



444 South 16th Street Mall  
Omaha NE 68102-2247

April 14, 2004  
LIC-04-0048

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Reference: Docket No. 50-285

**SUBJECT: Transmittal of Changes to Emergency Plan Implementing Procedures (EPIP)**

In accordance with 10 CFR 50.54(a), 10 CFR 50, Appendix E, Section V, and 10 CFR 50.4(b)(5), please find EPIP, EPF and RERP change packages enclosed for the Document Control Desk (holder of Copy 165) and the NRC Region IV Plant Support Branch Secretary (holder of Copies 154 and 155).

The document update instructions and summary of changes are included on the Confirmation of Transmittal form (Form EP-1) attached to each controlled copy change package. Please return the Confirmation of Transmittal forms by May 31, 2004.

The revised documents included in the enclosed package are:

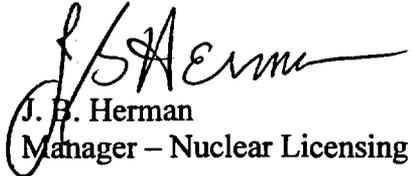
FC-EPF Index pages 1 and 2 issued 04/06/04	FC-EPF-34 R1 issued 03/31/04
FC-EPF-1 R8 issued 03/31/04	FC-EPF-36 R5 issued 03/31/04
FC-EPF-2 R4 issued 04/02/04	FC-EPF-37 R1 issued 03/31/04
FC-EPF-8 R7 issued 04/02/04	FC-EPF-38 R7 issued 03/31/04
FC-EPF-12 R4 issued 03/31/04	FC-EPF-41 R1 issued 03/31/04
FC-EPF-13 R1 issued 03/31/04	FC-EPF-43 R1 issued 04/06/04
FC-EPF-15 R4 issued 03/31/04	RERP Index page 1 of 1 issued 04/06/04
FC-EPF-17 R4 issued 04/06/04	RERP-Section L R11 issued 01/27/00
FC-EPF-27 R4 issued 04/02/04	EPIP Index pages 1 and 2 issued 04/02/04
FC-EPF-29 R2 issued 03/31/04	EPIP-EOF-6 R33 issued 04/02/04
FC-EPF-31 R3 issued 03/31/04	EPIP-RR-25 R22 issued 04/02/04
FC-EPF-32 R1 issued 03/31/04	EPIP-RR-72 R14 issued 04/02/04

A045

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If you have any questions regarding the enclosed changes, please contact Mr. Carl Simmons at (402) 533-6430.

Sincerely,



J. B. Herman  
Manager – Nuclear Licensing

JBH/ckf

Enclosures

- c: NRC Region IV Plant Support Branch Secretary (2 sets)  
Alan Wang, NRC Project Manager (w/o enclosures)  
J. G. Kramer, NRC Senior Resident Inspector (w/o enclosures)  
Emergency Planning Department (w/o enclosures)

OMAHA PUBLIC POWER DISTRICT  
Confirmation of Transmittal for  
Emergency Planning Documents/Information

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<input checked="" type="checkbox"/> Radiological Emergency Response Plan (RERP)	<input checked="" type="checkbox"/> Emergency Plan Implementing Procedures (EPIP)	<input checked="" type="checkbox"/> Emergency Planning Forms (EPF)
<input type="checkbox"/> Emergency Planning Department Manual (EPDM)	<input type="checkbox"/> Other Emergency Planning Document(s)/ Information	

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Transmitted to:

Name: Document Control Desk Copy No: 165 Date: \_\_\_\_\_  
Plant Support Branch Secretary Copy No: 154  
Plant Support Branch Secretary Copy No: 155

The following document(s) / information are forwarded for your manual:

REMOVE SECTION

FC-EPF Index pages 1 and 2 issued 12/16/03 & 01/29/04  
FC-EPF-1 R7 issued 11/29/01  
FC-EPF-2 R3 issued 03/15/01  
FC-EPF-8 R6 issued 07/23/02  
FC-EPF-12 R3 issued 02/14/02  
FC-EPF-13 R0 issued 01/17/91  
FC-EPF-15 R3 issued 07/11/97a  
FC-EPF-17 R3 issued 11/06/99  
FC-EPF-27 R3 issued 11/07/00  
FC-EPF-29 R1 issued 12/30/93  
FC-EPF-31 R2 issued 03/14/02  
FC-EPF-32 R0 issued 06/10/93  
FC-EPF-34 R0 issued 06/23/93  
FC-EPF-36 R4 issued 12/16/03  
FC-EPF-37 R0 issued 07/11/95  
FC-EPF-38 R6 issued 12/05/00  
FC-EPF-41 R0 issued 09/30/98  
FC-EPF-43 R0 issued 11/29/01  
RERP Index page 1 of 1 issued 01/06/04  
RERP-Section L R11 issued 01/27/00  
EPIP Index pages 1 and 2 issued 03/11/04  
EPIP-EOF-6 R32 issued 01/23/02  
EPIP-RR-25 R21 issued 05/15/03  
EPIP-RR-72 R13 issued 07/09/02

INSERT SECTION

FC-EPF Index pages 1 and 2 issued 04/06/04  
FC-EPF-1 R8 issued 03/31/04  
FC-EPF-2 R4 issued 04/02/04  
FC-EPF-8 R7 issued 04/02/04  
FC-EPF-12 R4 issued 03/31/04  
FC-EPF-13 R1 issued 03/31/04  
FC-EPF-15 R4 issued 03/31/04  
FC-EPF-17 R4 issued 04/06/04  
FC-EPF-27 R4 issued 04/02/04  
FC-EPF-29 R2 issued 03/31/04  
FC-EPF-31 R3 issued 03/31/04  
FC-EPF-32 R1 issued 03/31/04  
FC-EPF-34 R1 issued 03/31/04  
FC-EPF-36 R5 issued 03/31/04  
FC-EPF-37 R1 issued 03/31/04  
FC-EPF-38 R7 issued 03/31/04  
FC-EPF-41 R1 issued 03/31/04  
FC-EPF-43 R1 issued 04/06/04  
RERP Index page 1 of 1 issued 04/06/04  
RERP-Section L R11 issued 01/27/00  
EPIP Index pages 1 and 2 issued 04/02/04  
EPIP-EOF-6 R33 issued 04/02/04  
EPIP-RR-25 R22 issued 04/02/04  
EPIP-RR-72 R14 issued 04/02/04

**Summary of Changes:**

FC-EPF 1,2,8,12,13,15,17,27,29,31,32,34,36,37,38,41,43 were all revised due to being converted to WP8. RERP Section L was revised due to being converted to WP\* with Documentable Error incorporated. EPIP-EOF-6 was revised to add note telling when to use fax and to clarify instructions on how to use imminent release. EPIP-RR-25 was revised to add note to clarify when HPN is used, to delete sign-off/time on steps that are performed multiple times. EPIP-RR-72 was revised to correct Step 3 of Attachment 6.1 to include directing the field teams to synchronize their watches to ERF time.

*Ronald J. Mens*  
FOA Supervisor - Emergency Planning

**I hereby acknowledge receipt of the above documents/information and have included them in my assigned manuals.**

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Please sign above and return by to: 05/31/04

Beth Nagel  
Fort Calhoun Station, FC-2-1  
Omaha Public Power District  
444 South 16<sup>th</sup> Street Mall  
Omaha, NE 68102-2247

**NOTE:** If the document(s)/information contained in this transmittal is no longer requested or needed by the recipient, or has been transferred to another individuals, please fill out the information below.

Document(s)/Information No Longer Requested/Needed

Document(s)/Information Transferred to:

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
\_\_\_\_\_

Document	Document Title	Revision/Date
<u>FC-EPF-1</u>	Alert Notification System Accidental Activation Report Form	R8 03-31-04
<u>FC-EPF-2</u>	Offsite Monitoring Log	R4 04-02-04
<u>FC-EPF-3</u>	Administration of Potassium Iodide Tablets	R1 11-07-00
<u>FC-EPF-4 NCR</u>	Radiological Emergency Team Briefing Checklist	R3 07-29-03
<u>FC-EPF-5</u>	Emergency Worker Extension	R5 02-14-03
<u>FC-EPF-6</u>	Estimated Exposure Worksheet	R4 11-07-00
<u>FC-EPF-7</u>	Estimated Exposure Log	R2 04-01-98
<u>FC-EPF-8</u>	Sample Worksheet	R7 04-02-04
<u>FC-EPF-9</u>	OSC 24-Hour Staffing Schedule	R14 01-16-03
<u>FC-EPF-10</u>	CR/TSC 24-Hour Staffing Schedule	R16 01-16-03
<u>FC-EPF-11</u>	EOF 24-Hour Staffing Schedule	R12 01-16-03
<u>FC-EPF-12</u>	MRC 24 Hour Staffing Schedule	R4 03-31-04
<u>FC-EPF-13</u>	Emergency Response Organization Log Sheet	R1 03-31-04
<u>FC-EPF-14</u>	Emergency Response Organization Assignment Form	R13 01-29-04
<u>FC-EPF-15</u>	Drill Exercise Comment Form	R4 03-31-04
<u>FC-EPF-17</u>	Pager Response Follow Up Questionnaire	R4 04-06-04
<u>FC-EPF-19</u>	Process and Area Monitor Locations	R7 04-22-03
<u>FC-EPF-20</u>	Site Boundary/Owner Control Area	R2 06-03-03
<u>FC-EPF-21</u>	Fort Calhoun Station Sector Map	R2 05-15-97
<u>FC-EPF-27</u>	Onsite/Offsite Dose Comparison Data Record (Using Eagle Program)	R4 04-02-04
<u>FC-EPF-29</u>	Estimation of Unmonitored Release Rates	R2 03-31-04
<u>FC-EPF-31</u>	/ Stability Class Chart	R3 03-31-04
<u>FC-EPF-32</u>	Area Monitor Trending	R1 03-31-04

Document	Document Title	Revision/Date
FC-EPF-33*	Emergency Response Facility Computer System (ERFCS)	R1 07-02-96
FC-EPF-33A	ERFCS Function Key Mapping	R0 10-08-02
FC-EPF-34	MRC Director Checklist	R1 03-31-04
FC-EPF-35	Iowa EOC Route Map (double-sided)	R0 06-21-94
FC-EPF-36	Briefing Guidelines	R5 03-31-04
FC-EPF-37	Operations Liaison Out of Service Equipment List	R1 03-31-04
FC-EPF-38	Blair Industrial Park CO-OP	R7 03-31-04
FC-EPF-41	Emergency Planning Simulator Critique	R1 03-31-04
FC-EPF-42	Emergency Action Levels	R1 05-02-02
FC-EPF-43	Update Report to Offsite Authorities	R1 04-06-04

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ALERT NOTIFICATION SYSTEM  
ACCIDENTAL ACTIVATION REPORT FORM

1. Date:	Initial Contact Time:
OPPD Person Taking Information:	
2. Person Reporting Siren Sounding:	
3. Organization or Address of Individual:	
4. Siren Location:	
5. Siren Number(s) (if known):	
6. Description of Problem:	
7. Emergency Planning Contact Person Notified	
<input type="checkbox"/> "N/A" or Name:	Time:
8. KFAB Notified	
Name:	Time:
9. Electric Operations Dispatcher Notified	
<input type="checkbox"/> "N/A" or Name:	Time:
10. Applicable County Sheriff Notified	
<input type="checkbox"/> "N/A" or Name:	Time:
11. NRC Resident Inspectors Office Notified	
Name:	or
<input type="checkbox"/> message left on phonemail/answering machine	Time:
12. NRC Operations Center Notified	EN: Time:
Name:	
Record Condition Report Number (CR No.): _____	
<p>And Route This Form To: Supervisor, Emergency Planning, FC-2-1</p>	

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SAMPLE WORKSHEET

Sample #: \_\_\_\_\_ Time: \_\_\_\_\_ Location: \_\_\_\_\_ Team Red Blue

1. Counting Samples Using the ASP-2E with SPA-9 Probe

A. Iodine Activity: Wrap cartridge in plastic. Place cartridge in shielded holder, collected side up.

$$\frac{\text{spl}}{\text{cpm}} - \frac{\text{bkg}}{\text{cpm}} = \frac{\text{net}}{\text{cpm}} \times \frac{1.59E-11}{(\text{EFF I-131}) (\text{ft}^3)} = \frac{\text{activity (uCi / cc)}}{\text{ft}^3}$$

**NOTE:** If background is  $\leq 500$  cpm, the MDA is  $\leq 1.0E-08$  uCi/cc or calculate MDA as follows: (ARQ use graph)

$$\text{MDA} = \frac{\text{MDCR} \times 4.5E-7}{\text{EFF(I-131)} \times \text{Vol (ft}^3\text{)} \times 28317}$$

$$\text{MDCR} = \frac{2.71}{t_g} + 3.29 \sqrt{\frac{R_b}{t_g} + \frac{R_b}{t_b}}$$

$t_g$  = sample count time (min)  
 $t_b$  = background count time (min)  
 $R_b$  = background count rate (cpm)

