CALLAWAY PLANT

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EIP-ZZ-01211

INITIAL AND INTERMEDIATE DOSE ASSESSMENT

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DATE ISSUED 2-2-84

This procedure contains the following:

Pages	1	through	6
Attachments	1	through	9
Appendices		through	
Checklist		through	

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DEFICIENCY LIST

Section	Deficiency Description	Constraints
Attachment 2, Containment High Range Monitors	Recalculate conversion factor upon calibration	None
Attachment 3	Change flow rates following fan testing	None
Attachment 7	Justification for stability class determination using wind deviation not available.	None

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INITIAL AND INTERMEDIATE DOSE ASSESSMENT

1.0 PURPOSE AND SCOPE

This procedure provides the means for projecting off-site exposures prior to or during a release of radioactive material. It is intended as a backup to the Radioactive Release Information System.

2.0 RESPONSIBILITIES

2.1 ON-SHIFT HEALTH PHYSICS COORDINATOR (RAD-CHEM FOREMAN) Initiates this procedure upon notification of an emergency which involves or may involve an off-site release of radioactive material.

2.2 DOSE ASSESSMENT COORDINATOR (TSC) Assumes responsibility form the Rad-Chem Foreman upon activation of the TSC.

2.3 DOSE ASSESSMENT COORDINATOR (EOF) Assumes responsibility from the Dose Assessment Coordinator (TSC) upon activation of the EOF.

3.0 INITIATING CONDITIONS

3.1 This procedure shall be implemented upon declaration of an emergency which involves or may involve the release of radioactive material to the environment.

4.0 PROCEDURE

The HP coordinator or Dose Assessment Coordinator shall perform the following:

4.1 RELEASE RATE DETERMINATION

4.1.1 Request the Rad Chem Coordinator to assign a Rad Chem technician to the Control Room to provide readings from the following monitors or indicators, as applicable:

GT-RE-10B Radwaste Vent
GT-RE-21B Unit Vent
AB-RE-11 Steam Effluent Monitor
AB-RE-112 Steam Effluent Monitor
AB-RE-113 Steam Effluent Monitor
AB-RE-114 Steam Effluent Monitor
FC-RE-385 Aux. Feedwater Turbine Discharge Monitor
GT-RE-59 Containment High Range Monitor
GT-RE-60 Containment High Range Monitor
Vent Fan Status

4.1.2 Request the technician to provide additional data from the BOP computer room as follows:

Wind Speed
Wind Direction
Delta T

4.1.3 Ensure the technician provides updates when conditions change or every 15 minutes.

4.1.4 Enter monitor data on Attachment 1, Control Room Summary.

4.1.5 Place an X in the "ON" column of Attachment 1, Fan Status for each fan presently operating.

NOTE If fan status is unknown, use normal flow from Attachment 3.

4.1.6 Record met data on Attachment 1.

4.1.7 Determine Stability Class from Delta T by circling the column with the given Delta T and Stability Class letter designator.

NOTE If Delta T is unavailable, Stability class may be determined from the secondary met tower using wind deviation (sigma theta) per Attachment 7, Stability Class Determination.

4.1.8 Transfer appropriate data from Attachment 1 to Attachment 2, Release Rate Determination.

NOTE Attachment 2 applies to all accident types except an unmonitored Main Steam Line Break which requires the use of Attachment 6, Dose Assessment from Known Isotopic Mix (Section 4.3.).

4.1.9 If required, determine flow rate from Attachment 3, Fan Status, or obtain flow rates from Technical Assessment Coordinator.

