APPENDIX F

EVACUATION TIME ESTIMATES
for the
James A. FitzPatrick/Nine Mile Point
Emergency Planning Zone
(NUREG 0654 II.J.8, II.J.10a,m)

The Evacuation Time Estimates (ETEs) for the James A. FitzPatrick/Nine Mile Point Emergency Planning Zone, August 2003, prepared by KLD Associates Inc. have been submitted under separate cover but is considered to be incorporated as part of this document by reference. Additionally, the requirements of NUREG 0654 II.J.10a, for maps of evacuation routes are included within the context of the ETEs.

6. DEMAND ESTIMATION FOR EVACUATION SCENARIOS

An evacuation "case" defines the combination: Evacuation Region and Evacuation Scenario. The definitions of "Region" and "Scenario" are as follows:

Region — A grouping of contiguous evacuation ERPAs, that forms a "keyhole" sector-based area, or circular area within the EPZ, that must be evacuated in response to a radiological emergency.

Scenario — A combination of circumstances, including time of day, day of week, season, and weather conditions. Scenarios define the members of, and response times for the affected population groups.

A total of 51 Evacuation Regions were defined which encompass all the groupings of ERPA considered. These Regions are defined in Table 6-1. The ERPA configurations are identified in Figure 6-1. Each keyhole sector-based area consists of a central circle centered at the Nine Mile Point/JA Fitzpatrick Nuclear Facility (NMP), and three adjoining sectors, each with a central angle of 22.5 degrees. These sectors extend to a distance of 5 miles from NMP (Regions R4 to R27), or 10 miles (Regions R28 to R51). The azimuth of the center sector defines the orientation of these Regions.

A total of 14 Scenarios were evaluated for all Regions (714 cases). Table 6-2 is a description of all Scenarios.

Each combination of evacuation region and accident scenario implies a specific population to be evacuated. Table 6-3 presents the percentage of each population group assumed to evacuate with each scenario. Table 6-4 presents the actual population and vehicle counts for each scenario that were used for the simulation.

Table 6-1. Definition of Evacuation Regions					
Region	ERPAs in Region		Region	ERPAs in Region	
R1	1,2,3,26,27	2 mile			
R2	1-6,9-12,26,27	5 mile			
R3	1-29	Full EPZ			
	Evacuation to 5 Miles	Wind From		Evacuation to EPZ Boundary	Wind From
R4	1-3,26,27	214 to 222	R28	1-3,14,26,27,29	214 to 222
R5	1-3,26,27	223 to 233	R29	1-3,14,26,27,29	223 to 233
R6	1-3,7,26,27	234 to 240	R30	1-3,7,14,15,26,27,29	234 to 240
R7	1-4,7,26,27	241 to 254	R31	1-3,4,7,14,15,26,27,29	241 to 254
R8	1-4,7,26,27	255 to 262	R32	1-3,4,7,14-17,26,27,29	255 to 262
R9	1-4,7,9,26,27	263 to 278	R33	1-3,4,7-9,14-17,26,27,29	263 to 278
R10	1-5,7,9,26,27	279 to 292	R34	1-5,7-9,14-18,26,27,29	279 to 292
R11	1-5,7,9,10,26,27	293 to 305	R35	1-5,7-10,14-18,26,27,29	293 to 305
R12	1-5,7,9,10,26,27	306 to 311	R36	1-5,7-10,14-20,26,27,29	306 to 311
R13	1-5,7,9,10,26,27	312 to 332	R37	1-5,7-10,14-20,26,27	312 to 332
R14	1-5,9-11,26,27	333 to 340	R38	1-5,8-11,15-21,25-27	333 to 340
R15	1-5,9-11,26,27	341 to 349	R39	1-5,8-11,17-21,24-27	341 to 349
R16	1-3,5,6,9-11,26,27	350 to 356	R40	1-3,5,6,8-13,18-22,24-27	350 to 356
R17	1-3,5,6,9-11,26,27	357 to 12	R41	1-3,5,6,9-13,18-27	357 to 12
R18	1-3,5,6,10,11,26,27	13 to 20	R42	1-3,5,6,10-13,18-27	13 to 20
R19	1-3,5,6,10,11,26,27	21 to 51	R43	1-3,5,6,10-13,19-28	21 to 51
R20	1-3,5,6,11,26,27	52 to 56	R44	1-3,5,6,11-13,19-24,26-28	52 to 56
R21	1-3,5,6,11,26,27	57 to 61	R45	1-3,5,6,11-13,19,21-24,26-28	57 to 61
R22	1-3,6,11,26,27	62 to 70	R46	1-3,6,11-13,19,21-24,26-28	62 to 70
R23	1-3,6,26,27	71 to 89	R47	1-3,6,12,13,21-24,26-28	71 to 89

R24	1-3,6,26,27	90 to 95	**R48**	1-3,6,26-28	90 to 95
R25	1-3,26,27	96 to 114	**R49**	1-3,26-28	96 to 114
R26	1-3,26,27	115 to 146	**R50**	1-3,26-28	115 to 146
R27	1-3,26,27	147 to 213	**R51**	1-3,26-29	147 to 213

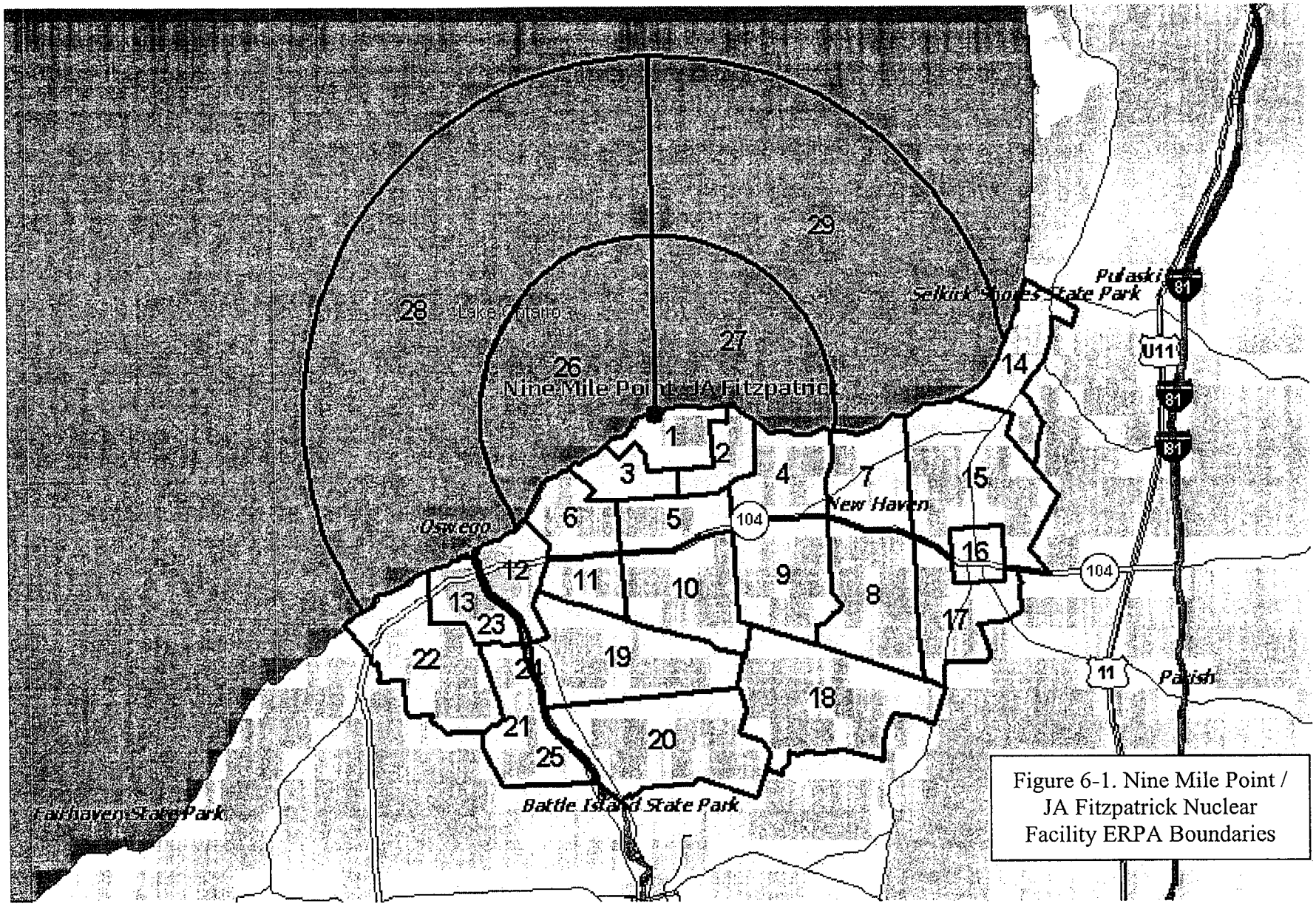

Figure 6-1. Nine Mile Point / JA Fitzpatrick Nuclear Facility ERPA Boundaries

Table 6-2. Evacuation Scenario Definitions

Scenario	Season	Day of Week	Time of Day	Weather	Special Events	Comments
1	Summer	Midweek	Midday	Good	None	Residents are at home or at work; employees are at 100% of mid-week work force; 50% of peak transient population is present; schools are not in session.
2	Summer	Midweek	Midday	Rain	None	As above. Sudden rain occurs.
3	Summer	Weekend	Midday	Good	None	Most residents are based at home; employees are at 40% of mid-week work force; 100% of transient population is present; schools are not in session.
4	Summer	Weekend	Midday	Rain	None	As above. Sudden rain occurs
5	Summer	Midweek, Weekend	Evening	Good	None	Residents are at home; employees (including shift workers) are at 10% of mid- week peak; 30% of transient population is present.
6	Winter	Midweek	Midday	Good	None	Residents are at home or at work; employees are at 100% of mid-week work force; 40% of peak transient population is present; schools are in session.
7	Winter	Midweek	Midday	Rain	None	As above. Sudden rain occurs
8	Winter	Midweek	Midday	Snow	None	As above. Snow is present requiring driveway clearance.
9	Winter	Weekend	Midday	Good	None	Most residents are based at home; employees are at 40% of mid-week work force; 40% of peak transient population is present; schools are not in session.
10	Winter	Weekend	Midday	Rain	None	As above. Sudden rain occurs
11	Winter	Weekend	Midday	Snow	None	As above. Snow is present requiring driveway clearance.
12	Winter	Midweek, Weekend	Evening	Good	None	Residents are at home; employees (including shift workers) are at 9% of mid- week peak; 20% of transient population is present.
13	Summer	Weekend	Midday	Good	Classic Weekend	As Scenario 3 with additional special event population
14	Summer	Midweek	Midday	Good	Harborfest	As Scenario 1 with additional special event population

Table 6-3. Percent of Population Groups for Various Scenarios

Scenarios	Residents	Employees	Transients	Shadow	Special Events	School Buses	Transit Buses	External Through Traffic
1	100%	100%	50%	40%	0%	30%	100%	100%
2	100%	100%	50%	40%	0%	30%	100%	100%
3	100%	40%	100%	34%	0%	0%	100%	100%
4	100%	40%	100%	34%	0%	0%	100%	100%
5	100%	25%	30%	33%	0%	0%	100%	60%
6	100%	100%	40%	40%	0%	100%	100%	100%
7	100%	100%	40%	40%	0%	100%	100%	100%
8	100%	100%	40%	40%	0%	100%	100%	100%
9	100%	40%	40%	34%	0%	30%	100%	100%
10	100%	40%	40%	34%	0%	30%	100%	100%
11	100%	40%	40%	34%	0%	30%	100%	100%
12	100%	25%	20%	33%	0%	0%	100%	60%
13	100%	40%	100%	34%	50%	0%	100%	100%
14	100%	25%	100%	33%	100%	0%	100%	100%

Residents Households of EPZ residents

Employees EPZ employees who live outside of the EPZ.

Transients People who are in the EPZ at the time of an accident for recreational or other (non-employment) purposes.

Shadow Residents and employees in the shadow region (outside of the EPZ) who will spontaneously decide to relocate during the evacuation. The basis for the values shown is a 30% relocation of shadow residents along with a proportional percentage of shadow employees. The percentage of shadow employees is computed using the scenario-specific ratio of EPZ employees to residents.

Special Events Additional vehicles in the Oswego area associated with a Classic Weekend and Harborfest.

School and Transit Buses Vehicle-equivalents present on the road during evacuation servicing schools and transit-dependent people.

External Through Traffic Traffic on local highways and major arterial roads at the start of the evacuation. This traffic is stopped by access control at about 1:00 after the evacuation begins.

Table 6-4. Vehicle Estimates for
Various Combinations of Regions and Scenarios

Scenarios	Residents	Employees	Transients	Shadow	Special Events	School Buses	Transit Buses	External Traffic	Total Scenario Vehicles
1	19,014	7,066	1,662	3,303	-	92	253	5,508	36,995
2	19,014	7,066	1,662	3,303	-	92	253	5,508	36,995
3	19,014	2,826	3,324	2,810	-	-	253	5,508	33,735
4	19,014	2,826	3,324	2,810	-	-	253	5,508	33,735
5	19,014	1,767	997	2,686	-	-	253	3,305	28,022
6	19,014	7,066	1,330	3,303	-	306	253	5,508	36,877
7	19,014	7,066	1,330	3,303	-	306	253	5,508	36,877
8	19,014	7,066	1,330	3,303	-	306	253	5,508	36,877
9	19,014	2,826	1,330	2,810	-	92	253	5,508	31,833
10	19,014	2,826	1,330	2,810	-	92	253	5,508	31,833
11	19,014	2,826	1,330	2,810	-	92	253	5,508	31,833
12	19,014	1,767	665	2,686	-	-	253	3,305	27,690
13	19,014	2,826	3,324	2,810	6,100	-	253	5,508	39,835
14	19,014	1,767	3,324	2,686	12,200	-	253	5,508	44,752

Residents *Households of EPZ residents*

Employees EPZ employees who live outside of the EPZ.

Transients People who are in the EPZ at the time of an accident for recreational or other (non-employment) purposes.

Shadow Residents and employees in the shadow region (outside of the EPZ) who will spontaneously decide to relocate during the evacuation. The basis for the values shown is a 30% relocation of shadow residents along with a proportional percentage of shadow employees. The percentage of shadow employees is computed using the scenario-specific ratio of EPZ employees to residents.

Special Events Additional vehicles in the Oswego area associated with a Classic Weekend and Harborfest.

School and Transit Buses Vehicle-equivalents present on the road during evacuation servicing schools and transit-dependent people. The numbers shown are double the actual number of buses on the road since the data presented is in units of vehicle-equivalents (1bus = 2 autos) We conservatively place some school buses on the road during the summer, midweek period and the winter, weekend period

External Through Traffic Traffic on local highways and major arterial roads at the start of the evacuation. This traffic is stopped by access control at about 1:00 after the evacuation begins.

7. GENERAL POPULATION EVACUATION TIME ESTIMATES (ETE)

This section presents the current results of the computer analyses using the IDYNEV System. These results cover the 51 Evacuation Regions within NMP EPZ and the 14 Evacuation Scenarios, discussed in Section 6.

The ETE for each Evacuation Case are presented in Tables 7-1A through 7-1D. These tables present the estimated time to clear the indicated population percentages from the Evacuation Regions. These tabulated values of ETE are obtained by interpolating from PCDYNEV output, which are generated at 30-minute intervals, then rounded to the nearest 5 minutes. Exhibit 1 is a sample use of these tables.

We define "voluntary evacuees" as people who live in ERPAs within the EPZ, for which an Order to Evacuate has not been issued, yet who nevertheless, elect to evacuate. We define "shadow movement" as the movement of people from areas ***outside*** the EPZ for whom no protective action recommendation has been issued. Both voluntary evacuation and shadow movement are assumed to take place over the same time frame as the evacuation from within the assigned Evacuation Region.

The ETE for NMP addresses the issue of voluntary evacuees in the manner shown in Figure 7-1. Within the circle defined by the furthest radial extent of the Evacuation Region, 50 percent of the population in ERPAs outside the Evacuation Region who are not advised to evacuate, are assumed to do so. Within the annual ring extending from the radial extent of the Evacuation Region (if less than 10 miles), to the EPZ boundary, it is assumed that 35 percent of the population will elect to evacuate.

Figure 7-2 presents the area identified as the "Shadow Region". This Region extends from the southern boundary of the EPZ to the southern city limits of Fulton in the area of New York State Routes 481 and 48. This area was selected because these routes are major evacuation routes for the City of Oswego and the City of Fulton is densely populated in the area surrounding these state routes. Thus, traffic generated within this Shadow Region, traveling away from the NMP location, has a potential for impeding evacuating vehicles from within the Evacuation Region. We assume that the traffic volumes emitted within the Shadow Region corresponds to 30 percent of the residents plus a proportionate number of employees in that region. All ETE calculations include this shadow traffic movement.

Exhibit 1
Utilization of Tables 7-1A through 7-1D

In the event of an emergency requiring a protective action recommendation, the following procedure is used.

1. Identify the season (Summer or Winter)
2. Identify the Day of the Week (Midweek, Weekend)
   (Note: Schools are in session generally during Winter, Midweek periods.)
3. Identify the Time of Day (Midday, Evening)
4. Identify the Weather Conditions (Good Weather, Rain, Snow with Passable Roads)
5. Identify the furthest extent of the protective action recommendation (2-miles, 5-miles, EPZ Boundary)
6. Identify the direction the wind is heading from
7. Knowing wind direction and extent of protective action needs, identify the region to be evacuated
8. Identify the Evacuation Percentile of Interest (50, 90, 95, or 100th percentile)
9. Go to Table 7-1A for a 50th percentile evacuation time, Table 7-1B for a 90th percentile evacuation time, Table 7-1C for a 95th percentile evacuation time, or Table 7-1D for a 100th percentile evacuation time
10. Identify the row of interest by matching the region with the region number on the table
11. The season, day of week, time of day, and weather conditions identify the column of interest
12. Evacuation times are read from the intersection of the row and the column selected from the table.