MDA \_\_\_\_\_ uCi/cc

2. Counting Samples Using the Frisker

A. Smear Activity: Use 100cm<sup>2</sup> smear. Use GM pancake probe. Use only slow response mode.

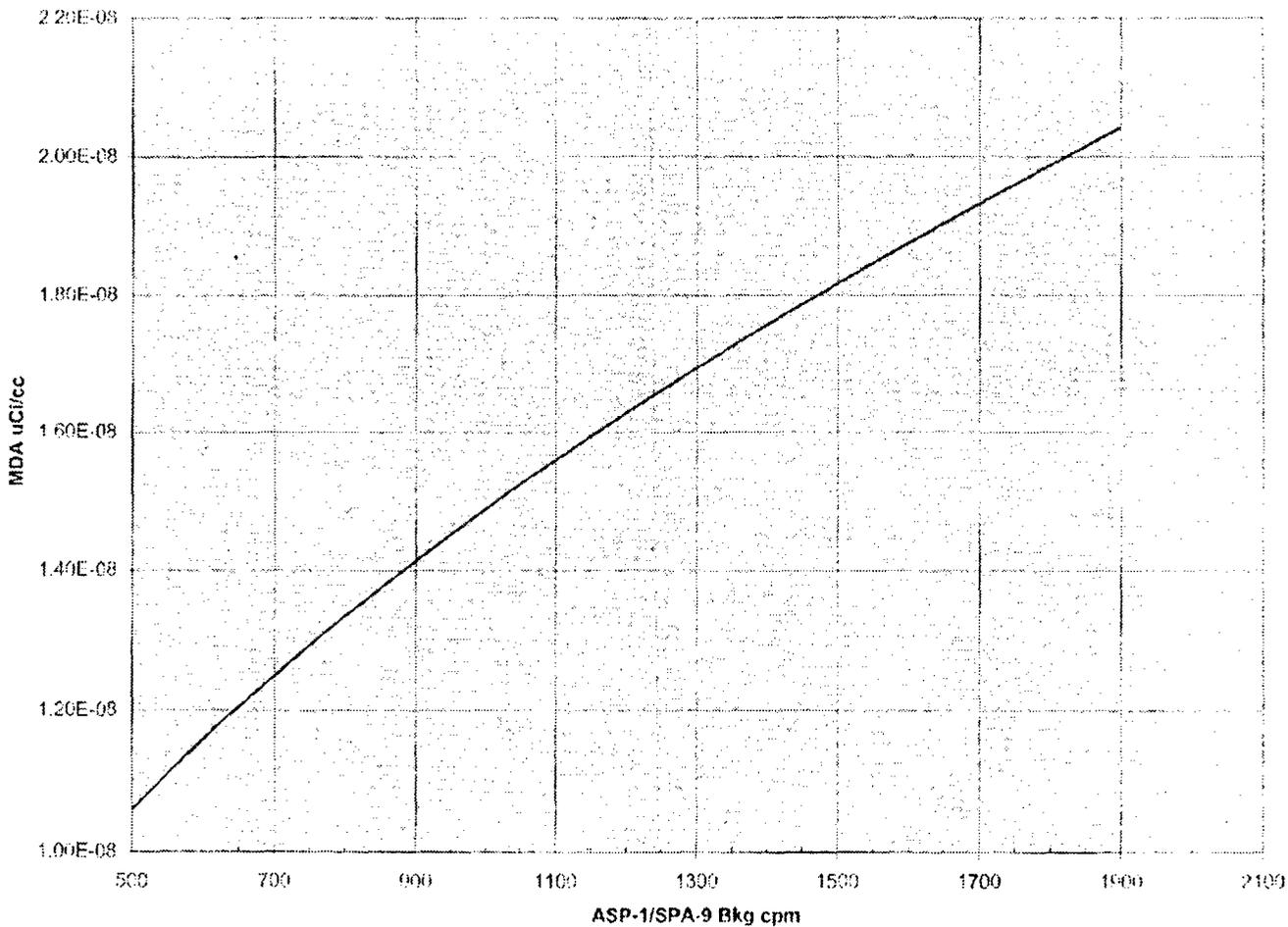
$$\frac{\text{spl}}{\text{cpm}} - \frac{\text{bkg}}{\text{cpm}} = \frac{\text{net}}{\text{cpm}} \times \frac{10}{\text{E.F.}} = \frac{\text{activity}}{\text{dpm/100cm}^2}$$

B. Particulate Activity: Use GM pancake probe. Use only slow response mode.

$$\frac{\text{spl}}{\text{cpm}} - \frac{\text{bkg}}{\text{cpm}} = \frac{\text{ncpm}}{\text{cpm}} \times \frac{1.59E-10}{(\text{ft}^3)} = \frac{\text{activity}}{\text{ft}^3}$$

**NOTE:** If sample counts are less than or equal to background counts, report results as "background".

I-131 MDA vs Background CPM



Assuming:  
4% I-131 Efficiency  
4 ft3 sample volume  
1 min count times

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**FORT CALHOUN STATION  
EMERGENCY PLANNING FORM**

**FC-EPF-12  
R4**

MRC 24-HOUR STAFFING SCHEDULE				
Date:	24 HOUR SCHEDULE			
Time:	Shift 1	Shift 2	Optional	
Shift Times:				
			CHECK WHEN NOTIFIED	
Corporate Spokesperson(2279)				
Media Release Center Manager(2250)				
MRC Clerical Supervisor(2252)				
MRC Information Specialist(2257/2258)				
MRC Technical Liaison(2255)				
Pub Infor & Rumor Control Supervisor(2280/2281)				
Public Information Specialist(2283)				
Public Information Specialist(2284)				
Public Information Specialist(2285)				
Public Information Specialist(2286)				
Public Information Specialist(2287)				
Public Information Specialist(2288)				
Public Information Specialist(2289)				
Public Information Specialist(2290)				
Public Information Specialist(2291)				
Public Information Specialist(2292)				
Others:				
<b>NOTE:</b> The expectation is to have a 24-hour schedule developed within 1 hour AFTER the center is declared OPERATIONAL for the 1 <sup>st</sup> shift and within 6 hours for the 2nd shift.				
Approved Signature:			Date/Time:	

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**EMERGENCY RESPONSE ORGANIZATION LOG SHEET**

Name:

Position:

Date:

Page

of

Time

Log Entries

**SIGNATURE:**

(SIGN LOG SHEET WHEN RELIEVED AND UPON EMERGENCY TERMINATION)

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DRILL/EXERCISE COMMENT FORM

Name:	Mail Stop:
Location:	Emergency Position:
Date:	
Equipment Comments Requiring Corrective Action:	
(1)	
(2)	
(3)	
Procedure/Training Comments Requiring Corrective Action:	
(1)	
(2)	
(3)	
Facility Comments Requiring Corrective Action:	
(1)	
(2)	
(3)	
General Comments Not Requiring Corrective Action:	
(1)	
(2)	
(3)	
<p><b>(Do Not Write On The Back Of This Form)</b> See Back For Comment Resolution Provided By The Emergency Planning Department</p>	

DRILL/EXERCISE COMMENT FORM

<b>Equipment Comments Corrective Action:</b>	
(1)	
(2)	
(3)	
<b>Procedure/Training Comments Corrective Action:</b>	
(1)	
(2)	
(3)	
<b>Facility Comments Corrective Action:</b>	
(1)	
(2)	
(3)	
<b>THANKS FOR YOUR PARTICIPATION!!!</b>	
Comment Resolutions Completed By: (EP Department)	
Comment Resolutions Reviewed By: (Supervisor - Emergency Planning)	

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PAGER RESPONSE FOLLOW UP QUESTIONNAIRE

Date:	
From: Supervisor - Emergency Planning	
To:	
Subject: Notification Drill Pager Response Follow Up	
A pager Notification Drill was conducted at	on 20
Test records indicate you did not respond to the pager test.	
Please put an "X" in the appropriate box at the bottom of this sheet.	
If you did not receive the page, please check your pager for operability by paging yourself and then check the appropriate box below.	
The requested information is vital in order to ensure the continued operability of the Emergency Pager System.	
Please complete by:	and return this form to:
	Emergency Planning FC-2-1
C. F. Simmons Supervisor - Emergency Planning	
[ ] Received the 5*5*5*5*5*5 page and could have responded to a real emergency.	
[ ] Received the 5*5*5*5*5*5 page but, due to circumstances, would NOT have been able to respond to a real emergency (examples: watching children, fitness for duty, vacation, etc.).	
[ ] Pager was turned off due to vacation, sickness, etc.	
[ ] Did not receive 5*5*5*5*5*5 page. I have checked my pager for operability.	
[ ] Pager is operable.	
[ ] Pager is not operable. I have contacted Emergency Planning at extension 7307 to resolve the pager problem.	
[ ] Other:	

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ONSITE/OFFSITE DOSE COMPARISON DATA RECORD (USING EAGLE PROGRAM)

Date/Time	Location	Distance	Instrument Reading (Rem/Hr)	Iodine Air Concentration ( $\mu\text{Ci/cc}$ )	Particulate Air Concentration ( $\mu\text{Ci/cc}$ )
		EAGLE			
		Actual			
		EAGLE			
		Actual			
		EAGLE			
		Actual			
		EAGLE			
		Actual			
		EAGLE			
		Actual			
		EAGLE			
		Actual			
		EAGLE			
		Actual			
		EAGLE			
		Actual			
		EAGLE			
		Actual			

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SECTION G  
ESTIMATION OF UNMONITORED RELEASE

1. Date/Time:			
2. Downwind Distance:			
3. Wind From:			°
4. Delta T ( $\Delta T$ ):			°C/100m
5. Wind Speed:			mph
6. Diffusion Factor:			
7. Dose Rate (Field Team):			Rem/hr
8. Iodine Air Concentration (Field Team):			$\mu\text{Ci/cc}$
9. Particulate Air Concentration (Field Team):			$\mu\text{Ci/cc}$
10. Noble Gas Release Rate ( $Q_{\text{NG}}$ ) from Field Team Dose Rate Data:			
( 2.5E-3 )	(          )	(          )	(          ) =
	mph	R/hr	Ci/sec Noble Gas
STEP 5	STEP 7	STEP 6	RESULT 10
11. Iodine Release Rate ( $Q_i$ ):			
a. From Field Team Dose Rate Data:			
(          )	(          )	( .02 ) =	
	Ci/sec		Ci/sec Iodine
RESULT 10			
b. From Field Team Air Sample Data:			
(          )	(          )	(          ) +	(          ) =
	mph	$\mu\text{Ci/cc}$	Ci/sec Iodine
STEP 5	STEP 8	STEP 6	
12. Particulate Release Rate ( $Q_p$ ):			
(          )	(          )	(          ) +	(          ) =
	mph	$\mu\text{Ci/cc}$	Ci/sec Particulate
STEP 5	STEP 9	STEP 6	
Assessment Completed By:			Time:

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### $\Delta T/\sigma\theta$ STABILITY CLASS CHART

$\Delta T$ Temperature Change With Height (°C/100 m)	$\sigma\theta$ Standard Deviation of the Horizontal Wind Direction (Degrees)	Pasquill Stability Class
$\leq -1.9$	$\sigma\theta \leq 22.5$	<b>A</b> Extremely Unstable
$> -1.9$ to $\leq -1.7$	$22.5 > \sigma\theta \leq 17.5$	<b>B</b> Moderately Unstable
$> -1.7$ to $\leq -1.5$	$17.5 > \sigma\theta \leq 12.5$	<b>C</b> Slightly Unstable
$> -1.5$ to $\leq -0.5$	$12.5 > \sigma\theta \leq 7.5$	<b>D</b> Neutral
$> -0.5$ to $\leq 1.5$	$7.5 > \sigma\theta \leq 3.8$	<b>E</b> Slightly Stable
$> 1.5$ to $\leq 4.0$	$3.8 > \sigma\theta \leq 2.1$	<b>F</b> Moderately Stable
$> 4.0$	$2.1 > \sigma\theta$	<b>G</b> Extremely Stable

**Delta Temperature ( $\Delta T$ )** is the temperature difference between 10 and 60 meters multiplied by two, in units of centigrade. The ERFCS displays  $\Delta T$  as °C/100 m.

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AREA MONITOR TRENDING

	TIME															
CONTAINMENT	RM070															
	RM071															
	RM072															
	RM073															
	RM074															
	RM075															
	RM091A															
	RM091B															
CORR 4	RM076															
	RM077															
	RM078															
	RM079															
CORR 26	RM080															
	RM081															
	RM082															
	RM084															
ROOM 69	RM085															
	RM086															
	RM087															
	RM088															
CR	RM089															
															Date:	

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MRC DIRECTOR CHECKLIST

Check item when completed	Agency/ person performing	BRIEFING #:	TIME:
		MRC DIRECTOR:	
* ITEMS REQUIRING DISCUSSION BASED ON ACTIVATION LEVEL OF EMERGENCY			
<b>Pre Briefing Checklist .</b>			
		Copies of news releases are available.	
		Copies of Emergency Broadcast Messages are available.	
		Media Kits are available	
		Staff members are available to handle inquires from the media.	
		Participants have name placeards stating name and agency on desk.	
		Log maintained of information provided to the media.	
		Pre briefing meeting held with all participants.	
<b>Required Topics of Discussion During Press Briefing.</b>			
		Introduce self and members of panel to media.	
		Description of current emergency conditions at FCS, with reference to both the potential for or actual release of radioactivity and current emergency classification level (ECL).	
		Rumor control telephone numbers.	
		Information to address false and misleading rumors.	
		Use of public information brochures.	
		*How to maximize protection when sheltering.	
		*Instructions to transients without shelter.	
		*What to leave behind and what to take along when evacuating.	
		*Evacuation routes.	
		*Location of reception centers / congregate care facilities.	
		*Information and instructions to parents, concerning protective actions for students.	
		*Information for transportation-dependant individuals.	
		*Information for special populations.	
		*Information and instructions on protective actions for ingestion.	
		*Information on relocation, re-entry or return.	

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BRIEFING GUIDELINES

Approximately Ten (10) Minutes Prior To Conducting The Briefing Make An Announcement Over The Paging System Stating When And Where The Briefing Will Take Place – If Input From Others Will Be Requested, Let Them Know So They Can Prepare.

**Stand-Up!! Get  
Everyone's Attention!!!!**

If not an actual emergency: "This is a Drill – This is a Drill"

1. State Your Name and Position:

2. Current Emergency Level:	NOUE	ALERT	SAE	GE
-----------------------------	------	-------	-----	----

2.1 Any indications which could lead to a higher classification?

2.2 Any indications to allow a deescalation or termination?

3. Command and Control is currently in the:	CR	TSC	EOF
---	----	-----	-----

Who:	Name:	Title:
------	-------	--------

4. Status of the Plant and Safety Systems

5. Status of Radiological Concerns/Release Pathway (if applicable)

6. Current Protective Actions

6.1 OPPD's PARs

6.2 State of Nebraska implementation (EOF only)

6.3 State of Iowa implementation (EOF only)

7. Current Response/Recovery Activities

7.1 OPPD

7.2 States (EOF only)

7.3 Federal Agencies (EOF only)

8. Current Priorities of OPPD ERO Personnel

9. Other Information, as needed

10. Remind personnel to use their procedures and complete their logs.

11. Remind personnel to use the Human Performance tools:

- |   |                         |
|---|-------------------------|
| • Effective Communication (2 and 3-way) | • Procedural Compliance |
| • Pre-Job Briefings                     | • Questioning Attitude  |
| • Self and Peer Checking                | • 200% Accountability   |

12. State Time of Next Planned Briefing

13. Ask for Questions or Comments

If not an actual emergency: "THIS IS A DRILL - THIS IS A DRILL"

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OPERATIONS LIAISON OUT OF SERVICE EQUIPMENT LIST

Please Provide To Status Board Keeper And Ensure All Other Facility Operations Liaisons Are Informed Of The Update.

