P	rocedure	Title	Date
*	EP-8.11	EOF Dose Assessment Staff	10/29/81
*	EP-8.12	Radiation Protection EOF Team	10/29/81
*	EP-8.13	Office Director	10/29/81
*	EP-8.14	EOF Clerical Staff	10/29/81
*	EP-8.15	VIC Staff	10/29/81
*	EP-8.16	Security Staff	10/29/81
*	EP-8.17	Radiation Protection Field Team	10/29/81
*	EP-8.18	EUF State Agency Representatives	10/29/81
*	EP-8.19	EOF Federal Agency Representatives	10/29/81
*	EP-8.20	EOF Dose Assessment State Agency Representatives	10/29/81
*	EP-9	Operation of the Operational Support Center	10/26/81
*	EP-10	Accident Dose Assessment Work Sheet Method	10/29/81
*	EP-10.1	Accident Dose Assessment Computer Analysis Method-Deleted	12/08/80
*	EP-10.2	Instructions for Use of Computer Terminal	02/12/81
*	EP-10.3	Use of the Subin Computer Code	04/14/81
*	EP-10.4	Use of the Ingest Computer Code	02/12/81
*	EP-10.5	Use of the Liquid Computer Code	02/12/81
*	EP-11	Onsite Radiological Surveys	10/28/81
*	EP-12	Offsite Radiological Surveys	11/02/81
*	EP-13	Personnel Monitoring and Decontamination	12/10/80
*	EP-14	Potassium Iodide (KI) Administration	11/05/81 -
*	EP-15	Emergency Supply List	09/18/81
*	EP-16	Drills and Exercises	04/14/81
*	EP-17	Medical	10/28/81

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<u>P</u>	rocedure	Title	Date
*	EP-18	Fire Fighting	10/21/81
*	EP-19	Communications	10/28/81
*	EP-19.1	Operation of Ground Radio System	10/28/81
*	EP-19.2	Operation of Dedicated Telephone System	10/28/81
*	EP-19.3	Operation of Trojan Commercial Phone System	10/28/81
*	EP-19.4	Emergency Notification System (ENS)	10/28/80
*	EP-19.5	Health Physics Network (HPN)	10/28/81
*	EP-19.6	Operation of Aerial Radio System (ARS)	10/28/81
*	EP-20	Site Security	10/28/81
*	EP-21	Reentry/Search and Rescue	12/10/80
*	EP-22	Public Relations Department	10/13/81
*	EP-23	Control Room Protective Action Recommendations	11/02/81
*	EP-23.1	Protective Action Implementation	12/24/80
*	EP-24	Long-Term Emergency Organization	10/28/81
*	EP-24.1	Emergency Response Manager	10/28/81
*	EP-24.2	Radiological Manager	10/28/81
*	EP-24.3	Emergency Response Manager's Support Group	10/28/81
*	EP-24.4	Procedure Support Supervisor	10/28/81
*	EP-24.5	Data Facility Supervisor	10/28/81
*	EP-24.6	Construction Manager	10/28/81
*	EP-24.7	Planning and Scheduling Manager	10/28/81
*	E7-24.8	Purchasing Manager	10/28/81
*	EP-24.9	QA Manager	10/28/81
*	EP-24.10	Radiation Control and Shielding Group	10/28/81

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2	rocedure	Title	Date
*	EP-24.11	Radwaste Systems Group	10/28/81
*	EP-24.12	Systems Group	10/28/81
*	EP-24.13	Analysis Group	10/28/81
*	EP-24.14	Licensing Group	10/28/81
*	EP-24.15	Environmental Monitoring/Dosimetry Group	10/28/81
*	EP-24.16	Design Team	10/28/81
*	FP-24.17	Advisory Support Group	10/28/81
*	EP-24.18	Legal Advisor	10/28/81
*	EP-24.19	Insurance Advisor	10/28/81
*	EP-24.20	Technical Representative at Oregon EOC	10/28/81
*	EP-24.21	Westinghouse Emergency Team	10/28/81
*	EP-25	Operation of Company Support Center	11/03/31
*	EP-25.1	Company Support Center Director - Deleted	· 02/25/81
*	EP-25.2	Public Information Advisor	11/03/81
*	EP-25.3	Environmental Sciences Advisor - Deleted	12/24/80
*	EP-25.4	Legal Advisor - Deleted	12/24/80
*	EP-25.5	Insurance Advisor - Deleted	12/24/80
*	EP-25.6	Communications Advisor	11/03/81
*	EP-25.7	TSC Communicator - Deleted	12/24/80
*	EP-25.8	ECC Communicator - Deleted	12/24/80
*	EP-25.9	General Communicator - Deleted	12/24/80
*	EP-25.10	CSC Clerical Staff - Deleted	12/24/80
*	EP-25.11	Plant Modifications Director	11/03/81
*	EP-25.12	Technical Support Director	11/03/81

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P	rocedure	Title	Date
*	EP-25.13	Administrative and Logistics Director	11/03/81
*	EP-25.14	Accident Analysis Manager	11/03/81
*	EP-25.15	Licensing Manager	11/03/81
*	EP-25.16	Design Manager	11/03/81
*	EP-25.17	Off-Site Power Supply Advisor	11/03/81
*	EP-25.18	Bechtel Emergency Team Leader	11/03/81
*	EP-25.19	CSC Assistants	11/03/81
*	EP-26	Medical Health Physicist	10/28/81
*	EP-27	Headquarters Training	12/24/80
*	EP-28	Onsite Training	04/21/81
*	EP-29	EOF Offsite Dose Assessment Computer Analysis Method	10/30/81
*	EP-29.1	Instructions for Use of Computer Terminal	11/02/81
*	EP-29.2	Use of the Subin Computer Code	11/02/81
*	EP-29.3	Use of the Ingest Computer Code	11/02/81
*	EP-29.4	Use of the Liquid Computer Code	11/02/81
*	EP-30	EOF Offsite Protective Action Recommendations	10/29/81

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F. UPDATING OF DOSE ASSESSMENTS

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- The dose assessment calculations shall be updated if any of the following parameters change significantly (by > 20 percent):
 - a. PRM reading.
 - b. Containment radiation level.
 - c. Measured effluent flow rate.
 - d. Containment pressure.
 - e. Wind speed.
 - f. Wind direction (change of 22.5-degree sector).
 - g. Temperature difference (or sigma).
 - h. Estimated duration of release.

Update readings of the above parameters shall be taken about every 15 minutes.

 Dose assessment calculations shall be updated upon receipt of new or revised results of grab sample analysis or upon receipt of significant new or revised information from field monitoring teams.

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PRM CALIBRATION FACTORS

PRM NAME	PRM NUMBER	CALIBRATION FACTOR (com/uCi/cc)
Containment Low-Level Noble Gas	PRM-1C	3.5E+7
Containment Intermediate-Level Noble Gas	PRM-1D	4.0E+3
Containment High-Level Noble Gas	PRM-1E	[a]
Auxiliary Building Low-Level noble gas	PRM-2C	3.5E+7
Auxiliary Building Intermediate - Level Noble Gas	PRM-2D	4.0E+3 "C"
Air Ejector Low-Level Noble Gas	PRM-6A	3.5E+15 CPY
Air Ejector Intermediate-Level Noble Gas	PRM-6B	4.0E+3 -9-81
Air Ejector High-Level Noble Gas	PRM-6C	- [a]

[a] Not Installed.

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Table 10-1 Page 1 of 1 EP-10 Page 7 of 36 Revision 2

Pathway	Default Flow Rate[a] (cfm)
Containment Purge	5.0E+4
Auxiliary Building Ventilation System	1.1E+5
Air Ejector	6.0E+1
Steam Generator PORVs[b]	1.4E+5
Steam Generator Relief Valves[b]	1.4E+6

DEFAULT VALUES FOR EFFLUENT FLOW RATES

[a] Based on maximum design flow rate.

[b] All valves (assume all valves are open).

Table 10-2 Page 1 of 1

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ATMOSPHERIC STABILITY CATEGORIES

Classification	Pasquill Stability Category	σθ (degree)	۵۲ (°C)
Extremely Unstable	A	<u>>22.5</u>	<-0.96
Moderately Unstable	В	22.5 to 17.5	-0.96 to -0.86
Slightly Unstable	с	17.5 to 12.5	-0.86 to -0.76
Neutral	D	12.5 to 7.5	-0.76 to -0.25
Slightly Stable	E	7.5 to 3.8	-0.25 to 0.76
Moderately Stable	F	3.8 to 2.1	0.76 to 2.0
Extremely Stable	G	<2.1	>2.0

Table 10-3 Page 1 of 1

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DISTANCES FROM CONTAINMENT TO EXCLUSION AREA BOUNDARY

Wind		Wind	Distance to Area Bou	Exclusion ndary
From	Degrees	Toward	(meters)	(miles)
N	348.75 - 11.25	S	1.3E+3	0.81
NNE	11.25 - 33.75	SSW	1.2E+3	0.75
NE	33.75 - 56.25	SW	1.3E+3	0.81
ENE	56.25 - 78.75	WSW	1.4E+3	0.87
E	78.75 - 101.25	w	9.5E+2	0.59
ESE	101.25 - 123.75	WNW	1.0E+3	0.62
SE	123.75 - 146.25	NW	8.1E+2	0.50
SSE	146.25 - 168.75	NNW	6.7E+2	0.42
S	168.75 - 191.25	N	6.6E+2	0.41
SSW	191.25 - 213.75	NNE	6.8E+2	0.42
SW	213.75 - 236.25	NE	8.2E+2	0.51
WSW	236.25 - 258.75	ENE	6.9E+2	0.43
W	258.75 - 281.25	E	6.8E+2	0.42
WNW	281.25 - 303.75	ESE	8.1E+2	0.50
NW	303.75 - 326.25	SE	1.0E+3	0.62
NNW	326.25 - 348.75	SSE	1.6E+3	0.99

Table 10-4 Page 1 of 1 EP-10 Page 10 of 36 Revision 2

	Pacquill St	ability Class
(m/sec)	Daytime	Nighttime
< 2	В	G
2-4	с	F
4-6	с	E
> 6	D	D
	peed (m/sec) < 2 2-4 4-6 > 6	peed Pasquill St (m/sec) Daytime < 2

DEFAULT VALUES FOR STABILITY CLASS[a]

[a] Reference: <u>Meteorology and Atomic Energy 1968</u>, Table 3-3, U.S. Atomic Energy Commission, 1968.

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-The st	 127	 n	£
1.6	 	 1	2
	 	 æ	10

DOSE ASSESSMENT DATA RECORD ATMOSPHERIC RELEASE Sheet No.

Other Data

Comments

Table 10-6 Page 1 of 1

Date	Time (24-Hr Clock)	PRM No.	PRM cpm	PRM Calibration Factor (Table 29-1)	ARM No.	ARM R/hr	Noble Gas Concen- tration[a] (µCi/cc)	Iodine Concen- tration[a] (µCi/cc)	Effluent Flow Rate[b] (cfm)	Con- tainment Pressure (psig)	Containment Spray System (CSS) Status
Cont a Expo Ra Cont a	inment osure ite	EAB[C]	EABLÉ	Estimated Release			Wind Direct	st ton[e]	ability Data	<u> </u>	<u> </u>

From

Gamma

(mR/hr)

Windspeed

(mph)

Duration

(hr)

EP-10 Page Revision 2 50 Ft

(R/hr)

Distance[d] Location from Con-Field Grid tainment Altitude Team Map[f] (ft) Coordinates (miles) Name 12 of 36

Doserate

(mR/hr)

[d] To be determined at the EOF.

Gamma + Beta

(mR/hr)

ΔT

(°C)

Toward

Dose Rates

σθ

(°)

I-131

Concen-

tration[8]

(µC1/cc)

- [e] Give as one of the 16 cardinal compass directions (N, NNE, etc.).
- [f] 2.5-, 10- or 50-mile grid map.
- [g] Initial Field Team measurement only. Laboratory results go on Form 29D.

Doserate

(miles)

[a] Isotopic analysis data recorded on Form 10.1D.

[b] See Table 10.1-2 for default values.

[c] Single measurement to determine release rate; not field monitoring team data.

	Accid	lent Assessment Rep	port Form Recorder:
Date:	Time:	Tim	me of Accident:
Check: Unusual H	Event() Al	lert() Site Area	Emergency() General Emergency()
Brief Description	(Accident;	Plant Status; Prog	gnosis):
Check: Airborne	Release ()	Waterborne Re	elease () No Release ()
		Neteorology	
		Meteorology	
Wind Speed (mph):	Dire	ection From[a]:	Direction Toward[a]:
Stability Categor	y:		Precipitation:
Action(s); Sector(s)[b]: Distance (miles):	Recommen	nded Offsite Protec	ctive Actions
Onsite Protective	Actions in	Effect:	
Offsite Assistand	e Requested:	·	
Nontechnical Info	ormation:		

Table 10-7 Page 1 of 2

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Check if Default Value Use Noble Gases (Ci/sec): Iodine (Ci/sec): Other Radionuclides (Ci () Check here if listed on attached computer output. Projected Dose Rates and Doses <u>Dose Rate (rem/hr)</u> Integrated Dose (re Whole Body Thyroid Whole Body Thyr EAB 2.5 miles	Radioactive Release	Rates:	Estimated Release Duration (hr)[c]:
Noble Gases (Ci/sec): Iodine (Ci/sec): Other Radionuclides (Ci () Check here if listed on attached computer output. Prefected Dose Rates and Doses			Check if Default Value Used ()
() Check here if listed on attached computer output. Projected Dose Rates and Doses Dose Rate (rem/hr) Integrated Dose (rem/hr) Whole Body Thyroid Whole Body Thyroid AB 2.5 miles 3.0 miles 10.0 miles () Check here if listed on attached computer output. Distance to which plume PAG doses may be exceeded (miles): Distance to which ingestion PAG doses may be exceeded (miles): Injured Personnel Status: Technical Information: al Give as one of the 16 cardinal compass directions (N. NNE, etc.).	Noble Gases (Ci/sec): Iodine (Ci/sec):	Other Radionuclides (Ci/sec)
Prejected Dose Rates and Doses	() Check here if 1	isted on attached computer	output.
Dose Rate (rem/hr) Integrated Dose (rem/hr) Whole Body Thyroid Whole Body Thyr bAB		Projected Dose Rates	and Doses
Whole Body Thyroid Whole Body Thyr EAB		Dose Rate (rem/hr)	Integrated Dose (rem)
bAB		Whole Body Thyroid	Whole Body Thyroid
2.5 miles	LAB .		
5.0 miles	2.5 miles		
10.0 miles	5.0 miles		
() Check here if listed on attached computer output. Distance to which plume PAG doses may be exceeded (miles): Distance to which ingestion PAG doses may be exceeded (miles): Injured Personnel Status: Technical Information: a) Give as one of the 16 cardinal compass directions (N. NNE, etc.).	10.0 miles		
Distance to which plume PAG doses may be exceeded (miles): Distance to which ingestion PAG doses may be exceeded (miles): Injured Personnel Status: Technical Information: a) Give as one of the 16 cardinal compass directions (N. NNE, etc.).	() Check here if 1	isted on attached computer	output.
Distance to which ingestion PAG doses may be exceeded (miles):	Distance to which p	lume PAG doses may be excee	ded (miles):
Injured Personnel Status: Technical Information: a) Give as one of the 16 cardinal compass directions (N. NNE, etc.).	Distance to which i	ngestion PAG doses may be e	exceeded (miles):
a) Give as one of the 16 cardinal compass directions (N. NNE, etc.).	Injured Personnel S	tatus:	
a) Give as one of the 16 cardinal compass directions (N. NNE, etc.).	Technical Informati	on:	
al Give as one of the 16 cardinal compass directions (N. NNE, etc.).			
b] Evacuation sector identifications are given in Emergency Procedure EP-30.	a) Give as one of t b) Evacuation secto	he 16 cardinal compass dire r identifications are given r release duration is three	ections (N, NNE, etc.). n in Emergency Procedure EP-30. hours.