Example:
Sunday, August 14, at 2PM in rain, Region 14 has been selected. The scenario is therefore (Summer, Weekend, Midday, Rain), or Column 4 on the tables. The ETE are:

50th Percentile	0:45	Table 7-1A
90th Percentile	1:25	Table 7-1B
95th Percentile	1:40	Table 7-1C

Figure 7-1A. Time to Clear The Indicated Area of 50 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Entire 2-Mile, 5-Mile Circles and EPZ																
R01	0:40	0:45	0:40	0:40	0:45	R01	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R01	0:40	0:45
R02	1:05	1:10	1:00	1:00	1:00	R02	1:05	1:10	1:25	1:00	1:00	1:25	0:55	R02	1:20	2:30
R03	1:15	1:20	1:10	1:15	1:10	R03	1:25	1:30	1:50	1:10	1:15	1:35	1:10	R03	1:45	2:30

Figure 7-1A. Time to Clear The Indicated Area of 50 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Regions Extending to 5-Miles																
R04	0:40	0:45	0:40	0:40	0:45	R04	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R04	0:40	0:45
R05	0:40	0:45	0:40	0:40	0:45	R05	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R05	0:40	0:45
R06	0:50	0:55	0:45	0:45	0:45	R06	0:50	0:55	1:00	0:45	0:45	0:55	0:45	R06	0:45	0:45
R07	1:05	1:05	0:45	0:50	0:50	R07	1:05	1:10	1:20	0:45	0:50	1:05	0:50	R07	0:45	0:50
R08	1:05	1:05	0:45	0:50	0:50	R08	1:05	1:10	1:20	0:45	0:50	1:05	0:50	R08	0:45	0:50
R09	1:05	1:10	0:45	0:50	0:50	R09	1:05	1:10	1:20	0:45	0:50	1:05	0:50	R09	0:45	0:50
R10	1:00	1:05	0:45	0:50	0:45	R10	1:00	1:05	1:20	0:45	0:50	1:05	0:50	R10	0:45	0:50
R11	1:00	1:05	0:45	0:50	0:50	R11	1:05	1:05	1:20	0:50	0:50	1:10	0:50	R11	0:50	0:50
R12	1:00	1:05	0:45	0:50	0:50	R12	1:05	1:05	1:20	0:50	0:50	1:10	0:50	R12	0:50	0:50
R13	1:00	1:05	0:45	0:50	0:50	R13	1:05	1:05	1:20	0:50	0:50	1:10	0:50	R13	0:50	0:50
R14	0:55	0:55	0:45	0:45	0:45	R14	0:55	0:55	1:10	0:45	0:45	1:05	0:45	R14	1:00	1:40
R15	0:55	0:55	0:45	0:45	0:45	R15	0:55	0:55	1:10	0:45	0:45	1:05	0:45	R15	1:00	1:40
R16	0:50	0:50	0:45	0:45	0:45	R16	0:50	0:50	1:00	0:45	0:45	1:00	0:45	R16	0:55	1:30
R17	0:50	0:50	0:45	0:45	0:45	R17	0:50	0:50	1:00	0:45	0:45	1:00	0:45	R17	0:55	1:30
R18	0:50	0:50	0:45	0:45	0:45	R18	0:50	0:50	1:00	0:45	0:45	1:00	0:45	R18	1:00	1:45
R19	0:50	0:50	0:45	0:45	0:45	R19	0:50	0:50	1:00	0:45	0:45	1:00	0:45	R19	1:00	1:45
R20	0:50	0:50	0:45	0:45	0:45	R20	0:50	0:50	0:55	0:45	0:45	1:00	0:45	R20	1:05	2:20
R21	0:50	0:50	0:45	0:45	0:45	R21	0:50	0:50	0:55	0:45	0:45	1:00	0:45	R21	1:05	2:20
R22	0:45	0:50	0:45	0:45	0:45	R22	0:50	0:50	0:55	0:45	0:45	0:55	0:45	R22	1:05	2:30
R23	0:45	0:45	0:40	0:45	0:45	R23	0:45	0:45	0:50	0:45	0:45	0:55	0:45	R23	0:40	0:50
R24	0:45	0:45	0:40	0:45	0:45	R24	0:45	0:45	0:50	0:45	0:45	0:55	0:45	R24	0:40	0:50
R25	0:40	0:45	0:40	0:40	0:45	R25	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R25	0:40	0:45
R26	0:40	0:45	0:40	0:40	0:45	R26	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R26	0:40	0:45
R27	0:40	0:45	0:40	0:40	0:45	R27	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R27	0:40	0:45

Figure 7-1A. Time to Clear The Indicated Area of 50 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Regions Extending to EPZ Boundary																
R28	0:40	0:40	0:45	0:45	0:40	R28	0:40	0:40	0:45	0:40	0:40	0:50	0:45	R28	0:40	0:40
R29	0:40	0:40	0:45	0:45	0:40	R29	0:40	0:40	0:45	0:40	0:40	0:50	0:45	R29	0:40	0:40
R30	0:50	0:55	0:50	0:50	0:45	R30	0:55	0:55	1:00	0:45	0:45	0:55	0:45	R30	0:45	0:45
R31	1:05	1:05	0:50	0:55	0:50	R31	1:05	1:10	1:15	0:50	0:50	1:00	0:50	R31	0:50	0:50
R32	1:05	1:05	0:50	0:55	0:50	R32	1:05	1:10	1:15	0:50	0:50	1:05	0:50	R32	0:50	0:50
R33	1:05	1:10	0:50	0:55	0:50	R33	1:05	1:10	1:20	0:50	0:55	1:05	0:50	R33	0:50	0:50
R34	1:05	1:05	0:50	0:55	0:50	R34	1:05	1:10	1:20	0:50	0:50	1:10	0:50	R34	0:50	0:50
R35	1:05	1:10	0:50	0:55	0:50	R35	1:05	1:10	1:20	0:50	0:55	1:10	0:50	R35	0:50	0:55
R36	1:10	1:15	0:55	0:55	0:55	R36	1:10	1:15	1:30	0:55	0:55	1:15	0:55	R36	0:55	1:00
R37	1:10	1:15	0:55	0:55	0:55	R37	1:10	1:15	1:30	0:55	0:55	1:15	0:55	R37	0:55	1:00
R38	1:10	1:10	0:55	0:55	0:55	R38	1:10	1:10	1:25	0:55	0:55	1:15	0:55	R38	1:00	1:10
R39	1:10	1:15	0:55	0:55	0:55	R39	1:10	1:15	1:30	0:55	0:55	1:15	0:55	R39	1:00	1:10
R40	1:15	1:20	1:05	1:05	1:00	R40	1:20	1:25	1:45	1:05	1:10	1:30	1:05	R40	1:25	1:35
R41	1:10	1:15	1:00	1:05	1:00	R41	1:15	1:20	1:40	1:05	1:10	1:25	1:05	R41	1:25	1:35
R42	1:10	1:15	1:05	1:10	1:05	R42	1:20	1:25	1:45	1:05	1:10	1:30	1:05	R42	1:25	1:40
R43	1:10	1:20	1:10	1:15	1:05	R43	1:20	1:25	1:50	1:10	1:15	1:35	1:10	R43	1:35	1:50
R44	1:10	1:15	1:10	1:15	1:05	R44	1:20	1:25	1:45	1:10	1:15	1:35	1:10	R44	1:35	1:50
R45	1:15	1:15	1:10	1:15	1:10	R45	1:20	1:25	1:45	1:10	1:15	1:35	1:10	R45	1:45	2:20
R46	1:15	1:15	1:10	1:15	1:10	R46	1:20	1:25	1:45	1:10	1:15	1:35	1:10	R46	1:45	2:20
R47	1:10	1:15	1:10	1:15	1:05	R47	1:20	1:25	1:45	1:10	1:15	1:35	1:10	R47	1:30	1:55
R48	0:45	0:45	0:40	0:45	0:45	R48	0:45	0:45	0:50	0:45	0:45	0:55	0:45	R48	0:40	0:50
R49	0:40	0:45	0:40	0:40	0:45	R49	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R49	0:40	0:45
R50	0:40	0:45	0:40	0:40	0:45	R50	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R50	0:40	0:45
R51	0:40	0:45	0:40	0:40	0:45	R51	0:40	0:45	0:45	0:40	0:40	0:50	0:45	R51	0:40	0:45

Figure 7-1B. Time to Clear The Indicated Area of 90 Percent of the Affected Population																	
	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Entire 2-Mile, 5-Mile Circles and EPZ																
R01	1:25	1:25	1:15	1:20	1:20	R01	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R01	1:15	1:20
R02	2:30	2:40	2:40	2:55	2:20	R02	2:30	2:35	3:05	2:25	2:40	3:10	2:15	R02	3:30	6:35
R03	3:00	3:20	3:15	3:35	3:00	R03	3:10	3:25	4:05	3:00	3:15	3:45	3:00	R03	4:40	6:35

Figure 7-1B. Time to Clear The Indicated Area of 90 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Regions Extending to 5-Miles																
R04	1:25	1:25	1:15	1:20	1:20	R04	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R04	1:15	1:20
R05	1:25	1:25	1:15	1:20	1:20	R05	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R05	1:15	1:20
R06	2:00	2:10	1:20	1:25	1:25	R06	2:00	2:10	2:20	1:20	1:25	1:50	1:25	R06	1:20	1:25
R07	2:10	2:25	1:25	1:30	1:25	R07	2:10	2:25	2:30	1:25	1:35	1:55	1:25	R07	1:25	1:25
R08	2:10	2:25	1:25	1:30	1:25	R08	2:10	2:25	2:30	1:25	1:35	1:55	1:25	R08	1:25	1:25
R09	2:05	2:25	1:25	1:30	1:25	R09	2:10	2:20	2:30	1:25	1:35	1:55	1:25	R09	1:25	1:25
R10	2:05	2:15	1:25	1:35	1:25	R10	2:10	2:15	2:35	1:30	1:35	2:00	1:25	R10	1:30	1:25
R11	2:10	2:15	1:25	1:35	1:30	R11	2:10	2:15	2:30	1:30	1:35	2:00	1:30	R11	1:30	1:50
R12	2:10	2:15	1:25	1:35	1:30	R12	2:10	2:15	2:30	1:30	1:35	2:00	1:30	R12	1:30	1:50
R13	2:10	2:15	1:25	1:35	1:30	R13	2:10	2:15	2:30	1:30	1:35	2:00	1:30	R13	1:30	1:50
R14	1:50	1:55	1:25	1:25	1:25	R14	1:50	2:00	2:15	1:25	1:25	1:55	1:25	R14	2:55	6:15
R15	1:50	1:55	1:25	1:25	1:25	R15	1:50	2:00	2:15	1:25	1:25	1:55	1:25	R15	2:55	6:15
R16	1:45	1:50	1:25	1:25	1:25	R16	1:45	1:50	2:10	1:25	1:25	1:55	1:25	R16	2:50	6:15
R17	1:45	1:50	1:25	1:25	1:25	R17	1:45	1:50	2:10	1:25	1:25	1:55	1:25	R17	2:50	6:15
R18	1:40	1:40	1:25	1:25	1:25	R18	1:40	1:45	2:05	1:25	1:25	1:55	1:25	R18	3:00	6:20
R19	1:40	1:40	1:25	1:25	1:25	R19	1:40	1:45	2:05	1:25	1:25	1:55	1:25	R19	3:00	6:20
R20	1:35	1:35	1:20	1:20	1:25	R20	1:35	1:40	2:00	1:20	1:20	1:50	1:25	R20	3:10	6:30
R21	1:35	1:35	1:20	1:20	1:25	R21	1:35	1:40	2:00	1:20	1:20	1:50	1:25	R21	3:10	6:30
R22	1:35	1:35	1:20	1:20	1:25	R22	1:35	1:35	2:00	1:20	1:20	1:50	1:25	R22	3:15	6:35
R23	1:30	1:30	1:20	1:20	1:20	R23	1:30	1:30	1:50	1:20	1:20	1:45	1:20	R23	1:20	1:45
R24	1:30	1:30	1:20	1:20	1:20	R24	1:30	1:30	1:50	1:20	1:20	1:45	1:20	R24	1:20	1:45
R25	1:25	1:25	1:15	1:20	1:20	R25	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R25	1:15	1:20
R26	1:25	1:25	1:15	1:20	1:20	R26	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R26	1:15	1:20
R27	1:25	1:25	1:15	1:20	1:20	R27	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R27	1:15	1:20

Figure 7-1B. Time to Clear The Indicated Area of 90 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Regions Extending to EPZ Boundary																
R28	1:25	1:25	1:30	1:40	1:20	R28	1:25	1:25	1:40	1:15	1:15	1:35	1:20	R28	1:15	1:20
R29	1:25	1:25	1:30	1:40	1:20	R29	1:25	1:25	1:40	1:15	1:15	1:35	1:20	R29	1:15	1:20
R30	2:10	2:20	1:35	1:45	1:25	R30	2:10	2:20	2:35	1:30	1:40	2:00	1:25	R30	1:30	1:25
R31	2:20	2:25	1:40	1:50	1:30	R31	2:20	2:35	2:50	1:40	1:45	2:10	1:30	R31	1:40	1:30
R32	2:25	2:30	1:45	1:55	1:40	R32	2:25	2:35	2:45	1:45	1:55	2:20	1:40	R32	1:45	1:40
R33	2:25	2:35	1:45	1:55	1:40	R33	2:25	2:35	2:50	1:45	1:55	2:20	1:40	R33	1:45	1:40
R34	2:20	2:25	1:45	1:55	1:40	R34	2:20	2:25	2:40	1:45	1:50	2:15	1:40	R34	1:45	1:40
R35	2:20	2:25	1:45	1:55	1:40	R35	2:20	2:30	2:40	1:45	1:50	2:20	1:40	R35	1:45	1:50
R36	2:20	2:25	1:50	2:00	1:45	R36	2:20	2:30	2:45	1:50	1:55	2:25	1:45	R36	2:05	2:35
R37	2:20	2:25	1:50	2:00	1:45	R37	2:20	2:30	2:45	1:50	1:55	2:25	1:45	R37	2:05	2:35
R38	2:25	2:30	1:55	2:05	1:50	R38	2:25	2:30	2:55	1:55	2:05	2:30	1:50	R38	2:25	3:30
R39	2:25	2:30	1:55	2:05	1:50	R39	2:25	2:30	2:50	1:55	2:00	2:30	1:50	R39	2:30	3:35
R40	2:40	2:55	2:45	3:00	2:35	R40	3:00	3:15	3:50	2:30	2:50	3:15	2:30	R40	4:05	5:45
R41	2:35	2:55	2:45	3:00	2:35	R41	3:00	3:15	3:50	2:35	2:50	3:15	2:35	R41	4:05	5:45
R42	2:40	3:00	2:50	3:05	2:40	R42	3:00	3:20	3:55	2:40	2:55	3:20	2:35	R42	4:10	5:50
R43	2:50	3:05	3:00	3:15	2:50	R43	3:10	3:25	4:05	2:45	3:00	3:30	2:45	R43	4:20	5:55
R44	2:50	3:10	3:00	3:20	2:50	R44	3:10	3:25	4:05	2:50	3:00	3:30	2:45	R44	4:20	6:00
R45	3:00	3:20	3:15	3:35	2:55	R45	3:10	3:25	4:05	3:00	3:15	3:45	2:55	R45	4:40	6:25
R46	3:00	3:20	3:15	3:35	3:00	R46	3:10	3:25	4:05	3:00	3:15	3:45	2:55	R46	4:40	6:30
R47	3:00	3:15	3:15	3:35	3:00	R47	3:10	3:25	4:05	3:00	3:15	3:45	3:00	R47	4:10	5:15
R48	1:30	1:30	1:20	1:20	1:20	R48	1:30	1:30	1:50	1:20	1:20	1:45	1:20	R48	1:20	1:45
R49	1:25	1:25	1:15	1:20	1:20	R49	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R49	1:15	1:20
R50	1:25	1:25	1:15	1:20	1:20	R50	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R50	1:15	1:20
R51	1:25	1:25	1:15	1:20	1:20	R51	1:25	1:25	1:40	1:15	1:20	1:40	1:20	R51	1:15	1:20

Figure 7-1C. Time to Clear The Indicated Area of 95 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Entire 2-Mile, 5-Mile Circles and EPZ																
R01	1:40	1:40	1:25	1:25	1:30	R01	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R01	1:25	1:30
R02	2:50	3:05	3:05	3:25	2:40	R02	2:50	3:05	3:35	2:45	3:00	3:35	2:35	R02	3:55	7:05
R03	3:30	3:55	3:40	4:05	3:25	R03	3:30	3:50	4:30	3:25	3:45	4:15	3:20	R03	5:15	7:05