ADD

REVISE

REMOVE

Item/Description:

Requested By (Initials):

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BLAIR INDUSTRIAL PARK CO-OP  
EVENT NOTIFICATION FORM

1. Take roll call of responding members (✓ by name of those responding)	<input type="checkbox"/> Blair Water/Sewer	<input type="checkbox"/> Cargill	<input type="checkbox"/> Kelly Ryan
	<input type="checkbox"/> MACC	<input type="checkbox"/> Terra Nitrogen	<input type="checkbox"/> Blair AG, LLC
	<input type="checkbox"/> Washington County Dispatch		
2. Emergency Classification Code	<input type="checkbox"/> NOUE (Blue)	<input type="checkbox"/> Alert (Green)	<input type="checkbox"/> Site Area (Yellow) <input type="checkbox"/> General (Red)
3. Classification:	Date:	Time:	
Reported by (If other than OPPD):			
4. Person making Report:	Title:		
Call back #:	Time:		
Authorized By:	Title:	Time:	
5. Incident facts	Time of Event:	Estimated Duration (hrs):	
6. Event type (✓ all applicable)	<input type="checkbox"/> Explosion	<input type="checkbox"/> Fire	<input type="checkbox"/> Gas Release
	<input type="checkbox"/> Radiological	<input type="checkbox"/> River Release	<input type="checkbox"/> Spill
	<input type="checkbox"/> Other; Please list:		
Substance Involved (proper spelling?):	Volume	Units	
	DOT ID #:	DOT Guide #:	
Other Identifying characteristics	<input type="checkbox"/> Flammable	<input type="checkbox"/> Toxic	<input type="checkbox"/> HazMat <input type="checkbox"/> Other
7. Weather	Direction (from°):	Wind Speed:      MPH	Precipitation? <input type="checkbox"/> Yes <input type="checkbox"/> No
8. Comments (At Site Area or General Emergency recommend that members tune to KFAB 1110 AM for EAS Message(s))			
9. Was an attempt made to contact members that didn't answer Co-Op line?			<input type="checkbox"/> Yes <input type="checkbox"/> No
List those not contacted:			

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EMERGENCY PLANNING SIMULATOR CRITIQUE

			Date:		
Participants:	Yes	No		Yes	No
Shift Manager			Turbine Building Operator		
Senior Reactor Operator			Water Plant Operator		
Licensed Operator			Communicator		
Licensed Operator*			Shift Chemist		
Auxiliary Building Operator			Shift HP		
Other:			Other:		
Objectives:				Met	
				Yes	No
Classifications are correctly made and are timely.					
FC-1188's are filled out correctly, approved and sent out promptly.					
All notifications are made in the required time per EPIP-OSC-2.					
Habitability checks are done correctly and verified during the drill.					
Dose assessment performed correctly with results given to Shift Manager.					
Any strengths or problems noted:					

Attach a copy of the attendance sheet

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UPDATE REPORT TO OFFSITE AUTHORITIES

Use this form only when the EAGLE dose assessment program is unable to print.				
This is a: <input type="checkbox"/> Emergency		<input type="checkbox"/> Drill/Exercise		
Contact/Fax Time:				
Call Back #: <input type="checkbox"/> CHP		Commercial (if CHP is unavailable) (402) -		
Fax to: <input type="checkbox"/> Iowa <input type="checkbox"/> Nebraska <input type="checkbox"/> TSC <input type="checkbox"/> EOF <input type="checkbox"/> Control Room (Simulator if Drill) <input type="checkbox"/> MRC				
Plume Calculation Time:		Plume #:	Dose Assessment Specialist:	
Release Point	<input type="checkbox"/> Auxiliary Building Stack		Flow	
	<input type="checkbox"/> Condenser/Main Steam		Flow	
	<input type="checkbox"/> Containment		Flow	
	<input type="checkbox"/> Rad Waste Building Stack		Flow	
Estimated Release Duration:			Hours	
Quantity and Rate	curies noble gas at		curies/second	
	curies iodine at		curies/second	
	curies particulate at		curies/second	
Meteorological	Atmospheric Mixing Condition:			
	Wind Speed:	MPH	Wind Direction:	Degrees
	Delta T:	Degrees	Ambient Temperature:	Deg. C
	Stability Class:		Mixing Height:	Meters
Affected Sectors:				
Projected Dose Rates (REM/Hr)			Projected Integrated Dose (REM)	
	TEDE	CDE	TEDE	CDE
Site Boundary				
2 Miles				
5 Miles				
10 Miles				
All calculations done using Straight Line Gaussian Model. Doses/Dose Rates <1E-4 are displayed as zero.				
Reviewed by:				

Document	Document Title	Revision/Date
<u>RERP</u>	Definitions and Abbreviations	R17 09-03-03
<u>RERP-SECTION A</u>	Assignment of Organizational Responsibility (Organizational Control)	R11 02-27-97c
<u>RERP-SECTION B</u>	Organizational Control of Emergencies	R25 08-24-00
<u>RERP-SECTION C</u>	Emergency Response Support and Resources	R9 09-30-98a
<u>RERP-SECTION D</u>	Emergency Classification System	R10 09-17-02
<u>RERP-SECTION E</u>	Notification Methods and Procedures	R23 08-24-00a
<u>RERP-SECTION F</u>	Emergency Communications	R15 08-24-00a
<u>RERP-SECTION G</u>	Public Education and Information	R11 08-08-02
<u>RERP-SECTION H</u>	Emergency Facilities and Equipment	R30 08-08-02
<u>RERP-SECTION I</u>	Accident Assessment	R12 03-20-03
<u>RERP-SECTION J</u>	Protective Response	R18 05-28-03
<u>RERP-SECTION K</u>	Radiological Exposure Control	R10 04-03-03
<u>RERP-SECTION L</u>	Medical and Public Health Support	R11 01-27-00b
<u>RERP-SECTION M</u>	Recovery and Reentry Planning and Post Accident Operations	R14 03-11-97b
<u>RERP-SECTION N</u>	Exercises and Drills	R13 12-07-01
<u>RERP-SECTION O</u>	Radiological Emergency Response Training	R13 09-23-97b
<u>RERP-SECTION P</u>	Responsibility for the Planning Effort: Development, Periodic Review and Distribution	R10 10-23-97a
<u>RERP-APPENDIX A</u>	Letters of Agreement	R16 03-07-00e
<u>RERP-APPENDIX B</u>	Supporting Emergency Plans	R4 10-27-98
<u>RERP-APPENDIX C</u>	NUREG/RERP/Implementing Procedure Cross Reference List	R12 09-02-99c
<u>RERP-APPENDIX D</u>	OPPD Resolution #4731, Radiological Emergency Response Plan Authority	R2 09-30-98a

WP10

Fort Calhoun Station  
Unit No. 1

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**RERP-SECTION L**

**RADIOLOGICAL EMERGENCY RESPONSE PLAN**

**Title: MEDICAL AND PUBLIC HEALTH SUPPORT**

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**FC-68 Number: N/A**

**Reason for Change: Converted from WP6.1 to WP8 with Documentable Error incorporated.**

**Initiator: Mark Reller**

**Preparer: Sheila Rasmussen**

**Correction (a): Page 5 (issue all pages) (01-06-04)**

**Correction (b): Page 4 (04-06-04)**

**ISSUED: 01-27-00 3:00 pm**

**R11**

## MEDICAL AND PUBLIC HEALTH SUPPORT

### 1. ONSITE FIRST AID

There are generally four types of response considered at the Fort Calhoun Station:

- 1) Minor injury, no contamination
- 2) Minor injury, contaminated
- 3) Major injury (requiring offsite treatment), no contamination
- 4) Major injury, contaminated

The order of medical treatment will be:

- 1) Care of severe physical injuries
- 2) Decontamination of personnel
- 3) First aid to other injuries
- 4) Monitor for internal contamination
- 5) Definitive treatment and subsequent therapy as required

All injuries at the station must be immediately reported to the Shift Manager, who will initiate response according to the Fort Calhoun Station Safety Manual.

When personnel are severely injured and contaminated, first aid shall take precedence over decontamination. In cases where internal exposure is suspected, a bioassay program may be performed as directed by the Radiation Protection Manual.

#### 1.1 First Aid Facilities

A First Aid Room is located in the TSC. This room is equipped with an examination table, examination chair, illuminating magnifier and a supply of bandages, splints, etc., to provide emergency first aid to injured personnel.

Other equipment located throughout the plant include first aid kits, Emergency Medical Technician (EMT) kits, personnel carriers, a wheelchair, and contaminated/injured personnel response kit. The Industrial Safety Coordinator inspects and maintains this equipment.

#### 1.2 Medical Response

##### 1.2.1 Minor Injury, No Contamination

The Shift Manager or other evaluators will determine the extent of medical response required. This could include:

- A. On the spot treatment by the individual or first aid qualified responders.

- 1.2.1 B. On the spot treatment by EMT qualified personnel.
- C. Movement of the injured party to the first aid room by medical responders for access to additional equipment.
- D. Other response determined necessary by responding personnel.

1.2.2 Minor Injury, Contaminated

Personnel that are injured and are potentially contaminated will be treated as explained above, and will also be monitored for contamination by Radiation Protection personnel. Monitoring and decontamination will be performed in accordance with Radiation Protection procedures.

1.2.3 Major Injury, No Contamination

Medical responders will be dispatched to the scene to perform first aid as required and prepare the victim for transport. The Shift Manager or designee will notify offsite authorities to provide victim transport to an available medical facility. Both air and ground transportation are available.

1.2.4 Major Injury, Contaminated

Personnel that are severely injured and are potentially contaminated will be treated as explained above, and will also be monitored for contamination by Radiation Protection personnel. If feasible, monitoring and decontamination will be performed in accordance with Radiation Protection Procedures. If decontamination is successful, the victim may be transported to any available medical facility for treatment.

If decontamination is not successful or not feasible, the victim will be transported to the Nebraska Health System (NHS) University Hospital Regional Radiation Health Center, unless the on-scene medical responders or transportation personnel deem it medically necessary to proceed to a closer facility. If another facility other than NHS is used, additional Radiation Protection personnel should be sent to the facility to assist in monitoring, decontamination and clean up.

2. MEDICAL TRANSPORTATION

2.1 Blair Fire Department and Rescue Squad

The Blair Fire Department and Rescue Squad Station is located less than four (4) miles from the Fort Calhoun Station. The Rescue squad furnishes transportation for the injured and administers first aid enroute to the hospital.

**2.2 Fort Calhoun Fire and Rescue Squad**

The Fort Calhoun Fire and Rescue Squad headquarters is located approximately 3-1/2 miles from the Fort Calhoun Station. This rescue squad serves as backup to the Blair Fire Department and Rescue Squad.

**2.3 Missouri Valley Fire and Rescue Squad**

The Missouri Valley Fire and Rescue Squad is located approximately fifteen (15) miles from the plant.

**2.4 Additional support is available to both the Blair Fire Department and Rescue Squad and the Fort Calhoun Fire and Rescue Squad by request through the Tri-Mutual Aid Association (Douglas, Sarpy, and Washington Counties).**

**2.5 Other Modes of Transportation**

If necessary, there are other modes of transportation for delivering injured personnel to appropriate medical facilities.

**2.5.1 Medical Ambulance helicopter.**

**2.5.2 Onsite company vehicles.**

**2.5.3 Private autos of company personnel.**

**3. OFFSITE MEDICAL SUPPORT**

**3.1 Non-Contaminated Personnel**

The nearest medical facility is the Blair Memorial Community Hospital which is located five (5) miles from the plant. A physician is readily available as a general medical consultant. Other facilities may be used as determined necessary by medical response personnel.

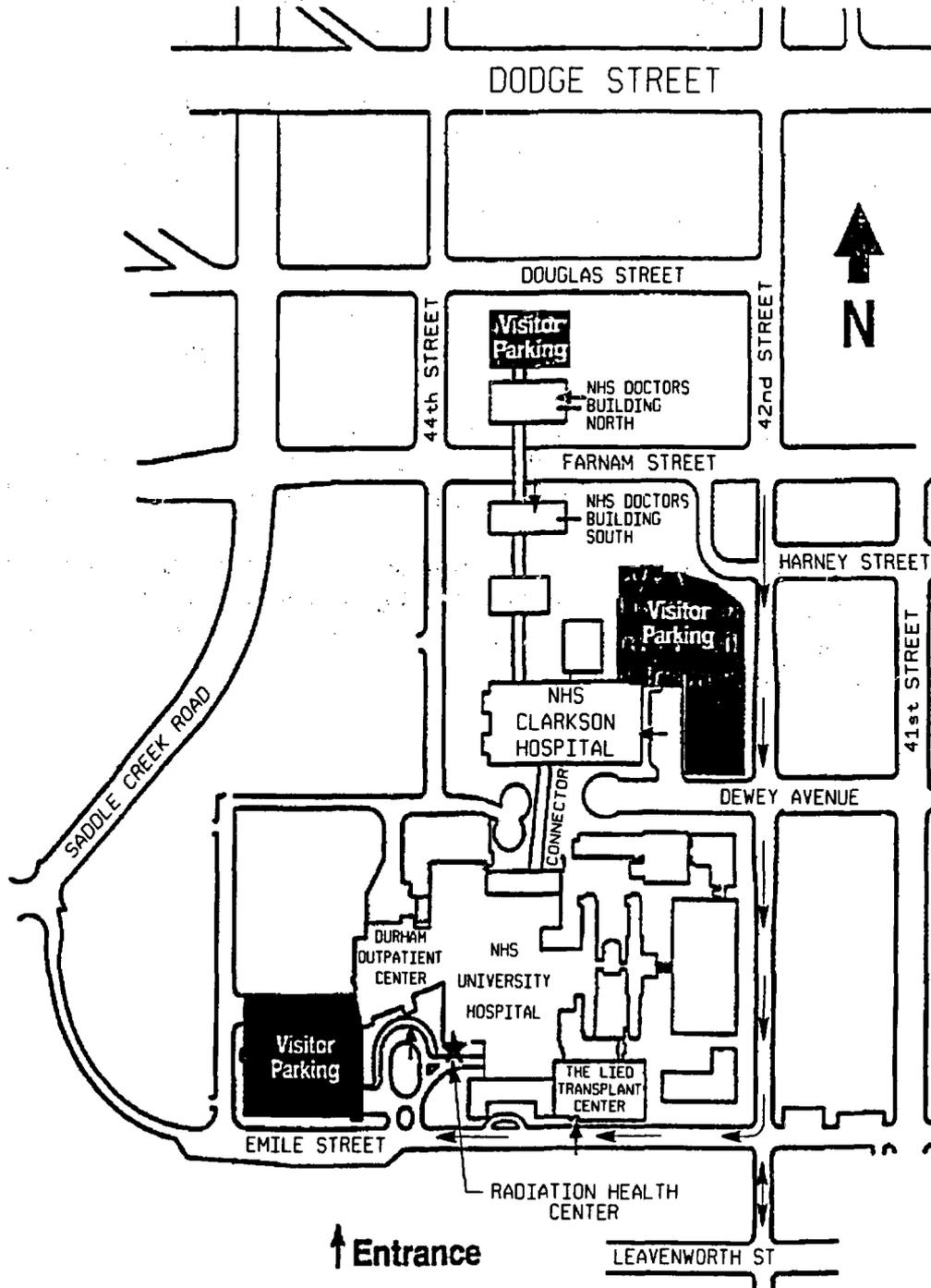
### 3.2 Contaminated Personnel

Omaha Public Power District maintains an agreement with the NHS, University Hospital Regional Radiation Health Center to supply 24-hour treatment for all injuries involving contamination and/or personnel radiation exposure. The Regional Radiation Health Center is located approximately 25 miles from the plant in Omaha, Nebraska. The facility is part of the NHS complex, and was established specifically for the treatment of injuries occurring from nuclear and radiation related incidents. A entrance is available for the ingress and egress of contaminated victims to a special assessment and decontamination facility. This entrance is from Forty-Second Street and Emile Street and is depicted in Figure L-1. Patients can also be transported to the facility via medical ambulance helicopters.