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Revision 2

FORM 10A

Date _____

Time

ACCIDENT DOSE ASSESSMENT WORK SHEET

ATMOSPHERIC RELEASE IN-PLANT MEASUREMENT METHOD

I. RADIOACTIVE MATERIAL RELEASE RATES

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A. PRM and Grab Sample Data:

Parameter	Nob (Xe	le Gas -133)	
PRM Number Net Count Rate	<u> </u>	срш	1
Calibration Factor[a]	<u> </u>	cpm µCi/cc	2
Noble Gas Concentration 1 + 2	- <u> </u>	uCi/cc	3
Iodine Concentration[b]	= <u> </u>	wi/cc	0
Effluent Stream Flow Rate[c]	= <u> </u>	cfm	4
Release Rates:			
1. Noble Gases $Q_G = 4.7E-4 \times 3A \times 4$	= <u> </u>	Ci/sec	3
2. Iddines $Q_T = 4.7E - 4 \times (B) \times (4)$	=	Ci/sec	6
 3. If (5) exceeds 7.8 Ci/sec and release has peor (5) exceeds 7.8E-1 Ci/sec and release has 0.5 Fr; or (6) exceeds 3.3E-3 Ci/sec and release has 2 min; or (6) exceeds 3.3E-4 Ci/sec and release has 0.5 hr; 	ersisted for persisted f persisted f persisted f	2 min; for for	
declare a Site Area Emergency if not already	declared.		

[a] See Table 10-1.

B

C

D

- [b] From Form 10B, 10F or Table 10-6.
- [c] For default values, see Table 10-2.
 - * Record on Table 10-7.

Form 10A Page 1 of 4 EP-10 Page 15 of 36 Revision 2 II. METEOROLOGICAL DATA

	Α.	Wind speed	-		E	mph	(7)*
		u = 0.45 x 🤇) =		E	m/sec	8
	в.	Direction from which wind blows[d]				<u></u>	9 *
	с.	Direction toward which wind blows[d]					•
	D.	Temperature difference ΔT_{200-33}	•			°C	0
	E.	Sigma (delete if ΔT is available). σ_{θ}	-		de	gree	2*
	F.	Pasquill stability category (use ① or ② and Table 10-3; for default value, see Table 10-5).	-				() *
	G.	Distance to EAB in direction towards which wind blows (see Table 10-4; default value = 6.6E+2 meter).			E	meter	0
	н.	Atmospheric dispersion factor for distance (4) and stability category (3) (from Figure 10-5)					
		(u _X /Q) =		E	1/m ²	0
III.	DOSE	RATES -					
	Α.	Inside EAB					
		1. Whole Body $R_W = \frac{3.5E-2 \times (5)}{(8)}$	-	<u>·</u>	E	rem hr	6
		2. Thyroid $R_{T} = \frac{3.0E+3 \times 6}{8}$	-		E	rem hr	Ø
		3. Evacuate the exclusion area if dose rate (6) 2.0E-3 rem/hr or if dose (1) exceeds 6.0E-3	er	ceed n/hr.	ds •		
	в.	At EAB					
		1. Whole body $R_W = \frac{4.1E+1 \times (5) \times (5)}{(8)}$	-		. Е	rem hr	® *
[d] Gi	ive a ind i	as one of the 16 cardinal compass points (N, NNW, N is meandering.	w, (etc)	. De	lete if	

Form 10A Page 2 of 4 EP-10 Page 16 of 36 Revision 2

 $R_T = \frac{3.4E+6 \times 6 \times (5)}{(8)} = . E$ rem hr 2. Thyroid (19) * If dose rate 18 exceeds 1.0 rem/hr; or dose rate 19 exceeds 5.0 rem/hr 3. Declare a General Emergency if not already declared. TV. PROJECTED DOSES, PLUME EP-2 A . Estimated Duration of Release hr 20 * (Minimum value for continuous release = 3 hr) t = B . Doses at EAB Dw = (18) x (20) = . E rem (21) * 1. Whole body DT = 19 x 20 = . E rem 22 * Thyroid 2. Offsite protective actions are required if dose (21) exceeds 1.0 rem or if dose (22) exceeds 5.0 rem. See Emergency 3. Procedures EP-23 (Control Room) or EP-30 (TSC or EOF). Doses at Offsite Locations C. Atmospheric dispersion factor at which offsite 1. protective action level whole body dose occurs: $(u\chi/Q)' = (3 + (2) = . E 1/m^2 (2)$ Atmospheric dispersion factor at which offsite 2. protective action level thyroid dose occurs: $(u\chi/Q)' = \frac{5.0 \times (5)}{(22)} = \frac{.E}{1/m^2}$ $(u^{\chi}/Q)' = . E 1/m^2$ (25) 3. Smallest value of (23) or (24) Determine distance at which offsite protective action level dose occurs by using 25 and 13 and Figure 10-5: 4. d' = . E meter 26 d' = 26 + 1.6E+3 = ____ E miles 27 *

* Record on Table 10-7.

Form 10A Page 3 of 4 EP-10 Page 17 of 36 Revision 2

- See Procedure EP-23 for offsite protective action recommendations.
- V. PROJECTED OFFSITE CONTAMINATION LEVELS, INGESTION EPZ[d]
 - A. Atmospheric dispersion factor at which iodine deposition corresponding to the Preventive PAG occurs:

$$(u \chi/Q)^{"} = \frac{3.9E-9 \times (8)}{6 \times (20)} = \underline{E} \frac{1/m^2}{28}$$

- B. Determine distance at which the Preventive PAG occurs using (28) and (13) and Figure 10-5 (if d" is > 8.0E+4 on Figure 10-5, enter 8.0E+4 in (29):
- C. Atmospheric dispersion factor at which iodine deposition corresponding to the Emergency PAG occurs:

$$(u X/Q)''' = \frac{3.9E-8 \times (8)}{6} = \underbrace{E \cdot 1/m^2}_{-} (3)$$

d" = (29) + 1.6E+3 = ____ E miles (30) *

- D. Determine distance at which the Emergency PAG occurs using (31) and (13) and Figure 10-5 (if d''' is > 8.0E+4 on Figure 10-5, enter 8.0E+4 in (32)):
 - d''' = . E meter 32

d" = _____ E meter 29

d''' = 32 + 1.6E+3 = <u>E miles</u> 33 *

E. See Procedure EP-30 for offsite protective action recommendations.

[d] This section to be completed at the TSC or EOF only.

* Record on Table 10-7.

Form 10A Page 4 of 4 EP-10 Page 18 of 36 Revision 2

FORM 10B

ACCIDENT DOSE ASSESSMENT WORK SHEET ATMOSPHERIC RELEASE ESTIMATE OF RADIONUCLIDE RELEASE FROM CONTAINMENT EXPOSURE RATE MEASUREMENTS

This calculation is to be employed when an accident has been identified inside Containment requiring a dose assessment and the Containment has successfully isolated.

I. CONTAINMENT RADIOACTIVITY CONCENTRATION

L. Exposure Rate Measurements

	 ARM reading (Use ARM-15A, -15B, or -20 reading if available. If not available, use ARM-6 reading multiplied by 10.) 	<u> </u>	E	R/hr	1
	ARM No	or			
	2. Exposure rate measurement outside Containment (at contact or at 50 ft as shown in Figure 10-1)[a] Contact50 ft	<u> </u>	E	R/hr	0
в.	Time since start of accident	<u>.</u>	E	hr	2
c.	Exposure rate inside Containment for 100-percent core release at time (2) (from Figure 10-2)		E	R/hr	3
D.	Exposure rate inside Containment for 100 percent gap release at time \bigcirc (for Figure 10-2)		E	R/hr	3
ε.	If (1) is greater than (B),				
	F = ① ÷ ③				
	If (1) is less than or equal to 3B,				
	F = ① + 3B F	•	E		
F.	Radioactivity Concentration in Containment				
	1. If (1) is greater than (1)				
	 a) Equivalent Xe-133 concentration (from 100-percent core release curve in Figure 10-3) 	<u> </u>	E	µC1/cc	©.

[a] External exposure rate measurements are to be used only if ARM readings are not available. Contact dose rate is preferrable to 50 ft dose rate.

Form 10B Page 1 of 2 EP-10 Page 19 of 36 Revision 2

Date _

Time

		 b) Equivalent I-131 concentration (from 100-percent core release curve in Figure 10-3) E Ci/cc (5B)
		2. If () is less than or equal to (3B:
		a) Equivalent Xe-133 concentration from 100-percent gap release curve in Figure 10-3) . E. Ci/cc (A)
		 Equivalent I-131 concentration from 100-percent gap release curve in Figure 10-3) E Ci/cc 6B
		3. Xe-133 concentration at ARM reading 1 or dose rate 1:
		$C_G = (4) \times [(5A) \text{ or } (6A)] = \underline{E} \underline{Ci/cc} (7)$
		4. I-131 concentration at ARM reading 1 or dose rate 1:
		a) If Containment sprays have not operated:
		$C_{I} = (4) \times [(5B) \text{ or } (B)] = \underline{E} \underline{Ci/cc} (8A)$
		b) If Containment sprays have operated:
		$C_{I} = 4 \times [5B \text{ or } 6B] \times 0.01 = _ E _ Ci/cc \ (8B)$
11.	RADI	COACTIVITY RELEASE RATE
	A.	Containment pressure . E psig 9
	в.	Containment leak rate at pressure (9) (from Figure 10-4) E cfm (10)
	с.	Release rates:
		1. Xe-133: $Q_G = 4.7E-4 \times 7 \times 10 = . E Ci/sec (1) *$
		2. I-131:
		QI = 4.7E-4 x [(8A) or (8B)] x (10) = E Ci/sec (12) *
	D.	Enter (1) and (12) on Lines (5) and (6) of Form 10A.

* Record on Table 10-7.

Form 10B Page 2 of 2

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FORM 10C

ACCIDENT DOSE ASSESSMENT WORKSHEET ATMOSPHERIC RELEASE ESTIMATION OF EFFLUENT RELEASE FROM OFFSITE MEASUREMENT

This form is to be used only when an unmonitored release from the Containment has occurred.

METI	EOROLOGICAL DATA					
Α.	Wind speed				E	mph
	u = 0	.45 x 2	•.		E	m/sec
в.	Temperature difference	AT200-33				°C
с.	Sigma (delete if AT is available)	σ _θ			2	degree
D.	Pasquill stability category (use 4) or 5) and Table 10-3; for default see Table 10-5)		•.			
Ε.	Direction from which wind blows[a]		• -			
F.	Direction toward which wind blows[a]		• -			
G.	Distance to EAB in direction towards which wind is blowing (see Table 10-4	•)		<u>.</u>	E	meter
н.	Atmospheric dispersion factor for distance (8) and stability	(v	1/m2

11. RADIONUCLIDE RELEASE RATES

A. Noble Gas Release Rate

$$Q_{G} = \frac{1 \times 3}{9 \times 4.1E+4} = \frac{E}{1.2} = \frac{C1/sec}{1.2} = \frac{C1/scc}{1.2} = \frac{C1/scc}{1.$$

B. Enter 10 on Line (5) of Form 10A.

[a] Give as one of 16 cardinal compass directions (N, NNE, etc.). * Enter on Table 10-7.

Form 10C Page 1 of 2 EP-10 Page 21 of 36 Revision 2

Date

Time

EVIDENCE-FOUNDATION PHOTOGRAPHS

R-10/81 St. v. Reams 47 Or App 907

Defendant shot his father-in-law in the back of the head -- it killed him! Certain photos were admitted showing deceased sitting on couch -- paper in lap -- some blood, etc., also showing closeup of side and back of head. The photos were not particularly gruesome unless a dead body is per se gruesome. THE COURT:

The issue is whether the probative value of the evidence outweighed its possible prejudicial value. State v. McCready, 31 Or App 591, 595, 571 P2d 160 (1977). Defendant contends that the photographs were not relevant for any purpose when admitted, particularly after the stipulation was offered. Defendant relies on State v. McKendall, 36 Or App 187, 198, 584 P2d 316 (1978), for the proposition that photographs are improperly admitted where the only issue is that of intent after a stipulation is offered. There, however, the defendant was an accomplice, who stipulated that the victim was murdered. The only issue was her intent as an accomplice, that is, whether she intended that the victim be murdered by another. The court held that the photographs, taken during an autopsy, were improperly admitted when the manner of death was not a disputed issue. A primary issue in this case was the state of mind of the defendant who killed the victim. The circumstances of the manner of death were relevant to that inquiry. We noted in State v. Yost, 28 Or App 803, 805, 561 P2d 657, rev den (1977), that mens rea can rarely be shown by direct evidence. The stipulation, an attempt in part to describe visual aspects of the death of the victim in words, did not necessarily convey all the relevant circumstances.

"In arguing that the photographs were not offered for any legitimate purpose and were prejudicial, defendant points out that the prosecution did not refer to or make use of them in any way once they were admitted, thereby in defendant's view confirming that they were offered only to show the victim's body to the jury. While it is true that photographs once admitted into evidence do not have to be referred to further to have an effect on the jury, which can review them during its deliberations, we are not persuaded that at time of admission the possible prejudice clearly outweighed the probative value of the photographs. They do have an emotional potential in that they capture the suddenness with which an ordinary domestic scene was transformed into a tragedy, but that was not so much unwarrantably prejudicial to the defendant as it was probative of the circumstances of the occurrence, not covered by the stipulation.

"The question whether exhibits possess sufficient probative value in relation to their possible prejudicial effect to warrant their admission is within the sound discretion of the trial court. State v. McKendall, supra, 36 Or App at 197. We conclude that the trial court did not err in admitting the photographs."

STATE V. REAMS

47 Or Arp 907, ____P2d ___ (1980).

53 Or App 355, ___ P2d ___ (1981).

10/81

10/81 St. v. Merrifield 53 Or App 567

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Murder Appeal.

Defendant shot and killed a man who had recently received an inheritance.

AT TRIAL - There was testimony about an incident in which defendant and others were riding in a car when a kid threw a piece of plastic at the car. The car backed up and there was reference to "blowing away" the kid etc. There was also testimony it was done "jokingly" and reference to a gun.