4.1.10 Complete calculations on Attachment 2 to obtain Release Rate in Curies per second.

4.2 DOSE ASSESSMENT FROM RELEASE RATE

4.2.1 Enter release rate (Ci/s) from Attachment 2 on Attachment 4, Dose Assessment from Release Rate Worksheet.

4.2.2 Circle the entire column below Stability Class.

4.2.3 Enter windspeed in meters per second from Attachment 1.

NOTE m/s = km/hr X 0.28
m/s = mph X 0.44

4.2.4 Obtain whole body and thyroid dose conversion factors from Attachment 5, Conversion Factors.

4.2.5 Obtain an approximate release duration from the Technical Assessment Coordinator.

4.2.6 Perform the calculations required for EAB only.

4.2.7 Compare dose rates or projected dose to Attachment 9, Protective Action Recommendations and EAL's.

4.2.8 Inform the HP Coordinator of any changes in EAL's or PAR's required.

4.2.9 Complete calculations for other distances, revaluating PAR's.

4.3 DOSE ASSESSMENT FROM KNOWN ISOTOPIC MIX

4.3.1 Obtain isotopic data from PASS analysis or grab samples.

4.3.2 Enter isotopic data on Attachment 4, Dose Assessment from Known Isotopic Mix.

4.3.3 Enter flow rate from Attachment 3, Fan Status.

4.3.4 Complete the necessary calculations for EAB only.

4.3.5 Compare results to Attachment 9, Protective Action Recommendations and EAL's.

4.3.6 Inform the HPC of any changes in EAL's or PAR's required.

4.3.7 Complete calculations for other distances, revaluating PAR's.

4.4 PLUME TRACKING

4.4.1 Determine the length of the plume using the table of travel times, Attachment 8.

4.4.2 Determine the affected sector as the sector containing the plume centerline.

4.4.3 Draw the plume centerline in red on the Field Monitoring Map.

4.4.4 Outline the affected sector in blue, reflecting the length of the plume.

4.4.5 Update the map on a regular basis (preferably every 15 minutes).

4.5 STATUS BOARD UPKEEP

4.5.1 Ensure the Status Board Keeper updates the Dose Assessment Status board with the latest projections.

4.5.2 Ensure the time of entry is included with all data on status board.

4.5.3 Review Status Boards regularly for correctness and timeliness.

4.5.4 Ensure latest information is transmitted to the Status Board Keeper in the other Dose Assessment facility.

5.0 FINAL CONDITIONS

5.1 The emergency has been closed out or the recovery phase has been declared.

5.2 Complete all necessary records and forms according to this procedure and EIP-ZZ-00250.

6.0 RECORDS

6.1 QA Records

6.1.1 Attachment 1 Control Room Summary

6.1.2 Attachment 2 Release Rate Determination

6.1.3 Attachment 3 Fan Status

6.1.4 Attachment 4 Dose Assessment from Release Rate

6.1.5 Attachment 6 Dose Assessment Based on Isotopic Mix

7.0 REFERENCES

7.1 USNRC Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the purposes of Evaluating Compliance with 10CFG50, Appendix I, Revision 1, October 1977."

7.2 USNRC Regulatory Guide 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants, Revision 1."

7.3 SNUPPS, Final Safety Analysis Report. Chapters 2, 7, 11, 15 and 15A.

8.0 ATTACHMENTS

8.1 Attachment 1 Control Room Summary

8.2 Attachment 2 Release Rate Determination

8.3 Attachment 3 Fan Status

| 8.4 Attachment 4 Dose Assessment from Release Rate

8.5 Attachment 5 Conversion Factors

8.6 Attachment 6 Dose Assessment Based on Isotopic Mix

8.7 Attachment 7 Stability Class Determination

| 8.8 Attachment 8 Plume Travel Time

| 8.9 Attachment 9 Protective Action Recommendations and EAL's

CONTROL ROOM SUMMARY
(DAC COPY)

TIME: _____

AFFECTED MONITOR	READING	UNITS

FAN STATUS
INDICATOR LIGHTS

INDICATOR	ON
CGL03A	
CGL03B	
CGG02A	
CGG02B	
CGT01	
CGT02	

INDICATOR	ON	INDICATOR	ON
CGF03A		CGH01A	
CGF03B		CGH01B	
CGK02A			
CGK02B			
CGE01A			
CGE01B			

Obtain flow rates from Attachment 3

MET DATA
(BOP COMPUTER ROOM)

Wind Direction _____°(From) Windspeed (10m) = _____m/sec (u)
(See Attachment 8)

Delta T (90m - 10m) _____°C/80m

Delta T in °C/80m [circle appropriate column]

<-1.50	-1.50 to -1.35	-1.35 to -1.20	-1.20 to -0.40	-0.40 to 1.20	1.20 to 3.20	>3.20

Stability Class

A B C D E F G

Completed By: _____ Date: _____

CONTROL ROOM SUMMARY
(TECHNICIAN COPY)

TIME: _____

	AFFECTED MONITOR	READING	UNITS
GT-RE-10B GT-RE-21B AB-RE-111 AB-RE-112 AB-RE-113 AB-RE-114 FC-RE-385 GT-RE-59 GT-RE-60	_____ _____	_____ _____	_____ _____