The NHS University Hospital Regional Radiation Health Center staff administers medical, decontamination, internal bioassay, and other nuclear medicine capabilities. The staff maintains an appropriate "Standard Operating Procedures Manual" which describes their responsibilities and roles. If additional hospital beds should be required during a major incident, the hospital maintains a mutual agreement with several other Omaha area hospitals to assist with decontaminated patients.

Due to the large, highly qualified staff, the distance from the plant, the specialized capabilities, and the overall size of the NHS complex, the Fort Calhoun Station was granted an exemption from requiring a backup medical facility by the Federal Emergency Management Agency.

Figure L-1 Entrance to Treatment Area  
NHS, University Hospital Regional Radiation Health Center



Document	Document Title	Revision/Date
<u>EPIP-OSC-1</u>	Emergency Classification	R35 05-02-02
<u>EPIP-OSC-2</u>	Command and Control Position Actions/Notifications	R42 05-28-03a
<u>EPIP-OSC-9</u>	Emergency Team Briefings	R7 12-09-99
<u>EPIP-OSC-15</u>	Communicator Actions	R22 10-24-00a
<u>EPIP-OSC-21</u>	Activation of the Operations Support Center	R13 03-02-04
<u>EPIP-TSC-1</u>	Activation of the Technical Support Center	R25 03-02-04
<u>EPIP-TSC-2</u>	Catastrophic Flooding Preparations (R0 03-22-95) DELETED (05-09-95) REINSTATED	R5 11-13-03
<u>EPIP-TSC-8</u>	Core Damage Assessment	R15 10-28-03
<u>EPIP-EOF-1</u>	Activation of the Emergency Operations Facility	R13 10-29-02
<u>EPIP-EOF-3</u>	Offsite Monitoring	R19 07-29-03
<u>EPIP-EOF-6</u>	Dose Assessment	R33 04-02-04
<u>EPIP-EOF-7</u>	Protective Action Guidelines	R15 03-11-04
<u>EPIP-EOF-10</u>	Warehouse Personnel Decontamination Station Operation	R10 01-13-00a
<u>EPIP-EOF-11</u>	Dosimetry Records, Exposure Extensions and Habitability	R20 07-02-03
<u>EPIP-EOF-19</u>	Recovery Actions	R8 07-17-03
<u>EPIP-EOF-21</u>	Potassium Iodide Issuance	R4 11-07-00
<u>EPIP-EOF-23</u>	Emergency Response Message System	R5 10-12-99
<u>EPIP-EOF-24</u>	EOF Backup Alert Notification System Activation	R3 09-09-99
<u>EPIP-RR-11</u>	Technical Support Center Director Actions	R14 02-29-00a
<u>EPIP-RR-13</u>	Reactor Safety Coordinator Actions	R14 12-09-99a
<u>EPIP-RR-17</u>	TSC Security Coordinator Actions	R15 12-10-02a
<u>EPIP-RR-17A</u>	TSC Administrative Logistics Coordinator Actions	R20 11-07-02a

Document	Document Title	Revision/Date
EPIP-RR-19A	Operations Liaison Actions	R6 04-15-03a
EPIP-RR-21	Operations Support Center Director Actions	R13 08-28-03
EPIP-RR-21A	Maintenance Coordinator Actions	R4 11-30-99a
EPIP-RR-22	Protective Measures Coordinator/Manager Actions	R23 09-09-03
EPIP-RR-22A	Chemistry Coordinator Actions	R6 12-07-01
EPIP-RR-25	EOF Dose Assessment Coordinator Actions	R22 04-02-04
EPIP-RR-28	OSC Accountability and Dosimetry Technician Actions	R8 09-25-01a
EPIP-RR-29	EOF Administrative Logistics Manager Actions	R20 11-07-02
EPIP-RR-39	Control Room Medical Responder Actions	R0 03-27-01a
EPIP-RR-63	EOF Dose Assessment Assistant Actions	R10 11-19-01
EPIP-RR-66	Communication Specialist Actions	R8 08-31-99
EPIP-RR-72	Field Team Specialist Actions	R14 04-02-04
EPIP-RR-87	Radiation Protection Coordinator Actions	R9 08-28-03
EPIP-RR-90	EOF/TSC CHP Communication Actions	R0 10-24-00

WP10

Fort Calhoun Station  
Unit No. 1

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**EPIP-EOF-6**

**EMERGENCY PLAN IMPLEMENTING PROCEDURE**

**Title: DOSE ASSESSMENT**

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**FC-68 Number: EC 33610**

**Reason for Change: Revise for EAGLE 6.0 upgrade.**

**Requestor: M. Reller**

**Preparer: M. Reller**

**ISSUED: 04-02-04 3:00 pm**

**R33**

DOSE ASSESSMENT  
NON-SAFETY RELATED

1. PURPOSE

- 1.1 This procedure provides instructions for performing dose assessment for Ventilation Stack releases, Main Steam Line/Condenser Off-Gas releases, Containment leakage and Radwaste Building releases. It also provides instruction for estimating unmonitored release rates, and performing liquid release assessment.

2. REFERENCES/COMMITMENT DOCUMENTS

- 2.1 EPIP-EOF-7, Protective Action Guidelines
- 2.2 OI-ERFCS-1, Operation of the Emergency Response Facilities Computer System
- 2.3 CH-SMP-PA-0005, Monitoring of Gaseous Effluent Releases Via the Auxiliary Building Ventilation Duct Pathway
- 2.4 TDB-IV.7, Process Monitor Setpoints
- 2.5 TDB-IV.8, Area Monitor Setpoints
- 2.6 User's Guide for EAGLE 6.00
- 2.7 EA-FC-03-002, Containment Area Monitor Response
- 2.8 EA-FC-03-003, Iodine to Noble Gas Particulate to Noble Gas Ratios for EAGLE 6.0
- 2.9 EA-FC-02-019, Secondary Side Source Term
- 2.10 EA-FC-02-020, Source Term Undamaged Core
- 2.11 EA-FC-02-030, Lateral Spread for EAGLE 6.0.0
- 2.12 EA-FC-02-031, Determination of Release Rate and Iodine/Noble Gas Ratios from Field Team Data
- 2.13 EA-FC-02-032, Imminent Projected Release from EAGLE 6.0.0
- 2.14 EA-FC-02-033, EAGLE 6.0.0 Source Term Damage Core
- 2.15 EA-FC-02-034, EAGLE 6.0.0 Methodology for Calculation of Ground Deposition and Ingestion Pathway

- 2.16 EA-FC-02-035, Calculation of Release Mass Flow Rate from Main Steam
- 2.17 CHP-2002-21, Source Term for EAGLE 6.0.0
- 2.18 CHP-2003-01, Radiation Monitor Parameters for EAGLE
- 2.19 CHP-2003-04, Liquid Releases in EAGLE 6.0
- 2.20 EP-02-075, EAGLE 6.0.0 Receptor Locations
- 2.21 Commitments (other than Ongoing)
  - AR 10029, IER-89-24
  - AR 13302, IER-92-20
  - AR 17061, LIC-95-0049/LIC-95-0230
- 2.22 Protective Measure Basis Document, CHP-00-038, September 28, 2000

### 3. DEFINITIONS

- 3.1 DELTA T ( $\Delta T$ ) TEMPERATURE - the temperature difference between 10 and 110 meters, in units of centigrade. The value displayed on the ERFCS equates to a  $100\Delta T[(T @ 60m - T @ 10m) \times 2]$ .
- 3.2 DURATION OF RELEASE - the time in hours the release is expected to continue.
- 3.3 DOSE - the amount of ionizing radiation that results from an amount of energy being absorbed in the human body, in units of Rem.
- 3.4 DOSE RATE - Dose per unit time, in units of Rem/hour.
- 3.5 ERFCS - Emergency Response Facility Computer System.
- 3.6 IMMINENT RELEASE - An impending release of the radioactive gas in Containment.
- 3.7 CDE - Committed Dose Equivalent.
- 3.8 TEDE - Total Effective Dose Equivalent.
- 3.9 COMMAND AND CONTROL POSITION: The position that is currently in charge of the emergency response, either the Shift Supervisor, Control Room Coordinator, Site Director or Emergency Director.
- 3.10 RELEASE RATE (Q) - the emission rate of the effluent in units of Curies per second from the release point.

4. PREREQUISITES

4.1 A radioactive release is suspected, imminent, or known to be in progress.

5. PROCEDURE

**NOTE:** If on-site meteorological data is not available, contact the National Weather Service (number in the Emergency Phone Book), and request wind speed and direction. For night time (sunset to sunrise) with no precipitation, use a  $\Delta T$  of +2.0 and a stability class F. For all other conditions, use a  $\Delta T$  of -1.0 and a stability class D.

5.1 To perform dose assessments in the Control Room, use Attachment 6.1.

5.2 To perform dose assessments in the TSC, use Attachment 6.2.

5.3 To perform dose assessments in the EOF, use Attachment 6.3.

5.4 When needed, perform dose assessments and updates to the states at least every 60 minutes. It is the goal of the Fort Calhoun Station to attempt to provide assessments and updates at 15 minute intervals. (AR 13302)

5.5 Retain all documentation (logs, assessments, etc.) generated or used during the emergency. At the termination, deliver all documentation to the TSC Administrative Logistics Coordinator in the TSC, or the EOF Administrative Logistics Manager in the EOF.

6. ATTACHMENTS

6.1 Dose Assessment in the Control Room

6.2 Dose Assessment in the TSC

6.3 Dose Assessment in the EOF

6.4 Computerized Dose Assessment

6.5 Unmonitored Release Assessments

1. Using information from the Control Room as needed and AI-33A, B and C or ERFCS pages 197, 360 and 361 evaluate and determine the release pathways for dose assessment as follows:

**NOTE:** The sample Control Module for RM-052 must be in the VENT position (monitoring the Auxiliary Building Vent Stack) in order to be used for dose assessment.

**NOTE:** RM-062/063 are the preferred process monitors to be used for dose assessment on the Auxiliary Building Vent Stack. RM-062 is normally in-service and RM-063 is normally in Standby. When RM-062 count rate exceeds  $5.0 \text{ E}+06$  cpm or if RM-063 exceeds  $5.0 \text{ E}-3 \mu\text{C}/\text{cc}$ ; sample flow will automatically shift from RM-062 to RM-063 and the alarm "RM-063 AUX BLDG VENT STACK IN SERVICE" will annunciate on AI-33C. When RM-063 radiation level drops below  $5.0 \text{ E}-3 \mu\text{C}/\text{cc}$ , sample flow will shift to RM-062 and RM-063 will shift to Standby.

- 1.1 Evaluate the Auxiliary Building Vent Stack release pathway using RM-052, RM-062 and RM-063.
- 1.2 Evaluate the Condenser/Main Steam release pathway using RM-057, RM-064 and whether or not a primary to secondary leak has been confirmed.
  - 1.2.1 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed, request that RM-064 be placed in service on the affected Main Steam Line.
  - 1.2.2 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed and if Condenser Off-gas is being vented directly to the atmosphere via the Turbine Building Roof, request that Condenser Off-gas be aligned to the Auxiliary Building Vent Stack.
  - 1.2.3 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed and Condenser Off-gas is being vented directly to the atmosphere via the Turbine Building Roof, perform dose assessment with Condenser Off-gas as the release pathway, using a flow rate of 340 scfm.
  - 1.2.4 If a primary to secondary leak is confirmed and RM-057 is not operable or is over ranged, and Condenser Off-gas is not aligned to the Auxiliary Building Vent Stack, this is an unmonitored release.
  - 1.2.5 If there is a confirmed primary to secondary leak, and FW-10 is receiving steam from the affected Steam Generator, or the atmospheric Steam Dump Valve HCV-1040 is OPEN or a Steam Safety is lifting on the affected side, and RM-064 count rate is less than or equal to the background count rate as listed in TDB-IV.7, this is an unmonitored release.

- 1.3 Evaluate the Containment Leakage release pathway using Containment Area Monitors.

**NOTE:** If containment leakage is suspected to be greater than designed Containment leakage of 1.5 scfm, and the leakage is from the Containment to the stack or from the Containment to Controlled Areas of the Auxiliary Building to the Auxiliary Building Vent Stack, consideration may be given not to count the release twice if dose assessment will be performed from the Auxiliary Building Vent Stack.

- 1.3.1 If Containment Area Monitors RM-070 through RM-075 are in High Alarm or RM-091A and B read 1.0 R/hr or higher, perform dose assessment using Containment leakage as a release pathway.
- 1.3.2 IF any area monitors indicate > 1000 times the background listed in TDB-IV.8, THEN inform the Command and Control position for classification information.

- 1.4 Evaluate the Radwaste Building Stack as a release pathway using RM-043

- 1.4.1 If RM-043 is in High Alarm, perform dose assessment using the Radiological Waste Building Vent Stack as a release pathway.