DEFENDANT OBJECTED: Impermissible bad act - other crime.

THE APPELLATE COURT:

"Defendant concedes on appeal that the state was entitled to show defendant's possession of the gun. His sole objection is to the portrayal of the allegedly menacing way in which it was being displayed. He says, 'It portrays defendant as violence-oriented, perhaps even gun-happy.' We do not read the testimony that way. The 'threat' was made 'jokingly,' according to the witness. Horseplay and high spirits are not the sort of 'other crimes' or 'bad acts' evidence condemned in such cases as <u>State v. Manrique</u>, 271 Or 201, 531 P2d 239 (1975). The trial judge did not abuse his discretion in denying a mistrial or in otherwise overruling defendant's objection to this testimony."

53 Or App 567, P2d (1981)

SUFFICIENCY OF EVIDENCE 30.0

R-10/81 St. v. Coatney 44 Or App 13

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Defendant's challenge to sufficiency of evidence will not be considered first time on appeal.

STATE v. COATNEY 44 Or App 13, P2d (1980)

QUERY: Should this be so following Jackson v. Virginia???

 SEE ALSO:
 STATE v. WHITE

 53 Or App 856,
 P2d
 (1981)

NOW THEREFORE THIS CONTRACT WITNESSETH:

AGREEMENT OF PURCHASE AND SALE

Seller agrees to sell and deliver to the Buyer and Buyer agrees to purchase and accept delivery from the Seller the following products (herein called the "Products")

- 1. Liquid Chlorine
- 2. Liquid Caustic Soda 50%
- 3. Sodium Chlorate Solution

upon the terms and conditions herein contained and as the Buyer may request the same by notice in writing to the Seller.

2. TERM OF CONTRACT

The term of this Contract shall be a period of five years commencing on June 1, 1982 and continuing until May 31, 1987, unless terminated earlier by either party at law or in accordance with the terms of this Contract; provided that the Buyer may, at its option, extend this Contract for an additional term of five years for the period from June 1, 1987 to May 31, 1992 of (a) the Buyer gives the seller notice on or before May 31, 1986 that it wants to extend this Contract for the additional term, and (b) the parties asree in writing on the Erices for the Products to be applicable at the commencement of the additional term.

3.

1.

SPECIFICATIONS

The Selfer warrants that each of the Products will comply with the specifications therefor annexed hereto as Schedule A. On or before the first working day after the completion of loading the barge on which the Products are shipped to the Buyer, the Seller will advise the Buyer by notice in writing, by telex if feasible, of the analysis of Products so shipped.

4. QUANTITY

The Seller shall sell and deliver to the Buyer and the Buyer shall purchase and accept delivery from the Seller in each twelve month period commencing June 1, 1982, and commencing on June 1 of each year thereafter during the term of this Contract of the following quantities of the Products:

> Liquid Chlorine 8,300 metric tons (9,150 short tons)

Liquid Caustic Soda - 50% 8,300 dry metric tons (9,150 dry short tons)

Sodium Chlorate - Solution 2,500 dry metric tons (2,756 dry short tons)

provided that if the Pulp Mill operates at less than its capacity, the Buyer may reduce the quantities purchased, hereunder by substantially the same proportion as the Pulp Mill is operating at less than its capacity.

If the parties so agree, quantities in excess of these specified may be purchased and sold, and the terms of this Contract shall apply on such purchase and sale.

5. TECHNOLOGICAL IMPROVEMENTS

If the Buyer's requirements for Products hereunder at any time are reduced by 25% or more from the quantities specified in Paragraph 4 as a result of technological changes in Buyer's processing operations, Seller shall have the right to supply Buyer with any chemical that is substituted for all or for part of Buyer's requirements hereunder, provided Buyer is not prevented from using the same due to patent rights of others. It is understood that Seller's rights under this section are subject to the condition that Seller's prices and terms and conditions on such substitute chemicals are not less favourable to the Buyer than those which the Buyer is able to obtain from any third party.

6. INITIAL PRICE

(a) <u>Base Portion</u>. The portion of the price for the Products for non-transportation costs, profit and overhead (herein called the "Base Portion") for the period from June 1, 1982 to December 31, 1982 is as follows:

- (i) Liquid Chlorine \$104.72 (U.S. Funds) per metric ton (\$95.00 (U.S. Funds) per short ton);
- (ii) Liquid Caustic Soda 50% \$154.32 (U.S. Funds) per metric ton (\$140.00 (U.S. Funds) per short ton);
- (iii) Sodium Chlorate Solution \$339.51 (U.S. Funds) per metric ton (\$308.00 (U.S. Funds) per short ton);

subject to increase or decrease as provided in Schedule 8.

(b) <u>Transportation Portion</u>. The portion of the price for the Products allocated to transportation costs (herein called the "Transportation Portion") shall be \$27,286 (U.S. Funds) per shipment of Products from any place of shipment to the Buyer's dock flance at Gold River, British Columbia, Bebject to increase or decrease, as provided in Schedule C. For the purposes of this Contract, the term "transportation costs" inclussion cost of loading, handling, stowing and discharge.

(c) <u>Price</u>. The price (herein called the "Price") for the Products is the aggregate of the Base Fortion and the Transportation Fortion thereof, as provided in Paragraph 6(a) and 6(b) as increased or decreased from time to time as provided therein as in Schedule A and Schedule B to this Contract. The Price is "Ex Quay (duties on buyer's account)" as defined in "Incoterms 1980" published by ICC Services S.A.R.L. (International Chamber of Commerce).

OTHER SELLERS

7.

If, during the term of this Contract

(a) Buyer shall advise Seller, by notice in writing, that an established manufacturer in the United States of America or Canada has offered to sell Products of substantially equal quality to Buyer under terms and conditions and at a price which result in a lower delivered cost to Buyer of Products physically delivered through Buyer's dock flange at Gold River, Eritish Columbia, than the cost to the Buyer of Products purchased hereunder, and

(b) Seller, shall fail, within 30 days of such notice. to sive potice in writing to the Suver that it agrees

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to adjust and does adjust the Prices hereunder to meet such lower delivered cost, the Buyer shall be under no obligation to purchase Products hereunder.

8. TRANSPORTATION

(a) <u>Barge</u>. The Seller shall use the barge "Pennsalt Tyee" to transport the Products to the Buyer's pulp mill at Gold River, British Columbia.

(b) <u>Barge Trips</u>. The Buyer and the Seller estimate that elecen trips will be required during each twelve month period for the delivery of Products to the Bayer at its pulp mill at Gold River, British Columbia.

(c) <u>Seaworthy Condition</u>. Seller will maintain "Pennsalt Type" in seaworthy cordition and suitable in all respects for the transportation of the Products. In the event the rennsalt Type" is not available by June 1, 1982 or at any other time, Seller will use suitable alternate transportation means, and will pay any difference in costs that may result from the use of an alternate <u>means of</u>, transportation until such time as the "Pennsalt Type" is placed into service for Gold River.

(d) <u>Capacity of "Pennsalt Type</u>". The Seller will equip and maintain the "Pennsalt Type' to carry the following approximate maximum quantities of Products:

> Liquid Chlorine: 1,089 metric tons (1,200 short tons), aud

Liquid Caustic Soda - 50%: 771 dry metric tons (850 dry short tons), cud Sodium Chlorate - Solution: 235 dry metric tons (260 dry short tons)

(e) <u>Discharge</u>. The Seller, at its own expense, will properly discharge the Products or will cause them to be properly discharged directly into the dock flange provided by the <u>Buyer</u> therefor (herein called the "Dock Flange") on the Buyer's Dock at Gold River, British Columbia. Title to the Products will pass from the Seller to the Buyer when the Products are properly and safely discharged into the Dock Flange. The Seller agrees to indemnify the Buyer and save it harmless from all loss, costs, damage, expenses and liability arising in any way from the Products before title to the Products has passed to the Buyer, or arising in any way from the vessel carrying or towing the Products.

(f) Discharge Time. The Buyer may require the barge transporting the Products to remain at Gold River, British Columbia, for the discharge of each shipment for up to 21 days for the period until June 30, 1983 and thereafter for up to 14 days, and to postpone discharge during 21 or 14 day periods, as the case may be until it requires the Products. After June 30, 1963 the Buyer may require the Barge to postpone discharge and to remain at Gold River, Eritish Columbia, for the discharge of a shipment of the Products for a period in excess of 14 days, provided that the Buyer shall pay to the Seller \$1,000 (U.S. Funds) per day for each day or part thereof, in excess of 14 days, that the Buyer postpones discharge and the Barge remains at Gold. River, British Columbia, for discharge at the request of the Ruver. The barge or scow carrying the Products shall remain at all times in the care, custody and control of the Seller, its servants or agents or independent contractors, and not be in the care, custody or control of the Buyer.

(g) Provision of Discharge Equipment and Personnel.

(i) <u>Equipment Provision</u>. The Seller will provide and maintain all equipment for the discharge of Products including the flexible hoses to be attached to the vessel transporting the Products <u>atg</u> the Dock Flange.

(ii) <u>Maintenance</u>. Without restricting the foregoing, the Seller will flush out, wash, clean, and ventilate all pipe lines, hoses, tanks, compartments and cargo spaces from time to time as may be required to properly maintain any and all equipment, barges or vessels used in the performance of its obligations under this Contract' (including the flexible hoses to be owned by the Seller but to be attached to the Dock Flange) in a clean and proper condition for moving or transporting the Products.

(iii) <u>Flexible Hoses</u>. The Seller, from time to time, will <u>provide</u> at its own cost the flexible hoses to be attached to the Dock Flange and the vessel transporting the Products and one replacement for each flexible hose.

(iv) <u>Inspection</u>. Employees of the Buyer from time to time may inspect <u>theatanks</u> for carrying the Products, the <u>Products</u> discharge system, machinery and equipment used in connection therewith and procedures relating thereto, in whole or in part (such inspection being herein called an "Inspection") of the 'Pennsalt Tyee" or other chemical-carrying vessel used in the transportation of the Froducts.

(v) <u>Consent</u>. The Seller consents to the Inspection by the Buyer or its employees from time to time,

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unless the Seller shall specifically request that such Inspection should not be made.

(vi) No Release of Seller. The Seller agrees that an Inspection shall not relieve the Seller of its obligations to load, handle, stow and discharge the Products and to be solely responsible therefor, whether the fault or neglect of the person making the Inspection would constitute negligence, contributory negligence or otherwise.

(vii) <u>Release of Buyer</u>. The Seller agrees that the Buyer will not be liable to the <u>Seller</u> and that the Seller will make no claim against the Buyer based on or in connection with an Inspection whether such Inspection is improperly made or whether the results of the Inspection are reported or not reported to the Seller or otherwise.

(viii) <u>Seller Direction and Control</u>. The Seller agrees that to the extent any employee of the Buyer provides any assistance to the Seller in connection with or does any work on the "Pennsalt Tyee" or other chemical-carrying vessel used in the transportation of the Products, he does the same as servant and agent of the Seller and under the Seller's direction and control and that the Seller agrees to indemnify the Buyer and any such employee and save it and him harmless from all claims, actions, or cause of action arising out of such work, whether resulting from the negligence of such employee or otherwise, provided that no employee of the Euyer shall provide any assistance to the Seller in connection with or do any work on the "Pennsalt Tyee" or other chemical-carrying vessel if the Seller shall request that it not be so provided or done. (ix) <u>Personnel</u>. The Seller will use such personnel for the discharge of the Products as the Euyer may approve, such approval not to be unreasonably withheld.

(h) <u>Tug Standby Time</u>. The Buyer may request that the tugboat towing the vessel transporting the Products to stand by in Gold River, British Columbia, for a period of time after the Buyer has requested the tugboat to remove the vessel. The Seller will require the tugboat to standby in accordance with such request, and the Buyer agrees to pay the Seller its costs thereof.

(i) <u>Alternate Barge</u>. In the event the barge "Pennsalt Tyee" cannot be used, the Seller will provide an alternate barge of similar capacity and condition, at no additional cost to the Buyer.

(j) Weights and Measures. Weights and measures shall be in accordance with Seller's calculations but subject to Boyer's inspection. Seller's calculations shall govern, except in case of error. The Seller will make copies of the records of measurements, procedures and equipment available for Buyer's inspection in Gold River or Vancouver, British Columbia upon request.

(k) <u>Delivery Schedule</u>. Buyer will firmish Seller with estimated annual requirements of Products and a proposed delivery schedule to permit Seller to plan production and shipments in an orderly fashion. This report shall be provided by Buyer not later than March 31 of each year during the term of this Contract. It is recognized that requirements and delivery dates will change from the estimates during the year. Buyer will notify Seller immediately of any variances as they are determined. Buyer

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and Seller will schedule shipments to be reasonably evenly spaced and of reasonably equal quantities throughout the term of this Contract.

(1) Final Delivery Dates. Buyer will fix final barge arrival dates and shall confirm all dates by shipping instructions in writing ten days in advance. The Seller shall comply with such shipping instructions. Seller shall not be bound to delivery of any quantities of Products for which Buyer has not given such shipping instructions. If problems develop at Buyer's mill an order for Products may be cancelled prior to shipment, and the only penalty to Buyer will be any tug boat charges actually charged and paid due to the cancellation.

8A. BARGE CHARTER OPTION

(a) If this Contract is terminated for any reason prior to May 31, 1987, or if this Contract is not renewed for the period after May 31, 1987, the Seller, at the request in writing of the Buyer will charter the "Pennsalt Tyee" by demise together with its tackle and equipment, to the Buyer for a period (herein called the "Charter Period") of 18 months or such shorter period as the Buyer may specify by notice in writing to the Seller.

(b) If the Buyer charters the "Pennsalt Tyee" the charterhire for each month (and proportionally for each part month) will be an amount equal to the sum of

(i) \$31,600 (U.S. Funds), and

 (ii) the product obtained by multiplying \$316
 (U.S. Funds) by the number of months which have expired during the period commencing July 1, 1982
 and the beginning of the month for which the charterhire is payable. The Buyer will pay the charterhire to the Seller on the first day of each month in advance during the Charter Period.

(c) The Seller will be responsible for and provide and pay for the biennial Coast Guard Recertification as required by applicable law.

(d) The Buyer will be responsible for and provide and pay for on-hire and off hire surveys.

(e) For the Charter Period the Buyer will keep and maintain the "Pennsalt Tyee" in good and substantial repair and condition, reasonable wear and tear excepted.

(f) The Seller will deliver up the "Pennsalt Tyee" in good and substantial repair and the Buyer will take delivery at the commencement of the Charter Period at the Seller's marine facilities in Tacoma, Washington, or at such other place as the parties way agree, and the Buyer will deliver up the "Pennsalt Tyee" the same good and substantial repair, (reasonable wear and tear excepted) at the end of the Charter Period at the Seller's marine facilities at Tacoma, Washington, or such other place as the parties may agree.

(g) The Buyer will deliver the "Pennsalt Tyee" to the Seller's Marine Facilities at Tacoma, Washington, for its biennial inspection if such inspection is required at law.