FAN STATUS

OBTAIN THE FOLLOWING FAN INDICATORS FROM MAIN CONTROL BOARD PANEL RL020:

INDICATOR	ON
CGL03A	
CGL03B	
CGG02A	
CGG02B	
CGT01	
CGT02	

OBTAIN THE FOLLOWING FAN INDICATORS FROM PANEL RP068 (BEHIND MAIN CONTROL BOARD)

INDICATOR	ON	INDICATOR	ON
CGF03A		CGH01A	
CGF03B		CGH01B	
CGK02A			
CGK02B			
CGE01A			
CGE01B			

MET DATA
(BOP COMPUTER ROOM)

Wind Direction _____°(From) Windspeed (10m) = _____m/sec

Delta T (90m - 10m) _____°C/80m

Report all data to Dose Assessment Coordinator.

Completed By: _____ Date: _____

TIME: _____
PROJECTION NO: _____

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RELEASE RATE DETERMINATION
WIDE RANGE GAS MONITORS

MONITOR	READING	FLOW[1] RATE (CFM)		NOBLE GAS RELEASE RATE		I/NG[2]	IODINE RELEASE RATE
GT-RE-10B or GT-RE-21B	_____ uCi/sec	x 1	x 1.0E-6 =	_____ Ci/s	x	_____ =	_____ Ci/s
	_____ uCi/cc	x _____	x 4.7E-4 =	_____ Ci/s	x	_____ =	_____ Ci/s

[1] Obtain flow rate from Attachment 3

[2] See I/NG Table, Page 2

ATMOSPHERIC RELEASE VALVE MONITORS

MONITOR	READING	FLOW[3] RATE lb/hr		CF[4]		NOBLE GAS RELEASE RATE		ICF[5]	IODINE RELEASE RATE
(circle 1) AB-RE-111, 112,113,114, FC-RE-385	_____ mr/hr	x _____	x	_____	x 1.0E-8 =	_____ Ci/s	x	_____ =	_____ Ci/s

[3] Normal release rate, PORV = 5.1E5 lb/hr
for Safeties, obtain flow rate from Pressure Table, Page 2.
Technical Assessment Coordinator can provide pressures from ERFIS.

[4] Conversion from lb to ft^3, from Pressure Table, Page 2.

[5] Iodine conversion factor, Page 2

*CONTAINMENT HIGH RANGE MONITORS

MONITOR	READING	LEAK[6] RATE (CFM)		CF		NOBLE GAS RELEASE RATE		ICF[5]	IODINE RELEASE RATE
GT-RE-59 or GT-RE-60	_____ R/hr	x _____	x	7.1E-7 =		_____ Ci/s	x	_____ =	_____ Ci/s

[5] Iodine conversion factor, Page 2

[6] Containment leak rate (containment isolated) = 3.5 CFM

Obtain more accurate data from Technical Assessment Coordinator.

Completed By _____ Date _____

CONVERSION FACTORS

[2] IODINE/ NOBLE GAS RATIO	ACCIDENT TYPE	[5] IODINE CONVERSION FACTOR (ICF)
5.9E-4	Fuel Handling (Fuel Building)	5.9E-4
5.7E-3	Fuel Handling (RX Building)	5.7E-3
5.6E-3	CVCS Letdown Line	5.6E-3
7.2E-5	Waste Gas Decay Tank	7.2E-5
1.9E-4	Liquid Radwaste Tank	1.9E-4
4.1E-1	Rod Cluster Control Assembly	2.9E-1
6.5E-3	Locked Rotor	6.5E-3
5.8E-2	Loss of Coolant	5.3E-2
1.0E+0	Primary Evap. Bottoms Tank	1.0E+0
6.0E-1	Steam Generator Tube Rupture	3.8E-1
4.1E+0	Main Steam Line Break	8.0E-1

Use the above conversion factors unless more accurate data is available.