- 1.5 Evaluate the liquid release pathways as follows:

- 1.5.1 If RM-055, Overboard Discharge Monitor is reading greater than the High Alarm Setpoint as listed in TDB-IV.7 and the overboard discharge flow is not isolated, then a liquid release assessment must be performed.
- 1.5.2 If either RM-054A or RM-054B Steam Generator Blowdown Monitors are reading greater than the High Alarm Setpoint as listed in TDB-IV.7 and blowdown flow is not isolated from the Steam Generator(s) with a primary to secondary leak, then a liquid release assessment must be performed.

- 1.6 Determine if there are any potentially unmonitored releases.

2. Perform dose assessment for monitored release pathways using Attachment 6.4 and for unmonitored release pathways per Attachment 6.5.

### 3. Review/Distribution

**NOTE:** The information generated by EAGLE is for OPPD decision maker's information only. Actual PARs are determined by the Command and Control position. The PAR Worksheet should be one of the tools used for guidance in determining PARs.

#### 3.1 If Command and Control is in the Control Room

- 3.1.1 Have the Command and Control position review the PAR Worksheet and the Update Report to Offsite Authorities.

**NOTE:** If a dose assessment results in a change in classification or a PAR change, ensure that the states are notified by the CR Communicator using an approved Emergency Notification form (FC-1188) prior to faxing the Update Report to Offsite Authorities.

**NOTE:** If the Network is down or faxing is slow consider using the stand-alone fax machine.

- 3.1.2 If the Command and Control position approves the assessment:

- Click the Fax button at the bottom of the screen
- Select the proper distribution list(s)
- Click "OK"

#### 3.2 If Command and Control is in the TSC:

- 3.2.1 Fax the unsigned PAR Information Worksheet and Update Report to State and County Authorities to the TSC.
- 3.2.2 Inform the TSC Protective Measures Coordinator of the transmittal.
- 3.2.3 Record transmittal time.

Attachment 6.2 - Dose Assessment In The Technical Support Center Page 1 of 3

**NOTE:** Dose assessment will only be performed in the TSC in the event that the EAGLE equipment in the Control Room is unavailable or inoperable. The TSC EAGLE equipment may also be used as a backup to the equipment located at the EOF.

1. Inform the Protective Measures Coordinator that you will be performing dose assessment in the TSC.
2. Using information from the Control Room as needed and AI-33A, B and C or ERFCS pages 197, 360 and 361 evaluate and determine the release pathways for dose assessment as follows:

**NOTE:** The sample Control Module for RM-052 must be in the VENT position (monitoring the Auxiliary Building Vent Stack) in order to be used for dose assessment.

**NOTE:** RM-062/063 are the preferred process monitors to be used for dose assessment on the Auxiliary Building Vent Stack. RM-062 is normally in-service and RM-063 is normally in Standby. When RM-062 count rate exceeds  $5.0 \text{ E}+06$  cpm or if RM-063 exceeds  $5.0 \text{ E}-3 \text{ } \mu\text{C}/\text{cc}$ ; sample flow will automatically shift from RM-062 to RM-063 and the alarm "RM-063 AUX BLDG VENT STACK IN SERVICE" will annunciate on AI-33C. When RM-063 radiation level drops below  $5.0 \text{ E}-3 \text{ } \mu\text{C}/\text{cc}$ , sample flow will shift to RM-062 and RM-063 will shift to Standby.

- 2.1 Evaluate the Auxiliary Building Vent Stack release pathway using RM-052, RM-062 and RM-063.
- 2.2 Evaluate the Condenser/Main Steam release pathway using RM-057, RM-064 and whether or not a primary to secondary leak has been confirmed.
  - 2.2.1 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed, request that RM-064 be placed in service on the affected Main Steam Line.
  - 2.2.2 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed and if Condenser Off-gas is being vented directly to the atmosphere via the Turbine Building Roof, request that Condenser Off-gas be aligned to the Auxiliary Building Vent Stack.
  - 2.2.3 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed and Condenser Off-gas is being vented directly to the atmosphere via the Turbine Building Roof, perform dose assessment with Condenser Off-gas as the release pathway, using a flow rate of 340 scfm.

Attachment 6.2 (continued)

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- 2.2.4 If a primary to secondary leak is confirmed and RM-057 is not operable or is over ranged, and Condenser Off-gas is not aligned to the Auxiliary Building Vent Stack, this is an unmonitored release.
- 2.2.5 If there is a confirmed primary to secondary leak, and FW-10 is receiving steam from the affected Steam Generator, or the atmospheric Steam Dump Valve HCV-1040 is OPEN or a Steam Safety is lifting on the affected side, and RM-064 count rate is less than or equal to the background count rate as listed in TDB-IV.7, this is an unmonitored release.
- 2.3 Evaluate the Containment Leakage release pathway using Containment Area Monitors
- NOTE:** If containment leakage is suspected to be greater than designed Containment leakage of 1.5 scfm, and the leakage is from the Containment to the stack or from the Containment to Controlled Areas of the Auxiliary Building to the Auxiliary Building Vent Stack, consideration may be given not to count the release twice if dose assessment will be performed from the Auxiliary Building Vent Stack.
- 2.3.1 If Containment Area Monitors RM-070 through RM-075 are in High Alarm or RM-091A and B read 1.0 R/hr or higher, perform dose assessment using Containment leakage as a release pathway.
- 2.3.2 IF any area monitors indicate > 1000 times the background listed in TDB-IV.8, THEN inform the Command and Control position for classification information.
- 2.4 Evaluate the Radwaste Building Stack as a release pathway using RM-043
- 2.4.1 If RM-043 is in High Alarm, perform dose assessment using the Radiological Waste Building Vent Stack as a release pathway.
- 2.5 Evaluate the liquid release pathways as follows:
- 2.5.1 IF RM-055, Overboard Discharge Monitor is reading greater than the High Alarm Setpoint as listed in TDB-IV.7 and the overboard discharge flow is not isolated, then a liquid release assessment must be performed.
- 2.5.2 If either RM-054A or RM-054B Steam Generator Blowdown Monitors are reading greater than the High Alarm Setpoint as listed in TDB-IV.7 and blowdown flow is not isolated from the Steam Generator(s) with a primary to secondary leak, then a liquid release assessment must be performed.

Attachment 6.2 (continued)

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- 2.6 Determine if there are any potentially unmonitored releases.
3. Perform dose assessment for monitored release pathways using Attachment 6.4 and for unmonitored release pathways per Attachment 6.5.
4. Review

**NOTE:** The information generated by EAGLE is for OPPD decision maker's information only. Actual PARs are determined by the Command and Control position. The Information Worksheet should be one of the tools used for guidance in determining PARs.

- 4.1 Obtain a printout of the Information Worksheet and the Update Report to Offsite Authorities.
- 4.2 Forward printouts to the Protective Measures Coordinator.
5. Provide a detailed briefing to oncoming shift relief of emergency conditions and dose assessment status.

Attachment 6.3 - Dose Assessment in the Emergency Operation Facility

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1. IF dose assessments are being performed in the Control Room, THEN contact the technician in the Control Room performing dose assessment and review all previous assessments using the fax copies.
2. IF dose assessments are being performed in the TSC, THEN contact the technician performing dose assessment in the TSC and review all previous assessments using the fax copies.
3. Standby to transfer dose assessment from the Control Room (or TSC) to the EOF, as directed by the Protective Measures Manager.
4. When directed to take over dose assessment, inform the technician in the Control Room (or TSC) of your actions.
5. Using information from the Control Room as needed and AI-33A, B and C or ERFCS pages 197, 360 and 361 evaluate and determine the release pathways for dose assessment as follows:

**NOTE:** The sample Control Module for RM-052 must be in the VENT position (monitoring the Auxiliary Building Vent Stack) in order to be used for dose assessment.

**NOTE:** RM-062/063 are the preferred process monitors to be used for dose assessment on the Auxiliary Building Vent Stack. RM-062 is normally in-service and RM-063 is normally in Standby. When RM-062 count rate exceeds  $5.0 \text{ E}+06$  cpm or if RM-063 exceeds  $5.0 \text{ E}-3 \text{ } \mu\text{C}/\text{cc}$ ; sample flow will automatically shift from RM-062 to RM-063 and the alarm "RM-063 AUX BLDG VENT STACK IN SERVICE" will annunciate on AI-33C. When RM-063 radiation level drops below  $5.0 \text{ E}-3 \text{ } \mu\text{C}/\text{cc}$ , sample flow will shift to RM-062 and RM-063 will shift to Standby.

- 5.1 Evaluate the Auxiliary Building Vent Stack release pathway using RM-052, RM-062 and RM-063.
- 5.2 Evaluate the Condenser/Main Steam release pathway using RM-057, RM-064 and whether or not a primary to secondary leak has been confirmed.
  - 5.2.1 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed, request that RM-064 be placed in service on the affected Main Steam Line.
  - 5.2.2 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed and if Condenser Off-gas is being vented directly to the atmosphere via the Turbine Building Roof, request that Condenser Off-gas be aligned to the Auxiliary Building Vent Stack.

Attachment 6.3 (continued)

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- 5.2.3 If RM-057 is in High Alarm or if a primary to secondary leak is confirmed and Condenser Off-gas is being vented directly to the atmosphere via the Turbine Building Roof, perform dose assessment with Condenser Off-gas as the release pathway, using flow rate of 340 scfm.
  - 5.2.4 If a primary to secondary leak is confirmed and RM-057 is not operable or is over ranged, and Condenser Off-gas is not aligned to the Auxiliary Building Vent Stack, this is an unmonitored release.
  - 5.2.5 If there is a confirmed primary to secondary leak, and FW-10 is receiving steam from the affected Steam Generator, or the atmospheric Steam Dump Valve HCV-1040 is OPEN or a Steam Safety is lifting on the affected side, and RM-064 count rate is less than or equal to the background count rate as listed in TDB-IV.7, this is an unmonitored release.
- 5.3 Evaluate the Containment Leakage release pathway using Containment Area Monitors
- NOTE:** If containment leakage is suspected to be greater than designed Containment leakage of 1.5 scfm, and the leakage is from the Containment to the stack or from the Containment to Controlled Areas of the Auxiliary Building to the Auxiliary Building Vent Stack, consideration may be given not to count the release twice if dose assessment will be performed from the Auxiliary Building Vent Stack.
- 5.3.1 If Containment Area Monitors RM-070 through RM-075 are in High Alarm or RM-091A and B read 1.0 R/hr or higher, perform dose assessment using Containment leakage as a release pathway.
  - 5.3.2 IF any area monitors indicate > 1000 times the background listed in TDB-IV.8, THEN inform the Command and Control position for classification information.
- 5.4 Evaluate the Radwaste Building Stack as a release pathway using RM-043
- 5.4.1 If RM-043 is in High Alarm, perform dose assessment using the Radiological Waste Building Vent Stack as a release pathway.
- 5.5 Evaluate the liquid release pathways as follows:
- 5.5.1 If RM-055, Overboard Discharge Monitor is reading greater than the High Alarm Setpoint as listed in TDB-IV.7 and the overboard discharge flow is not isolated, then a liquid release assessment must be performed.

Attachment 6.3 (continued)

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5.5.2 If either RM-054A or RM-054B Steam Generator Blowdown Monitors are reading greater than the High Alarm Setpoint as listed in TDB-IV.7 and blowdown flow is not isolated from the Steam Generator(s) with a primary to secondary leak, then a liquid release assessment must be performed.

5.6 Determine if there are any potentially unmonitored releases.

6. Perform dose assessment for monitored release pathways using Attachment 6.4 and for unmonitored release pathways per Attachment 6.5.
7. Review

**NOTE:** The information generated by EAGLE is for OPPD decision maker's information only. Actual PARs are determined by the Command and Control position. The Information Worksheet should be one of the tools used for guidance in determining PARs.

7.1 Obtain a printout of the Information Worksheet and the Update report to Offsite Authorities.

7.2 Forward printouts to the Dose Assessment Coordinator.

8. Provide a detailed briefing to oncoming shift relief of emergency conditions and dose assessment status.

Attachment 6.4 - Computerized Dose Assessment

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1. Logging on to Eagle

1.1 Is the Workstation on, with the EAGLE workstation status window showing?

**NOTE:** You can determine the status of all workstations by noting the color of the button on the icon located in the upper left hand corner of the screen: Blue = PC Mode, Green = Online Control Mode, Yellow = Offline, Red = Not available.

1.1.1 Yes Click the EAGLE Icon.

No Re-boot the system, EAGLE will automatically log itself in.

**NOTE:** If another workstation has network control and is performing dose assessment, coordinate the network synchronization accordingly. At the EOF, work with the EOF Dose Assessment Coordinator, to insure a smooth transfer of dose assessment responsibilities.

1.1.2 To take control, from the "Main Menu" screen, in the Status Box select "Network Control".

**IF** a process monitor reading increases by 50% while performing an assessment, or the Command and Control Position requests an immediate assessment, **THEN** complete the current assessment and immediately start another. (AR 10029)

2. Performing dose assessment, from the EAGLE "Main Menu" screen.

2.1 In the Mode box, select the appropriate selection.

2.2 In the Status box, select the appropriate selection (Network/Control is preferred) use PC standalone only if network is not working.

2.3 Click the "Perform Dose Calculations" button.

**NOTE:** For this step of the procedure, select Normal Dose Projection. Imminent Release is discussed in Step 3 and Liquid Release in Step 4 of this Attachment.

2.3.1 The Input Data screen will appear, select "Normal Dose Projection".

2.3.2 Click "OK".

Attachment 6.4 (continued)

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**NOTE:** It is possible to redo a plume by selecting that plume number at this point. However all data for that plume and successive plumes will be lost.

2.3.3 The Plume Segment Number screen will appear, enter the desired number.

2.3.4 Click "OK".

**NOTE:** For unmonitored releases see Attachment 6.5.

2.4 Select "Monitored Release".

**NOTE:** There are four release points listed at this point. To simplify this procedure, guidance will only be given for the Auxiliary Building Stack. The method for doing other release paths is similar. Reference the EAGLE 6.0.0 User Manual if you need further guidance.

2.4.1 Select "Aux Building".

A. Select other pathways, as needed.

B. Click "OK".

2.4.2 Core Damage

A. Enter the highest Core Exit Thermocouple reading.

B. Enter the highest RM-091A/B reading (R/hr).

C. Click "OK".

D. At this point EAGLE will tell you if you have a damaged or undamaged core.

E. Click "OK".

2.4.3 Aux Building Stack

A. Click "the appropriate option" (the method used here will use radiation monitor data).

B. Select the appropriate rad monitor.

C. Enter the current rad monitor value.

Attachment 6.4 (continued)

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**NOTE:** Step 2.4.3D to 2.4.3H is optional and used only if you want to change the default iodine/noble gas ratios OR the default isotopic spectrum.