(h) During the Charter Period, the Seller will insure the "Pennsalt Type"

(i) with hull insurance under Canadian HullsPacific Clauses 1974, or equivalent, for the fullvalue thereof;

(ii) with Broad Form Protection and Indemnity Insurance (SP23 or equivalent) including pollution liability and collision liability in an amount of not less than \$5,000,000 (U.S. Funds) for any one accident or occurrence;

with the Buyer as a named insured and the Buyer will pay the Seller the costs thereof. The Seller will deliver to the Buyer, from time to time, proof of such insurance, and failing such delivery, the Buyer may so ensure at the Seller's expense.

9. RETURNED PRODUCTS

Seller will accept returned Products from Gold River, British Columbia, provided they meetAsubstantially the same quality standards as when they were shipped. Products returned on the "Pennsalt Tyee" must be of sufficient quantity as to be recoverable for Seller's use without unreasonable effort. Seller will credit Buyer at 90% of theaprice at which the returned Products were originally purchased. <u>Ary additional</u> freight charges, if <u>actually</u> incurred by the Seller for the return of the, Products, are for Buyer's account, at cost, unless the Products did not conform to the specification hereunder when delivered.

10. ALTERNATE SOURCES

In the event that a Product is not available from Seller's Tacoma manufacturing facilities, the Seller will supply the Product from Seller's Portland Plant at no additional landed cost to Buyer. In the event that both the Seller's Tacoma and Portland manufacturing facilities are inoperative the Seller will use its best efforts to obtain Products from other producers and will charge no additional costs to the Buyer. In the event both Seller's Tacoma and Portland manufacturing facilities are inoperative and Seller is unable to obtain product from other producers, Paregraph 16 will apply.

11. TECHNICAL SERVICE

Seller will provide such technical service to Buyer's pulp mill staff as is normally provided by suppliers of products similar to the Products, including:

- (a) detailed information on each of the Products, including such information as the Buyer may request from time to time.
- (b) safety information and education for the Buyer's employees with respect thereto.
- (c) regular inspections to and reports on the Buyer's facilities and capability to safely and efficiently handle the Products.
- (d) on-site assistance by competent personnel of the Seller in the event of serious handling and process use problems.
- (e) analytical testing service with respect to quality and use of the Products.
- (f) advice on technical developments in the industry relative to the Buyer's use of the Products.
12. EXCHANGE RATE

Should the rate of exchange on Canadian funds to U.S. funds as published by the Bank of Canada be, on the first day of any month during the term of this Contract,

- (a) Less than \$1.19 (Canadian Funds) per \$1.00 (U.S. Funds), the basic purchase price shall not be adjusted for change in foreign exchange rates.
- (b) \$1.19 (Canadian Funds) or more per \$1.00 (U.S. Funds), the price for Products shipped during that month hereunder shall be reduced by a percentage equal to one-third of percentage difference between \$1.19 and the prevailing rate of exchange. For example, if the exchange rate is \$1.20 Canadian = \$1.00 U.S., the basic purchase price of \$95.00 U.S. would be reduced by .28% to \$94.73 U.S. (\$0.01: \$1.19 = .0084; .0084 : 3 = .0028; \$95.00 x .28% = \$0.27; \$95.00 - \$0.27 = \$94.73).

13. SUSPENSION

If the rate of exchange on Canadian funds to U.S. funds published by the Bank of Canada is more than <u>Sl. 27</u> (Canadian Funds) to \$1.00 (U.S. Funds) on the first day of any month during the term of the Contract, Seller may suspend delivery of Products during that month or at the Buyer's option shall continue to ship Product but at a price established as if the prevailing rate of exchange were <u>Sl. 27</u> (Canadian Funds) to \$1.00 (U.S. Funds).

14. TERMS

The terms of payment are net thirty days, payable in U.S. funds.

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15. DUTY

Seller will promptly prepare and provide Buyer with Canadian Customs Invoice and Shipper's Export Declaration for each shipment to Gold River, British Columbia, or other certificate of origin or consular invoice or similar documents required for importation into Canada. The Buyer will pay all customs duties as well as any other duties and taxes payable <u>on the Products</u> at the time of or by reason of importation into Canada.

ADDITIONAL TERMS AND CONDITIONS

16. FORCE MAJEURE

Neither party shall be liable for any failure to make one or more deliveries (or portions thereof) or for failure or refusal to accept any one or more deliveries (or portions thereof) because of mill shutdown arising out of compliance with any law or governmental action or arising out of acts of God, fire, flood, explosion, strikes or other labour troubles, shortage or failure of supply of energy, materials or equipment, interruption of or delay in transportation, or any other circumstances of like or different nature beyond the reasonable control of the party so failing or refusing. If any such circumstances affect only a part of Seller's capacity to perform, Seller shall have the right to allocate production and deliveries among all of its customers and its own requirements in any manner Seller deems fair and reasonable. Quantities of the Product not delivered or accepted pursuant to this paragraph may, at the option of either party, be eliminated from the quantities of Products agreed to be purchased and sold under

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this Contract without liability, but this Contract shall remain otherwise in full force and effect.

17. WARRANTIES

(a) Warranty Liability. Seller warrants that the Products shall be of the quality and specifications specified in Schedule A. Seller warrants title to the Products sold hereunder, that they are of merchantable quality, conform to description, and that the sale or use will not infringe the claims of any patent covering the Product itself. Seller does not warrant against infringement which might arise by the use of said material in any combination with other materials or arising in the operation of any process. Except as so warranted the Products covered by this Contract are sold as is. SELLER MAKES NO OTHER WARRANTY OF ANY KIND EXPRESS OF IMPLIED INCLUDING ANY WARRANTY OF FITNESS OF THE MATERIAL FOR ANY PARTICULAR PURPOSE EVEN IF THAT PURPOSE IS KNOWN TO SELLER. Seller's liability with respect to failure to comply with the specifications of Products sold under this Contract shall not exceed the purchase price of the portion of such material as to which liability arises and Seller shall not be liable for any injury, loss or damage, resulting from the handling or use by the Buyer of the Products shipped hereunder whether in manufacturing process or otherwise. In no event shall Seller be able for consequential damage. The Buyer shall give to the Seller notice of any claim within 30 days of the date the Buyer first had knowledge of the claim.

(b) <u>Employee Indemnity</u>. Buyer agrees to indemnify and hold Seller harmless from and against the portion of any liability, cost, expense (including reasonable attorneys' fees), claim, judgment, settlement or damage that Seller may be required to pay to any employee of Buyer who alleges or proves that he or she has been injured in the course of his or her employment while working with the materials supplied by the Seller under this Contract, to the extent caused or contributed to by the negligence or fault of the Euyer. In case the Buyer resells the Products supplied by the Seller under this Contract, Buyer will request and if possible obtain from its purchaser an indemnification agreement similar to the foregoing in this Paragraph 17(b) for the benefit of Buyer and Seller.

18. TITLE

Seller warrants to Buyer its good title to and right to sell the Products and that such Products shall be sold free of all liens, charges, adverse claims or demands whatsoever.

19. TAXES

Buyer shall reimburse Seller for all taxes, excises or other charges which Seller is required to pay to any government or governmental authority and which are hereafter levied directly upon the sale, transportation or use of the Products and which is in excess of that now levied, and the Seller shall reduce the price of the Products by any reduction in such taxes, excises and other levies from that now levied. If a tax, excise, customs duty or other levy is imposed by any government or governmental authority which, in the opinion of the Buyer, is prohibitive or unduly burdensome the Buyer may omit purchases or deliveries during the period of continuance and the contract quantities shall be reduced by the quantities so omitted.

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20. ENTIRE AGREEMENT

This Contract constitutes the entire agreement for sale and purchase of the Products. No modification of this Contract shall be of any force or effect unless in writing signed by the parties hereto and no modification shall be effected by the acknowledgment or acceptance of forms entitled "Purchase Order" containing different terms or conditions.

21. ASSIGNMENT

Neither party shall assign this Contract or any of its rights and obligations hereunder in whole or in part, except to its parent company or a subsidiary or corporations with which it does not deal at arms length, without the prior written consent of the other, which consent shall not be unreasonable withheld.

22. WAIVER

The failure of either party at any time to require performance by the other party of any provision hereof shall in no way affect such party's right thereafter to enforce such provision. Nor shall the waiver by either party of any breach of any covenant, condition or proviso hereof be or be deemed to be a waiver of any further breach of the same or any other covenant, condition or proviso.

23. UNENFORCEABLE PROVISIONS

If any provision of the Contract is or becomes violative of any law, or rule, order or regulation issued

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thereunder, either party shall have the right, upon notice to the other, to cancel such provision, without affecting the other provisions of this Contract, or to cancel this Contract in its entirety.

24. DEFAULT

In the event that either party hereto shall be in default with respect to any of the terms and conditions of this Contract, the other party may at its option, suspend further performance hereunder until such default is remedied; provided that, if the party not in default so elects, the term of this Contract shall be extended for a period equal to that during which performance has been suspended. In the event that the party so in default shall fail to remedy such default with sixty days after notice in writing thereof from the other party specifying the particulars of such default, the party not in default may terminate this Contract by written notice to the other specifying the date on which termination shall become effective, whereupon on the date so specified, the Contract shall be terminated but without prejudice to the rights of either party arising in respect of any act or omission to act or any other event occurring prior to such termination, and the right of either party to pursue any and all of its remedies in law or equity for the enforcement thereof.

25. EXFORT TAX

In the event the United States Government or the Government of the State of Washington or Oregon should impose monetary penalties in the form of export or excise taxes for goods manufactured for export by power generated in the United States either the Buyer or the Seller may

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. declare the same to be circumstance beyond its reasonable control, and Paragraph 16 shall apply.

26. PROPER LAW

All of the provisions of this Contract and any questions concerning its interpretation and enforcement shall be governed by the laws of the Province of British. Columbia.

27. TITLE RETENTION CLAUSE:

It is expressly agreed between the Seller and the Buyer that on all sales, beneficial and legal title to, ownership of, right to possession of, control over, and risks of loss and damage to or by, the Products shall remain with Seller until the shipment is safely and properly delivered to the Buyer at its Dock Flange at Gold River, British Columbia.

The time of payment, whether be are or after shipment; the place or medium of payme whethed of shipment; the manner of consignment, whether to Seller or its agent, to the Buyer or its agent, or sugent for both; or any document in relation to any sale under this agreement, shall in no way limit or modify the rights or obligations of Seller as the legal and beneficial owner of the Products, its right to control, and its right to possession of such goods until they are safely and properly delivered to the Buyer at its Dock Flange at Gold River, British Columbia.

All sales shall be made on the basis of "no arrival, no sale". It is expressly understood that the foregoing shall not be construed to mean that Seller has merely retained bare legal title for security purposes but rather retains legal title and full beneficial ownership until the Products are safely and properly delivered to the Buyer at its Dock Flange at Gold River, British Columbia.

28. LIABILITY AFTER DELIVERY

Buyer assumes full responsibility and liability for handling and use of the Products after they have been safely and properly delivered to the Buyer at its Dock Flange at Gold River, British Columbia.

29. RIGHTS OF SUCCESSORS AND ASSIGNS

This Contract shall inure to the benefit of and be rinding upon the parties hereto and their respective and permitted successors and assigns.

30. NOTICE

Notices under this Contract shall be in writing and may be sent by telegram or telex and mailed to the address of the parties hereto, as set out on the first page of this Contract, provided that either party hereto may change its address for notice by giving notice in writing of its new address to the other party. Any such notice shall be deemed to have been received by the party to whom it is addressed within forty-eight hours after despatching such telex or delivering such telegram to a telegraph office (exclusive of Saturdays, Sundays and legal holidays). PENNWALT INTERNATIONAL CORPORATION - WESTERN HEMISPHERE

By:				
-	And the second s	CONTRACTOR OF THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER.	the state of the state of the	and industry of states, in the second states of

Title:

Date:

TAHSIS COMPANY LTD.

. . .

: . :

By:			

Title:			
	see more than a second s	and the second se	

Date:

SCHEDULE A

. . .

Specifications of Products

SCHEDULE B

BASE PRICE ESCALATION

1. AMOUNTS

On January 1 and July 1 of each year during the term hereof commencing January 1, 1983, the Base Portion for the Products shall be increased or decreased for each succeeding six month period applying the changes in Seller's actual average costs from the preceding quarter at Seller's plants at Tacoma, Washington, and Portland, Oregon, U.J.A., using 1980 Base Cost in U.S. dollars specified below as a base pursuant to the following schedule.

CHANGE TO PRICE

ITEM OF COST	1980 BASE COST	CHANGE OR PART THEREOF TO BASE COST	LIQUID • CHLORINE	*CAUSTIC • SODA	**SGDIUM CHLORATE
ELECTRIC	\$ 0.00664/ KWH	\$0.001/KWH	\$1.52/MT (\$1.38/short ton)	\$1.52/MT (\$1.38/short ton)	\$7.72/M POWE (\$7.00/short ton)
LABOUR	\$ 8.865/hr	\$1.00/hr	\$1.32/MT \$1.20/short ton)	\$1.32/MT (\$1.20/short ton)	\$2.76 (2.50/short ton)
SALT	\$13.51/ short ton	\$1,00/ short ton	\$1.01/MT (\$0.92/short ton)	\$1.01/MT . (\$0.92/short ton)	\$1.32/M (\$1.20/short ton)
FUEL	\$ 3.60/ million aru	\$0.10/ million · BTU	\$0.00/MT (\$0.00/short ton)	\$1.12/MT (\$1.02/short ton)	\$0.44/M (\$0.40/short ton)
	*Caustic Sc	ođa on a 76% N	la ₂ 0 basis		

**Sodium Chlorate on a 100% NaCLO, basis

Accordingly:

A .

C.

D.

For each \$0.001/KWN change in the cost of electricity, the Base Portion of Liquid Chlorine and • Caustic Soda* will change by \$1.52/MT each (\$1.38/short ton) and • Sodium Chlorate by \$7.72/MT (\$7.00/short ton).

B. For each \$1.00/hour change in the base average straight time hourly rate, the Base Portion of Liquid Chlorine and • Caustic Soda* will change by \$1.32/MT (\$1.20/short ton) and • Sodium Chlorate** \$2.76/MT (\$2.50/short ton).

For each \$1.00/short ton change in the cost of salt, the Base Portion of Liquid Chlorine and • Caustic Soda* will change by \$1.01/MT (\$0.92/short ton) and • Sodium Chlorate** by \$1.32/MT (\$1.20/short ton).

For each \$0.10/million BTU change in the cost of fuel, the Base Portion of • Caustic Soda* will change by \$1.12/MT (\$1.02/short ton) and • Sodium Chlorate** by \$0.44/MT (\$0.40/short ton). Changes in fuel costs will not affect the price of Liquid Chlorine.

PROVIDED that the Base Portion for • Sodium Chlorate will be changed forthwith as changes to the Seller's cost of electric power occur.

PROCEDURES

2.

On or about the twentieth day following the commencement of each six month calendar period, Seller shall determine its average costs during the quarterly period immediately preceding such six month calendar period and shall make any adjustment, retroactive to the commencement of the six month period, of the Base Portion of the prices of the Product to Buyer during the then current six month period, as may be required to reflect changes in price related to changes in costs as provided in Paragraph 1 of this Schedule B.