Figure 7-1C. Time to Clear The Indicated Area of 95 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Regions Extending to 5-Miles																
R04	1:40	1:40	1:25	1:25	1:30	R04	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R04	1:25	1:30
R05	1:40	1:40	1:25	1:25	1:30	R05	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R05	1:25	1:30
R06	2:15	2:25	1:30	1:40	1:30	R06	2:10	2:25	2:40	1:30	1:40	2:05	1:30	R06	1:30	1:30
R07	2:20	2:40	1:35	1:45	1:40	R07	2:25	2:40	2:50	1:40	1:45	2:10	1:40	R07	1:40	1:40
R08	2:20	2:40	1:35	1:45	1:40	R08	2:25	2:40	2:50	1:40	1:45	2:10	1:40	R08	1:40	1:40
R09	2:20	2:40	1:35	1:45	1:40	R09	2:20	2:35	2:50	1:35	1:45	2:10	1:40	R09	1:35	1:40
R10	2:20	2:25	1:35	1:45	1:40	R10	2:25	2:30	2:55	1:40	1:45	2:10	1:40	R10	1:40	1:40
R11	2:25	2:30	1:40	1:45	1:45	R11	2:25	2:30	2:50	1:40	1:45	2:15	1:45	R11	1:40	2:20
R12	2:25	2:30	1:40	1:45	1:45	R12	2:25	2:30	2:50	1:40	1:45	2:15	1:45	R12	1:40	2:20
R13	2:25	2:30	1:40	1:45	1:45	R13	2:25	2:30	2:50	1:40	1:45	2:15	1:45	R13	1:40	2:20
R14	2:05	2:10	1:35	1:40	1:35	R14	2:00	2:10	2:25	1:35	1:40	2:10	1:35	R14	3:20	6:55
R15	2:05	2:10	1:35	1:40	1:35	R15	2:00	2:10	2:25	1:35	1:40	2:10	1:35	R15	3:20	6:55
R16	2:00	2:05	1:35	1:35	1:35	R16	1:55	2:05	2:20	1:30	1:35	2:10	1:35	R16	3:20	6:55
R17	2:00	2:05	1:35	1:35	1:35	R17	1:55	2:05	2:20	1:30	1:35	2:10	1:35	R17	3:20	6:55
R18	1:55	1:55	1:35	1:35	1:35	R18	1:55	2:00	2:15	1:30	1:35	2:10	1:40	R18	3:25	7:00
R19	1:55	1:55	1:35	1:35	1:35	R19	1:55	2:00	2:15	1:30	1:35	2:10	1:40	R19	3:25	7:00
R20	1:55	1:55	1:30	1:30	1:30	R20	1:55	1:55	2:15	1:30	1:30	2:05	1:30	R20	3:30	7:05
R21	1:55	1:55	1:30	1:30	1:30	R21	1:55	1:55	2:15	1:30	1:30	2:05	1:30	R21	3:30	7:05
R22	1:55	1:55	1:30	1:30	1:30	R22	1:55	1:55	2:15	1:30	1:30	2:05	1:30	R22	3:35	7:05
R23	1:45	1:45	1:30	1:30	1:30	R23	1:45	1:45	2:10	1:30	1:30	2:00	1:30	R23	1:25	1:55
R24	1:45	1:45	1:30	1:30	1:30	R24	1:45	1:45	2:10	1:30	1:30	2:00	1:30	R24	1:25	1:55
R25	1:40	1:40	1:25	1:25	1:30	R25	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R25	1:25	1:30
R26	1:40	1:40	1:25	1:25	1:30	R26	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R26	1:25	1:30
R27	1:40	1:40	1:25	1:25	1:30	R27	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R27	1:25	1:30

Figure 7-1C. Time to Clear The Indicated Area of 95 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Regions Extending to EPZ Boundary																
R28	1:35	1:35	1:40	1:55	1:25	R28	1:35	1:40	2:00	1:25	1:25	1:55	1:30	R28	1:25	1:25
R29	1:35	1:35	1:40	1:55	1:25	R29	1:35	1:40	2:00	1:25	1:25	1:55	1:30	R29	1:25	1:25
R30	2:30	2:40	1:45	1:55	1:35	R30	2:30	2:40	3:00	1:45	1:50	2:15	1:35	R30	1:45	1:35
R31	2:40	2:45	1:50	2:00	1:40	R31	2:30	2:50	3:10	1:50	1:55	2:20	1:40	R31	1:50	1:40
R32	2:45	2:55	1:55	2:15	1:50	R32	2:45	3:00	3:10	2:00	2:10	2:35	1:50	R32	2:00	1:50
R33	2:45	3:05	2:00	2:15	1:55	R33	2:50	3:05	3:20	2:00	2:15	2:40	1:55	R33	2:00	1:50
R34	2:40	2:50	1:55	2:10	1:55	R34	2:40	2:50	3:10	2:00	2:10	2:35	1:55	R34	2:00	1:50
R35	2:40	2:50	1:55	2:10	1:55	R35	2:40	2:55	3:10	2:00	2:10	2:35	1:55	R35	2:00	2:05
R36	2:40	2:50	2:05	2:20	2:00	R36	2:40	2:55	3:10	2:05	2:15	2:45	2:00	R36	2:20	3:00
R37	2:40	2:50	2:05	2:20	2:00	R37	2:40	2:55	3:10	2:05	2:15	2:45	2:00	R37	2:20	3:00
R38	2:45	3:00	2:15	2:25	2:10	R38	2:45	2:55	3:25	2:15	2:25	2:55	2:10	R38	2:55	4:25
R39	2:40	2:55	2:20	2:25	2:10	R39	2:40	2:55	3:15	2:15	2:25	2:50	2:10	R39	2:55	4:30
R40	3:10	3:35	3:25	3:50	3:10	R40	3:25	3:45	4:20	3:10	3:25	4:00	3:10	R40	4:55	6:35
R41	3:15	3:40	3:25	3:50	3:15	R41	3:25	3:45	4:25	3:15	3:30	4:00	3:10	R41	4:55	6:35
R42	3:20	3:45	3:30	3:55	3:15	R42	3:25	3:50	4:25	3:15	3:30	4:05	3:10	R42	4:55	6:35
R43	3:25	3:50	3:35	4:00	3:20	R43	3:30	3:50	4:30	3:20	3:40	4:10	3:15	R43	5:00	6:40
R44	3:30	3:50	3:35	4:00	3:20	R44	3:30	3:50	4:30	3:25	3:40	4:10	3:20	R44	5:00	6:45
R45	3:30	3:55	3:40	4:05	3:20	R45	3:30	3:50	4:30	3:25	3:45	4:15	3:20	R45	5:10	7:00
R46	3:30	3:55	3:40	4:05	3:25	R46	3:30	3:50	4:30	3:25	3:45	4:15	3:20	R46	5:15	7:00
R47	3:30	3:45	3:40	4:00	3:20	R47	3:30	3:45	4:25	3:25	3:45	4:15	3:20	R47	4:40	5:55
R48	1:45	1:45	1:30	1:30	1:30	R48	1:45	1:45	2:10	1:30	1:30	2:00	1:30	R48	1:25	1:55
R49	1:40	1:40	1:25	1:25	1:30	R49	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R49	1:25	1:30
R50	1:40	1:40	1:25	1:25	1:30	R50	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R50	1:25	1:30
R51	1:40	1:40	1:25	1:25	1:30	R51	1:40	1:40	2:05	1:25	1:25	1:55	1:30	R51	1:25	1:30

Figure 7-1D. Time to Clear The Indicated Area of 100 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Entire 2-Mile, 5-Mile Circles and EPZ																
R01	2:20	2:20	1:50	1:50	1:50	R01	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R01	1:50	1:50
R02	3:20	3:40	3:45	4:10	3:05	R02	3:20	3:40	4:10	3:05	3:35	4:10	2:55	R02	4:55	7:45
R03	4:30	4:55	4:20	4:50	4:00	R03	4:30	4:45	5:35	4:10	4:30	5:05	4:00	R03	6:55	8:20

Figure 7-1D. Time to Clear The Indicated Area of 100 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Regions Extending to 5-Miles																
R04	2:20	2:20	1:50	1:50	1:50	R04	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R04	1:50	1:50
R05	2:20	2:20	1:50	1:50	1:50	R05	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R05	1:50	1:50
R06	2:35	2:50	1:45	1:45	1:45	R06	2:30	2:55	3:05	1:45	1:45	2:30	1:45	R06	1:45	1:45
R07	2:35	2:55	2:00	2:00	2:05	R07	2:40	2:55	3:10	2:00	2:05	2:30	2:05	R07	2:00	2:05
R08	2:35	2:55	2:00	2:00	2:05	R08	2:40	2:55	3:10	2:00	2:05	2:30	2:05	R08	2:00	2:05
R09	2:35	3:00	1:45	1:50	2:05	R09	2:40	2:55	3:10	1:45	1:50	2:30	2:05	R09	1:45	2:05
R10	2:40	2:50	1:45	2:00	2:05	R10	2:45	2:50	3:25	2:05	2:05	2:30	2:05	R10	2:05	2:05
R11	2:45	2:55	1:45	2:15	2:05	R11	2:45	3:00	3:20	1:45	2:15	2:30	2:05	R11	1:45	3:45
R12	2:45	2:55	1:45	2:15	2:05	R12	2:45	3:00	3:20	1:45	2:15	2:30	2:05	R12	1:45	3:45
R13	2:45	2:55	1:45	2:15	2:05	R13	2:45	3:00	3:20	1:45	2:15	2:30	2:05	R13	1:45	3:45
R14	2:20	2:20	2:05	2:15	1:45	R14	2:20	2:30	2:45	1:45	2:15	2:30	1:45	R14	4:00	7:40
R15	2:20	2:20	2:05	2:15	1:45	R15	2:20	2:30	2:45	1:45	2:15	2:30	1:45	R15	4:00	7:40
R16	2:15	2:20	2:05	2:05	2:05	R16	2:15	2:30	2:40	1:40	2:05	2:30	2:05	R16	4:00	7:45
R17	2:15	2:20	2:05	2:05	2:05	R17	2:15	2:30	2:40	1:40	2:05	2:30	2:05	R17	4:00	7:45
R18	2:20	2:20	2:05	2:05	2:15	R18	2:20	2:20	2:35	1:40	2:05	2:30	2:15	R18	4:00	7:45
R19	2:20	2:20	2:05	2:05	2:15	R19	2:20	2:20	2:35	1:40	2:05	2:30	2:15	R19	4:00	7:45
R20	2:20	2:20	1:45	1:45	1:40	R20	2:20	2:20	2:30	1:45	1:40	2:30	1:45	R20	4:00	7:40
R21	2:20	2:20	1:45	1:45	1:40	R21	2:20	2:20	2:30	1:45	1:40	2:30	1:45	R21	4:00	7:40
R22	2:25	2:25	1:40	1:40	1:45	R22	2:25	2:30	2:30	1:40	1:40	2:30	1:45	R22	4:00	7:40
R23	2:25	2:25	1:40	1:40	1:40	R23	2:30	2:30	2:30	1:40	1:40	2:30	1:40	R23	1:40	2:10
R24	2:25	2:25	1:40	1:40	1:40	R24	2:30	2:30	2:30	1:40	1:40	2:30	1:40	R24	1:40	2:10
R25	2:20	2:20	1:50	1:50	1:50	R25	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R25	1:50	1:50
R26	2:20	2:20	1:50	1:50	1:50	R26	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R26	1:50	1:50
R27	2:20	2:20	1:50	1:50	1:50	R27	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R27	1:50	1:50

Figure 7-1D. Time to Clear The Indicated Area of 100 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Classic Weekend	Weekend Harbor Fest
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Regions Extending to EPZ Boundary																
R28	2:25	2:25	1:55	2:15	1:50	R28	2:25	2:25	2:35	2:00	2:00	2:30	1:50	R28	2:00	1:50
R29	2:25	2:25	1:55	2:15	1:50	R29	2:25	2:25	2:35	2:00	2:00	2:30	1:50	R29	2:00	1:50
R30	3:05	3:15	2:05	2:15	1:45	R30	2:55	3:20	3:40	2:05	2:15	2:40	1:45	R30	2:05	1:45
R31	3:05	3:15	2:05	2:20	2:05	R31	2:55	3:20	3:45	2:05	2:20	2:40	2:05	R31	2:05	2:05
R32	3:15	3:25	2:15	2:35	2:05	R32	3:15	3:35	3:45	2:15	2:40	3:05	2:05	R32	2:15	2:05
R33	3:20	3:40	2:20	2:45	2:10	R33	3:20	3:40	4:00	2:20	2:45	3:10	2:10	R33	2:20	2:10
R34	3:20	3:35	2:25	2:45	2:10	R34	3:25	3:35	4:00	2:25	2:45	3:15	2:10	R34	2:25	2:10
R35	3:20	3:40	2:25	2:45	2:15	R35	3:25	3:45	4:00	2:25	2:50	3:15	2:15	R35	2:25	3:45
R36	3:20	3:40	2:40	3:00	2:30	R36	3:25	3:45	4:00	2:35	2:50	3:15	2:30	R36	3:00	3:40
R37	3:20	3:40	2:40	3:00	2:30	R37	3:25	3:45	4:00	2:35	2:50	3:15	2:30	R37	3:00	3:40
R38	3:20	3:40	3:00	3:25	3:00	R38	3:20	3:35	4:10	3:00	3:10	3:45	3:00	R38	3:55	7:45
R39	3:20	3:30	3:00	3:25	3:00	R39	3:20	3:30	4:00	3:00	3:10	3:45	3:00	R39	3:55	7:45
R40	4:25	4:50	4:20	4:50	4:00	R40	4:30	4:45	5:35	4:10	4:30	5:05	4:00	R40	6:55	8:20
R41	4:25	4:50	4:20	4:50	4:00	R41	4:30	4:45	5:35	4:10	4:30	5:05	4:00	R41	6:55	8:20
R42	4:25	4:50	4:20	4:50	4:00	R42	4:30	4:45	5:35	4:10	4:30	5:05	4:00	R42	6:55	8:20
R43	4:25	4:50	4:20	4:50	4:00	R43	4:30	4:45	5:35	4:10	4:30	5:05	4:00	R43	6:55	8:20
R44	4:30	4:55	4:20	4:45	4:00	R44	4:30	4:45	5:35	4:10	4:30	5:05	4:00	R44	6:55	8:15
R45	4:25	4:45	4:20	4:45	4:00	R45	4:30	4:40	5:25	4:10	4:30	5:00	4:00	R45	6:30	8:15
R46	4:30	4:45	4:20	4:45	4:00	R46	4:30	4:40	5:30	4:05	4:30	5:00	4:00	R46	6:30	8:15
R47	4:20	4:40	4:15	4:45	4:00	R47	4:20	4:40	5:25	4:05	4:30	5:00	4:00	R47	5:45	7:25
R48	2:25	2:25	1:40	1:40	1:40	R48	2:30	2:30	2:30	1:40	1:40	2:30	1:40	R48	1:40	2:10
R49	2:20	2:20	1:50	1:50	1:50	R49	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R49	1:50	1:50
R50	2:20	2:20	1:50	1:50	1:50	R50	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R50	1:50	1:50
R51	2:20	2:20	1:50	1:50	1:50	R51	2:20	2:20	2:30	1:50	1:50	2:20	1:50	R51	1:50	1:50