PRESSURE TABLE

PRESSURE (psig)	NUMBER OF SAFETIES OPEN	[3] TOTAL FLOW (lb/hr)	[4] CONVERSION FACTOR (ft^3/lb)
1000	0	0	4.6E-1
1100	0	0	4.1E-1
1185	1	7.9E5	3.7E-1
1197	2	1.6E6	3.6E-1
1210	3	2.4E6	3.6E-1
1222	4	3.2E6	3.6E-1
1234	5	4.0E6	3.5E-1

Time: _____
Projection No. _____

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FAN STATUS

VENTILATION EXHAUST SYSTEM	EXHAUST FAN INDICATOR LIGHTS	ON (X)	*DESIGN RATED FLOW (CFM)	NORMAL FLOW	FUEL BLDG. ISOLATION	AUX. BLDG. ISOLATION	CONTAINMENT PURGE
Auxiliary Bldg./ Fuel Handling Bldg. Normal Exhaust - Fast	CGL03A		32,000	32,000	13,000 (Slow Speed)	Shutdown	32,000
	CGL03B		32,000				
Fuel Handling Bldg. Emergency Exhaust	CGG02A		9,000	Shutdown	9,000	9,000	Shutdown
	CGG02B		9,000				
Main Steam Enclosure Bldg. Exhaust	CGF03A		23,000	23,000	23,000	23,000	23,000
	CGF03B		23,000				
Access Control Exhaust	CGK02A		6,000	6,000	6,000	6,000	6,000
	CGK02B		6,000				
Condenser Air Removal Filtration	CGE01A		1,000	1,000	1,000	1,000	1,000
	CGE01B		1,000				
Containment Shutdown Purge Exhaust	CGT01		20,000	Shutdown	Shutdown	Shutdown	20,000
Containment Mini Purge Exhaust	CGT02		4,000	4,000	4,000	4,000	Shutdown
Total Station Vent Flow				66,000	56,000	43,000	82,000
Radwaste Bldg. Exhaust	CGH-01A		12,000	12,000	12,000	12,000	12,000
	CGH-01B		12,000				

NOTE: DESIGN RATED FLOWS from FSAR.

Completed By _____ Date _____

TIME _____ PROJECTION NO. _____

DOSE ASSESSMENT FROM RELEASE RATE

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NOTE:
For a quick analysis, compare results below with Attachment 9, Protective Action Recommendations and EAL's

	Stability Class (circle column) A	B	C	D	E	F	G												
				$\chi u/Q$				Wind Speed (m/s)		X/Q		Release* Rate (Ci/s)		Conversion** Factor		Dose Rate Thyroid (mR/hr)	Dose Rate Whole Body (mR/hr)	Release Duration (hrs)	Projected Dose Thyroid (mR)	Projected Dose Whole Body (mR)
EAB	2.0E-6	1.1E-5	3.2E-5	1.1E-4	2.1E-4	4.9E-4	1.4E-3	____	=	____ x ____	(NG)		x	_____	=		_____ x	_____	=	_____ @ EAB
									=	____ x ____	(I)		x	_____	=	_____ @ EAB		x _____	=	_____ @ EAB
Distance 2 mi	5.4E-7	9.0E-7	5.9E-6	2.3E-5	4.0E-5	1.1E-4	2.7E-4	____	=	____ x ____	(NG)		x	_____	=		_____ x	_____	=	_____ @ 2 mi
									=	____ x ____	(I)		x	_____	=	_____ @ 2 mi		x _____	=	_____ @ 2 mi
5 mi	2.5E-7	3.2E-7	1.3E-6	5.9E-6	1.3E-5	3.2E-5	8.1E-5	____	=	____ x ____	(NG)		x	_____	=		_____ x	_____	=	_____ @ 5 mi
									=	____ x ____	(I)		x	_____	=	_____ @ 5 mi		x _____	=	_____ @ 5 mi
10 mi	1.6E-7	1.9E-7	4.5E-6	8.6E-7	5.4E-6	1.4E-5	3.7E-5	____	=	____ x ____	(NG)		x	_____	=		_____ x	_____	=	_____ @ 10 mi
									=	____ x ____	(I)		x	_____	=	_____ @ 10 mi		x _____	=	_____ @ 10 mi

* Release rate is determined using Attachment 2, Release Rate Determination.
**Conversion factors determined by accident type from Attachment 5.