3. CALCULATIONS

All calculations reflecting the changes provided for in Paragraph 7(a) shall be carried to five digits beyond the decimal point and rounded off to the nearest one-tenth of one mil.

4. MINIMUM CHANGE

The Base Portion of price of a Product will be changed only if the calculations reflect an increase or decrease of one-tenth of one mil or more in the price of a metric ton of the Product.

5. VERIFICATION

At Buyer's request and cost, Seller shall have its firm of independent certified public accountants certify the correctness of any adjustments to the Base Portion of the prices of a Product made by Seller in accordance with the terms of this Schedule B; provided that if any adjustments so made were inaccurate, the cost of the certified public accountants shall be paid by the Seller.

-4-

6. EXTRAORDINARY CHANGE

Notwithstanding anything in this Schedule B contained, if Seller incurs in one or more of the categories of items of cost of Products during the term of this Contract, increases in costs which are so uncontrollable and extraordinary that Seller wishes to begin recouping them during the period when they are incurred, Seller shall notify Buyer of the Base Portion price changes it proposes to effect during current guarter pursuant to the formula set forth above. Seller shall give Buyer as much notice of the proposed Base Portion price increase as is practical in light of the circumstances, but in no event shall Seller give Buyer less than two weeks notice of the proposed Base Portion price increase. The Buyer shall have thirty days after receipt of such notice within which to accept such increase or to cancel future shipments of such Product so long as the proposed increase remains unacceptable to Buyer or to terminate this Contract of Sale. All shipments made by Seller to Buyer, which have not been cancelled by Buyer after the notified effective date of the proposed price increase, will be billed and paid for by Buyer at the increased Base Portion of price.

7. ADDITIONAL COST PRICE ADJUSTMENTS

Beginning on October 1, 1982 and each subsequent October 1st during the term of the Contract, Buyer and Seller shall consult with each other to determine whether, and the extent to which, the Base Portion of prices should be changed effective January 1 the following year. Base Portion of prices will not be increased more than \$10.00 per metric ton per year for Liquid Chlorine; \$10.00 per metric ton for 1983 and \$15.00 per metric ton for subsequent years for 50% Liquid Caustic Soda; \$25.00 per metric ton in 1983 and \$30.00 per metric ton for subsequent years for Sodium Chlorate Solution over the term of this Contract. If mutual agreement is not reached between October 1, 1982 and January 1, 1982 and each subsequent October 1st to January 1st during the contract term, the Contract shall be ipso facto amended to expire on June 30 of the year for which no agreement is reached, and prices shall remain unchanged until June 30 of the year for which no agreement is reached.

-5-

SCHEDULE C

TRANSPORTATION ESCALATION

1. <u>Changes for Labour, Fuel and Index Charges</u>. The Transportation Portion of the Price for the Products of \$27,286 (U.S. Funds) per shipment at the time of execution of this Contract shall be increased or decreased as follows:

- (a) for each 1% increase or decrease in the daily wage cost of an 1800 bulk horsepower 7 man tug from the daily wage rate specified below, the Transportation Portion will be increased or decreased by 0.45% of . The daily wage cost of an 1800 bulk horsepower 7 man tug is as follows: •
- (b) for each 1.0% increase or decrease in the net price of diesel fuel charged by Shell Canada Limited in Vancouver, British Columbia, from the net price as of July 23, 1981 of \$1.1774 (Canadian Funds) per imperial gallon, the Transportation Portion will be increased by 0.28% of o.
- (c) for each 1.0% increase or decrease in the Industry Selling Price Index published by Statistics Canada over the Industry Selling Price Index at 269.6 as at May 1981 the Transportation Portion will be increased by 0.7% of .

2. Effective Date of Labour and Fuel Changes. The increases or decreases provided for in Paragraphs 1(a) and

FORM 10D

ACCIDENT DOSE ASSESSMENT WORK SHEET	Date
ATMOSPHERIC RELEASE	
DOSE FROM OFFSITE MEASUREMENT	Time

This method is to be employed when accidental atmospheric release rates from the Plant cannot be determined from inplant measurements. This method can also be employed to verify EAB and offsite dose rates that have been calculated from atmospheric release rates determined inplant.

This form is for use in projecting doses at offsite locations from measurements of whole body dose rates and iodine air concentrations that are performed at the EAB towards which the wind is blowing. These measurements are recorded on Form 10D.

I. MEASURED DOSE RATES AT EAB TOWARD WHICH WIND IS BLOWING

- Gross concentration of radioiodine in air (Table 10-6)
- 2. Thyroid dose rate:

R_r = 3.4E+6 x (2A) = _ E rem/hr (2B)

- C. If dose rate (A) exceeds 0.5 rem/hr for greater than 2 min; or dose rate (A) exceeds 0.05 rem/hr for greater than 0.5 hr[a]; or dose rate (B) exceeds 2.5 rem/hr for greater than 2 min; or dose rate (B) exceeds 0.25 rem/hr for greater than 0.5 hr[a] Declare a Site Area Emergency if not already declared.
- D. If dose rate (D) exceeds 1.0 rem/hr or dose rate (D) exceeds 5.0 rem/hr Declare a General Emergency if not already declared.

II. ESTIMATED DURATION OF RELEASE

(minimum value for continuous releases = 3 hr)

t = hr (3)*

 $C_{I} = . E \underline{UC1/cc} (2A)$

[a] Determined from two measurements 30 min apart at EAB. * Record on Table 10-7.

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Form 10D Page 1 of 4

III.	PRO	JECTED DOSES AT EAB TOWARDS WHICH WIN	D IS BLOW	ING				
	Α.	Whole body	D (A) x (3)	. E	rem	4
	в.	Thyroid	D) x (3)	• E	rem	5
	с.	Offsite protective actions are requ (4) exceeds 1.0 rem or if dose (5) e See Procedures EP-23 (Control Room)	ired if d exceeds 5. or EP-30	ose. 0 rem. (TSC	or EO	F).		
IV.	MET	EOROLOGICAL DATA (Hourly Averages)						
	Α.	Wind speed			•_	• E	meh	6
			u = 0.4	5 x 6) = _	. E	m/sec	6A *
	в.	Direction from which wind blows[b]			_			7*
	с.	Direction toward which wind blows[b	1		_			8*
	D.	Temperature difference	4	T200-3	3 = _		°C	9
	E.	Sigma (delete if AT is available)		σ	e = _		degree	•
	F.	Pasquill Stability Category (use 9 or 10 and Table 10-3, for default, see Table 10-5)			• -			(I) *
	G.	Distance to EAB in direction toward which wind is blowing (Table 10-4)	ls			. E	meter	12
	н.	Atmospheric dispersion factor for d and stability category (1) (from Fig	ure 10-5)	2) (ux/q)"	• .	. E	1/m ²	13
ν.	DOST	ES AT OFFETTE LOCATIONS						

A. Atmospheric dispersion factor at which offsite protective action level whole body dose occurs:

[b] Give as one of the 16 cardinal compass points (N, NNW, NW, etc). Delete if wind is meandering.

* Record on Table 10-7.

Form 10D Page 2 of 4 EP-10 Page 24 cf 36 Revision 2

 $(u\chi/Q)' = (3) \div (4) = _ E 1/m^2 (4)$

B. Atmospheric dispersion factor at which offsite protective action level thyroid dose occurs:

- $(u \chi/Q)' = \frac{5.0 \chi (13)}{(3)} = \frac{E}{1/m^2} (15)$ C. Smallest value of (14) or (15) $(u \chi/Q)' = \frac{E}{1/m^2} (16)$
- D. Determine distance at which offsite protective action level dose occurs by using 16 and 11 and Figure 10-5 d' = . E meter 17
- E. See Procedures EP-23 (Control Room) or EP-30 (TSC or EOF) for protective action recommendations.

VI. ESTIMATION OF RELEASE RATES FROM OFFSITE MEASUREMENT

A. Noble Gases

B. Iodine



(17) + 1.6E+3 = ____ E miles (18) *

VII. PROJECTED OFFSITE CONTAMINATION LEVELS (Complete at TSC or EOF only)

A. Atmospheric dispersion factor at which iodine deposition corresponding to HEW/FDA Preventive PAG occurs:

$$(uX/Q)'' = \frac{3.9E-9 \times (6A)}{(20 \times (3))} = \underbrace{E}_{1/m^2} (21)$$

B. Determine distance at which HEW/FDA Preventive PAG occurs using (21) and (11) and Figure 10-5 (if d" is greater than 8.0E+4 on Figure 10-5, enter 8.0E+4):

d" = (22) ÷ 1.6E+3 = ____ E ____ (23) *

d" = . E meter (22)

* Record on Table 10-7.

Form 10D Page 3 of 4 EP-10 Page 25 of 36 Revision 2 C. Atmospheric dispersion factor at which iodine deposition corresponding to HEW/FDA Emergency PAG occurs:

 $(u / Q)''' = \frac{3.9E-8 \times (6A)}{20 \times (3)} = \underbrace{E = 1/m^2}_{2}$

D. Determine distance at which HEW/FDA Emergency PAG occurs using 24 and 11 and Figure 10-5 (if d''' is greater than 8.0E+4 on Figure 10-5, enter 8.0E+4):

d''' = . E meter (25)

d''' = 25 + 1.6E+3 = <u>E miles</u> 26 *

E. See Procedure EP-30 for protective action recommendations.

* Record on Table 10-7.

Form 10D Page 4 of 4 EP-10 Page 26 of 36 Revision 2

Date |

Time

ACCIDENT DOSE ASSESSMENT WORK SHEET ATMOSPHERIC RELEASE CALCULATION OF DOSE EQUIVALENT Xe-133 CONCENTRATION

Isotope	C _G Concentration (µCi/cc)	Dose Equivalent Factor	C _G x E
Kr-83m	• E	2.5E-3	. E
Kr-85	<u> </u>	2.2E-3	. E
Kr-85m	<u> </u>	1.6E-1	. E
Kr-87	<u> </u>	7.9E-1	. E
Kr-88	. E	2.0E+0	. E
Kr-89	E	4.2E-1	. E
Kr-90	. E	2.3E+0	. E
Xe-131m	. E	2.0E-2	. E
Xe-133	<u> </u>	4.5E-2	• E
Xe-133m	<u> </u>	4.2E-2	. E
Te-135	. E	2.5E-1	. E
X2-135m	<u> </u>	4.3E-1	. E
Xe-137	. E	1.9E-1	<u> </u>
Xe-138	. E	1.2E+0	<u> </u>
		Su	. E

Dose equivalent Xe-133 concentration:

 $C_{G}' = 22. \times Sum = . E VCi/cc^{[a]}$

[a] This value is to be placed on Line (3A) of DOSE ASSESSMENT FORM 10A.

Form 10E Page 1 of 1 EP-10 Page 27 of 36 Revision 2

-	~	7334		0.
ж	13	RM.		136
	v	777.7	-	05
_				

Date Time

ACCIDENT DOSE ASSESSMENT WORK SHEET ATMOSPHERIC RELEASE CALCULATION OF DOSE EQUIVALENT I-131 CONCENTRATION

Isotope	C _I Concentration (µCi/cc)	K Dose Equivalent Factor	. C _I x K
1-131	<u> </u>	6.0E+6	. E
1-132	. E	7.1E+4	. E
I-133	. E	1.4E+6	. E
I-134	. E	1.9E+4	. E
I-135	. E	2.8E+5	. E
		Su	m = E

Dose equivalent I-131 concentration:

 $C_{I}^{*} = 1.7E-7 \times Sum = _. E \ \mu Ci/cc^{[a]}$

[a] This value is to be placed on Line (3B) of DOSE ASSESSMENT FORM 10A.

Form 10F Page 1 of 1

.

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FORM 10G

				Date
		ACCIDENT DOSE AS	SESSMENT WORK SHEET	
		LIQUI	D RELEASE	Time
	ISOTOPIC LIQU	ID CONCENTRATIONS		
	Detarmine iso If only a group	topic concentrations ss activity estimate	of released liquid by ga can be made, assume that	amma spectrometry. t all activity
	(excluding H-	3; 15 due to 1-151.		-
Ι.	LIQUID EFFLUE	NT RELEASE RATE [a]		. <u>E</u> gpm (1)
.11	ESTIMATED DUR	ATION OF RELEASE [a]		
	(minimum valu	e for continuous rel	ease = 2 hr)	hr ②
v.	TOTAL VOLUME	OF RELEASED LIQUID		
			V = 60. z ① x ② =	. <u>E</u> gal 3
	NUCLIDE PARAM	ETERS	3.8E+3 x ③ =	. <u>E</u> <u>cc</u> ④
			R	
		FEELmann	Doco Frator	
		Concentration	Dose ractor	
	v	Concentration	rem/nr	C - A - P
	Nuclide	(µ01/cc)	UCI/CC	C A X B
	H-3	• E	1.2E-2	• E
	Cr-51	• E	1.6E-2	• E
	Mn-54	• E	7.5E-1	• E
	Ma-56	• E	2.8E+0	• E
	Co-58	• E	3.4E-1	• E
	Co-60	• E	9.7E-1	• E
	Fe-59	• E	2.0E+0	• E
	Zn-65	• E	2.4E+0	• E
	Sr-89	• E	9.5E+1	• E
	Sr-90	· E	7.0E+2	• E
	2r-95	• E	9.4E-1	• E
	Mo-99	• E	2.0E+0	• E
	Ru-103	E	6,8E+0	• E
	Ru=106	E	6-9E+0	- E
	T-131	E	5-2E+2	E
	T-132	F	6- 0E+0	F
	T-132		1 35+2	F
	1-135 T-134		1.55+2	
	1-134		2 45-1	
	1-135	· E	2.4671	
	08-134	• <u>E</u>	2.75+1	
	Cs-13/	·	2. SET1	• •
	8a-140	• <u>E</u>	0.42+0	• <u>E</u>
	Ce-141	• <u>E</u>	9.35-1	·
	Ce-144	• E	0.45+0	
			Si	um = . E (5)

VI. PROJECTED DOSE AT RAINIER WATER INTAKE

D = 9.8E-14 x (4) x (5) = ____ E rem (6)

VII. PROTECTIVE ACTIONS

Implement protective actions if dose 6 exceeds 1.0 rem.

[a] For batch releases delete Items (1) and (2) and enter volume of release in gal for Item (3).

Form 10G Page 1 of 1 EP-10 Page 29 of 36 Revision 2

- C. Measured noble gas concentration in Containment[b]
- Measured iodine concentration in D. Containment[c]
- Iodine release rate E.

$$Q_{I} = \frac{12 \times 10}{(11)} = E Ci/sec (1) *$$

. E

. E

uCi/cc

uCi/cc (2)

F. Enter (13) on Line (6) of Form 10A.

- [b] From Form 10B, Line (7), Form 10E, Form 10A, Line (3A), or Table 10-6. [c] From Form 10B, Line (8A) or (8B), Form 10F, or Table 10-6.
- * Enter on Table 10-7.