- 2.4.3 D. Select "Input Values".
- E. Click "Change Ratios" enter the desired values.
- F. Click "OK".
- G. Click "OK".
- H. Select "Change Spectrum"
- Zero the column desired by clicking the "Zero \_\_\_\_\_" for the area of interest.
  - Enter the desired isotopic values (for each column total must equal 100%).
- I. Click "OK".

2.4.4 The "Input Aux Building Stack Release Rates" screen will appear.

- A. Enter the current "Aux Building Vent Stack" flow (default is 72,500 CFM).
- B. Click "OK".

## 2.5 Meteorological Data

**NOTE:** For early dose assessments use the defaults for Atmospheric Mixing Conditions and Atmospheric Stability Class Method. The Protective Measures Group at the EOF should review Weather conditions and adjust assessments accordingly once the EOF has assumed command and control of the emergency.

- 2.5.1 Select the appropriate Atmospheric Mixing Conditions ("Unlimited Mixing Condition" is the default).
- 2.5.2 Select the Appropriate Atmospheric Stability Method ("Delta T Method" is the default).
- 2.5.3 Enter the slowest 10 meter wind speed.
- 2.5.4 Enter the wind direction the wind is coming from.

2.5.5 Enter the ambient temperature in degrees Celsius.

2.5.6 Enter the most positive Delta T.

**NOTE:** If you chose an alternative Atmospheric Mixing or Atmospheric Stability Methods you will need to supply the information requested in the windows that have opened.

A. Click "OK".

B. Enter the estimated release duration, click "OK".

**NOTE:** At this point, you may review your data to ensure that it is correct. Clicking on any of the buttons allows you to change one or all of the inputs in that specific section.

C. Click " Calc Plume".

D. The "Output Results" screen will appear.

**NOTE:** Any projections that exceed limits established in EPIP-OSC-1 EAL's or EPIP-EOF-7 will be highlighted in red on the PAR Worksheet page.

E. With "Release Information" and "Offsite Document" selected, click "Print".

F. Click on the "Worksheet" to obtain EAGLE projections.

G. Click "Print".

## 2.6 Graphic and Plume Data Printout

2.6.1 From the "Output Results" screen, select "Plume Data".

2.6.2 From the "Graph Display" screen, select "Display Graph".

2.6.3 Click "Print".

2.6.4 Click "Quit".

## 2.7 Follow-up Actions

2.7.1 To go to the next plume segment, click "Run Next Segment".

Attachment 6.4 (continued)

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- 2.7.2 Go to Step 2.3.1 and follow guidance as needed to change inputs, as conditions require.

3. Imminent Release Assessment

- 3.1 Performing imminent release assessment, from the EAGLE "Main Menu" Screen.

3.1.1 In the Mode box, select the appropriate selection.

3.1.2 In the Status box, select the appropriate selection (Network Control is preferred) use PC standalone only if network is not working.

3.1.3 Click the "Perform Dose Calculations" button.

**NOTE:** For this step of the procedure select Imminent Release. Normal Dose Projection is discussed in Step 2 and Liquid Release in Step 4 of this Attachment.

3.1.4 The Input Data screen will appear, select "Imminent Release Dose Projection".

3.1.5 Click "OK".

- 3.2 The "Containment Imminent Release" screen will appear.

3.2.1 Select "Damaged" or "Undamaged" core based on plant conditions.

A. Enter time in hours, since accident.

B. Enter time until projected release.

C. Click "OK".

3.2.2 Select the flow rate method desired (Cubic feet per minute to Atmosphere is demonstrated here).

A. Enter the containment flow rate (default is 1.5 cfm).

B. Click "OK".

**NOTE:** For this procedure the Containment monitor reading will be used. Refer to the EAGLE 6.0.0 User Manual for guidance on how to use the Isotopic Concentrations selection.

3.2.3 Select "Containment Area Monitor Reading (R/hr)".

A. Enter the Containment Monitor reading in Rem/hr.

B. Click "OK".

### 3.3 Meteorological Data

**NOTE:** For early dose assessments use the defaults for Atmospheric Mixing Conditions and Atmospheric Stability Class Method. The Protective Measures Group at the EOF should review weather conditions and adjust assessments accordingly once the EOF has assumed command and control of the emergency.

3.3.1 Select the appropriate Atmospheric Mixing Condition ("Unlimited Mixing Condition" is the default).

3.3.2 Select the Appropriate Atmospheric Stability Method ("Delta T Method" is the default).

3.3.3 Enter the slowest 10 meter wind speed.

3.3.4 Enter the wind direction the wind is coming from.

3.3.5 Enter the ambient temperature in degrees Celsius.

3.3.6 Enter the most positive Delta T.

**NOTE:** If you chose an alternative Atmospheric Mixing or Atmospheric Stability Method you will need to supply the information requested in the windows that have opened.

3.3.7 Click "OK".

3.3.8 Enter the estimated release duration, click "OK".

3.3.9 The "Plume Centerline Straight-line Gaussian" screen will appear with the results of the imminent release calculation.

3.3.10 Click "Print" for a hard copy.

#### 4. Liquid Release Assessment

##### 4.1 Performing Liquid release assessment, from the EAGLE "Main Menu" Screen.

4.1.1 In the Mode box, select the appropriate selection.

4.1.2 In the Status box, select the appropriate selection (Network Control is preferred) use PC standalone only if network is not working.

4.1.3 Click the "Perform Dose Calculations" button.

**NOTE:** For this step of the procedure select Liquid Release. Normal Dose Projection is discussed in Step 2 and Imminent Release in Step 3 of this Attachment.

4.1.4 The Input Data screen will appear, select "Liquid Release".

A. Click "OK".

**NOTE:** IF one of the isotopes or the total of any of the isotopes exceeds 10 CFR 20 Appendix B limits you will be alerted to call MUD to have them shutdown their intake.

4.1.5 The "Liquid Release" Screen will appear.

A. Enter the activity for listed isotopes (available from chemistry).

B. Click "Print".

C. Click "OK"

**NOTE:** For determining projected release rates from the Ventilation Stack when RM-062/52 and 63 are off-scale/not available, refer to CH-SMP-PA-0005.

**NOTE:** For determining projected release rates from the Main Steam/Condenser Off-gas system when RM-057/64 are off-scale/not available, use Section 1.

**NOTE:** For determining projected release rates from Containment when RM-091A/B and RM-070 through RM-075 are off-scale/not available, use Section 2.

**NOTE:** For determining actual release rates using Field Team data, use Section 3.

1. For unmonitored releases via Condenser Off-gas/Main Steam System:

1.1 If RM-057 is off-scale or is not operable, and Condenser Off-gas is vented to the atmosphere via the Turbine Building Roof, perform dose assessment using RM-064 and a main steam flow in lbm/hr from the affected Steam Generator (ERFCS page 353) per the following criteria:

1.1.1 If RM-064 is reading at or below background, use one (1) net count per minute (NCPM) for the RM-064 reading, and Attachment 6.4 to perform dose assessment.

1.1.2 If RM-064 is reading above background, use the indicated reading on RM-064, and Attachment 6.4 to perform dose assessment.

1.1.3 If RM-064 is off-scale high or is not operable, go to Section 1.3 below.

1.2 For unmonitored releases via FW-10, the Atmospheric Dump Valve (HCV-1040) or a Main Steam Safety Valve, perform dose assessment per the following criteria:

1.2.1 If RM-064 is reading at or below background use one (1) net count per minute (NCPM) for the RM-064 reading, a flow rate as determined from EAGLE, and Attachment 6.4 to perform dose assessment.

1.2.2 If RM-064 is reading above background, use the indicated reading on RM-064, a flow rate as determined from EAGLE, and Attachment 6.4 to perform dose assessment.

1.2.3 If RM-064 is off-scale high or is not operable, go to Section 1.3 below.

1.3 If RM-064 goes off-scale high or is otherwise known to be inoperable, perform the following:

1.3.1 Obtain direct radiation readings on the main steam lines in Room 81. Refer to Figure 6.5.1 for reading locations.

1.3.2 If the dose rate is between 0 and 100 mRem/hr, use the following equation to calculate the TEDE release rate:

$$Q_{TEDE} = (17.5) (\text{Contact Dose Rate in mRem/hr})$$

1.3.3 If the dose rate is >100 mRem/hr, use the following equation to calculate the TEDE release rate:

$$Q_{TEDE} = (5) (\text{Contact Dose Rate in mRem/hr})$$

1.3.4 Multiply the  $Q_{TEDE}$  from Step 1.3.2 or 1.3.3 by the following applicable step to obtain the noble gas, iodine and particulate release rate in curies per second:

A. For un-damaged core source term (other than secondary side listed below):

- $(Q_{TEDE}) (0.993) =$  noble gas release rate in curies per second.
- $(Q_{TEDE}) (0.007) =$  Iodine release rate in curies per second.
- $(Q_{TEDE}) (0.000) =$  Particulate release rate in curies per second.

B. For un-damaged core secondary side source term (Stm. Gen. Tube Rupture, Main Stm. Line Break, etc):

- $(Q_{TEDE}) (0.9295) =$  Noble gas release rate in curies per second.
- $(Q_{TEDE}) (0.065) =$  Iodine release rate in curies per second.
- $(Q_{TEDE}) (0.00555) =$  Particulate release rate in curies per second.

1.3.4 C. Damaged Core Source Term: The following equations should be used. In these equations

- $t$  = time (hours) after the initiation of the damaged core source term.
- It should be noted that it is important for EAGLE plume data to be entered every 15 minutes to maintain the accuracy of this and other calculation methods.

$$A = 0.02973e^{-0.1447t} + 0.2312e^{-3.814t} - 0.0003404.$$

$$B = 0.0002911e^{-0.4327t} + 0.01802e^{-5.232t} - 6.056E-07$$

**NOTE:** If  $t > 24$  hours, then  $A = 4.75E-4$ .

- $(Q_{Tede}) (1-A)$  = noble gas release rate in curies per second.
- $(Q_{Tede}) (A)$  = Iodine release rate in curies per second.

**NOTE:** If  $t > 12$  hours, then  $B = 1.0E-6$ .

- $(Q_{Tede}) (B)$  = Particulate release rate in curies per second.

1.3.5 Input the Noble Gas, Iodine and Particulate Release Rate into the EAGLE dose assessment program to obtain the dose and dose rate results. (AR 17061)

## 2. Containment Leakage

2.1 If all Containment Area Radiation Monitors are off-scale or inoperable, perform the following:

- 2.1.1 Obtain direct radiation readings on containment penetrations C-2 or H-4. Refer to Figures 6.5.2 and 6.5.3 for reading locations.
- 2.1.2 Multiply this penetration reading by the Containment Multiplication Factor (CMF) using Figure 6.5.4, to determine an equivalent area monitor reading.
- 2.1.3 Insert the area monitor reading into the EAGLE dose assessment program to obtain the dose and dose rate results.

3. Determining actual release from Field Team Data.

**NOTE:** Field Teams must be dispatched, and data from the approximate plume centerline must be available in order to complete this step of this procedure. The Field Team Specialist should be consulted for field team data.

3.1 Performing unmonitored release assessment, from the EAGLE "Main Menu" screen.

3.1.1 In the Mode box, select the appropriate selection.

3.1.2 In the Status box select the appropriate selection (Network Control is preferred) use PC standalone only if network is not working.

3.1.3 Click the "Perform Dose Calculations" button.

3.1.4 The Input Data screen will appear select "Normal Dose Projection".

3.1.5 Click "OK".

**NOTE:** It is possible to redo a plume by selecting that number at this point. However all data for that plume and other sequential plumes will be lost.

3.2 The Plume Segment Number screen will appear, enter the desired number.

3.2.1 Click "OK".

**NOTE:** For monitored releases see Attachment 6.4.

3.2.2 In the "Type of Release" section, select "Unmonitored".

3.2.3 Click "OK".

3.3 The "Field Team Data" screen will appear.

3.3.1 In the Sector window, toggle down and highlight the affected sector.

3.3.2 In the Emergency Monitor Description, toggle down and highlight the Emergency Monitor.

3.3.3 In the Instrument Reading, enter the reading in mR/hr obtained by the Field Team Technician at the Emergency Monitor location.

Attachment 6.5 (continued)

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- 3.3.4 If an air sample has been collected, select "Have Air Concentrations for Iodines and Particulates".
- A. Enter the iodine and particulate concentrations provided by the field team technicians.
  - B. Click "OK".
- 3.3.5 If you do not have an air sample, select "Air Concentration for Iodines and Particulates Not Available".
- A. Click "OK".
- 3.3.6 You will be asked if the release is from the secondary side.
- A. If Yes - Click "OK".
  - B. If No - You will be asked if the core is damaged.
    - If Yes - enter how long it has been damaged in the box.
    - Click "OK".
    - No - Click "OK".
- 3.3.7 Meteorological Data

**NOTE:** For early dose assessments use the defaults for Atmospheric Mixing Conditions and Atmospheric Stability Class Method. The Protective Measures Group at the EOF should review weather conditions and adjust assessments accordingly once the EOF has assumed command and control of the emergency.

- A. Select the appropriate Atmospheric Mixing Conditions ("Unlimited Mixing Condition" is the default).
- B. Select the Appropriate Atmospheric Stability Method (Delta T Method is the default).
- C. Enter the slowest 10 meter wind speed.
- D. Enter the wind direction the wind is coming from
- E. Enter the ambient temperature in degrees Celsius.

3.3.7 F. Enter the most positive Delta T.

**NOTE:** If you chose an alternative Atmospheric Mixing or Atmospheric Stability Method you will need to supply the information requested in the windows that have opened.

G. Click "OK".

3.3.8 Enter the estimated release duration click "OK".

A. An EAGLE message will appear informing you if a damaged or un-damaged core is being used for calculations.

B. Click "OK".

**NOTE:** At this point, you may review your data to ensure that it is correct. Clicking on any of the buttons allows you to change one or all of the inputs in that specific section.

C. Click "Calc Plume"

3.3.9 The "Output Results" screen will appear.

**NOTE:** Any projections that exceed limits established in EPIP-OSC-1 EAL's or EPIP-EOF-7 will be highlighted in red on the worksheet page.