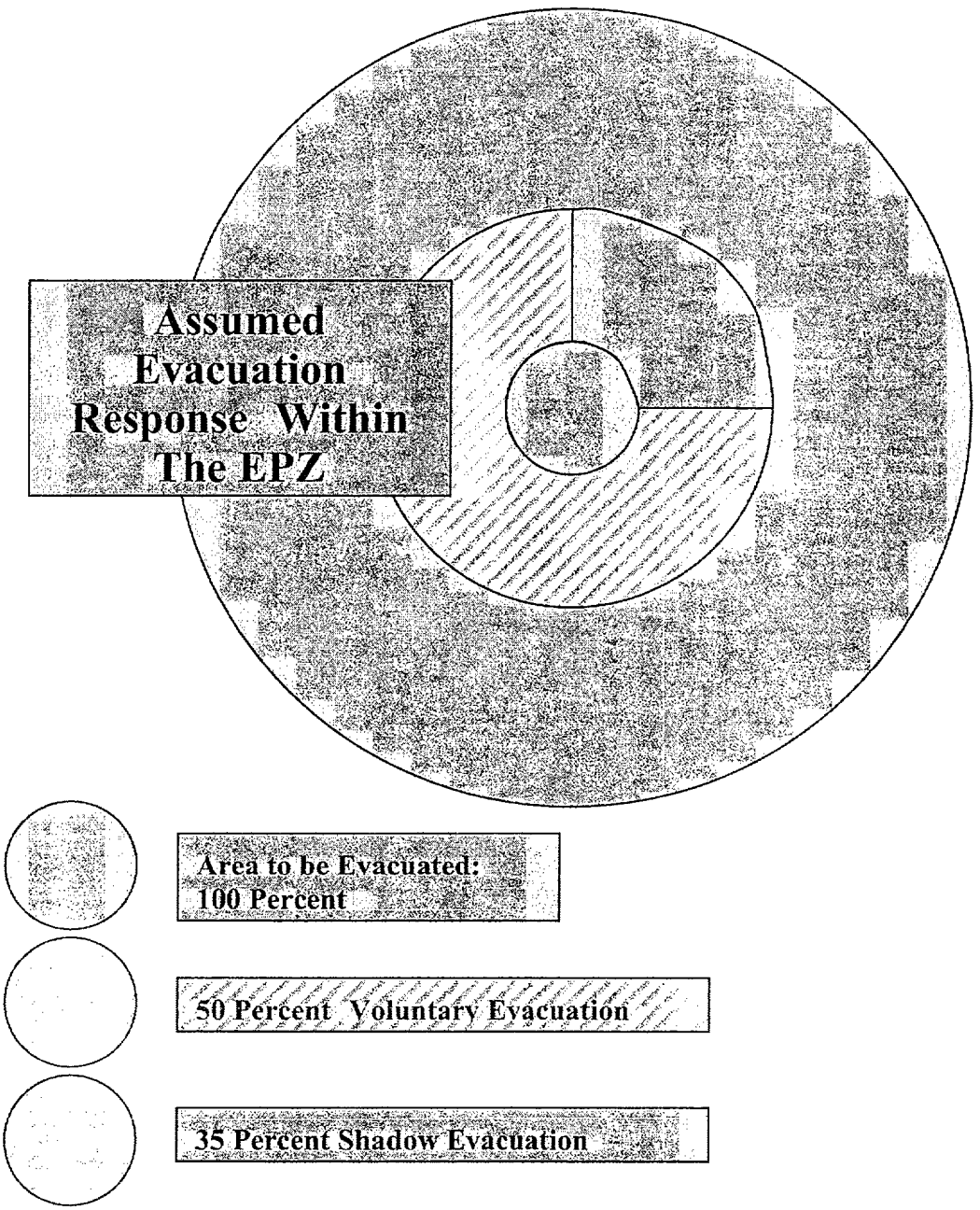

Figure 7-1. Evacuation Response Within the EPZ

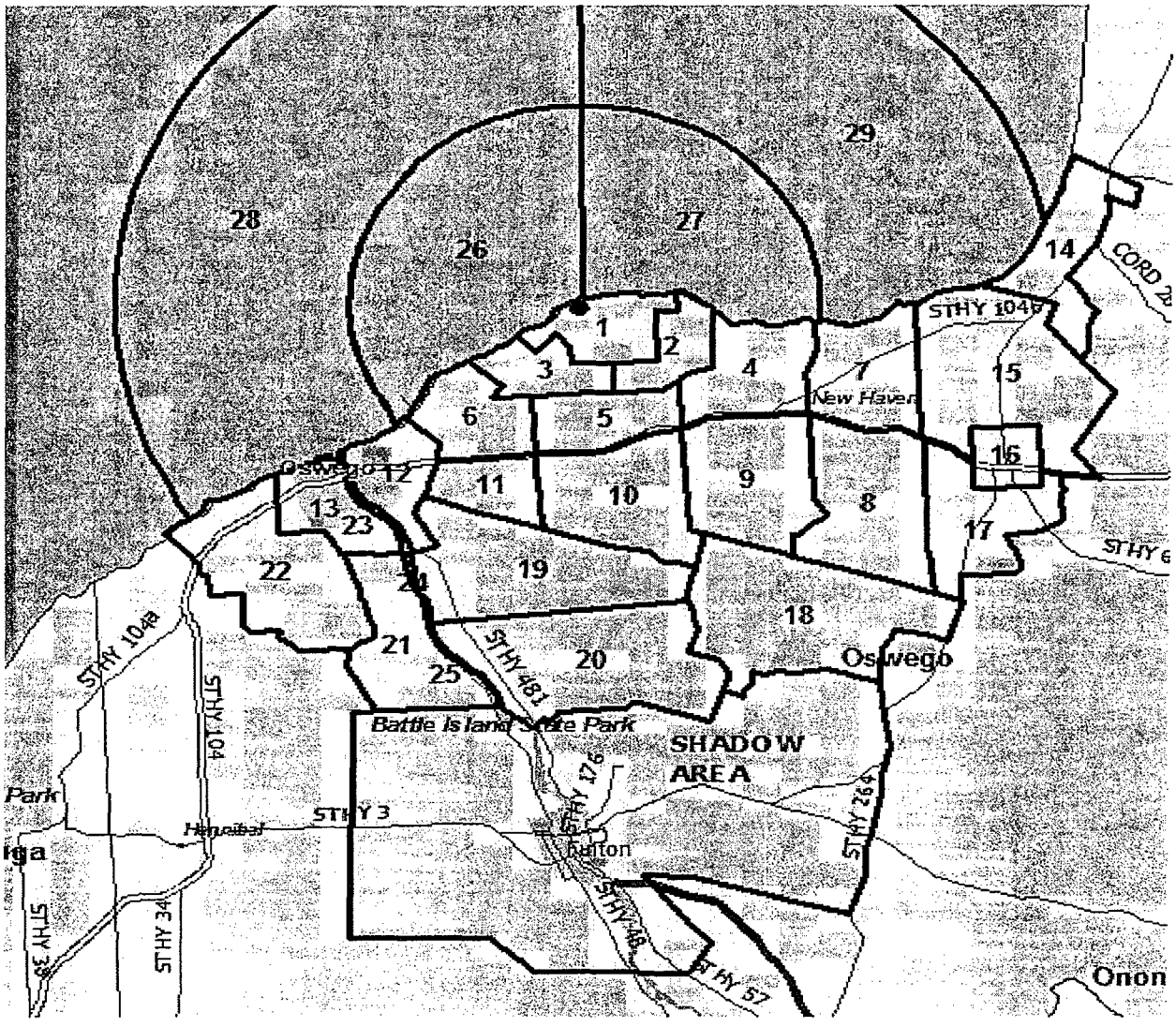

Figure 7-2. Shadow Region

NINE MILE POINT NUCLEAR STATION

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EPIP-EPP-08

REVISION 15

OFF-SITE DOSE ASSESSMENT AND PROTECTIVE ACTION RECOMMENDATION

TECHNICAL SPECIFICATION REQUIRED

Approved by:
G. L. Detter — Manager Security and Emergency Preparedness — 12/15/03 Date

Effective Date: 12/19/2003

PERIODIC REVIEW DUE DATE: SEPTEMBER 2004

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1.0 PURPOSE

To provide the methods for determining meteorology data, release rates, dose assessment and protective actions during accident conditions at Nine Mile Point.

2.0 PRIMARY RESPONSIBILITIES

2.1 The Station Shift Supervisor/Emergency Director (SSS/ED):

2.1.1 Ensures meteorological data acquisition, release rate determination, and dose assessment are performed during the initial stages of an emergency to support development of Protective Action Recommendations (PARs)

2.1.2 Approves PARs and ensures their timely issue to the State and County

2.2 The Emergency Director/Recovery Manager (ED/RM) approves PARs prior to their transmittal to the State and County, following EOF activation.

2.3 The Radiation Assessment Manager (RAM) is responsible to the TSC Manager for managing the onsite radiological monitoring and assessment aspects of the station during an emergency, following TSC activation.

2.4 Chemistry Technicians perform release rate assessments, obtain meteorological data, and develop PARs, prior to EOF activation.

2.5 The Offsite Dose Assessment Manager (ODAM) manages the offsite dose aspects of an emergency in order to assess the radiological consequences to the public, following EOF activation.

2.6 The Radiological Assessment Staff is responsible to the ODAM for obtaining meteorological data, determining source term, performing dose assessment, and developing PARs, following EOF activation.

3.0 PROCEDURE

3.1 Dose Assessment and Protective Action from the Control Room

* *

CAUTION

Calculation involving the determination of release rates and/or protection action shall be self-checked for accuracy.

* *

3.1.1 Chemistry Technician Actions

a. Review and complete (as appropriate) EPIP-EPP-23 Attachment 8.

3.1.1 (Cont)

b. Consult the SSS/ED on plant conditions and possible release paths. If a General Emergency has been declared, assist SSS/ED in making Protective Action Recommendations based on plant conditions using Attachment 1.

c. Access EDAMS computer using Attachment 2.

d. Obtain meteorological data using Attachment 3 (each 15 minutes).

e. Assess effluent monitor readings and conditions.

f. Determine release rates using Attachment 4.

1. Sum all release points from the same elevation (ground or elevated).

2. Calculate the total release rate from combined ground and elevated sources using the workspace on Attachment 1.

g. Compare the release rate to the Table 1.1 values.

h. Use Attachment 1 flowchart and advise SSS/ED of any PARs recommended by the flowchart.

NOTE: A release (tube leak) from the Emergency Condenser (EC)Vent is considered an unmonitored atmospheric release. An out of plant survey is needed to determine actual Release Rate.

i. Compare monitor readings and calculated release rates to ODCM limits using Attachment 4A.

j. IF an unmonitored atmospheric release is suspected or known to be in progress, then assist the SSS/ED in the following actions:

1. Advise the SSS/ED to expedite the dispatch of Radiation Protection (RP) Technician. Request assistance of the unaffected Unit or J.A. Fitzpatrick if needed.

2. The RP Technician should be dispatched to potential plume centerline {wind direction (degrees) ± 180° = plume centerline}, as close to the site boundary as practical. See Attachment 1, Figure 1.4 for Site boundary location.

3. IF readings indicate > 1 Rem/hr based on field survey perform the actions indicated in Attachment 1.

3.1.1 (Cont)

k. Assist the SSS/ED in completing the Part 1 Notification Fact Sheet.

l. Continue to monitor meteorological data, changes in effluent conditions or conditions that might lead to abnormal radiological effluents (or changes to PARs).

m. When contacted by EOF Dose Assessment Staff, provide briefing on:

- Status of any radiological releases
- Dose assessments efforts to date
- Impending or actual PARs

3.1.2 SSS Actions

a. Verify that the Chemistry Technician is performing dose assessment and protective action development in a timely fashion and in accordance with Attachment 1.

b. Assess any release rates or monitor readings provided by the Chemistry Technician against the Emergency Action Levels (EAL).

c. Review AND approve PARs recorded on the Notification Fact Sheet Part 1, as required. Use ERPA map in Attachment 1 if desired.

3.2 Dose Assessment and Protective Actions from the EOF

3.2.1 Offsite Dose Assessment Manager (ODAM) Actions

a. IF at any time the initiating conditions listed in Attachment 1 are met, THEN perform the actions listed in that attachment.

b. Perform actions as indicated in EPIP-EPP-23.

c. Verify Environmental Survey Sample Team Coordinator has been assigned and is:

1. Preparing for the dispatch of downwind survey teams.

2. Aware of Meteorologist availability.

3.2.1 (Cont)

d. Perform or have performed the following:

1. Obtain meteorology data using Attachment 3 of this procedure.

2. Obtain effluent monitor readings and calculate release rate using Attachment 4 of this procedure.

3. Perform dose assessment calculations and PARs using Attachment 5 of this procedure.

e. Interface with State and County representatives in the EOF.

1. Keep State/County representatives informed of confirmed data and results.

f. Complete Part 2 Notification Fact Sheet in accordance with EPIP-EPP-23.

NOTE: A release (tube leak) from the Emergency Condenser (EC) Vent is considered an unmonitored atmospheric release. An out of plant survey is needed to determine actual Release Rate.

g. Constantly reassess effluent monitors (release rate) and meteorological data for changes. Perform new dose assessment as needed. Develop new PARs and/or verify the adequacy of PARs already made.

h. As Downwind Survey Team (DST) becomes available, utilize it to verify release rates. If these refined release rates differ significantly from those calculated from effluent monitor readings, reperform dose assessment using refined release rates.

i. Provide data for the Part 1 Notification Fact Sheet as requested.

j. Provide ED/RM with pertinent information as needed.

1. Changing radiological conditions that may lead to PARs.

2. Protective actions for site staff.

k. Maintain Chronological Release Rate Log (see Attachment 5.1).

3.2.2 EOF Dose Assessment Staff

a. IF at any time the initiating conditions listed in Attachment 1 are met, THEN perform the actions listed in that attachment.

b. Perform actions as indicated in EPIP-EPP-23.

c. Perform any actions as requested by the ODAM, including:

- Obtaining meteorological data (Attachment 3)
- Obtaining release rate data (Attachment 4)
- Performing dose assessment and protective action recommendations (Attachment 5)

4.0 DEFINITIONS

4.1 CDE_T. Committed dose equivalent to the thyroid for the child.

4.2 **EDAMS**. Emergency Dose Assessment Modeling System. A PC-based computer program that calculates release rates, doses and protective actions, and obtains meteorological data for emergencies.

4.3 **MMS**. Meteorological Monitoring System. Consists of the dedicated computer, main, backup and inland towers and software. Stores and edits site meteorological data.

4.4 **RADDOSE**. A subprogram of EDAMS, it performs the dose assessment functions during emergencies.

4.5 **SHELTERING**. A protective action whose benefit is to bring the public to a heightened state of awareness. No dose reduction is assumed for sheltering.

4.6 **TEDE**. Total Effective Dose Equivalent.

5.0 REFERENCES/COMMITMENTS

5.1 Technical Specifications

None

5.2 Licensee Documentation

5.2.1 NMP Unit 1 FSAR, Section XV

a. Table XV-32

b. Table XV-28

c. Table XV-29

d. Table XV-23

e. Table XV-29d

f. Section 1.3.1

g. Section 2.1

5.2.2 NMP Unit 2 USAR, Section 15

a. Table 15.6-15b

b. Table 15.4-12

c. Table 15.7-11

d. Table 15.6-8

e. Table 15.7-4

f. Table 15.6-3

g. Table 16.6-19

5.2.3 SEP, Nine Mile Point Nuclear Station Site Emergency Plan

5.2.4 NMPC Correspondence 96-MET-001 (Backup Tower Wind Speed Correction Factor)

5.2.5 NMP Correspondence 96-MET-002 (Main Tower Wind Speed Correction Factor)

5.2.6 NMP Correspondence 96-MET-004 (Backup Tower Wind Direction Concerns)

5.2.7 NMP Correspondence 96-MET-003 (Discussion at DER C-95-0693)

5.2.8 NMP Correspondence 96-MET-005 (Main Tower 30' Sigma Theta Concern)

5.2.9 NMP Correspondence 97-MET-002 (Main Tower Wind Obstructions)

5.3 Standards, Regulations, and Codes

NUREG-0654, FEMA-REP-1, Rev 1, Supp 3, Criteria for Protective Action Recommendations for Severe Accidents

5.4 Policies, Programs, and Procedures

5.4.1 EPIP-EPP-07, Downwind Radiological Monitoring

5.4.2 EPIP-EPP-15, Emergency Health Physics Procedure

5.4.3 EPIP-EPP-23, Emergency Personnel Action Procedures

5.4.4 N2-CSP-LWS-M203, Monthly Liquid Release Dose Calculation

5.4.5 N1-CSP-M204, Liquid Release Dose Calculation

5.4.6 "Implementation of the use of KI as a protective action for the public", New York State EP Subcommittee Technical Issues Task Force, March 2003

5.5 Commitments

DER C-95-0693 (for Attachment 3)

6.0 RECORDS REVIEW AND DISPOSITION

6.1 The following records generated by this procedure shall be maintained by Records Management for the Permanent Plant File in accordance with NIP-RMG-01, Records Management:

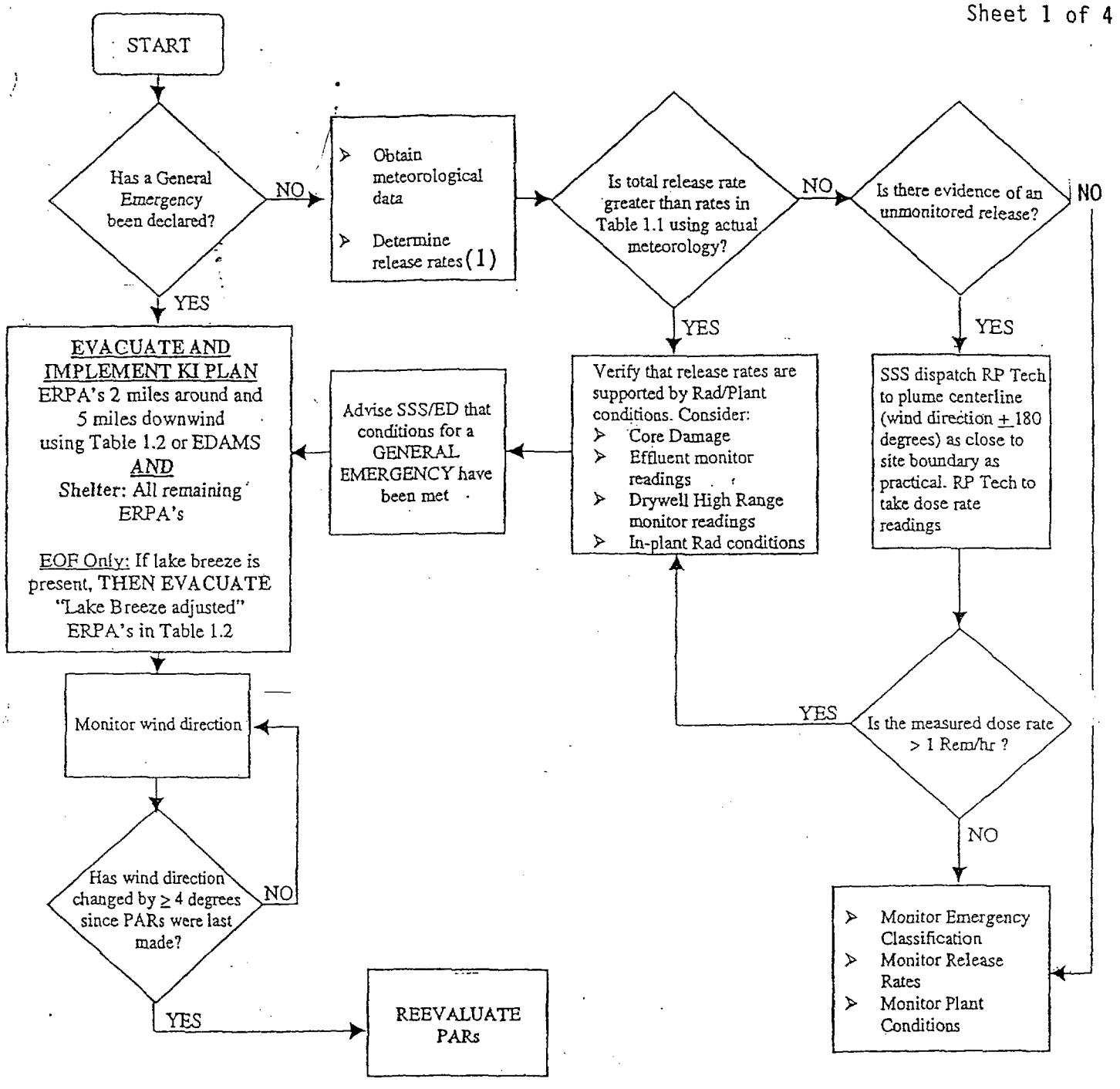
NOTE: For records generated due to an actual declared emergency only.

- Attachment 1, Initial Dose Assessment and Protective Actions
- Attachment 4, Release Rate Determination
- Attachment 5.1, Chronological Release Rate Log
- Attachment 5.2, EDAMS/RadDose Data Entry Form

6.2 The following records generated by this procedure are not required for retention in the Permanent Plant File:

NOTE: For records generated NOT due to an actual declared emergency only.