Form 10C Page 2 of 2 EP-10 Page 22 of 36 Revision 2

FORM 10H

Date _____

Time

ACCIDENT DOSE ASSESSMENT WORK SHEET ATMOSPHERIC RELEASE CALCULATION OF ALLOWABLE EVACUATION TIME

This form is to be used <u>only</u> at the TSC or at the EOF if the computer is not operational.

I. DATA FROM FORMS 10A AND 10E

A. Projected dose at EAB toward which wind is blowing:

	1) Whole body (Form 10A, Line (21) or Form 10E, Line (4)		E	rem	1
	2) Thyroid (Form 10A, Line 22 or Form 10E, Line 5)		E	rem	2
в.	Atmospheric dispersion factor at EAB (Form 10A, Line (5))		E	1/m ²	3
с.	Distance at which allowed evacuation time is to be calculated. Initial distances to be used = downwind EAB distance (Form 10A, Line (14)), 2.5 and 5.0 miles, if the projected doses at these distances exceed 1.0 rem whole body or 5.0 rem thyroid.	•	E	miles	4
	1.6E+3 x (A) =		E	meters	B
D.	Pasquill stability class (Form 10A, Line (13))				5
E.	Atmospheric dispersion factor at distance (4B) (using (5) and Figure 10-5).		E	1/m ²	6
F.	Wind speed (Form 10A, Line 7) or Form 10E, Line 3)		E	mph	Ø
G.	Estimated duration of release (Form 10A, Line (20) or Form 10E, Line (3)		E	hr	(8)
DOSE	RATES AND INTEGRATED DOSES				
Α.	Dose rate at distance 4: E miles:				
	1. Whole body:				
	$R_{e} = \begin{bmatrix} \textcircled{1} & x & \textcircled{6} \\ \textcircled{8} & x & \textcircled{3} \end{bmatrix} = .$	<u>.</u>	[2]	rem/hr	@ A

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Form 10H Page 1 of 2

II.

2. Thyroid:

	$R_e = \frac{[2 \times 6]}{[8 \times 3]} = \underline{E \text{ rem/hr}}$	@B
в.	Integrated Doses at Distance 4:	
	1. Whole body: D'e = (A) x (8) = E rem	
	D"e = @B x ⑧ = <u>. E rem</u>	(OB)
REQU	UIRED EVACUATION TIME	
Α.	Evacuation Time Required For Distance 4:	
	1. Whole body:	
	Note: Do not evaluate if $(10A)$ dose is less than 1 rea. $t_e = \begin{pmatrix} 4A \\ 7 \end{pmatrix} + \frac{1.0}{(9A)} = \underline{E}$ hrs	(1 1 A)
	Thyroid:	
	Note: Do not evaluate if (10B) dose is less than 5 rem. $t_e = 4A + 5.0$ E = hrs	
в.	Largest value of (1A) and (1B): . E hrs	12
с.	Time from start of release to time at which dose calculation is done $t_d = \underline{t_d} = \underline{t_d} = \underline{t_d}$	13
D.	Remaining evacuation time: $t_r = (12) - (13) = - E hrs$	14
E.	Use time (14) and distance (4A) in Procedure EP-23.1	

E. Use time (14) and distance (4A) in Procedure EP-23.1 to determine offsite protective action recommendations.

Form 10H Page 2 of 2

III.

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Figure 10-2 Containment Dose Rate vs Post-Accident Decay Time

Figure 10-2 Page 1 of 1 EP-10 Page 33 of 36 Revision 2

100mmit 10 9407 6 5 14 4 3 -? 1:1-1 1002 CORE Xe-133 195 104 Á 7 1 ** 5 5 4 ---3 1.4.1 2 1-131 EQUIVALENT CONCENTRATION (µC1/cc) 2 2 104 103 34007 I-131 100% CORE . -6 5 5. 1 4 1 4.1 3 3 2 ---: -7.1111 2 10 0007 6 10 0007 6 -133, 5 4.14 1 ... 5 1001 GAP 1 4 4 3 3 2 2 100% GAP I-131. 10,007 10 100 7 00 6 5 5 4 1.1 11 4 3 3 1= -2 2 10-2 0 111 0 10 100 101 5 6 7 8 HOURS EP-10 1 3 4 12 2 -Page 34 of 36 Revision 2 Figure 10-3 I-131 and Xe-133 Equivalent Concentrations Ranaw Time s and do

Xe-133 EQUIVALENT CONCENTRATION (µC1/cc)

Figure 10-3 Page 1 of 1





1 2

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RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURES

EP-10

SAFETY-RELATED

ACCIDENT DOSE ASSESSMENT WORK SHEET METHOD

APPROVED BY

Hund

DATE 10/29/81

A. Purpose

The purpose of this procedure is to describe the procedures for offsite dose assessment using work sheets. This procedure is to be used <u>only</u> in the following circumstances:

- In the Control Room or Technical Support Center (TSC) before the Emergency Operators Facility (EOF) area dose assessment is activated.
- 2. In the EOF if the dose assessment computer is not operational.
- In the control room and TSC (Sections B., C. and D. only) to record dose assessment information for transmittal to the EOF dose assessment staff.

For dose assessments using the computer, see Procedure EP-29.

B. Initiation of Dose Assessment

An offsite dose assessment will be performed under any of the following emergency conditions:

1. The following PRM readings are exceeded for greater than 15 min:

PRM-1C	(purge mode):	Offscale High	
PRM-1D	(purge mode):	1.8E+2 cpm	
PRM-1E	(purge mode):	[when installed]	
PRM-1D	(pressure relief mode):	6.5E-4 cpm	
PRM-1E	(pressure relief mode):	[when installed]	
PRM-2C:		2.0E+5 cpm	
PRM-2D:		10 x high alarm count rate	

EP-10 Page 1 of 36 Revision 2

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RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURE

EP-29.3

SAFETY-RELATED

USE OF THE INGEST COMPUTER CODE

Pfindt Date 11/2/81 Approved By

A. PURPOSE

To provide a rapid calculation, in the event of an accidental airborne radioactivity release, of whole body and thyroid dose commitments via the ingestion pathways of cow's milk, meat and vegetation, peak nuclide concentrations in each of these food categories, and initial ground depositions at the pathway location.

B. DESCRIPTION OF CODE

The computer code INGEST calculates doses for up to seven isotopes of iodine, strontium and cesium. Doses at up to 10 downwind distances from the Plant (ranging from 0.1 to 50 miles) may be calculated simultaneously.

C. OPERATION OF CODE

1. Input Parameters

After typing in the command "INGEST", which calls and begins execution of the program, an introduction is printed (along with optional instructions), followed by a list of input categories:

L=1, INSTRUCTIONS L=2, ENTER RADIOACTIVITY SOURCE TERMS L=3, ENTER RELEASE DURATION L=4, ENTER DOWNWIND DISTANCE L=5, ENTER WINDSPEED L=6, ENTER ATMOSPHERIC STABILITY DATA L=7, CALCULATE L=8, DATA USED IN LAST CALCULATION L=9, QUIT

The user is then prompted to input the integer associated with the category desired. If the option selected is an input variable, the user is prompted to enter the value of that parameter. Failure of the user to input a numerical parameter causes a default value of zero

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TROJAN NUCLEAR PLANT

PLANT OPERATING MANUAL

RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURES

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* EP-8.4	Technical Support Center Communicator	10/29/81
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* EP-8.7	Instrumentation and Control EOF Team	10/29/81
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* EP-8.9	UDAC Radio Communicator - Deleted	12/12/80
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*Safety Related

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RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURE EP-9

SAFETY-RELATED

OPERATION OF THE OPERATIONAL SUPPORT CENTER

Byundt DATE 10/26/81 APPROVED BY

PURPOSE A .

This procedure describes the activation and subsequent operation of the OPERATIONAL SUPPORT CENTER (OSC) in the event of an Alert, Site Area Emergency or General Emergency. Topics addressed are:

- Functions of the OSC and its interface with other bodies of the onsite 1. emergency organization.
- Activation criteria for both day shift and off-hours. 2.
- Emergency organization personnel assigned to the manning of the OSC; 3. their duties and responsibilities.
- FUNCTIONS OF THE OPERATIONAL SUPPORT CENTER B .

In the event of an emergency, the OSC provides a location where plant emergency teams can assemble to provide the OSC staff operations, maintenance, and chemical and radiation protection assistance to the Shift Supervisor in combatting the emergency.

The OSC is located in the Hagan Rack area at the 93' Elevation of the Control Building (directly behind the Control Room main console) and at the access control area at the 45' Elevation of the Control Building.

- ACTIVATION OF THE OPERATIONAL SUPPORT CENTER C.
 - Time Criteria for Activation of the OSC 1.

On day shift the OSC will be activated within 15 minutes of the declaration of an Alert, Site Area Emergency or General Emergency.

During off-hours the OSC will be activated within 60 minutes of the declaration of a .lert, Site Area Emergency or General Emergency. The OSC will be activated by off-duty personnel as they arrive onsite as determined at the TSC.

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2. OSC Staff

The OSC staff will consist of:

- a. Operations Emergency Team.
- b. Maintenance Emergency Team.
- c. Radiation Protection Emergency Team.
- d. Chemistry Emergency Team.

In the absence of key personnel, an alternate or subordinate will assume the responsibility of the unavailable person.

D. OPERATION OF THE OSC

- 1. Authority, Responsibilities and Duties of the OSC Staff
 - a. Operations Emergency Team.

Authority:

The Operations Emergency Team is directed by the Shift Supervisor and consists of:

- 1) Off-duty Control Room personnel called to the plant.
- 2) Relief crew.

This team will report to the Hagan Rack area.

Responsibilities and Duties:

Provide supplemental and relief support to the Control Room staff.

b. Maintenance Emergency Team.

Authority:

The Maintenance Emergency Team is directed by senior maintenance personnel and reports to the Shift Supervisor. The team consists of:

- 1) Designated electrical personnel.
- 2) Designated mechanical personnel.
- 3) Designated Instrumentation and Control personnel.

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As required, the Maintenance Supervisor may dispatch additional personnel from the EOF to augment this team.

This team will report to the Hagan rack area.

Responsibilities and Duties:

Provide damage control and maintenance support as directed by the Shift Supervisor.

c. Radiation Protection Emergency Team.

Authority:

The Radiation Protection Emergency Team is directly by the Unit Supervisor, Radiation Protection and reports to the Shift Supervisor. The team consists of:

 All personnel assigned to the Radiation Protection section (excluding the Field Team personnel).

This team will initially report to the 45' elevation access control area of the Control Building, with the exception of one member designated by the Radiation Protection Superviso to report to the Hagan Rack OSC as a liason, and one member designated to report to the TSC.

Responsibilities:

The Radiation Protection Emergency Team is responsible for providing radiation protection and first aid inside the Plant.

- Determine existing radiation levels and trends in the Plant and establish aproximate boundaries, warnings and work limits.
- Ensure the radiation safety of all personnel. One team member shall accompany other emergency teams in the affected area, to provide radiological assistance.
- Supervise decontamination of personnel and administers first aid.
- 4) Provide radiation monitoring in the TSC and the Security Building. The team member assigned to the TSC may cover both areas. Direct evacuation of these areas when radiation evacuation criteria are exceeded (see EP-7).

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- 5) The team leader will periodically obtain updates on the status of the emergency from the Control Room.
- d. Chemistry Emergency Team.

Authority:

The Chemistry Emergency Team reports to the Shift Supervisor. The team consists of:

 All C&RF Technicians assigned to the Chemistry section (excluding the Radiation Protection EOF Team personnel).

Responsibilities:

The Chemistry Emergency Team is responsible for providing Plant chemistry functions. The team is also responsible for providing radiation protection functions as a backup to the Radiation Protection Emergency Team.

Duties:

- Provide plant chemistry functions by performing in-Plant sampling and analysis to determine radioactivity levels in Plant effluent and coolant.
- 2) Perform chemical sampling and analysis.
- 3) Provide backup radiation protection to the Radiation Protection Emergency Team. Team members may be dispatched to the EOF to perform field monitoring or surveys, and decontamination of plant personnel.

2. Communications

- a. Communications between the Hagan Rack and Access Control OSCs and other bodies of the onsite emergency organization will be via the communications equipment described in Procedure EP-19.
- b. The leader of the Maintenance Emergency Team will be the communications link in the Hagan Rack OSC with the TSC.
- c. The leader of the Radiation Protection Emergency Team will be the communications link between the Access Control OSC and the TSC, Control Room and Hagan Rack OSC.

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RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURE

EP-6*

SAFETY-RELATED

COMMAND CLASSIFICATION/EMERGENCY COORDINATOR

DATE 11/2/81 APPROVED BY - 11/3/81 APPROVED BY President Nuclear

A. PURPOSE

The purpose of this procedure is to describe the authority, responsibilities and duties of the Emergency Coordinator, as well as his designation and succession of authority.

B. AUTHORITY

- The Emergency Coordinator is the person onsite who is designated to take charge of all emergency control measures. He has ultimate authority over all onsite activities and personnel.
- The <u>Shift Supervisor</u> initially is designated as the Emergency Coordinator until he is relieved onsite by the <u>Plant General Manager</u> (or his alternate). If the Shift Supervisor is not available or is unable to perform his duties, the succession for the authority as Emergency Coordinator is as follows:
 - a. Assistant Shift Supervisor (after July 1, 1982).
 - b. Control Operator.
 - c. Assistant Control Operator.
- 3. The <u>Plant General Manager</u> relieves the Shift Supervisor as Emergency Coordinator upon his notification by the Shift Supervisor and arrival onsite. In the absence of the Plant General Manager, the available senior alternate will assume the role of Emergency Coordinator from the Shift Supervisor. This alternate will continue in this role until the Plant General Manager arrives onsite. On the off-hours shifts, a Duty Plant General Manager is designated to be on call 24 hr a day. The Duty Plant General Manager will be the Plant General Manager or one of his alternates.

*This procedure has been completely rewritten. EP-6 Page 1 of 3 Revision 1

- 4. The Emergency Response Manager (or his alternate) assumes the position of Emergency Coordinator after he arrives at the Plant site from PGE headquarters and is fully informed of the emergency conditions. The Emergency Response Manager will be located in the Emergency Operations Facility (EOF) at the Trojan Visitors Information Center.
- 5. The succession for the authority as Emergency Coordinator is as follows:
 - a. Emergency Response Manager (or alternate).
 - b. Plant General Manager.
 - c. Manager, Operations and Maintenance.
 - d. Manager, Technical Services.
 - e. Shift Supervisor.
- 6. The Emergency Coordinator may not delegate his authority to another member of the Plant Staff or PGE headquarters staff until he is formally relieved, unless he is physically or otherwise unable to exercise his authority. He may, however, delegate some of his duties to subordinates to improve the efficiency of the emergency organization.

C. RESPONSIBILITIES

The Emergency Coordinator is responsible for placing the Plant in a safe shutdown condition, for terminating or minimizing releases of radioactive materials, for protecting Plant personnel and visitors, for assessing incident severity, and the notifying/advising offsite authorities and support groups. During recovery operations, he is responsible for returning the Plant as nearly as possible to a pre-emergency condition.