A. With "Release information" and "Offsite Document" selected click "Print".

B. Click on the "Worksheet" to obtain EAGLE Projections.

C. Click "Print".

3.3.10 Graphic and Plume Data Printout

A. From the "Output Results" screen, select "Plume Data".

B. From the "Graph Display" screen, select "Display Graph".

C. Click "Print".

D. Click "Quit".

**3.3.11 Follow-up Actions**

- A. To go to next plume segment, click "Run Next Plume Segment".
- B. Go to Step 3.3 and follow guidance as needed to change inputs, as conditions require.

Figure 6.5.1 - Main Steam Headers Radiation Dose Measurement Point Locations

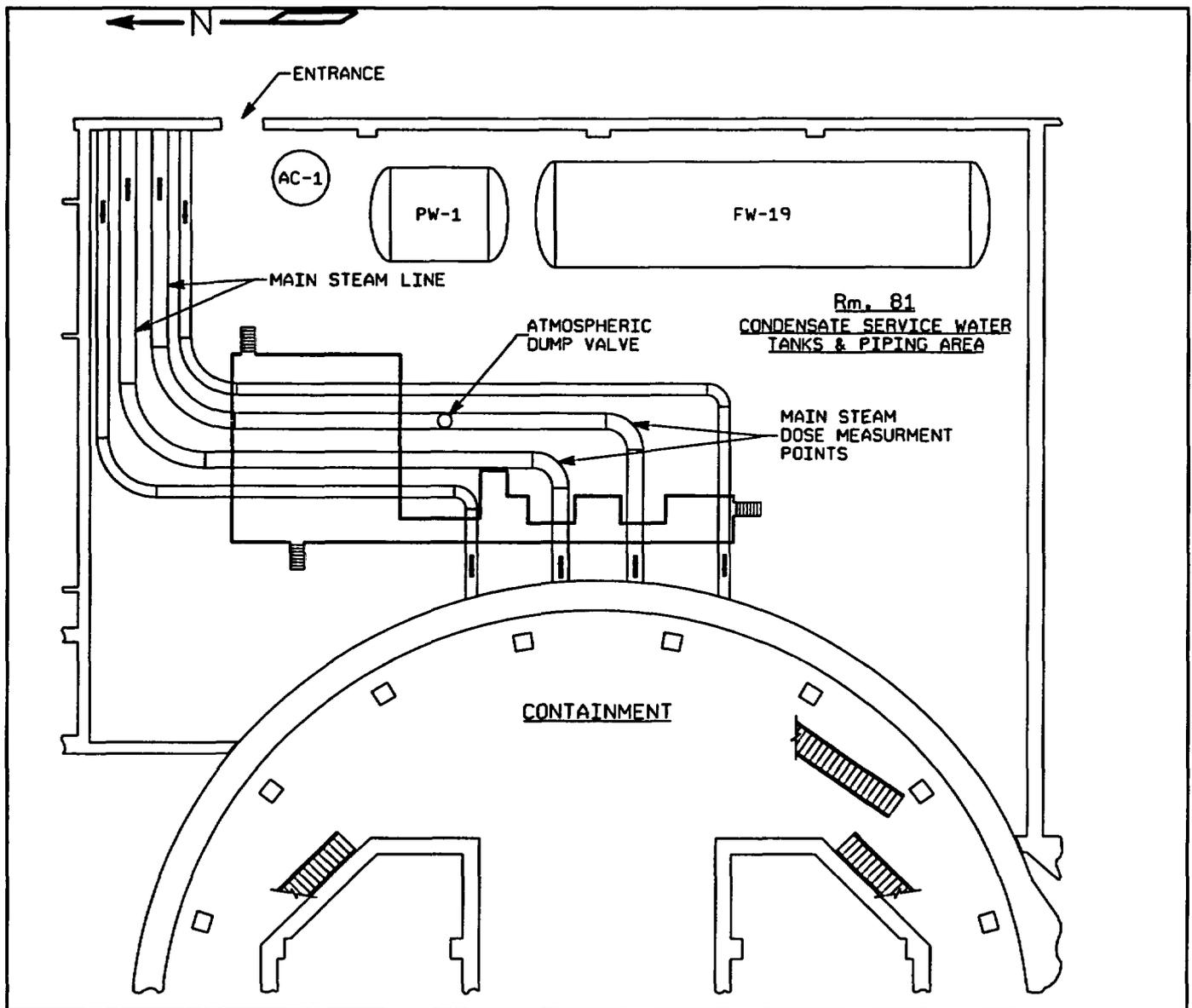


Figure 6.5.2 - Auxiliary Building - Plant Elevation 1007'-0" & 1013'-0"

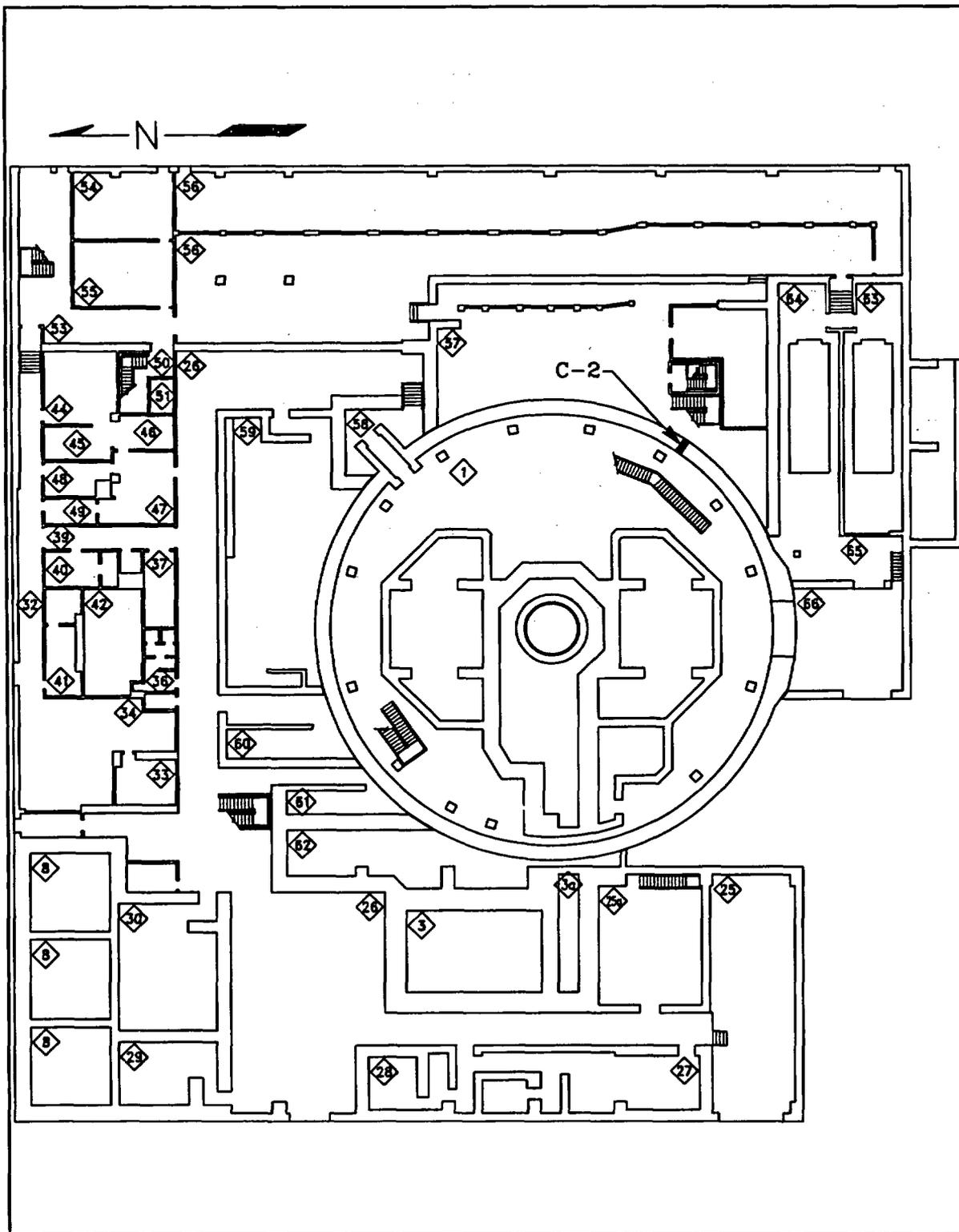
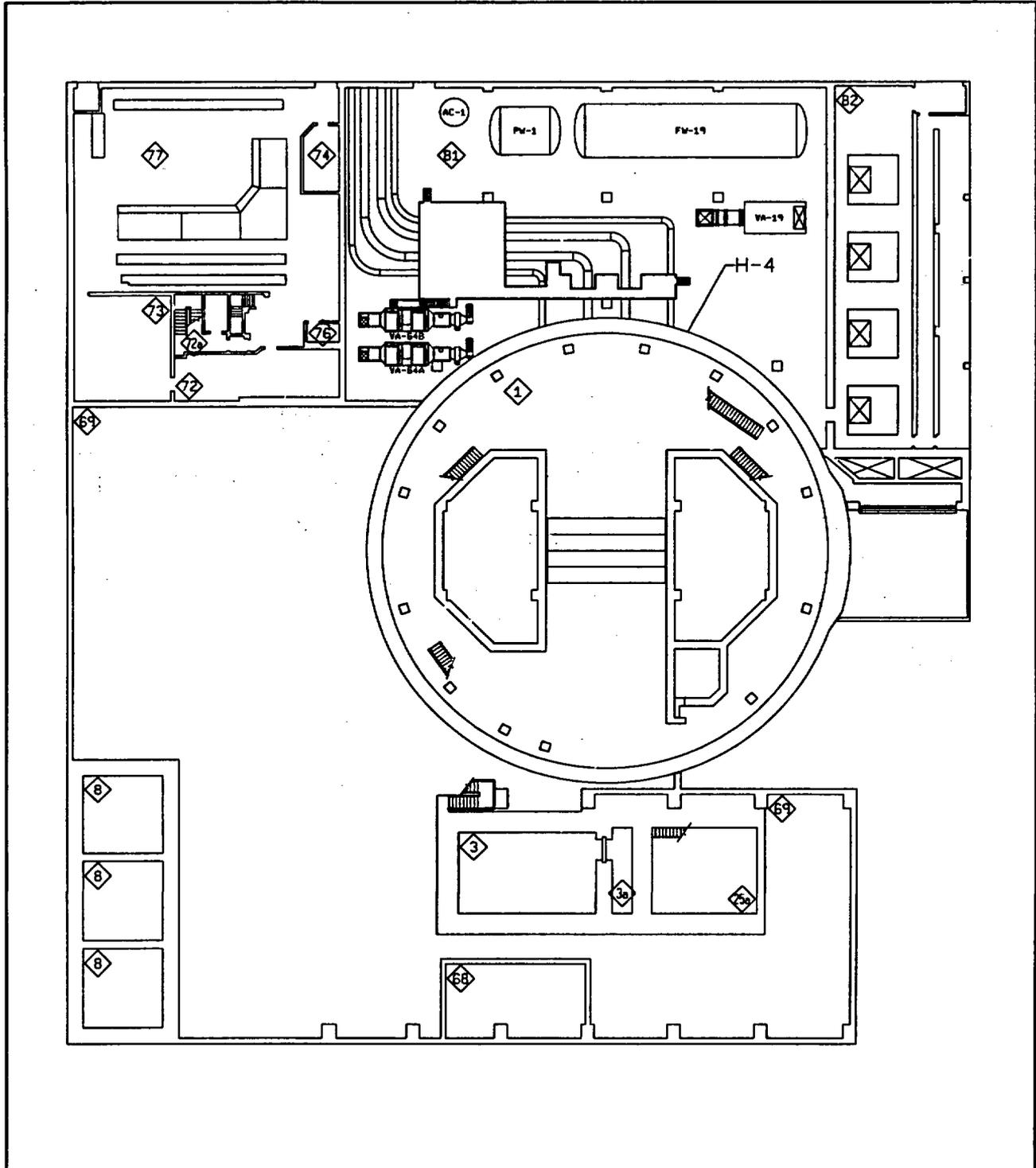


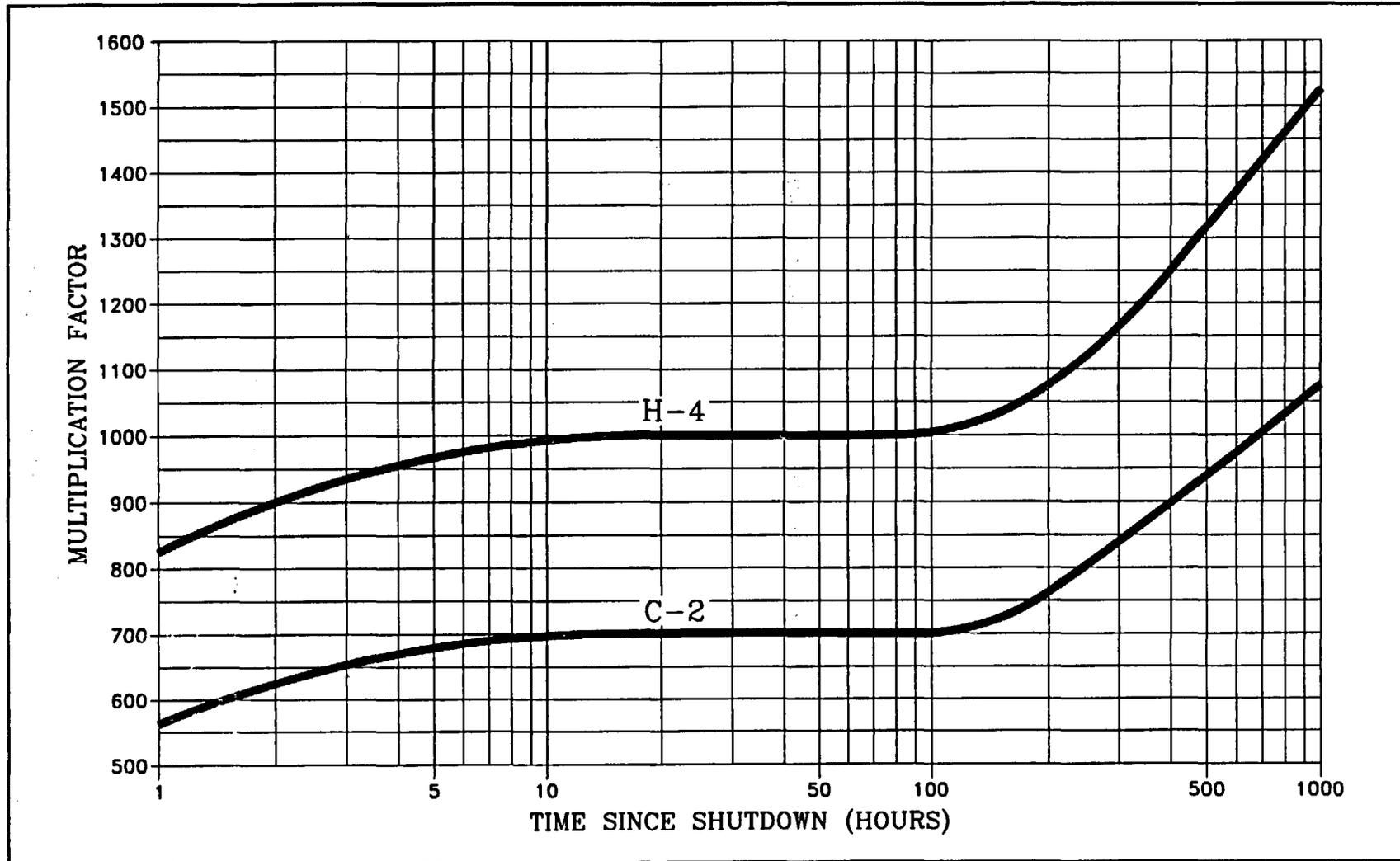
Figure 6.5.3 - Auxiliary Building - Plant Elevation 1036'-0



Attachment 6.5 (continued)

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Figure 6.5.4 - Containment Multiplication Factor (CMF)



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**EPIP-RR-25**

**EMERGENCY PLAN IMPLEMENTING PROCEDURE**

**Title: EOF DOSE ASSESSMENT COORDINATOR ACTIONS**

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**FC-68 Number: EC 33899**

**Reason for Change: Update for new Eagle 6.0.0, change capitalization.**

**Requestor: M. Reller**

**Preparer: M. Reller**

**ISSUED: 04-02-04 3:00 pm**

**R22**

EOF DOSE ASSESSMENT COORDINATOR ACTIONS

NON SAFETY RELATED

1. PURPOSE

- 1.1 This procedure provides guidance to the EOF Dose Assessment Coordinator for performing actions in response to an emergency at Fort Calhoun Station.

