Table 14.8-1

CHARACTERISTICS OF NUCLEAR EXCURSIONS
WATER-MODERATED OXIDE CORES

Range	Reactivity Insertion Rate ($/sec)	Minimum Period (ms)	Peak Energy Density (cal/gm)	Principal Shutdown Mechanisms
Low	<2.5	>4	<120	Doppler Effect Moderator Effects
Medium	2-25	7-2	100-425	Doppler Effect
High	>20	<3	>380	Doppler Effect Core Disassembly

Table 14.8-2

DOSE COMPUTATIONAL METHODS WIND DIRECTION PERSISTENCE

		Frequency of Duration in Hours (One Sector - 22 1/2°)					Longest No. Hours** in any Direction	
Station	Direction*	50%	10%	1%	0.1%	Longest No. Hours		
Augusta, Georgia	W	2	3	8	13	18	W	18
Birmingham, Alabama	S	2	4	9	16	16	SSE	20
Chicago, Illinois	SSW	2	5	12	21	22	NSE	25
Little Rock, Arkansas	SSW	2	4	9	17	28	SSE	28
Phoenix, Arizona	E	2	3	6	9	12	E	12
Rochester, New York	WSW	2	6	13	23	28	WSW	28
Salt Lake City, Utah	SSE	2	4	7	13	15	S	17
San Diego, California	NW	2	6	12	16	17	WSW	33
Tampa, Florida	ENE	2	3	7	13	14	SSW	18
Yakima, Washington	W	2	5	8	14	17	WNW	19

*Direction examined is the one showing greatest frequency of persistent winds.

**Longest number of hours observed may not be same direction as direction showing most frequency of persistent winds.

Table 14.8-3

METEOROLOGY APPLICABLE TO DESIGN BASIS ACCIDENTS

Time After Accident	Diffusion Conditions Investigated		Wind Variance During Indicated Time Period	Breathing Rate M^3/sec
	Stability Category*	σ_θ u		
0-8 hrs	VS-1, MS-1, N-1, N-5, U-1, U-5	0.1 for $\bar{u}$ = 1.0 1.0 for $\bar{u}$ = 5.0	None (centerline concentration)	3.47×10^{-4}
8-24 hrs	VS-1, MS-1 N-1, N-5 U-1, U-5	0.1 for $\bar{u}$ = 1.0 1.0 for $\bar{u}$ = 5.0	None (centerline concentration)	1.75×10^{-4}
>24 hrs	VS-1, MS-1 N-1, N-5 U-1, U-5	0.1 for $\bar{u}$ = 1.0 1.0 for $\bar{u}$ = 5.0	Wind assumed to blow in 22.5° sector 1/4 of the time	2.32×10^{-4}

*VS denotes very stable meteorological conditions.

MS - moderately stable, N-neutral, and U - unstable meteorological conditions. 1 and 5 denotes wind speed in meters/second.

Table 14.8-4

CALCULATED AIR CONCENTRATION FOR 183 METER RELEASE HEIGHT

Distance (meters)	Activity of Interest	VS-1	(Curie-sec/m^3/curie released) Meteorological Conditions MS-1	N-1	N-5	U-1	U-5
1,400	Noble Gases	0	5.3×10^{-18}	2.1×10^{-7}	2.3×10^{-9}	4.0×10^{-6}	4.3×10^{-7}
	Halogens	0	5.3×10^{-18}	2.1×10^{-7}	2.3×10^{-9}	3.9×10^{-6}	4.2×10^{-7}
3,000	Noble Gases	0	4.2×10^{-12}	1.7×10^{-6}	1.5×10^{-7}	1.9×10^{-6}	2.9×10^{-7}
	Halogens	0	4.2×10^{-12}	1.7×10^{-6}	1.5×10^{-7}	1.9×10^{-6}	2.8×10^{-7}
8,000	Noble Gases	1.8×10^{-36}	1.4×10^{-8}	9.8×10^{-7}	1.7×10^{-7}	4.7×10^{-7}	8.4×10^{-8}
	Halogens	1.8×10^{-36}	1.4×10^{-8}	9.4×10^{-7}	1.6×10^{-7}	4.4×10^{-7}	7.9×10^{-8}
16,000	Noble Gases	1.9×10^{-22}	1.3×10^{-7}	4.1×10^{-7}	8.2×10^{-8}	1.7×10^{-7}	3.2×10^{-8}
	Halogens	1.9×10^{-22}	1.3×10^{-7}	3.9×10^{-7}	7.6×10^{-8}	1.6×10^{-7}	2.9×10^{-8}