D. DUTIES

The duties of the Emergency Coordinator are as follows:

- Declaring the appropriate emergency class based on prescribed Emergency Action Levels (EALs).
- Directing, coordinating and supervising the combined activities of PGE personnel in the control room, Emergency Operations Facility (EOF), Technical Support Center (TSC), Operational Support Center (OSC) and elsewhere on the site.
- Approving protective actions recommended by the TSC or EOF to the State and county Emergency Operations Centers (EOCs) and to the U. S. Coast Guard.

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- Final interpretation of any ambiguous Plant emergency data and transmitting subsequent recommendations to emergency teams and to the State and county Emergency Operations Centers (EOCs).
- Directing and coordinating the combined activities of PGE personnel in the Long-Term Emergency Organization in returning the Plant as nearly as possible to its pre-emergency condition.

E. PROCEDURE REFERENCES

- 1. For declaration of emergency classifications, see EP-1.
- 2. For emergency notifications, see EP-5.
- 3. For operation of TSC, see EP-7.
- 4. For operation of EOF, see EP-8.
- 5. For operation of OSC, see EP-9.
- 6. For communications procedures, see EP-19.
- 7. For control room protective action recommendations, see EP-23.
- 8. For Long-Term Emergency Organization operation, see EP-24.
- 9. For TSC/EOF protective action recommendations, see EP-30.

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PRM-6A:	Offscale high
PRM-6B:	6.6E+3 cpm
PRM-6C:	[when installed]

or

2. The following ARM readings are exceeded:

ARM-15A or	-15B:	20 R/hr
ARM-6:		2,000 mR/hr
ARM-20:		20 R/hr

and Containment pressure is > 5 psig for 2 minutes.

- 3. An Alert, Site Area Emergency or General Emergency has been declared and radioactive effluent has been released to the environment through an unmonitored pathway or pathway with a malfunctioning PRM.
- C. Determination of Radioactive Material Release Rates
 - 1. Gaseous Effluent Releases

Radioactive material release rates will be determined as follows, in order of priority:

- a. If the effluent release pathways can be monitored or sampled:
 - If noble gas PRMs (listed in B.1 above) are operational and on scale, use Form 10A to determine the effluent concentrations of noble gases from the PRM readings and applicable calibration factors (Table 10-1).
 - 2) Collect a grab sample of iodine effluent and analyze for gross activity using Procedure 1 of the Sampling and Analysis Plan for Post-Fuel Failure Accident. Enter data on Line 3B of Form 10A.
 - 3) If all noble gas PRMs have malfunctioned or are offscale, determine noble gas concentration in effluent using measured dose rate on sample line as described in Procedure 9 of the Sampling and Analysis Plan for Post-Fuel Failure Accident. Enter data on Line 3A of Form 10A.
 - Calculate the effluent release rates using measured or default effluent stream flow rates (Table 10-2) and Form 10A.

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- b. If the accident is inside Containment and the Containment is isolated:
 - Determine noble gas concentrations in Containment using PRMs listed in B.1 or doserate on sample line as described in 1.a.3), if possible. Enter on Line 3A of Form 10A.
 - Obtain grab sample of iodine effluent and analyze as in 1.a.2), if possible. Enter on Line 3B of Form 10A.
 - 3) If a sample of Containment atmosphere cannot be taken, use Form 10B to estimate radioactive noble gas and iodine concentrations in Containment using Containment ARM (-6, -15A, -15B or -20) readings or gamma dose rate measurements outside Containment (Figures 10-1, 10-2 and 10-3). Enter results on Lines 3A and 3B of Form 10A.
 - Estimate Containment leak rate from recorded Containment pressure using Figure 10-4. Enter this data on Line 4 of Form 10A.
- c. If the accident is inside Containment, the Containment is not isolated and radioactive effluents are being released through an unmonitored pathway (e.g., Containment rupture):
 - Immediately dispatch a C&RP Technician to perform an external dose rate measurement at the site boundary in the downwind direction. Enter the results of this measurement on Line 1 of Form 10C.
 - Obtain noble gas concentration inside Containment via PRM reading or sample line dose rate as described in 1.a.3), if possible. Enter on Line 11 of Form 10C.
 - 3) Obtain iodine concentration inside Containment via analysis of a grab sample as described in 1.a.2), if possible. Enter on Line 12 of Form 10C.
 - 4) If samples cannot be taken, determine Containment noble gas and iodine concentration using Contairment ARM (-6, -15A, -15B or -20) readings as in 1.b.3). Enter on Lines 11 and 12 of Form 10C.
 - Use Form 10C to calculate releases. Enter results on Lines 5 and 6 of Form 10A.
- d. Pispatch Radiation Protection Field Team to perform out-of-plant radiological measurements in the downwind direction (see Emergency Procedure EP-12). Record Field Team data on Table 10-6. Enter on Form 10D if appropriate.

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- e. Collect grab samples of accident effluent (noble gas and iodine) and perform gamma analysis. Enter this data on Forms 10E and 10F.
- 2. Liquid Effluent Releases

Determine liquid effluent release rates by analyzing a grab sample of the liquid effluent and determining the total volume of released liquid as described in Form 10G.

D. Meteorological Data

- 1. Record the following meteorological data or Table 10-6:
 - a. Wind direction at 33 ft (both towards and from which wind is blowing). Backup is wind direction at 200 ft.
 - b. Wind speed at 33 ft (mph). Backup is wind speed at 200 ft.

c. Stability data: primary $\sim \Delta T(200-33)(^{\circ}C)$ backup - $\sigma_{\theta}(^{\circ})$

- 2. Enter these data on Forms 10A, 10C or 10D, as appropriate.
- 3. If ΔT and σ_{θ} instrumentation is not functional, estimate stability class using wind speed and Table 10-5.
- If wind speed and/or wind direction instrumentation is not functional, estimate using instrumentation mounted on wind generator tower at the VIC (EOF).
- Follow procedures on Form 10A, 10C and 10D to obtain atmospheric dispersion factors.
- E. Dose Calculations
 - 1. Control Room
 - a. If the EOF or the TSC are operational, do not proceed with dose calculations. Communicate the information on Table 10-6 and Forms 10E and 10F (if available) to the TSC. Update about every 15 minu es.
 - b. If neither the EOF or the TSC is operational:
 - Proceed with dose calculations utilizing Forms 10A or 10D as appropriate.

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- 2) Record results on Table 10-7.
- 3) See Procedure EP-19 for communications instructions.
- See Procedure EP-5 for notification instructions.
- See Procedure EP-23 for control room protective action recommendation instructions.
- 2. Technical Support Center
 - a. If the EOF Dose Assessment Area is operational, <u>do not proceed</u> with dose calculations. Communicate the information on Table 10-6 and Forms 10E and 10F (if available) to the dose assessment staff. Update about every 15 minutes.
 - b. If the EOF Dose Assessment Area is not operational:
 - Proceed with dose calculations using Forms 10A or 10E as appropriate.
 - 2) Record results on Table 10-7.
 - 3) See Procedure EP-19 for communications instructions.
 - 4) See Procedure EP-5 for notification instructions.
 - See Procedure EP-30 for protective action recommendation instructions.

3. EOF Dose Acsessment Area

- a. If the computer is operational, use Procedure EP-29 for dose calculations.
- b. If the computer is not operational:
 - Proceed with dose calculations using Forms 10A or 10D as appropriate.
 - 2) Calculate required evaucation times using Form 10H.
 - 3) Record results on Table 8-2 of Procedure EP-8.
 - 4) See Procedure EP-19 for communications instructions.
 - See Procedure EP-30 for protective action recommendation instructions.

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RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURE

EP-17

TABLE 17-2

First Aid Supplies

In

Radiation Protection Office and Visitors Information Center

Radiation Protection Office

- A. One Oxygen administrator with a spare cylinder and spare mask/bag assemblies.
- B. One BP200 Burn Pac Mini Kit.
- C. Stretcher.
 - 1. A collapsible-type stretcher.
 - 2. Two body splints.

D. Splints.

- 1. Prefolded cardboard splints.
- 2. Inflatable splints (currently on hand).
- 3. Two pillows.

E. Technician's Jump Kit (with additional quantities kept in stock).

- 1. Medi-Kit No. 2 Case.
- 2. Three cervical collars (one large, one medium, one small).
- 3. Medical scissors (one pair).
- 4. Stethescope.
- 5. Blood pressure cuff and sphygmomanometer.
- 6. Penlight with spare batteries.
- 7. A ring cutter.
- 8. Two styrofoam cups.
- 9. Sterile aluminum foil or plastic wrap.

Table 17-2 Page 1 of 2 EP-17 Page 6 of 10 Revision 3

- 10. Four cold packs.
- 11. One pair of forceps (5-1/2 inch).
- 12. Triangular bandages (6).
- 13. Kling roller gauze (4 rolls of 2-inch, 4 rolls of 3-inch).
- 14. Two multitrauma dressings.
- 15. Adhesive bandages (various sizes).
- 16. Adhesive tape (2 rolls of 1-inch, 2 rolls of 1/2-inch).
- 17. Two-inch by two-inch gauze pads (12)
- 18. Four-inch by four-inch gauze pads (12).
- 19. One KCD Blanket.
- 20. A poison antidote kit.
- 21. A bottle of standard saline solution.
- 22. Eye patches (6 oval).
- 23. Antiseptic soap solution.
- 24. One elastic bandage.
- 25. Oral thermometer (disposable-type preferred).
- 26. Alcohol preps (10).
- 27. Emergency report forms.
- 28. First Aid Manual.

ECC Maintenance Room Cabinet VIC

- 1. Four KCD yellow disposable blankets.
- 2. Six large multi-purpose dressings and gauze tails.
- 3. Four gauze compresses 24-in. x 72-in.
- 4. Six 4-in. bancige compresses.
- 5. Four 2-in. bandage compress.
- 6. Eight triangular bandages.
- 7. six rolls Kling gauze bandages.

Table 17-2 Page 2 of 2 EP-17 Page 7 of 10 Revision 3

RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURE

EP-17

TABLE 17-3

Scott Air Pak Locations

Location	Quantity
Visitors Information Center	2
Chlorine Building	2
Control Room	5
Mainterance Tool Room	4
45' Auxiliary Building Control Access Point	4
Control Building Train Bay	2

Standby Bottles

Location	Quantity
Visitors Information Center	2
Control Room	8
Maintenance Tool Room	20

NOTE: These quantities are maximum numbers and may vary due to maintenance, repairs or testing. The Visitors Information Center, Chlorine Building, Control Room, and 45-Foot Auxiliary Building Control Access Point quantities should be maintained.

Table 17-3 Page 1 of 1

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- b. In the case of nonradiological injuries, unless the injury is severe and requires highly specialized treatment, the injured will be taken to the closest available hospital.
- c. Good Samaritan Hospital & Medical Center, Portland, Oregon.

In the event of a radiological accident, Good Samaritan Hospital and Medical Center will be the primary provider of medical care.

d. St. Vincent Hospital & Medical Center, Portland, Oregon.

St. Vincent Hospital and Medical Center will serve as the backup hospital. Patients will be transported there only after it is determined that Good Samaritan Hospital is unable to handle all of the patients requiring treatment.

e. Columbia District Hospital, St. Helens, Oregon.

Columbia District Hospital shall be utilized only as a first stop facility to give life support measures that the EMT's are unable to provide or continue to provide during the transport of the patient from the plant to the Good Samaritan Hospital facilities.

f. Hanford Environmental Health Foundation Hospital, Richland, Washington.

Radiation victims requiring extensive external or internal decontamination and/or a shielded facility for medical care will be transferred from Good Samaritan or St. Vincent Hospital to the Emergency Decc tamination Center at the Hanford Environmental Health Foundation Hospital as soor as practical.

E. THYROID BLOCKING

Guidelines and instructions for Potassium Iodide (KI) administration are contained in EP-14.

EP-17 Page 4 of 10 Revision 3

MQH

TABLE 17-1

FIRST-AID EQUIPMENT LOCATIONS

Administration Building

Stokes Stretcher - East side, outside

Demineralizer Building

Stokes Stretcher - East wall behind electrical panels

Turbine Building

Stokes Stretcher - Elevation 45-ft by equipment elevator Stokes Stretcher - Elevation 69-ft by East door of switchgear room Stokes Stretcher - Elevation 93-ft north of door to Control Building.

Control Building

Stokes Stretcher - Elevation 45-ft by elevator lobby Stokes Stretcher - Elevation 61-ft by elevator lobby Stokes Stretcher - Elevation 77-ft in elevator lobby Stokes Stretcher - Elevation 93-ft in elevator lobby Trauma Kit - Elevation 93-ft behind electrical distribution panel First Aid Kit - Elevation 93-ft in Shift Supervisor's office Trauma Kit - Elevation 45-ft in Radiation Protection Office First Aid Kit - Elevation 45-ft in Radiation Protection Office

Auxiliary Building

Stokes Stretcher - Elevation 45-ft by elevator Stokes Stretcher - Elevation 61-ft by elevator Stokes Stretcher - Elevation 77-ft by elevator Stokes Stretcher - Elevation 93-ft by elevator with hoisting straps Trauma Kit - Elevation 93-ft by elevator Trauma Kit - Elevation 25-ft on stairwell landing Scoop Stretcher - Elevation 45-ft by elevator, with Stokes Stretcher

Fuel Building

Stokes Stretcher - Elevation 93-ft by waste compactor room, with hoist'ng straps

Maintenance Building

First Aid Kit - In Maintenance shop by door going into office area Trauma Kit - South/East corner of mechanical shop

Visitors Information Center

Trauma Kit - Maintenance Room cabinet.

Table 17-1 Page 1 of 1 EP-17 Page 5 of 10 Revision 3

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RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURE

EP-14

SAFETY-RELATED

POTASSIUM IODIDE (KI) ADMINISTRATION

APPROVED BY

Cofundt DATE 11/5/81

A. PURPOSE

This procedure provides guidelines and instructions for the administration of Potassium Iodide (KI) to plant employees (including field monitoring teams) for use as a thyroid blocking agent to provide protection against airborne radioiodine.

B. LOCATION OF KI SUPPLIES

KI tablets are store in the following locations (see EP-15 for quantities).

- 1. Operational Support Center (Hagan Rack Area).
- 2. Technical Support Center.
- Visitors Information Center (EOF) Maintenance Room cabinet.
- 4. Visitors Information Center (EOF) Field Kit.
- 5. St. Helens District Office (alternate EOF).
- 6. Security Building.

KI is stored in bottles of ten 130 mg tables. Ten tables constitute one unit or one adult dosage for 10 days. Procedure EP-15 lists the number of units stored in each location.

C. PROCEDURE FOR ADMINISTRATION

- KI tables are to be taken by personnel in the Control Room, CAS, Operational Support Centers, Technical Support Center, EOF, and Security building when measured radioiodine concentrations in air exceed 1.4 x 10⁻⁷ uCi/cc (15 MPC) see note 1 (10CFR20, Table I, Column I).
- 2. KI shall be carried with the Radiation Protection Field Team and taken if measured airborne iodine concentration exceeds 1.4 x 10^{-7} µCi/cc (15 MPC).