- Attachment 1, Initial Dose Assessment and Protective Actions
- Attachment 4, Release Rate Determination
- Attachment 5.1, Chronological Release Rate Log
- Attachment 5.2, EDAMS/RadDose Data Entry Form



(1) Use this formula if release has a ground AND elevated source:

$$\left[\frac{\text{Ground Release Rate (Ci/s)}}{\text{Table 1.1 Ground Release Rate (Ci/s)}}\right] + \left[\frac{\text{Elevated Release Rate (Ci/s)}}{\text{Table 1.1 Elevated release rate (Ci/s)}}\right] = \text{IF} \geq 1\text{, A General Emergency Exists}$$

$$\left[\frac{\quad}{\quad}\right] + \left[\frac{\quad}{\quad}\right] =$$

TABLE 1.1 - GENERAL EMERGENCY RELEASE RATES

Ground Release (Ci/s)				
Wind Speed (mi/h)	Stability Class			
	A	B/C	D	E/F/G
0-3	1333	213	119	38
4-6	3226	286	143	48
7-9	5556	526	250	83
10-13	7692	769	357	117
14-17	10753	1075	500	164
18-21	13514	1389	667	213
>21	16393	1667	833	256

Elevated Release (Ci/s)				
Wind Speed (mi/h)	Stability Class			
	A	B/C	D	E/F/G
0-3	2041	1124	3030	769
4-6	3703	909	769	769
7-9	5882	1515	1075	1250
10-13	7692	2083	1388	1724
14-17	11494	2857	1818	2273
18-21	14286	3704	2273	2778
>21	17241	4348	2632	3226

TABLE 1.2 - AFFECTED ERPAs

Wind Direction From	2 Miles Around and 5 Miles Downwind	EOF Only beyond this line!	Lake Breeze Adjusted (5 Mile Radius)
214 to 222	1, 2, 3, 26, 27		
223 to 233	1, 2, 3, 26, 27		4, 7
234 to 240	1, 2, 3, 7, 26, 27		4
241 to 254	1, 2, 3, 4, 7, 26, 27		9
255 to 262	1, 2, 3, 4, 7, 26, 27		9
263 to 278	1, 2, 3, 4, 7, 9, 26, 27		5
279 to 292	1, 2, 3, 4, 5, 7, 9, 26, 27		10
293 to 305	1, 2, 3, 4, 5, 7, 9, 10, 26, 27		
306 to 311	1, 2, 3, 4, 5, 7, 9, 10, 26, 27		
312 to 332	1, 2, 3, 4, 5, 7, 9, 10, 26, 27		6, 11
333 to 340	1, 2, 3, 4, 5, 9, 10, 11, 26, 27		6, 7, 12
341 to 349	1, 2, 3, 4, 5, 9, 10, 11, 26, 27		6, 7, 12
350 to 356	1, 2, 3, 5, 6, 9, 10, 11, 26, 27		4, 7
357 to 0 0 to 12	1, 2, 3, 5, 6, 9, 10, 11, 26, 27		4
13 to 20	1, 2, 3, 5, 6, 10, 11, 26, 27		4, 9
21 to 51	1, 2, 3, 5, 6, 10, 11, 26, 27		9
52 to 56	1, 2, 3, 5, 6, 11, 26, 27		10
57 to 61	1, 2, 3, 6, 6, 11, 26, 27		10
62 to 70	1, 2, 3, 6, 11, 26, 27		10
71 to 89	1, 2, 3, 6, 26, 27		11
90 to 95	1, 2, 3, 6, 26, 27		5, 11, 12
96 to 114	1, 2, 3, 26, 27		6, 12
115 to 146	1, 2, 3, 26, 27		
147 to 213	1, 2, 3, 26, 27		

TABLE 1.3 - EPA 400 Protective Action Guidelines (EPA PAGs)

PAR	TEDE (rem)	CDE_T (rem)
Evacuate	> 1	> 5

FIGURE 1.4 - Site Boundary Map

Site Boundary Map

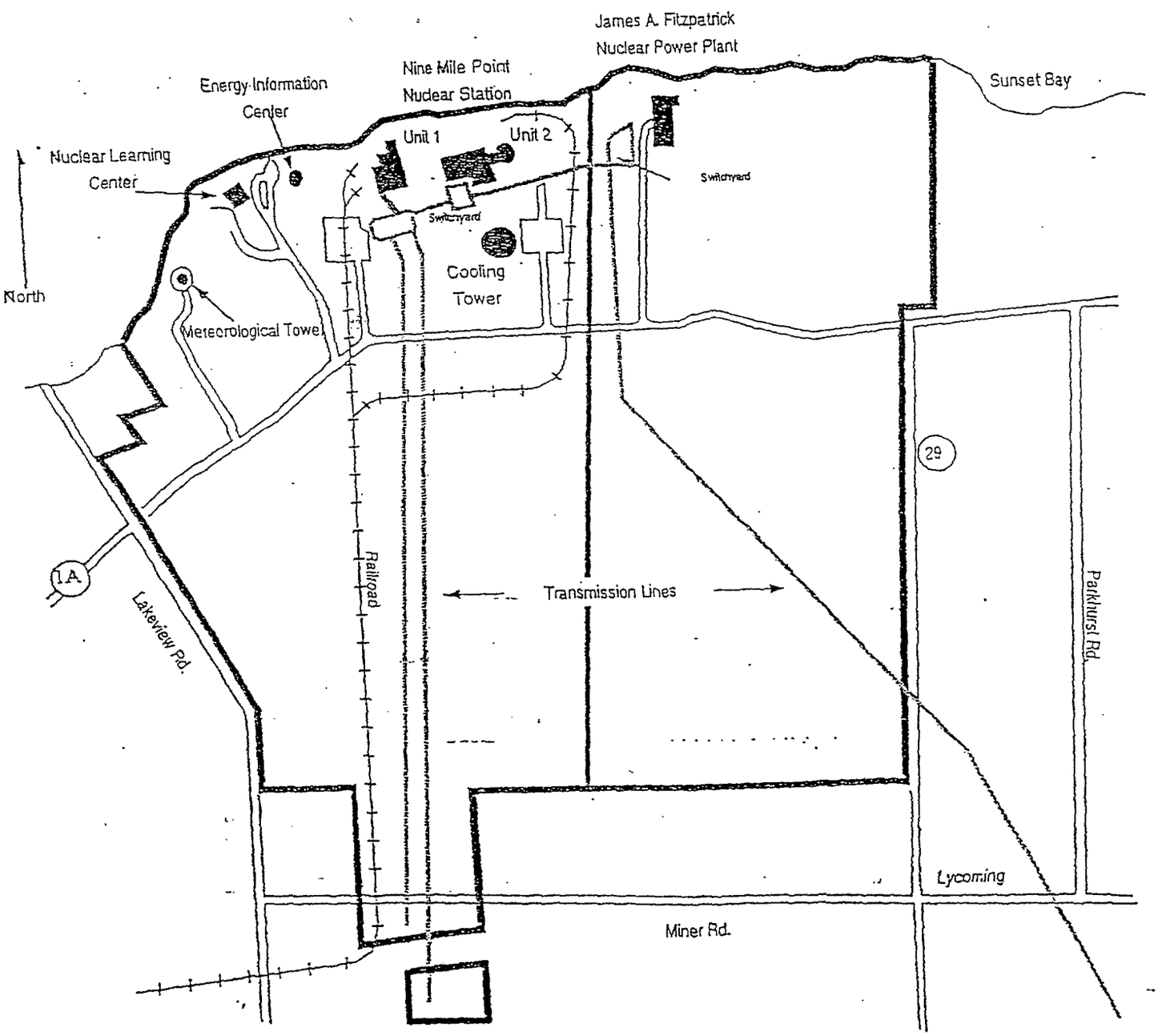
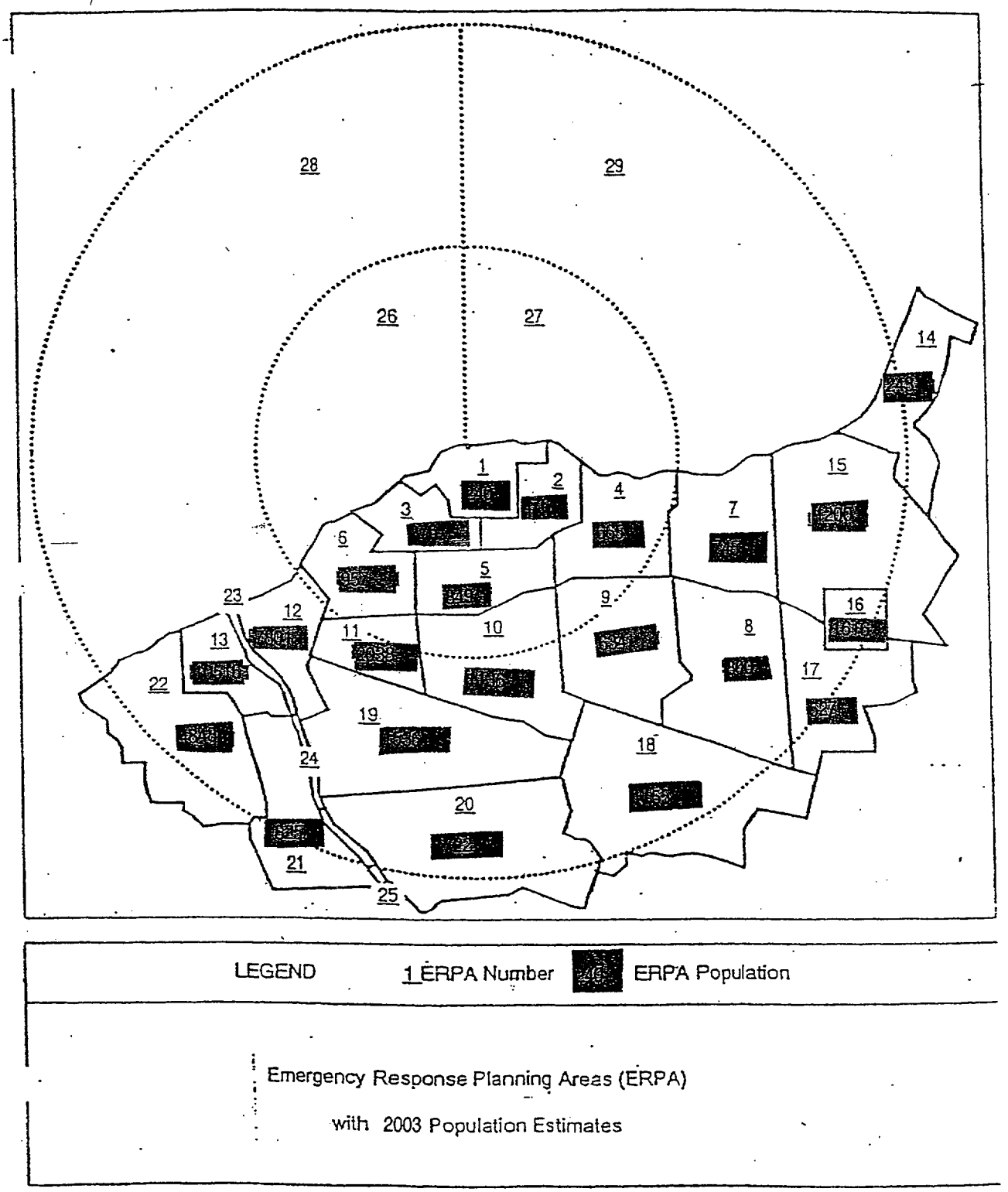


FIGURE 1.5 - ERPA Map



ATTACHMENT 2: USE OF THE EDAMS COMPUTER

1.0 EDAMS Computer

1.1 Ensure the system is powered up. If it is not, turn on the power to the EDAMS computer, monitor, printer, and modem if appropriate. After the computer boots:

1.1.1 Select the EDAMS icon on the desktop screen or from the Start Menu Programs.

1.1.2 Select the Login icon.

1.1.3 Select Continue or hit the enter key.

1.1.4 Select "Direct Connect to Met Data".
NOTES: 1. If the message "Invalid Selection" appears,

- Hit the Escape key
- Click Logoff icon (you may have to wait for it to "Timeout")
- Continue at 1.1.2

2. You will also get "Invalid Selection" if you attempt direct connect when you are already connected. To determine if you are already connected:

- Hit the escape Key, then
- Select Emergency Met Report icon

1.1.5 Once login is successful/complete, select OK.

1.1.6 Select appropriate icon.

1.1.7 When finished, log off the MMS by clicking the Logoff icon.

1.2 Communications Problems

1.2.1 If "Direct Connect to Met Data" fails repeat Step 1.1 "a" through "c" and then, select "Automatic Dial-In to Met Data" (Automatic dial will try 4 different numbers to connect).

1.2.2 If "Automatic Dial-In to Met Data" fails, select" Manual Dial-In to Met Data", and select "number to dial" from the drop down box. Repeat with different numbers as necessary.

1.2.3 If all attempts to login to the Meteorological Monitoring System fail, data will have to be obtained using backup methods as described in Attachment 3 of this procedure.

1.3 Computer Problems

1.3.1 Select the Logoff icon (you may have to wait for it to "Timeout")

1.3.2 Shut down/power off the computer and then reboot the computer

1.3.3 Repeat Section 1.1

a. If problems still exist use the backup computers as follows:

- Unit 1 backup EDAMS computer is the "Rounds" computer
- Unit 2 backup EDAMS computer is the STA's computer
- EOF backup EDAMS computer is the duplicate EDAMS computer

NOTE: The Rounds and STA computers are ONLY capable of "Direct Connect". Automatic or Manual Dial-in can not be used to obtain meterological data.

2.0 EDAMS DOSE MODEL LIMITATIONS

2.1 A calculational limitation of the dose assessment model occurs when an extreme wind (direction) shift takes place. The model may not calculate doses in sectors that the plume skips over entirely within a single 15-minute calculation step.

2.2 EDAMS only allows the operation of one application at a time.

2.3 Dose rates and deposition rates reported by the model are the maximum for the sector, not necessarily the dose rate or deposition rate at the center of the sector. This avoids the situation of a narrow (stable) plume slipping between receptor points and being missed.

2.4 Deposition data reported is not intended for an environmental evaluation; its intent is to indicate areas of potentially high ground level conentrations.

ATTACHMENT 3: METEOROLOGICAL DATA ACQUISITION

1.0 OBTAINING METEOROLOGICAL DATA

1.1 Obtain ground/elevated meteorological data appropriate to the radiological release point in the order listed below. If no release is in progress, or the release path is unknown obtain the elevated data.

A. EDAMS (see Section 2.0 of this Attachment)
B. Strip chart recorder (see Section 3.0 of this attachment)
C. Manual input from alternate sources (see Section 4.0 of this attachment)

NOTE: Data may be recorded in Table 3.7.

1.2 EOF only - Assume both Lake Breeze and Land Breeze exist. Confirm existence in accordance with Figures 3.2 and 3.3, if a meteorologist is present.

1.3 EOF only - If using the main tower and wind direction is between 0° and 100° or if using the backup tower and wind direction is between 220° and 270° notify the ESSTC and ODAM that the plume may arrive sooner than the wind speed would indicate.

1.4 Repeat Section 1.0 every 15 minutes.

2.0 USING EDAMS TO OBTAIN METEOROLOGICAL DATA

2.1 Log in the EDAMS computer in accordance with Attachment 2 of this procedure.

2.2 Select "Emergency Meteorological Report" to obtain meteorological data.

2.3 Select "Continue" or hit "Enter" key.

2.4 Select affected unit, and select Release Height.

2.5 Select OK or hit "enter" key.

2.6 Requery, if necessary.

2.7 Select "Print Met Data" to print the data, as required.

2.8 Determine whether to use ground or elevated data in accordance with Step 1.1.

2.9 Use data as obtained;

2.10 If data is not available through the EDAMS computer, proceed to Section 3.0.

3.0 USING STRIP CHART RECORDERS TO OBTAIN METEOROLOGICAL DATA

* *

CAUTION

Do not use the LED readouts associated with the strip chart recorders.

* *

NOTE: Use this method only if the method described in Section 2.0 of this attachment is unavailable. If the strip chart data is unavailable, proceed to Section 4.0.

3.1 Locate the chart recorders in the Unit 1 or 2 Control Rooms or the TSC.

NOTES:

1. Figure 3.4 shows a sample strip chart trace of air temperature, 100' ΔT, 200'ΔT, and $\sigma\theta$ and Figure 3.5 shows a sample of wind speed and wind direction data.
2. A meteorologist may use the following steps or skills of the trade to obtain meteorological data.

3.2 Apply the hierarchy in accordance with Table 3.1 to determine what data to obtain.

TABLE 3.1

Parameter	Hierarchy	Elevated Release	Ground Release
Wind Speed & Direction	Primary	200' Main	30' Main
	Substitute	100' Main	
		JAF Backup	
		30' Main	200' Main
Stability	Primary	200' ΔT	100' ΔT
	Substitute	100' ΔT	200' ΔT
		200' $\sigma\theta^{(1)}$	30' $\sigma\theta^{(1)}$
		100' $\sigma\theta^{(1)}$	
		JAF Backup $\sigma\theta$	
		30' $\sigma\theta^{(1)}$	200' $\sigma\theta^{(1)}$

(1) If using 30', 100' or 200' $\sigma\theta$ stability, AND the wind is from a direction listed in Step 3.8, THEN substitute the next source of data in accordance with this step.

3.3 If substitute data is to be used consult a meteorologist if available; otherwise use the data as obtained.

3.4 Determine wind direction as follows:
a. Locate the wind direction trace
b. Estimate the average wind direction over the last 15 minutes;

3.5 Determine wind speed as follows:
a. Locate the wind speed trace
b. Estimate the average wind speed over the last 15 minutes; data

3.6 Determine stability class as follows:
a. Locate the ΔT
b. Estimate the average ΔT over the last 15 minutes.
c. Compare ΔT values to the Stability Classification chart (Table 3.6).
AND Select the appropriate stability class (for 200' ΔT use column 6 and for 100' Δt use column 4.