Completed By _____ Date _____

CONVERSION FACTORS $\frac{\text{mr-m}^3}{\text{Ci-hr}}$

ACCIDENT TYPE	WHOLE BODY (All Isotopes)	THYROID (Iodine Only)
Loss of Coolant	4.9E5	3.5E8
Rod Cluster Control Assembly Ejection	6.9E5	3.9E8
Fuel Handling Accident Reactor Building	3.4E4	1.8E9
Fuel Handling Accident Fuel Building	3.3E4	1.7E9
Steam Generator Tube Rupture	4.2E5	6.6E8
Waste Gas Decay Tank Rupture	3.4E4	1.6E9
Locked Rotor Accident	4.6E5	4.2E8
Liquid Radwaste Tank Rupture	3.6E4	1.5E9
Primary Evap Bottoms Tank Failure	9.3E5	1.6E9
CVCS Letdown Line Rupture	1.6E5	6.8E8
Main Steam Break	6.8E5	7.0E8

TIME_____ PROJECTION NO. _____

DOSE ASSESSMENT BASED ON ISOTOPIC MIX

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WHOLE BODY DOSE FACTORS

	uCi/cc			
KR-85m	_____	x	63	= _____
KR-87	_____	x	319	= _____
KR-88	_____	x	791	= _____
KR-89	_____	x	893	= _____
Xe-133	_____	x	16	= _____
Xe-135m	_____	x	168	= _____
Xe-135	_____	x	97	= _____
Xe-137	_____	x	76	= _____
Xe-138	_____	x	475	= _____
I-131	_____	x	146	= _____
I-132	_____	x	846	= _____
I-133	_____	x	2632	= _____
I-134	_____	x	893	= _____
I-135	_____	x	705	= _____
			TOTAL	= _____ x _____ = _____

FLOW* RATE (CFM) | WHOLE BODY RELEASE FACTOR $\frac{mr\text{-}m^3}{hr\text{-}sec}$

THYROID DOSE FACTORS

	uCi/cc			
I-131	_____	x	8.74E5	= _____
I-132	_____	x	1.04E4	= _____
I-133	_____	x	2.07E5	= _____
I-134	_____	x	2.73E3	= _____
I-135	_____	x	4.26E4	= _____

FLOW* RATE (CFM) | Iodine Release Factor** $\frac{mr\text{-}m^3}{hr\text{-}sec}$

TOTAL = _____ x _____ = _____

NOTE:
For a quick analysis, compare results below with Attachment 9, Protective Action Recommendations and EAL's

Stability Class (circle column)

	A	B	C	D	E	F	G	Wind Speed (m/s)	X/Q	Whole Body Release Factor	Iodine Release Factor	Dose Rate Thyroid (mR/hr)	Dose Rate Whole Body (mR/hr)	Release Duration (hrs)	Projected Dose Thyroid (mR)	Projected Dose Whole Body (mR)
				Xu/Q												
EAB	2.0E-6	1.1E-5	3.2E-5	1.1E-4	2.1E-4	4.9E-4	1.4E-3	____ =	____ x ____	(NG)	=	____ x	____ x	____ =		____ @ EAB
								= ____			x ____ (I) =	____ @ EAB		x ____ =	____ @ EAB	
Distance 2 mi	5.4E-7	9.0E-7	5.9E-6	2.3E-5	4.0E-5	1.1E-4	2.7E-4	____ =	____ x ____	(NG)	=	____ x	____ x	____ =		____ @ 2 mi
								= ____			x ____ (I) =	____ @ 2 mi		x ____ =	____ @ 2 mi	
5 mi	2.5E-7	3.2E-7	1.3E-6	5.9E-6	1.3E-5	3.2E-5	8.1E-5	____ =	____ x ____	(NG)	=	____ x	____ x	____ =		____ @ 5 mi
								= ____			x ____ (I) =	____ @ 5 mi		x ____ =	____ @ 5 mi	
10 mi	1.6E-7	1.9E-7	4.5E-6	8.6E-7	5.4E-6	1.4E-5	3.7E-5	____ =	____ x ____	(NG)	=	____ x	____ x	____ =		____ @ 10 mi
								= ____			x ____ (I) =	____ @ 10 mi		x ____ =	____ @ 10 mi	

* Flow rate is determined using Attachment 3, Fan Status.
** If sample taken is liquid, multiply above factor by 0.01 (Iodine partition factor).