EP-14 Page 1 of 4 Revision 2 KI shall be taken by all in-plant personnel before entering areas where the airborne iodine concentration exceeds 1.4 x 10⁻⁷ µCi/cc (15 MPC).

NOTE 1: The MPC (40 hours exposure) for Iodine-131 in air is 9 x 10⁻⁹ uCi/ml.

- 4. As directed by the Radiation Protection Supervisor, in-plant personnel shall use respirators in addition to KI for thyroid protection.
- When taking KI tablets, follow the directions in Appendix A. Take one tablet per day until otherwise directed by the Radiation Protection Supervisor.

D. MAINTENANCE OF KI SUPPLIES

KI tablets have a shelf life of approximately three (3) years*, see Appendix B. The Radiation Protection Supervisor is responsible for maintaining the inventories of KI as described in Paragraph B and replacing tablets whose shelf life has been exceeded.

*Recent FDA action has extended the shelf life to three (3) years.

EP-14 Page 2 of C Revision 2 Palient Package insert For

Appendix A

THYRO-BLOCK"

(POTASSIUM ICDIDE) (pronounced poe-TASS-e-um EYE-on-dyed) (appreviated: KI) TABLETS and SOLUTION U.S.P

TAKE POTASSIUM IODIDE ONLY WHEN PUBLIC HEALTH OFFICIALS TELL YOU. IN A RADIATION EMERGENCY. RADIOACTIVE IODINE COULD BE RELEASED INTO THE AIR POTASSIUM IODIDE (A FORM OF IODINE) CAN HELP PROTECT YOU.

IF YOU ARE TOLD TO TAKE THIS MEDICINE. TAKE IT ONE TIME EVERY 24 HOURS. DO NOT TAKE IT MORE OFTEN. MORE WILL NOT HELP YOU AND MAY IN-CREASE THE RISK OF SIDE EFFECTS. DO NOT TAKE THIS DRUG IF YOU KNOW YOU ARE ALLERGIC TO IODIDE. (SEE SIDE EFFECTS BELOW.)

INDICATIONS

THYROID BLOCKING IN A RADIATION EMERGENCY ONLY.

DIRECTIONS FOR USE

Use only as directed by State or local public neulth authorities in the event of a radiation emergency.

"ubiets:

DOSE ADULTS AND CHILDREN I YEAR OF AGE OR OLDER: One (1) tablet once a day. Crush for small children. BABIES UNDER I YEAR OF AGE: One-hulf (1/2) tablet once a day. Crush first.

Solution:

ADULTS AND CHILDREN I YEAR OF AGE OR OLDER: Add 6 drops to onehalf glass of liquid and drink each day. BABIES UNDER 1 YEAR OF AGE: Add 3 drops to s small amount of liquid once a day.

For all dusage (orms: Take for 10 days unless directed otherwise by State or local public health authorities.

Store at controlled room temperature between 15° and 30°C (59° to 86°F). Keep container tightly closed and protect from light. Do not use the solution if it appears brownish in the nozzle of the bottle.

WARNING

Potassium iodide should not be used by people allergic to iodide. Keep out of the reach of children. In case of overdose or allergic suction, contact a physician or the public health authority.

DESCRIPTION

Each THYRO-BLOCKTM TABLET contains 130 mg of putassium iodide

Each drop of THYRO-BLOCKTM SOLUTION contains 21 mg of polysawin iodide.

HOW POTASSIUM IODIDE WORKS

3

Certain I ms of iodine help your thyroid gland work right. Most people g the iodine they need from loods, like iodized salt or fish. The tayroid can "store" or hold only a certain amount of iodine.

In a radiation emergency, radioactive iodine may be released in the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it. The damage would probably not show itself for years. Children are most likely to have thyroid damage.

If you take potassium iodide, it will fill-up your thyroid giand. This reduces the chance that harmful radioactive iodine will enter the thyroid giand.

WHO SHOULD NOT TAKE POTASSIUM IODIDE

The only people who should not take potassium iodide are people who know they are allergic to iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or antichyroid drug). Pregnant and nursing women and bables and children may also take this drug.

HOW AND WHEN TO TAKE POTASSIUM IODIDE

Potassium lodide should be taken as soon as possible after public health officials tell you. You should take one does every 24 hours. More will not help you because the thyroid can "hold" only limited amounts of iodine. Larger doese will increase the risk of side effects. You will probably be told not to take the drug for more than 10 days.

SIDE EFFECTS

Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful not to take more than the recommended dose or take it for longer than you are told. Side effects are unlikely because of the low dose and the short time you will be taking the drug.

Possible side effects include skin rashes, swelling of the salivary glands, and "iodism" (metallic tasts, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes stomach upset and diarrhee).

A few people have an allergic reaction with more serious symptoms. These could be fever and joint pains, or swelling of parts of the face and body and at times severe shortness of breath requiring immediate medical attention.

Taking iodide may rarely cause overactivity of the thyroid gland, underactivity of the thyroid gland, or enlargement of the thyroid gland igniter).

WHAT TO DO IF SIDE EFFECTS OCCUR

If the side effects are severe or if you have an allergic reaction, stop taking potassium iodide. Then, if possible, call a doctor or public health authority for instructions.

HOW SUPPLIED

THYRO-BLOCKTM TABLETS (Potassium lodide, U.S.P.) botties of 14 tablets (NDC 0037-0472-20.) Each white, round, secred tablet contains 130 mg potassium iodide.

THYRO-BLOCKTM SOLUTION (Potassium lodide Solution. U.S.P.) 30 mi(1 fl. oz.) light-resistant, measured-drop dispensing units (NDC 0037-4287-25). Each drop contains 21 mg potassium iodide.

WALLACE LABORATORIES

Division of CARTER-WALLACE. INC. Cranbury, New Jersey 08512

CW-107915-10/79

Issue 10/79

Appendix A Page 1 of 1 EP-14 Page 3 of 4 Revision 2 1. inte

DIST: JSH, HS, RA, EF, RDS, JVS, DD, KB, JIB, LEB, LH, AKM, RL, RK, RF, EV

DEPARTMENT OF HEALTH & HUMAN SI RVICES

Public Health Service

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FGULATORY AFFAIRS

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NDA 18-307/S-002

APR 1 5 1981

Wallace Laboratories Division of Carter-Wallace, Inc. Attention: Mr. H. B. Zimmerman Cranbury, New Jersey 02512

Gentlemen:

Reference is made to your communication dated March 12, 1981 regarding your supplemental new drug application of July 10, 1980 submitted pursuant to section 505(b) of the Federal Food, Drug, and Cosmetic Act for Thyro-Block Tablets (Potassium Iodide Tablets, U.S.P.).

Reference is also made to our letter to you dated December 1, 1980.

The supplemental application provides for an increase from the presently approved two years expiration period to four years for the tablet dosage form.

We have reviewed the information submitted in your March 12, 1981 letter and have the following comments:

- a) Your communication fails to address the three deficiencies specified in our December 1, 1980 letter.
- b) The penultimate paragraph of your Narch 12, 1981 transmittal letter takes issue with our request for individual tablet assay results to be submitted to this supplement, stating that this is not a compendial requirement and, accordingly you did not submit this requested information.

The approved specifications for this drug product do not require individual tablet assay results in the controls. Our December 1, 1980 request was for a one-time submission so that the Bureau's Biometrics Section could, together with your responses to the other two items, statistically evaluate the stability assays.

 c) We note that your March 12, 1981 amendment does not contain extensions of the graphs as had been submitted in your initial supplemental application.

We are allowing, however, the extension of the drug product's expiration date from two years to three years and shall consider further extension after we have received the evaluation from our Biometrics Section of the data you have submitted. Whatever additional stability data you wish to submit toward such an extension will be considered in this evaluation.

Appendix B Page 1 of 1 EP-14 Page 4 of 4 Revision 2

UPDATED MAINTAINED BY COPY HOL .

DATE 10/28/81

RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURE

EP-17

SAFETY-RELATED

MEDICAL

APPROVED BY

CP Jundk

PURPOSE A .

> The purpose of this procedure is to letail the treatment of injured personnel during a radiological emergency.

AUTHORITY AND RESPONSIBILITY B .

The Radiation Protection Supervsior reports to the Manager, Technical Services at the Technical Support Center (TSC). The Radiation Protection Supervisor has the authority to direct the treatment and/or decontamination of injured personnel onsite. His responsibilities include:

- Providing Cardiopulmonary Resuscitation (CPR) and first aid training 1. to appropriate C&RP personnel.
- Maintaining first aid supplies in designated places. 2.

The Radiation Protection Emergency Team is trained in first aid and is responsible for first aid inside the plant.

PERSONNEL INJURY C.

> Personnel injured onsite will have immediate first aid administered to them by trained C&RP technicians. For those injuries which require further, more complete medical attention or are of such a serious nature as to require a doctor's care, ambulance service to a nearby medical facility offsite will be provided.

- First Aid 1.
 - Radiological accidents at the Trojan site may involve injury, a. overexposure or contamination of plant personnel. In this event, it will be necessary to:
 - 1) Provide first aid and transportation to the hospital.
 - 2) Prevent or minimize the spread of contamination.

EP-17 Page 1 of 10 Revision 3

- Protect the health and safety of onsite personnel and offsite assistance persons.
- b. Any injury or overexposure will be reported to the Control Room, and the Shift Supervisor will notify the Radiation Protection Supervisor. The following actions will be taken by the Radiation Protection Emergency Team:
 - 1) Provide first aid to injured individuals.
 - Survey the patient to determine the extent and location of contamination or direct radiation being emitted from the patient.
 - Decontaminate the injured person as much as possible using standard methods.
 - Determine exposure, remove all dosimetry devices for processing and replace as appropriate.
 - 5) If needed, notify the Control Room and the Security Watch Supervisor of the need for an ambulance and the door to which the ambulance should be dispatched. Prepare the patient for ambulance transportation.
 - 6) A Radiation Protection Emergency Team member will accompany the patient to the hospital and remain at the hospital to provide radiological services to hospital personnel.
- c. Injured personnel in-plant should be taken to the Radiation Protection Office on the 45-foot level of the Control Building for treatment. If out-of-plant or if during a plant evacuation, all injured personnel should be taken to the VIC/EOF.
- d. A list of first aid equipment locations is in Table 17-1. Table 17-2 is a list of first aid supplies in the Radiation Protection office and in the EOF. Table 17-3 is a list of Scott Air Pak locations.

2. Transportation

- a. If it is necessary to transport the injured person by ambulance to the hospital, the Security Watch Supervisor will take the following action:
 - Contact Rainier Ambulance and request them to dispatch an ambulance to the site.

EP=17 Page 2 of 10 Revision 3

- Arrange to have the ambulance escorted to the proper door for injured personnel pickup.
- 3) Instruct the ambulance driver that the patient is to be taken along prearranged routes (see RERP Figures 2:6.5-1 or 2:6.5-2) to: (figures attached).
 - a) The Emergency Department at Good Samaritan Hospital,
 - b) The West entrance (Physical Therapy Unit) at St. Vincent Hospital, or
 - c) Columbia District Hospital (for interim treatment only).
 - NOTE: St. Vincent Hospital should be used only in the event Good Samaritan Hospital is not available.
- 3) Notify the hospital to which the injured is to be taken.
 - a) Describe the extent and type of injury and provide available radiological information.
 - b) Estimate the approximate ambulance arrival time.
- 4) Notify the designated Health Physicist to proceed to the hospital to advise and consult with the hospital medical personnel concerning radiation exposures.

D. OFFSITE FACILITIES

- 1. Ambulance Services
 - a. Primary: Rainier Ambulance.
 - b. Alternate: St. Helens Fire Department Ambulance.
- 2. Hospitals
 - a. All personnel who might have exceeded 25-rem whole body dose or five times the maximum permissible radionuclide body burden shall be transported to a radiation care facility (i.e., Good Samaritan or St. Vincent Hospitals) for surveillance. Dose estimates shall be made by PGE personnel using, as applicable, pocket dosimeters, TLD film badges, survey instruments, urinalysis and whole body counts. The PGE Medical Advisor shall recommend the extent of medical surveillance.

EP-17 Page 3 of 10 Revision 3

UPDATED

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RADIOLOGICAL EMERGENCY RESPONSE PLAN IMPLEMENTING PROCEDURE

EP-11

SAFETY-RELATED

ONSITE RADIOLOGICAL SURVEYS

APPROVED BY

Ryendt

DATE 10/28/81

A. PURPOSE

This procedure details procedures for evaluating onsite radiological contamination of large or unknown quantities using both installed and por able equipment. The Radiation Protection Supervisor will designate Survey Team personnel and provide guidelines for conducting onsite radiological surveys.

B. AUTHORITY AND RESPONSIBILITY

Emergency Coordinator

The Emergency Coordinator is the person onsite who is designated to take charge of the emergency control measures. He has the ultimate authority over all onsite activities and personnel.

C. EQUIPMENT

1. Fixed Monitoring Systems

a. Area Radiation Monitoring System (ARMS).

- This system is provided to supplement the personnel and area radiation monitoring provisions of the plant radiation protection program.
- For locations and alarm setpoints see Section III of the Radiation Protection Manual.
- b. Process and Effluent Radiological Monitoring System (PRMS).
 - The Process and Effluent Radiological Monitoring System provides the means for monitoring the Containment atmosphere, the ventilation exhaust from spaces containing components for recirculation of radioactiv fluids, and all other gaseous and liquid effluent paths by which radionuclides may be released to the environment.
 - For locations and alarm setpoints see Section II of the Radiation Protection Manual.

EP-11 Page 1 of 2 Revision 1 c. Portal Monitors.

5.

- Personnel leaving the controlled access area or the site resticted area must pass through the portal radiation monitors or frisk manually. When exiting controlled area, monitor your body and any equipment per Radiation Protection procedures. If contamination is found, see EP-13.
- For locations and alarm setpoints see Section III of the Radiation Protection Manual.

2. Portable Instruction

a. Radiation Instruments.

These instruments are itemized in Section III of the Radiation Protection Manual including types of radiation detected, levels, accuracy of each instrument, and use.

- b. Air Monitoring Instruments.
 - Constant Air Monitors are used to monitor a continuous sample of air from an area.
 - Air samplers used to draw an air sample through a filter paper to remove particulates and a charcoal or silver zeolite cartridge to remove halogen radioactivity.
 - For operation and use of these instruments, see the Radiation Protection procedures and Emergency Procedure EP-12.

D. SURVEY TEAM ORGANIZATION

The Onsite Survey Team wil consist of two Chemistry and Radiation Protection Technicians initially. More can be added as the need arises.

E. SURVEY TEAM PROCEDURES

1. During the initial reentries following an accident, radiation and airborne radioactivity levels may be much greater than normal.

Prior to entries, collect as much data as possible from the fixed monitoring systems (ARMS, PERMS, etc.). Expected entry path and destination may be available via the Fixed Monitoring System.

2. Record survey data on routine department survey forms.

EP-11 Page 2 of 2 Revision 1

MQH