3.7 If ΔT values are not available, then locate the $\sigma\theta$ from the main or backup tower recorder in accordance with Table 3.1.

3.8 If using 30', 100', or 200' $\sigma\theta$ stability and the wind is reading from a direction listed below, substitute the next stability source in accordance with Table 3.1.

Main Tower $\sigma\theta$ Stability	Wind Direction
200'	030° to 096°
100'	030° to 077°
30'	035° to 076°

3.9 Compare the value of $\sigma\theta$ to Table 3.6 (Column 5)

AND Select the appropriate stability class (column 3).

3.10 If using JAF Backup $\sigma\theta$ stability, the following adjustments should be made:

JAF Backup Tower Wind Direction	JAF Backup $\sigma\theta$ Stability Adjustment
232° to 246° or 270° to 281°	Add one stability class, such that: A→B B→C C→D D→E E→F F or G→G
247° to 269°	Add two stability class, such that: A→C B→D C→E D→F E, F or G→G

3.12 If neither ΔT or $\sigma\theta$ is available, observe the wind direction trace (200' for elevated data or 30' for ground data or substitute per Table 3.1) over the last 15-minute period.

3.13 Estimate $\sigma\theta$ from the trace by dividing the horizontal deviation of the wind direction trace (over the last 15 minutes) by 6. To make reading the chart easier, you may want to advance the chart.

3.14 Compare this calculated $\sigma\theta$ value to Table 3.6 (column 5).

AND Select the appropriate stability class (column 3).

4.0 MANUAL INPUT FROM ALTERNATE SOURCES

NOTE: Use this data only if the methods described in Section 2.0 and 3.0 unavailable.

* *

CAUTION

Data obtained by the following methods may not be site-representative and may introduce errors into dose assessments. A meteorologist should be consulted regarding the use of all substitute data. Use the data as obtained if a meteorologist is not available.

* *

4.1— To obtain National Weather Service (NWS) Meteorological Data
a. Telephone the NWS in Buffalo at 800-462-7751 or 716-565-9001.
b. Request the current wind speed, direction, stability class, and temperature.
c. Use the data as follows:
   1. Wind speed = elevated and ground wind speed
   2. Wind Direction = elevated and ground wind direction
   3. Stability Class = elevated and ground stability classes
   4. Temperature = ambient temperature

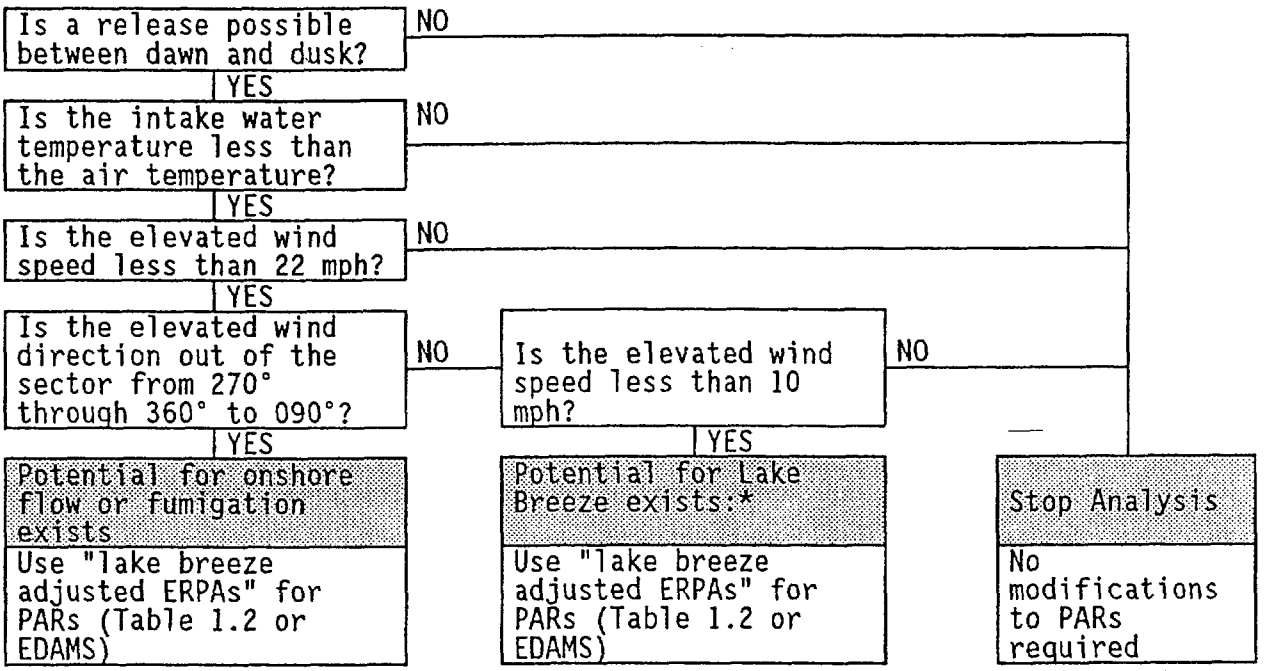
4.2 **EOF Only** - (Directions for the following may be found at the EOF at the Meteorology Station.)
Other sources of meteorological data that may be utilized are:

1. SODAR
2. Other Meteorology towers
3. Commercial weather services
4. **Meteorologist only** - Characterization tables
5. **Meteorologist only** - Skills of the trade

FIGURE 3.2
Lake Breeze/On-Shore Flow and Fumigation Flow Chart

EOF only - Refer to the following step and the flowchart below to determine if a lake breeze is a possibility.

1. Obtain meteorological data in Section 1.0 of this attachment.
2. Obtain intake water temperature from Table 3.8, Meteorologist (if available), Unit 1 or Unit 2 process computer, Control Rooms or using EDAMS
3. Follow the flowchart answering the appropriate questions.

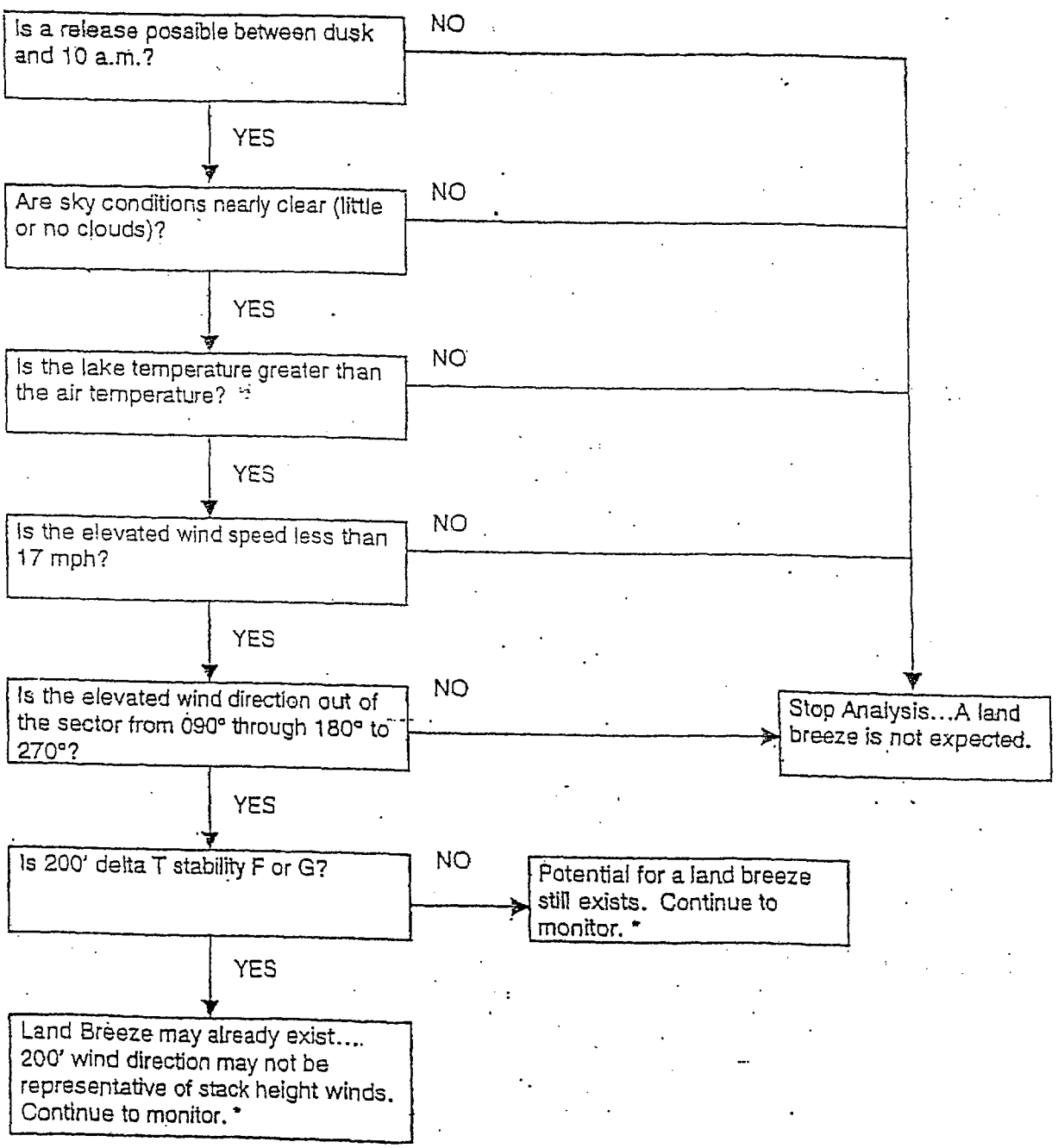


* NOTE: There is a potential for a shift in wind direction to 245° through to 065° if the lake breeze has not already formed.

FIGURE 3.3
LAND BREEZE FLOW CHART

EOF only - Refer to the flowchart below to determine if a **land breeze** is a possibility.

1. Obtain meteorological data in accordance with Section 1.0 of this Attachment.
2. Obtain lake temperature from Table 3.8, Meteorologist (if available). Unit 1 or 2 process computer, Control Rooms, or using EDAMS.
3. Follow the flowchart answering the appropriate questions.



*NOTE: There is a potential for a shift in wind direction to 090° through 180° to 270°.

FIGURE 3.4
Sample Air Temperature, Delta Temperature and Sigma Theta Trace Control Room

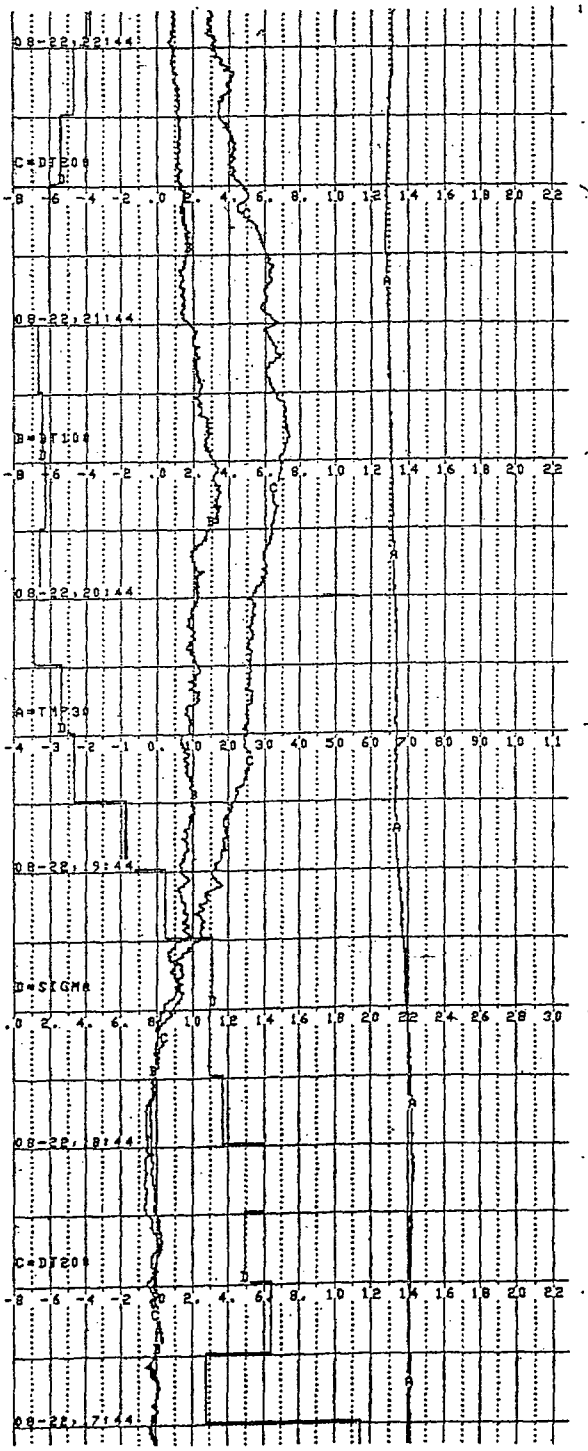


FIGURE 3.5
Sample Wind Speed and Wind Direction Trace
Control Room and TSC

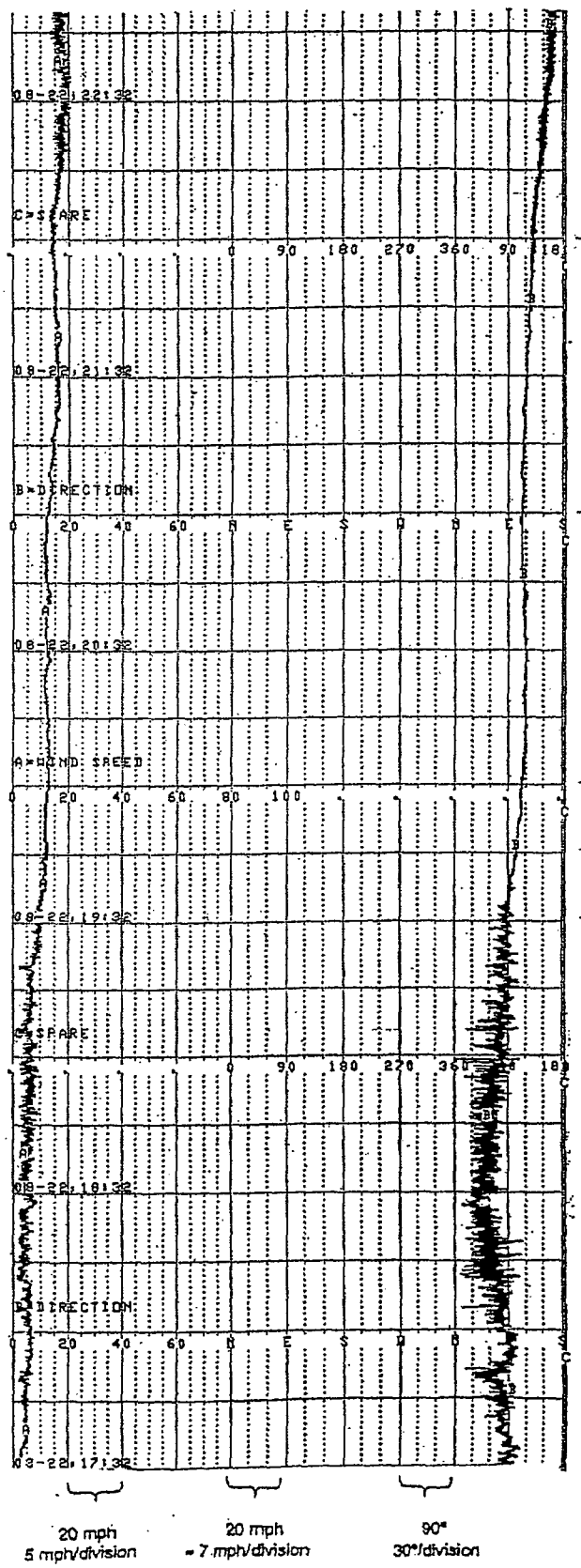


TABLE 3.6 - Stability Classification Chart

1	2	3	4	5
STABILITY CLASSIFICATION	STABILITY CLASS	TEMP CHANGE WITH HEIGHT, °F/72ft[1] (100 ft. ΔT)	σ_θ DEGREES RANGE OF VALUES[2]	TEMP CHANGE WITH HEIGHT, °F/168ft[3] (200 ft. ΔT)
Extremely Unstable	A	$\Delta T/\Delta Z \leq -0.75$	$22.5 \leq \sigma_\theta$	$\Delta T/\Delta Z \leq -1.75$
Moderately Unstable	B	$-0.75 < \Delta T/\Delta Z \leq -0.67$	$17.5 \leq \sigma_\theta < 22.5$	$-1.75 < \Delta T/\Delta Z \leq -1.57$
Slightly Unstable	C	$-0.67 < \Delta T/\Delta Z \leq -0.59$	$12.5 \leq \sigma_\theta 17.5$	$-1.57 < \Delta T/\Delta Z \leq -1.38$
Neutral	D	$-0.59 < \Delta T/\Delta Z \leq -0.20$	$7.5 \leq \sigma_\theta < 12.5$	$-1.38 < \Delta T/\Delta Z \leq -0.46$
Slightly Stable	E	$-0.20 < \Delta T/\Delta Z \leq 0.59$	$3.8 \leq \sigma_\theta < 7.5$	$-0.46 < \Delta T/\Delta Z \leq 1.38$
Moderately Stable	F	$0.59 < \Delta T/\Delta Z \leq 1.58$	$2.1 \leq \sigma_\theta < 3.8$	$1.38 < \Delta T/\Delta Z \leq 3.69$
Extremely Stable	G	$1.58 < \Delta T/\Delta Z$	$\sigma_\theta < 2.1$	$3.69 < \Delta T/\Delta Z$

(1) Adjusted to correspond to the ΔT measured between the 30-foot and 100-foot levels on the main tower.
(2) Note on symbol convention "$3.8 \leq \sigma\theta < 7.5$" means that $\sigma\theta$ is greater than or equal to 3.8 degrees but less than 7.5 degrees.
(3) Adjusted to correspond to the ΔT measured between the 30-foot and 200-foot levels on the main tower.