Completed By: _____ Date: _____

STABILITY CLASS DETERMINATION

*DETERMINATION OF PASQUILL STABILITY CLASS USING WIND DEVIATION

STABILITY CLASS	WIND DEVIATION - SIGMA THETA (DEGREES)
A - Extremely Unstable	SIGMA THETA ≥ 22.5
B - Moderately Unstable	22.5 > SIGMA THETA ≥ 17.5
C - Slightly Unstable	17.5 > SIGMA THETA ≥ 12.5
D - Neutral	12.5 > SIGMA THETA ≥ 7.5
E - Slightly Stable	7.5 > SIGMA THETA ≥ 3.8
F - Moderately Stable	3.8 > SIGMA THETA ≥ 2.1
G - Extremely Stable	2.1 > SIGMA THETA

$\bar{Xu}$ S-m/s

Q VALUES m^3

STABILITY CLASS

DISTANCE	A	B	C	D	E	F	G
EAB	2.0 E-6	1.2 E-5	3.2 E-5	1.1 E-4	2.1 E-4	5.0 E-4	1.1 E-3
1 Mile	1.1 E-6	7.2 E-6	2.1 E-5	8.1 E-5	1.4 E-4	3.4 E-4	8.6 E-4
2 Miles	5.4 E-7	9.0 E-7	5.9 E-6	2.3 E-5	4.0 E-5	1.1 E-4	2.7 E-4
3 Miles	4.0 E-7	5.0 E-7	2.8 E-6	1.2 E-5	2.4 E-5	5.9 E-5	1.4 E-4
4 Miles	3.2 E-7	4.0 E-7	1.8 E-6	8.1 E-6	1.5 E-5	4.0 E-5	1.0 E-4
5 Miles	2.5 E-7	3.2 E-7	1.3 E-6	5.9 E-6	1.3 E-5	3.2 E-5	8.1 E-5
6 Miles	2.1 E-7	2.7 E-7	9.9 E-7	4.4 E-6	9.9 E-6	2.4 E-5	6.3 E-5
7 Miles	1.9 E-7	2.3 E-7	8.1 E-7	3.7 E-6	8.6 E-6	2.2 E-5	5.4 E-5
8 Miles	1.8 E-7	2.1 E-7	6.3 E-7	3.3 E-6	7.2 E-6	1.9 E-5	4.5 E-5
9 Miles	1.7 E-7	2.1 E-7	5.4 E-7	2.7 E-6	6.8 E-6	1.6 E-5	4.2 E-5
10 Miles	1.6 E-7	1.9 E-7	4.5 E-7	2.2 E-6	5.4 E-6	1.4 E-5	3.7 E-5
12 Miles	1.2 E-7	1.4 E-7	3.1 E-7	1.9 E-6	4.3 E-6	1.2 E-5	2.9 E-5
15 Miles	1.1 E-7	1.3 E-7	2.2 E-7	1.2 E-6	3.1 E-6	8.6 E-6	2.2 E-5

To obtain X/Q, divide above by the windspeed in m/s.

PLUME TRAVEL TIME

TRAVEL TIME (Hours)

WIND SPEED (m/s)	DISTANCE (Miles)												
	EAB	1	2	3	4	5	6	7	8	9	10	12	15
0.5	0.7	0.9	1.8	2.7	3.6	4.5	5.5	6.4	7.3	8.2	9.1	11.0	13.6
1.0	0.3	0.4	0.9	1.3	1.7	2.2	2.7	3.6	3.6	4.0	4.4	5.3	6.7
2.0	0.2	0.2	0.4	0.7	0.9	1.1	1.3	1.8	1.8	2.0	2.2	2.7	3.3
4.0	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0	1.1	1.3	1.7
6.0	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.9	1.1
8.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.8
10.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.7
12.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.6
14.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.5
16.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4
18.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
20.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
30.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2

DOSE RATE @ EAB WHOLE BODY (mR/hr)	DOSE RATE @ EAB THYROID (mR/hr)	PROJECTED DOSE TO POPULATION WHOLE BODY mR	PROJECTED DOSE TO POPULATION THYROID mR	E.A.L. EIP-ZZ-00101	PROTECTIVE ACTION RECOMMENDATIONS EIP-ZZ-00212
0.05	0.25			6.A. (UE)	
0.5	2.5			6.B. (A)	
50	250			6.C. (SE)	
500	2500			6.C. (SE)	
		1,000	5,000	6.F. (SE)	Shelter 2 mile
1000	5000			6.D. (GE)	Radius, 5 miles downwind
		1,000 to 5,000	5,000 to 25,000		Shelter, evacuate if practical
		>5,000	>25,000		Mandatory evacuation

NOTE: This attachment to be used as a guide only.
Refer to appropriate procedures for additional clarification.