2. REFERENCES/COMMITMENT DOCUMENTS

- 2.1 EPIP-EOF-6, Dose Assessment
- 2.2 EPIP-EOF-7, Protective Action Guidelines
- 2.3 EPIP-EOF-21, Potassium Iodide Issuance
- 2.4 EPIP-EOF-11, Dosimetry Records, Exposure Extensions and Habitability
- 2.5 FC-EPF-6, Estimated Exposure Worksheet
- 2.6 Commitment Documents
- AR 13302, IER-92-20

3. DEFINITIONS

None

4. PREREQUISITES

None

5. PROCEDURE

- 5.1 The EOF Dose Assessment Coordinator will use Attachment 6.1 as an aid to completing required actions.

**NOTE:** When needed, perform dose assessments and updates to the states at least every 60 minutes. It is the goal of the Fort Calhoun Station to attempt to provide assessments and updates at 15 minute intervals. (AR 13302)

- 5.2 Use Attachment 6.2 as guidance in comparing field team data to dose assessment data.

- 5.3 Review the procedure and appropriate checklists, and accomplish the applicable steps both upon initial activation and periodically, as required, thereafter.**
- 5.4 Retain all documentation (logs, calculation sheets, notes, etc.) generated or used during the emergency. At the termination, deliver all documentation to the Administrative Logistics Manager in the EOF.**

**6. ATTACHMENTS**

- 6.1 EOF Dose Assessment Coordinator Checklist**
- 6.2 Comparison of Field Team Data to Dose Assessment Data**

**Maintain a log of all key activities**

	(✓)	<u>INIT/TIME</u>
1. Upon arrival:		
1.1 Sign in on security roster	_____	
1.2 Put on personnel identification badge	_____	_____ / _____
<b>NOTE:</b> If dose assessment is being performed at the EOF, proceed to Step 5. Otherwise continue with Step 2.		
2. Instruct EOF Dose Assessment Specialist to:		
2.1 Determine on-site dose assessment status.	_____	
2.2 Ensure that the EOF has a hard copy of all dose assessments.	_____	
2.3 Ensure that at least one EOF EAGLE machine is functional.	_____	
2.4 Stand by for transfer of dose assessment to the EOF.	_____	_____ / _____
3. Review the dose assessments to ensure proper response has been taken.		_____ / _____
4. If required, direct transfer of dose assessment from the plant to the EOF:		
4.1 Determine when the transfer of Command and Control will take place (ask the Protective Measures Manager or Emergency Director).	_____	
4.2 If possible coordinate the dose assessment transfer with the transfer of Command and Control.	_____	
4.3 Inform EOF Dose Assessment Specialist of time of transfer of Command and Control.	_____	
4.4 Ensure coordination of dose assessment transfer between on-site Dose Assessment Specialist and EOF Dose Assessment Specialist.	_____	

Attachment 6.1  
(continued)

(✓)	<u>INIT</u>	<u>TIME</u>
		/
		/
		/
		/

4.5 Upon transfer ensure EOF Dose Assessment Specialist properly understands and is prepared to assume their duties.

**NOTE:** If field team direction is not yet at the EOF, check with the TSC Protective Measures Coordinator to determine their status.

5. Determine status of the Field Teams from the EOF Field Team Specialist.

6. Keep the Protective Measure Manager abreast of the status of dose assessment and the Field Teams.

7. As data becomes available perform dose assessment and Field Team comparisons. Use Attachment 6.2.

8. As conditions warrant contact the National Weather Service to obtain a 24 hour forecast.

8.1 Determine the potential impact on dose assessment.

8.2 Determine the potential impact to the Field Teams.

**NOTE:** Do not activate the Health Physics Network (HPN) until requested to do so by the NRC.

9. As required, provide radiological information to:

9.1 The states/counties using the Conference Health Physics (CHP) Network or commercial line as a backup.

9.2 The NRC using the Health Physics Network (HPN) or commercial line as a backup.

10. If required, coordinate protective measures for Field Teams use:

- EPIP-EOF-21, Potassium Iodide Issuance
- EPIP-EOF-11, Dosimetry Issuance, Extensions and Habitability
- FC-EPF-6, Estimated Exposure Worksheet

**FORT CALHOUN STATION  
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**EPIP-RR-25  
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**Attachment 6.1  
(continued)**

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**(✓)**

**INIT/TIME**

**11. As required, provide a detailed briefing to your relief covering:**

- **Emergency conditions**
- **Actions taken (current status)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ / \_\_\_\_\_

Attachment 6.2 - Comparison of Field Team Data to Dose Assessment Data

Page 1 of 3

**NOTE:** This guideline should be used when field team data becomes available, to determine if dose projections match actual field team measurements. Based on these comparisons, the proper decision-makers may adjust Protective Action Recommendations (PARs) and Emergency Action Levels (EAL) accordingly.

1. Obtain an FC-EPF-27 Form(s).

1.1 Record the following data:

- Date
- Time

1.2 From the Field Team Specialist determine and record:

- Field Team location
- Approximate distance from site
- Waist level dose rate (Rem/Hr) as reported by the Field Team
- Iodine Concentration ( $\mu\text{Ci}/\text{cc}$ ) as reported by the Field Team
- Particulate Air Concentration ( $\mu\text{Ci}/\text{cc}$ ) as reported by the Field Team

1.3 Using the EAGLE workstation

1.3.1 From EAGLE Main Menu:

- Ensure EAGLE is in Network/Read
- Select "Output Menu"

1.3.2 From the Plume Segment Screen enter the desired plume segment number.

1.3.3 Click "OK"

1.3.4 From the Output Results screen select "Plume Data"

1.3.5 Click "Display Graph"

1.3.6 From the Graphic Screen

- Click "EMER".
- Using the pull down menu find the Emergency Monitor that the Field Team has reported on.
- Click "Print".

**Attachment 6.2  
(continued)**

**Page 2 of 2**

**1.4 Recording Data**

**1.4.1 From the EAGLE print out use the Field Team information**

**1.4.2 Record on the FC-EPF-27**

- **The projected Field Team (Rem/Hr)**
- **The projected Iodine 131 ( $\mu\text{Ci/cc}$ )**
- **The projected Particulate Air Concentration ( $\mu\text{Ci/cc}$ )**

**1.5 Compare data and discuss any potential PAR correction with the Protective Measures Manager/Coordinator.**

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**EPIP-RR-72**

**EMERGENCY PLAN IMPLEMENTING PROCEDURE**

**Title: FIELD TEAM SPECIALIST ACTIONS**

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**FC-68 Number: EC 34093**

**Reason for Change: Revise to inform Field Team Specialist that they now normally perform Field Team calculations. In accordance with change to EPIP-EOF-3.**

**Requestor: M. Reller**

**Preparer: M. Reller**

**ISSUED: 04-02-04 3:00 pm**

**R14**

FIELD TEAM SPECIALIST ACTIONS

NON-SAFETY RELATED

1. PURPOSE

This procedure provides guidance to the EOF Field Team Specialist in performing actions in response to an emergency at Fort Calhoun Station.

2. REFERENCES/COMMITMENT DOCUMENTS

2.1 EPIP-EOF-3, Offsite Monitoring

2.2 FC-EPF-2, Offsite Monitor Log

2.3 FC-EPF-6, Estimated Exposure Worksheet

2.4 FC-EPF-7, Estimated Exposure Log

2.5 FC-EPF-8, Sample Worksheet

2.6 S.W. Gebers, CHP. ESTIMATES OF TOTAL EFFECTIVE DOSE EQUIVALENT: USING DIRECT READING DOSIMETERS. December, 1993.

2.7 Radiological Health and Engineering, "Dose Assessment Model: Site Population Dose", Memorandum FC-RP-028-94

2.8 Radiological Analysis 95-006, Halogen DCF Based on Field Air Sample

3. DEFINITIONS

None

4. PREREQUISITES

None

5. PROCEDURE

5.1 The EOF Field Team Specialist will use Attachment 6.1 as an aid to completing required actions.

5.2 Use Attachment 6.2 as guidance in directing Field Teams.

- 5.3 Review the procedure and appropriate checklists, and accomplish the applicable steps both upon initial activation and periodically, as required, thereafter.
- 5.4 Retain all documentation (logs, calculation sheets, notes, etc.) generated or used during the emergency. At the termination, deliver all documentation to the Administrative Logistics Manager in the EOF.

6. ATTACHMENTS

- 6.1 EOF Field Team Specialist Checklist
- 6.2 Plume Tracking Techniques



Attachment 6.1 - EOF Field Team Specialist Checklist

Page 2 of 3

(✓) INITIAL/TIME

6.5 If any field team dosimeter readings approach or reach 150 mRem prior to performing a TEDE calculation, perform the following:

6.5.1 Instruct the teams to exit the area and report to either the EOF or plant site, as determined by the EOF Dose Assessment Coordinator. \_\_\_\_\_

6.5.2 Initiate an estimated TEDE determination for the team using FC-EPF-6.

A. IF an estimated TEDE cannot be calculated due to lack of data, THEN go to Step 6.5.3. \_\_\_\_\_

B. IF the estimated TEDE is greater than 1 Rem, THEN go to Step 6.5.3. \_\_\_\_\_

C. If the estimated TEDE is less than 1 Rem, team may again be dispatched upon approval from the Protective Measures Manager. \_\_\_\_\_

6.5.3 Initiate replacement of the team and a dosimetry/bioassay evaluation for the team through the EOF Dose Assessment Coordinator. \_\_\_\_\_ / \_\_\_\_\_

6.6 Use FC-EPF-6 to calculate estimated TEDE for the field teams, and inform them of the results.

6.6.1 If an estimated TEDE is greater than 1 Rem:

A. Instruct the teams to exit the area and report to either the EOF or plant site, as determined by the EOF Dose Assessment Coordinator. \_\_\_\_\_

B. Initiate replacement of the team and dosimetry/bioassay evaluation for the team through the EOF Dose Assessment Coordinator. \_\_\_\_\_

6.6.2 If an estimated TEDE is less than 1 Rem, team may continue. \_\_\_\_\_ / \_\_\_\_\_

Attachment 6.1 - EOF Field Team Specialist Checklist

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(✓) INITIAL/TIME

6.7 Post OPPD field team survey results. \_\_\_\_\_ /

6.8 Submit completed FC-EPF-2 forms to the EOF Dose Assessment Coordinator for review and comparison to EAGLE data. \_\_\_\_\_ /

7. Provide detailed briefing to oncoming shift relief of emergency conditions and status of field team monitoring. \_\_\_\_\_ /

Attachment 6.2 - Plume Tracking Techniques

(✓) INITIAL/TIME

**NOTE:** Gamma radiation, above normal background, with no beta component may indicate the presence of a nearby elevated or horizontally displaced plume. A significant difference between open and closed window readings probably indicates immersion in the plume as the most energetic beta particle expected (3 MeV) would travel approximately 30 feet in air.

**NOTE:** An open air ion chamber becomes internally contaminated with noble gas after immersion in the plume for a short time. This condition gives the appearance of a "Gamma only response" (no difference between open and closed window). In this case, confirm background gamma radiation levels with GM detectors or other sealed chamber survey instruments.

1. If time and roadways allow, dispatch one team to a downwind location to intercept the projected center line of the plume and have them standby with dose rate instruments on.  

---
2. Dispatch the second team closer to the plant to continuously traverse the projected plume path with instruments on. Direct this team to notify you immediately upon locating the actual centerline. After the centerline has been located, direct the team to transverse the plume to determine the plume boundaries.  

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**NOTE:** As time to compare actual and projected dose is critical, give consideration to the roadway network and direct sampling by the team which can be placed closest to the centerline in the least amount of time.

3. Use the overlay map and plot the centerline path. As needed, move the first team to intercept the actual centerline and to take surveys as close to the centerline as dose rates and roadways allow.  

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4. After the centerline surveys have been taken, direct the teams to determine the plume edges and remain outside the plume. Place teams on either side of the plume and periodically monitor the plume boundaries to ensure wind shift has not occurred.  

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5. Based on radiological conditions and changes in plant status, additional surveys may be taken to confirm dose assessment projections.  

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Attachment 6.2 - Plume Tracking Techniques

(✓) INITIAL/TIME

6. After plume passage and release termination, determine the following:

6.1 Boundaries of ground deposition \_\_\_\_\_

6.2 Beta and gamma dose rates from ground deposition \_\_\_\_\_

6.3 Surface contamination levels \_\_\_\_\_ / \_\_\_\_\_