ATMOSPHERIC STABILITY CHARACTERIZATION

A. Mid-afternoon only, with clear skies or skies with very few thin clouds; late spring to early fall, winds usually are below 6 miles per hour.

B. Late morning to mid-afternoon only, with clear or partly cloudy skies; mid spring to mid-fall, winds are usually below 9 miles per hour.

C. Late morning to late afternoon only, with partly cloudy skies; spring through fall, wind usually are below 11 miles per hour.

D. All daytime, with overcast or partly cloudy skies or early morning and late afternoon with clear or partly cloudy skies, all night time with overcast skies or partly cloudy year round, winds are moderate to high (greater than 6 miles per hour).

E. Typically night time only, with thin overcast or partly cloudy skies, all year round, winds less than 10 miles per hour.

F. Typically night time only, with clear to partly cloudy skies, all year round, winds less than 7 miles per hour.

G. Typically night time only, with clear skies or very few thin clouds all year round, winds less than 5 miles per hour.

Table 3.7: MANUAL MET DATA WORKSHEET

Date/Time	Release Height (circle one)	Source of Data (circle one)	Wind Direction (degrees)	Wind Speed (mph)	Stability Class
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
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	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			
	Elevated/Ground	EDAMS/Strip Chart/Other			

Table 3.8 - Lake Ontario Surface Temperature (°F)

Month	From	To	Temperature	Month	From	To	Temperature
January	1	11	37	July	18	22	67
January	12	23	36	July	23	28	68
January	24	31	35	July	29	31	69
February	1	6	35	August	1	4	69
February	7	25	34	August	5	11	70
February	26	28	33	August	12	18	71
March	1	8	33	August	19	26	70
March	9	27	34	August	27	31	69
March	28	31	35	September	1	1	69
April	1	11	35	September	2	8	68
April	12	20	36	September	9	14	67
April	21	27	37	September	15	19	66
April	28	30	38	September	20	24	65
May	1	2	38	September	25	28	64
May	3	6	39	September	29	30	63
May	7	9	40	October	1	1	63
May	10	12	41	October	2	4	62
May	13	15	42	October	5	7	61
May	16	18	43	October	8	9	60
May	19	21	44	October	10	11	59
May	22	24	45	October	12	13	58
May	25	27	46	October	14	15	57
May	28	30	47	October	16	17	56
May	31	31	48	October	18	19	55
June	1	2	48	October	20	21	54
June	3	4	49	October	22	23	53
June	5	7	50	October	24	26	52
June	8	9	51	October	27	29	51
June	10	11	52	October	30	31	50
June	12	13	53	November	1	1	50
June	14	15	54	November	2	4	49
June	16	17	55	November	5	7	48
June	18	19	56	November	8	10	47
June	20	21	57	November	11	13	46
June	22	23	58	November	14	16	45
June	24	25	59	November	17	20	44
June	26	27	60	November	21	24	43
June	28	29	61	November	25	29	42
June	30	30	62	November	30	30	41
July	1	1	62	December	1	4	41
July	2	4	63	December	5	10	40
July	5	8	64	December	11	18	39
July	9	12	65	December	19	30	38
July	13	17	66	December	31	31	37

Source: R.J.Ballentine, "Formulation And Testing Of An Index To Predict The Onset Of Lake Breezes Along The South Shore Of Lake Ontario" (May 1987).

ATTACHMENT 4: RELEASE RATE DETERMINATION

1.0 METHOD

a. Access the EDAMS Computer using Attachment 2 of this procedure.

b. Select the "EDAMS" Icon.

c. Select "Release Rate Calculations"

d. IF Unit 1 was selected, go to Section 2.0 of this Attachment.

e. IF Unit 2 was selected, go to Section 3.0 of this Attachment.

f. Assess all calculated release rates or EC monitor readings against ODCM limits by implementing Attachment 4a.

2.0 UNIT 1 METHODS

2.1 OGESMS

a. Select monitor (7, 8, 10a or 10b)

NOTE: Monitor 7 = indicator 112-07A
Monitor 8 = indicator 112-08A
Monitor 10a = indicator RN10A
Monitor 10b = indicator RN10B

b. Enter time that reading was obtained (using 24 hour format)

c. Enter monitor reading (cpm for monitors 7 or 8, cps for monitors 10a or 10b). Use J panel readings or the following computer points:

- monitor 7, use E334
- monitor 8, use E335
- monitor 10a, use E488
- monitor 10b, use E489

d. Enter process computer calibration factor. If unavailable, use default values below:

- 4.4E-8 for 7 or 8
- 4.4E-7 for 10a or 10b

e. Enter Stack Flow (kcfm). Use J Panel OR computer point C320 or calculate from Table 4.1.

f. Hit the "F9" key.

g. Print results.

2.2 Stack Teletector

a. Enter the time that the reading was obtained (24-hour format).

b. Enter the monitor reading (mrem/hr).

c. Enter the calibration factor. If unavailable, use default value of 0.5.

d. Enter Total Stack Flow (kcfm). Use J Panel or computer point C320 or calculate from Table 4.1.

e. Hit the "F9" key.

f. Print the results.

2.3 Grab Sample (Noble Gas)

* *

CAUTION

In using grab samples to determine release rate, the results may be invalid if significant changes in source terms have occurred since the sample was taken.

* *

a. Enter the time that the reading was obtained (24-hour format).

b. Enter total Noble Gas concentration (μCi/cc) (for EDAMS) OR the concentration of each isotope (μCi/cc)(for Raddose).

c. Enter Total Stack Flow (kcfm). Use J Panel or computer point C320 or calculate from Table 4.1.

d. Hit the "F9" Key.

e. Print the results.

2.4 Back Calculation

NOTE: Use back calculation of downwind survey team data to determine release rate when no other method is available, AND to verify calculated release rates.

a. If this method is to be used to make an initial determination of release rate, then back calculate using EDAMS (not Raddose). This value can then be input into Raddose in accordance with Attachment 5 of this procedure.

b. Enter the time that the reading was obtained (24-hour format).

c. Enter the wind speed (mi/hr). Use the method described in Attachment 3.

d. Enter "E" for elevated/stack or "G" for ground/vent release.

e. Enter the stability class (A-G).

f. Enter the three foot closed window reading from the ion chamber (mRem/hr). If readings are in CPM, then convert using 3500 CPM = 1 mRem/hr, or other appropriate conversion constant for the detector being used.

g. Enter the downwind distance that the above reading was obtained.

h. Hit the "F9" key.

i. Print the results.

2.5 UFSAR/USAR

* *

CAUTION

This selection is only appropriate if no other sources of data are available (including downwind survey data) AND the accident conditions are identical to those described in the UFSAR for the accident selected.

* *

NOTE: Input from the Control Room, TSC or EOF Technical Staff may be necessary to select the FSAR accident type that most closely describes the conditions being experienced.

a. Select the accident being experienced or projected (Use Attachment 5, Table 5.1).

b. Print results.

2.6 Containment High Range Monitor

NOTES: 1. This method is only valid if the monitor is able to "see" the release. Therefore, consult Operations personnel on the validity of monitor readings.

2. The following may be used for this calculation:

- Unit 1 primary containment free-air volume = 314,000 ft^3
- Tech Spec leakage from primary containment = ~1%/day

a. Enter the monitor ID or number (U-1 CHRRM 11,12; U-2 RMS 1A-1D)

b. Enter the time that the reading was obtained (24-hour format).

c. Enter the date that the reading was obtained.

d. Enter the time of reactor shutdown (24-hour format).

e. Enter the date that the reactor was shutdown.

f. Enter the monitor reading (rem/hr). Use J Panel computer point E467 or E468.

g. Enter the expected flow rate (kcfm) to the environment. Consult with Operations personnel if needed.

h. Hit the "F9" key.

i. Print results.

2.7 For liquid releases, consult N1-CSP-M204

3.0 UNIT 2 METHODS

3.1 GEMS

a. Enter the time that the reading was obtained (24-hour format).

b. Enter "S" if this is a stack reading or "V" if it is a vent reading.

c. Enter monitor reading (μCi/s). Use GEMS readings from SPDS display or the GEM recorder on (X10) 882 panel. If offscale (range 1E9 μCi/sec), use GEMS computer.

d. Hit the "F9" key.

e. Print results.

3.2 Grab Sample (Noble Gas)

* *

CAUTION

In using grab samples to determine release rate, the results may be invalid if significant changes in source terms have occurred since sample was taken.

* *

a. Enter the time that the reading was obtained (24-hour format)

b. Enter total Noble Gas reading (μCi/cc) (for EDAMS) OR the concentration of each isotope (μCi/cc)(for Raddose).

c. Enter total stack or vent flow (kcfm). Calculate from Figure 4.2 or 4.3.

d. Hit the "F9" Key.

e. Print the results.

3.3 Back Calculation

Use Section 2.4 of this Attachment.

3.4 USAR

Use Section 2.5 of this Attachment.

3.5 Containment High Range Monitor

NOTES: 1. This method is only valid if the monitor is able to "see" the release. Therefore, consult Operations personnel on the validity of monitor readings.

2. The following may be used for this calculation:

- Unit 2 primary containment free-air volume = 497,000 ft^3
- Tech Spec leakage from primary containment = ~1%/day

Use Section 2.6 of this Attachment. Monitor readings are available on the DRMS system, the SPDS display or the 880 panel.

3.6 For liquid releases, consult N2-CSP-LWS-M203

TABLE 4.1
UNIT 1 STACK: FAN CONFIGURATION

Fan	Nominal Flow (KCFM)	Computer Point	Workspace
Drywell Vent, Purge, and Fill Line	10		
Turbine Building High Speed Fan	170		
Turbine Building Low Speed Fan	120		
Reactor Building High Speed Fan	70		
Reactor Building Low Speed Fan	35		
Waste Building	8		
Waste Building Extension	5.3		
Offgas Building	6		
Reactor Building Emergency Ventilation	1.6		
RSSB Extension	10.25		
Total Stack Flow		C320	

TABLE 4.2
UNIT 2 STACK: FAN CONFIGURATION

Fan	Nominal Flow (KCFM)	Computer Point	Workspace
CST Room	2.2		
Stack Substructure	1.4		
Turbine Building - 1 fan	40		
Turbine Building - 2 fans	80		
Standby Gas Treatment	4		
Total Stack Flow			

TABLE 4.3
UNIT 2 VENT: FAN CONFIGURATION

Fan	Nominal Flow (KCFM)	Computer Point	Workspace
Turbine Building 250' and 306' Decon Rm Fan	3.3		
Radwaste Liner Fan	0.8		
Radwaste Tank Fan	4.9		
Radwaste Building - 1 fan	47.8		
Radwaste Building - 2 fans	95.6		
Aux Boiler	23		
Refueling Floor Above	70		
Refueling Floor Below	70		
Total Vent Flow			

ATTACHMENT 4A: DETERMINATION OF PERCENT OF ODCM RADIOLOGICAL RELEASE

Procedure:

1. Determine release rate in accordance with Attachment 4 of this procedure.

2. Enter release rate or monitor reading as appropriate and calculate % ODCM.

   a. Unit 1 Stack release:

      1. assume calculated stack release rates represent Noble Gas release rates
      2. calculate:

      % ODCM =
      Noble Gas release rate (Ci/sec) _____x 8850 = % ODCM =_____

   b. Unit 1 Emergency Condenser (EC) Vent release:

      NOTE: (EC Vent is considered an unmonitored release)

      1. calculate:

      % ODCM =
      EC Vent monitor reading (mr/hr) _____x 5 = % ODCM =_____

   c. Unit 2 Stack release:

      1. assume calculated stack release rates represent Noble Gas release rates
      2. calculate:

      % ODCM =
      Noble Gas release rate (Ci/sec) _____x 1042 = % ODCM =_____

   d. Unit 2 Vent release:

      1. assume calculated stack release rates represent Noble Gas release rates
      2. calculate:

      % ODCM =
      Noble Gas release rate (Ci/sec) _____x 3704 = % ODCM =_____

3. If there are multiple releases (release points) due to the same event, then SUM the % ODCM values to obtain the total % ODCM.
   Total % ODCM =_____

4. IF Total % ODCM or % ODCM from any source is > 100% ODCM, THEN:

   a. Advise the SSS/ED or the ODAM that a release that exceeds the ODCM has taken place.

   b. (EOF Only) Initiate Part II Notification Fact Sheet, as directed by the ODAM, using EDAMS to generate the report as described in Attachment 5 Section 1.2.9, or complete by hand.

ATTACHMENT 5: REFINED DOSE ASSESSMENT AND PROTECTIVE ACTIONS

1.0 DOSE ASSESSMENT

1.1 General Considerations

1.1.1 The dose assessment program is called RADDOSE.

1.1.2 Meteorological data is automatically sent to RADDOSE by the Meteorological Monitoring System (MMS). The user can use this data or manually input data.

1.1.3 Source term and release rate determination is identical to that described in Attachment 4.

1.2 Dose Assessment Procedure

NOTE: The dose assessment model has many capabilities beyond those used in this procedure. Use the "EDAMS Operators Manual" (available in the EOF) for further reference.

1.2.1 Log on to EDAMS computer using Attachment 2.

1.2.2 Select the affected Unit "Dose Assessment Model."

1.2.3 Utilize "EDAMS/RadDose Data Entry Form", Attachment 5.2, or equivalent.

1.2.4 Select "Begin New Incident" at the options.

1.2.5 Select "Yes" to erase all previous data when prompted.

1.2.6 Enter the following at the Accident Scenario Definition screen:

a. Reactor Trip Date. This is the date that the reactor scrammed or was manually tripped. IF the reactor is not shut down, enter tomorrow's date.

b. Reactor Trip Time (24-hour format). This is the time that the reactor scrammed or was manually tripped.

c. Release Date. This is the date that the release to the atmosphere began, or is projected to begin.

d. Release Time (24-hour format). This is the time that release to atmosphere began or is projected to begin.

e. Enter the lake temperature (deg F). If unknown, hit "Enter" and historical data will be entered.

f. Enter the initials of the user (two or three initials).

g. Verify entries, make any necessary changes, and select accept to continue.

1.2.7 Select "Enter/Edit Source Term Data" from the EDAMS main menu.

NOTES:

1. Use Attachment 4 to obtain the information needed to complete this section.
2. The preferred source of release rate data is the actual isotopic distribution, if available.

a. Select the accident type that most closely matches the source term going to the environment. Use the table below as a guide.

Fuel Damage/Reduction Mechanism	Accident Type
None/none	LOCA
Minor (gap release)/SBGT or GTS	LOCA
Significant (grain boundary - melt)/none	DBA
Significant (grain boundary -melt)/SBGT or GTS	LOCA
Severe (melt)/SBGT or GTS	Severe Accident
Severe (melt)/none	Severe Accident

b. Select "Yes" for elevated releases OR "No" for ground releases when asked, "Is this release Elevated?".

NOTE: "Elevated" releases are releases from the stack. "Ground" releases are from any other release point.

1.2.7 (Cont)

c. Select the "Method" used to determine the release rate by selecting the highlighted cell or by hitting the "F2" key and selecting.

1. Utilize Attachment 4 Section 2.0 for Unit 1 releases.

2. Utilize Attachment 4 Section 3.0 for Unit 2 releases.

a. Enter correct Calibration Factor, if appropriate, then select "OK".

b. Enter appropriate Flow Rate and monitor reading.

d. Select the Iodine release rate "Method" by selecting the highlighted cell or by hitting "F2" key. Utilize one of the following:

1. Grab Sample: This section can be used if concentrations (μCi/cc) by isotope, and associate flow rate are available

a. obtain sample analysis results from TSC

b. enter concentration of each isotope

c. enter flow rate (cfm) associated with sample

NOTE: This method will override previously input Total Release Rate method

2. Direct: This selection utilizes direct entry of the release rate (in Ci/Sec) obtained by any method, including the following

a) Use of downwind survey team data

1) determine the representative I/NG ratio using field data and the methodology described in EPIP-EPP-07.

2) multiply the NG or total release rate (obtained from Attachment 4) by the I/NG ratio.

3) enter the Iodine release rate in the appropriate column.

1.2.7 (Cont)

3. Ratio: This selection utilizes the UFSAR/USAR I/NG ratio and multiplies it by the Total Release Rate.

Accident Type	I/NG Ratio	
	U1	U2
LOCA	5.59 E-4	2.23 E-4
DBA	8.2 E-4	1.97 E-2
Steam Line Break	7.64	33.5

4. UFSAR:

e. Up to three Accident Types (and therefore three release paths) can be entered. To enter additional release paths, repeat Steps a - d above. When all applicable accident types have been entered, proceed to the next step.

f. Upon completion of this screen, verify data and make any necessary changes before "Accept".

1.2.8 The user will be queried for the meteorological data required. Enter meteorological data as required:

a. Select "Enter/Edit Meteorological Data", Elevated or Ground as appropriate.

b. If the MMS is available, the data will be automatically displayed for the current time step.

1. Select "Requery MMS".

2. Select "Accept" as necessary.

1.2.8 (Cont)

c. If the MMS is unavailable, then enter both ground and elevated met data obtained from alternate sources, as outlined in Attachment 3 of this procedure and select "Accept"

1.2.9 Select "Perform Calculations" from the EDAMS main menu.

NOTE: The purpose of the following steps is to determine the projected avoidable dose resulting from the incident.