Symbols refer to stability and wind speed, i.e., VS, MS, N, U, means very stable, moderately stable, neutral and unstable respectively and 1 and 5 means 1 meter/sec and 5 meters/sec, respectively. The diffusion parameter $\Delta \varnothing$ u assumed is 0.1 radian-meter/sec for the 1 meter/sec cases and 1.0 radian-meter/sec for the 5 meter/sec cases.

Table 14.8-5

CALCULATED AIR CONCENTRATION FOR 183 METER RELEASE HEIGHT

Distance (meters)	Activity of Interest	VS-1	(Curie-sec/m^3/curie released) Meteorological Conditions MS-1	N-1	N-5	U-1	U-5
1,400	Noble Gases	3.9×10^{-5}	7.2×10^{-5}	3.9×10^{-5}	1.1×10^{-5}	7.5×10^{-6}	2.0×10^{-6}
	Halogens	3.7×10^{-5}	7.0×10^{-5}	3.7×10^{-5}	1.1×10^{-5}	6.9×10^{-6}	1.8×10^{-6}
3,000	Noble Gases	1.1×10^{-5}	4.2×10^{-5}	1.1×10^{-5}	3.5×10^{-6}	1.9×10^{-6}	5.2×10^{-7}
	Halogens	1.0×10^{-5}	3.8×10^{-5}	1.0×10^{-5}	3.1×10^{-6}	1.7×10^{-6}	4.6×10^{-7}
8,000	Noble Gases	2.1×10^{-6}	1.5×10^{-5}	2.1×10^{-6}	6.5×10^{-7}	3.3×10^{-7}	8.9×10^{-8}
	Halogens	1.8×10^{-6}	1.2×10^{-5}	1.8×10^{-6}	5.6×10^{-7}	2.9×10^{-7}	7.5×10^{-8}
16,000	Noble Gases	6.2×10^{-7}	6.8×10^{-6}	6.2×10^{-7}	1.9×10^{-7}	9.6×10^{-8}	2.5×10^{-8}
	Halogens	5.2×10^{-7}	4.7×10^{-6}	5.2×10^{-7}	1.6×10^{-7}	8.0×10^{-8}	2.0×10^{-8}

Symbols refer to stability and wind speed, i.e., VS, MS, N, U, means very stable, moderately stable, neutral and stable respectively and 1 and 5 means 1 meter/sec and 5 meters/sec, respectively. The diffusion parameter Δ 8,45 u assumed is 0.1 radian-meter/sec for the 1 meter/sec cases and 1.0 radian-meter/sec for the 5 meter/sec cases.

Table 14.8-6

THYROID DOSE CONVERSION FACTORS

Isotope	Effective 1/2 Life (Days)	f_a	E (Mev/dis)	C'_i Rad/ curie inhaled)
I-131	$7.6 \times 10^{\circ}$	2.3×10^{-1}	2.3×10^{-1}	1.48×10^{6}
I-132	9.7×10^{-2}	2.3×10^{-1}	6.5×10^{-1}	5.65×10^{4}
I-133	8.7×10^{-1}	2.3×10^{-1}	5.4×10^{-1}	4.21×10^{5}
I-134	3.6×10^{-2}	2.3×10^{-1}	8.2×10^{-1}	2.64×10^{4}
I-135	2.8×10^{-1}	2.3×10^{-1}	5.2×10^{-1}	1.30×10^{5}