* *

CAUTION

Any calculations performed on actual data shall be verified. The ODAM may act as the checker for calculations performed by the Rad Assessment Staff.

* *

a. The map of the 10 mile Emergency Planning Zone (EPZ) will appear with centerline dose rates when the calculation is complete.

b. Select "Continue" to go to the output menu.

c. Select "Continue Calculations" from the output menu.

d. Select "Perform Forecast" from the RADDOSE main menu.

e. Verify both meteorology and source term data as required.

f. Enter "Forecast Period" (i.e. - release duration). Use 4 hours as a default value.

g. Select "OK".

h. Select "Yes" if a GE has been declared for any reason, OR "No" if GE has not been declared.

i. After the forecast map appears "Continue" to go to the output menu.

j. Select "Go to Report Menu".

k. Select "Print 10-Mile ERPA Map".

l. Select "Print Complete Dose/Dose Rate Report".

m. Select "Print Notification Form Part 2", as directed by the ODAM, to print Part II Notification Fact Sheet.

n. Attach results of Step 1.2.9.j and k to EDAMS/RadDose Data Entry Form, Attachment 5.2 or equivalent.

1.2.9 (Cont)

o. Verify that any results are supported by radiological and plant conditions. Consider:

- Core damage
- Drywell high range monitor readings
- Effluent monitor readings
- Inplant radiological conditions
- Containment hydrogen monitor readings

p. If the next 15 minute internal is part of the forecast for ERPAs/towns/etc., where the plume has not yet arrived at those locations, add data to the next projection.

1.3 If it is desired to utilize EDAMS to track near real-time doses, then perform the following steps:

* *

CAUTION

The results of this step shall NOT be utilized to determine PARs.

* *

1.3.1 Enter accident, source term and meteorological data in accordance with Steps 1.2.1 through 1.2.8 of this attachment.

1.3.2 Select "Perform Calculations" from the EDAMS main menu.

1.3.3 Enter meteorological and source term data at 15 minute intervals.

1.3.4 Determine dose at any time by viewing the displayed 10 mile ERPA map.

2.0 REFINED PROTECTIVE ACTIONS

2.1 These actions are initiated for the purpose of verifying the adequacy of PARs made using Attachment 1 of this procedure **OR** to develop PARs using projected doses obtained from Attachment 5, Step 1.2.9 of this procedure.

2.2 In determining PARs based on dose assessment, carefully consider factors such as release duration and Evacuation Travel Time Estimates (ETTE). (For example, puff releases may yield doses in excess of Protective Action Guidelines for an evacuation, but the plume will pass before an evacuation could be completed). ETTEs are available in the EOF.

2.3 If evacuation is recommended for an ERPA, Then the recommendation shall include implementation of the KI Plan.

NOTE: County and State PARs take many factors into account that NMP procedures do not (i.e. - road conditions, special population needs, evacuation scenarios, and shelter vs evacuation doses). Therefore, differences in PARs may occur. The ODAM must account for differences in PARs, when those differences exist. This can be accomplished via consultation with County and State representatives in the EOF as to the assumptions used in their dose calculations and PAR development.

2.3 Obtain dose projection for each ERPA.

2.3.1 PARs are listed on the 10 mile ERPA map obtained per Attachment 5, Step 1.2.9. j.

2.3.2 The following criteria are used in determining the PAR for each ERPA.

PAR	TEDE (rem)	CDE_T (rem)
Evacuate	> 1	> 5

2.3.3 Record the PAR for each ERPA on the Part 1 Notification Form and give to the ED/RM for approval.

2.3.4 PARs that have been made previously must be accounted for when PARs are revised. For example, if a PAR to evacuate an ERPA was previously made to the State/County and that PAR does not appear on a revised map from ~~1~~.2.9.j, that PAR must still be included on the revised recommendation to the State/County. Once a PAR is transmitted to the State/County, it shall not be changed.

2.3.5 If projected doses exceed values listed in Attachment 5 Step 2.3.2 for distances greater than 10 miles, PARs shall be made using convenient geographic boundaries (such as townships).

TABLE 5.1 - FSAR/USAR ACCIDENT TYPE

Accident Type	Noble Gas Release Rate (Ci/s)	Iodine Release Rate (Ci/s)	Analyzed Release Point
Unit 1:			
DBA Loss of Coolant	5.50E+0	4.53E-3	Elevated
Control Rod Drop	2.51E+1	6.03E-5	Elevated
Refueling Accident	3.78E-2	3.84E-5	Elevated
Steam Line Break	6.36E+0	4.86E+1	Ground
Loss of Coolant (Realistic)	1.79E-3	1.00E-6	Elevated
Unit 2:			
DBA Loss of Coolant	1.03E+1	2.03E-1	Elevated
Control Rod Drop	4.22E-2	4.70E-4	Ground
Refueling Accident	1.77E+1	1.65E-1	Ground
Steam Line Break	3.64E+0	1.22E+2	Ground
Rad Gas Waste System Leak	4.06E+0	0.00	Ground
Instrument Line Failure	0.00	2.17E-2	Ground
Fuel Cask Drop	2.06E+0	2.68E-3	Ground
Loss of Coolant (Realistic)	1.05E-2	2.38E-5	Elevated

CHRONOLOGICAL RELEASE RATE LOG

Date:	Release Form:	Survey Location:	Completed By:

Effluent Monitor Data				Environmental Sampling Data								Release Log			
Time of Monitor Reading	Monitor System	Release Rate (Ci/sec)	Duration of Release	Survey Time	Location	Gamma Dose Rate (mR/hr)	Distance (Mi)	Wind Speed (mph)	*** Transit Time (min)	**** Est. Time of Release from Site	Release Rate (Ci/sec)	Assigned Release Rate (Ci/sec)	Assigned Time Interval Start	Stop	ODAM Review

Notes: *** Transit Time (min) = (Distance/Wind Speed) x 60 min/hr **** Est. Time of Release = Survey Time - Transit Time

EDAMS/RadDose Input Form (Unit 1)

Date/Time completed: _____ / _____ ❑ Actual ❑ What if

Source Term Data:

Scenario Definition

Reactor trip: Date: Time:	**Release began:** Date: Time:	**Release duration:** (hrs)

Source term entry:

Pathway #1 2 3 (circle) ❑ Elevated ❑ Ground

Total release rate definition

Select accident: ❑ Containment DBA ❑ Control Rod Drop ❑ Refueling Accident ❑ Steam Line Break ❑ LOCA (realistic)

❑ Svr Accident Source Term

OGESMS	Stack Teletector	Grab Sample	Direct	UFSAR	Containment HR Rad	Back Calc	Svr Accdnt
Reading _____ ❑ cpm ❑ cps Cal Factor ❑default or _____ Stack flow rate (kcfm) _____	Reading Time _____ Reading (mr/hr) _____ Cal Factor _____ Stack flow (kcfm) _____	Sample flow (kcfm) _____ Attach printout	_____ Ci/sec	❑	Monitor ID _____ Monitor Rdg _____ R/hr Flow _____ Kcfm	3' CW _____mr/hr* Reading distance ____ mi Reading bearing _____ deg * mr/hr x 3500 = cpm	Sprays: ❑ on ❑ off Filters: ❑ on ❑ off Leak Rate: ☐ 0.1%/day ☐ 100%/day ☐ 100%/hour Hold-up Time ☐ 0.5 hour ☐ 2-12 hours ☐ 24 hours

Iodine release rate definition

Grab Sample	Ratio	UFSAR	Direct
Attach printout ❑	❑	❑	_____ Ci/sec Or Total RR or Noble Gas RR x I/NG ratio = Ci/sec workspace: _____ x _____ = _____

(Additional pathways may be entered using additional sheets)

Source Term entry

Pathway #1 2 3 (circle) ❑ Elevated ❑ Ground

Total release rate definition

Select accident: ❑ Containment DBA ❑ Control Rod Drop ❑ Refueling Accident ❑ Steam Line Break ❑ LOCA (realistic)

❑ Svr Accident Source Term

OGESMS	Stack Teletector	Grab Sample	Direct	UFSAR	Containment HR Rad	Back Calc	Svr Accdnt
Reading _____ ❑ cpm ❑ cps Cal Factor ❑default or _____ Stack flow rate (kcfm) _____	Reading Time _____ Reading (mr/hr) _____ Cal Factor _____ Stack flow (kcfm) _____	Sample flow (kcfm) _____ Attach printout	_____ Ci/sec	❑	Monitor ID _____ Monitor Rdg _____ R/hr Flow _____ Kcfm	3' CW _____ mr/hr* Reading distance _____ mi Reading bearing _____ deg * mr/hr x 3500 = cpm	Sprays: ❑ on ❑ off Filters: ❑ on ❑ off Leak Rate: ❑ 0.1%/day ❑ 100%/day ❑ 100%/hour Hold-up Time ❑ 0.5 hour ❑ 2-12 hours ❑ 24 hours

Iodine release rate definition

Grab Sample	Ratio	UFSAR	Direct
Attach printout ❑	❑	❑	_____ Ci/sec Or Total RR or Noble Gas RR x I/NG ratio = Ci/sec workspace: _____ x _____ = _____

Meteorological Data:

❑ Use actual data ❑ Use data below

	Wind Speed (mi/hr)	Wind from (degrees)	Delta Temp (F°)	Sigma Theta (Degrees)	Stability Class	Air Temp (F°)	Precip Rate (in/15 min)
Ground Data							
Elevated Data							

EDAMS/RadDose Input Form (Unit 2)

Date/Time completed: _____ / _____ ❑ Actual ❑ What if

Source Term Data:

Scenario Definition		
Reactor trip: Date: Time:	**Release began:** Date: Time:	**Release duration:** (hrs)

Source Termientry:

Pathway #1 ❑ Elevated ❑ Ground

Total release rate definition

Select accident: ❑ Containment DBA ❑ Control Rod Drop ❑ Refueling Accident ❑ Steam Line Break ❑ LOCA ❑ Svr Accident Source Term ❑ Rad Gas Waste System Leak ❑ Instrument Line Break ❑ Fuel Cask Drop

GEMS	Grab Sample	Direct	USAR	Containment HR Rad	Back Calc
_____µCi/sec	Sample flow (kcfm) _____ Attach printout	_____ Ci/sec	❑	Monitor ID _____ Monitor Rdg _____ R/hr Flow _____ Kcfm	3' CW _____mr/hr* Reading distance ____ mi Reading bearing _____ deg * mr/hr x 3500 = cpm

Iodine release rate definition

Grab Sample	Ratio	USAR	Direct
Attach printout ❑	❑	❑	_____ Ci/sec Or Total RR or Noble Gas RR x I/NG ratio = Ci/sec workspace: _____ x _____ = _____

(additional pathways may be entered on the reverse side)

Pathway #2 ❑ Elevated ❑ Ground

Total release rate definition

Select accident: ❑ Containment DBA ❑ Control Rod Drop ❑ Refueling Accident ❑ Steam Line Break ❑ LOCA ❑ Svr Accident Source Term

❑ Rad Gas Waste System Leak ❑ Instrument Line Break ❑ Fuel Cask Drop

GEMS	Grab Sample	Direct	USAR	Containment HR Rad	Back Calc
_____µCi/sec	Sample flow (kcfm) _____ Attach printout	_____ Ci/sec	❑	Monitor ID _____ Monitor Rdg _____ R/hr Flow _____ Kcfm	3" CW _____mr/hr* Reading distance ____ mi Reading bearing _____ deg * mr/hr x 3500 = cpm

Iodine release rate definition

Grab Sample	Ratio	USAR	Direct
Attach printout ❑	❑	❑	_____ Ci/sec Or Total RR or Noble Gas RR x I/NG ratio = Ci/sec workspace: _____ x _____ = _____

Meteorological Data:

❑ Use actual data ❑ Use data below

	Wind Speed (m/hr)	Wind from (degrees)	Delta-Temp (°F)	Sigma Theta (Degrees)	Stability Class	Air Temp (°F)	Precip Rate (in/15 min)
Ground Data							
Elevated Data							

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EPIP-EPP-26

REVISION 01

NATURAL HAZARD PREPARATION AND RECOVERY

TECHNICAL SPECIFICATION REQUIRED

Approved by:
L. E. Pisano

Manager - Nuclear Training

14 Nov 00
Date

THIS IS A FULL REVISION

Effective Date: 11/27/2000

PERIODIC REVIEW DUE DATE NOVEMBER, 2001

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1.0 PURPOSE

To provide guidance on the preparation for, response to and recovery from natural hazards that may affect Nine Mile Point or the ability to implement the site emergency plan.

1.1 Applicability

This procedure applies to any severe natural events, which may include but are not limited to:

- Snow events of sufficient magnitude (actual or projected) to impede access to site for greater than several hours.
- Other severe weather events that result in, or may have resulted in widespread or significant damage to electrical transmission/distribution system, offsite buildings or residences or blocking a major roadway.
- Earthquakes, flooding or any other natural phenomena that causes significant damage to any site structure.

2.0 PRIMARY RESPONSIBILITIES

2.1 Emergency Preparedness should

2.1.1 Maintain sufficient supplies, equipment and procedures to meet the personal needs of the Emergency Response Organization.

2.1.2 Apprise the on-duty Emergency Director/Recovery Manager (ED/RM) of any impending natural hazards.

2.2 Station Shift Supervisor/Emergency Director (SSS/ED) should

2.2.1 Assesses conditions against emergency action levels and, if necessary, declares an emergency.

2.2.2 Initiates actions to assess and mitigate the consequences of severe natural events.

2.3 Emergency Director/Recovery Manager (ED/RM) should

2.3.1 Determine Emergency Response Organization (ERO) staffing strategy.

2.3.2 Determine degree of Site Emergency Plan (SEP) implementation, if any.

3.0 PROCEDURE

3.1 Notification

3.1.1 Notification may be received from:

- Site Meteorologist
- Emergency Preparedness
- National Weather Service Radio
- State/County Emergency Management
- NMPC Power Control
- J. A. FitzPatrick
- Direct Observation

3.1.2 Any site personnel receiving reports of actual or potential severe natural events shall notify the SSS at Unit 1 or Unit 2.

3.1.3 Upon receipt of notifications the SSS shall proceed to Step 3.2.

3.2 Determination of Applicability

3.2.1 If the actual or projected severe natural event meets any Emergency Action Level (EAL) in EPIP-EPP-01 or EPIP-EPP-02, then the SSS shall declare the emergency, and activate the emergency plan in accordance with EPIP-EPP-18.

3.2.2 If an emergency is declared in response to the actual or potential natural hazard, the SSS/ED (before EOF activation) or ED/RM (after EOF activation) should decide on the appropriate level of response using Attachment 1 as a guide.

3.2.3 If no immediate emergency is declared but the potential exists for a response to the severe natural event, the SSS should:

a. Contact the on-call ED/RM and Emergency Preparedness on-call staff and request the Attachment 1 be performed.

b. On-call ED/RM should call in emergency response organization staff as appropriate.

3.3 Preventative and Mitigating Actions

The SSS, SSS/ED or ED/RM should perform the actions in Attachment 1, if determined to be appropriate.

3.4 Recovery from Natural Hazards

IF: a natural hazard or event has resulted in ANY of the following conditions:

- Significant damage to the site
- Extensive offsite power outages
- Blockage of major roads due to fallen trees, wires or debris

THEN: implement Attachment 2.

3.4.1 The SSS or SSS/ED should implement Attachment 2, Step 1.0.

3.4.2 The ED/RM should direct implementation of Attachment 2, Step 2.0.

4.0 DEFINITIONS

Natural Hazard is any natural phenomena that may result in widespread (not localized) damage to dwellings, power/communications lines and road systems.

5.0 REFERENCES AND COMMITMENTS

5.1 Licensee Documentation

Nine Mile Point Site Emergency Plan

5.2 Technical Specifications

None

5.3 Standards, Regulations, Codes

5.3.1 10CFR50.72, Immediate Notification Requirements for Operating Nuclear Power Reactors

5.3.2 NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

5.3.3 NRC Information Notice, IN 93-53

5.4 Policies, Programs and Procedures

5.4.1 EPIP-EPP-01, Classification of Emergency Conditions at Unit 1

5.4.2 EPIP-EPP-02, Classification of Emergency Conditions at Unit 2

5.4.3 EPIP-EPP-18, Activation and Direction of the Emergency Plan

5.4.4 EPIP-EPP-20, Emergency Notifications

5.4.5 EPIP-EPP-25, Emergency Reclassification and Recovery

5.4.6 EPIP-EPP-30, Prompt Notification System Problem Response

5.4.7 EPMP-EPP-02, Emergency Equipment Inventories and Checklists

5.5 Commitments

Sequence Number	Commitment Number	Description
None		

6.0 RECORD REVIEW AND DISPOSITION

6.1 The following records generated by this procedure shall be maintained by Nuclear Records Management for the Permanent Plant File in accordance with NIP-RMG-01, "Records Management".

NOTE: This section only applies when records are generated as the result of an actual emergency declared at Nine Mile Point.

- Any records, logs or notes

6.2 The following records generated by this procedure are not required for retention in the Permanent Plant File.

NOTE: This section only applies when records are generated as the result of activities other than actual events (such as drills and training).

- Any records, logs or notes

LAST PAGE

ATTACHMENT 1:
PREPARATION AND RESPONSE TO NATURAL HAZARDS

Name:	Date:	Unit ☐ 1 ☐ 2

NOTE: 1. All steps should be performed.
2. Use N/A or N/R if appropriate.
3. Maintain a log documenting other activities

	Complete	N/A
PREPARATION		
1. Determine need for adding or retaining additional staff. (It may be appropriate to retain 1 or 2 ERO teams on site if the projected hazard may impede access to site)	☐	☐
2. If it is decided to retain staff, and if time allows, allow staff to accommodate personal and family needs. Staff may go home for this and return before travel or access is impeded	☐	☐
3. Contact Emergency Preparedness and have them:		
• Obtain, or verify adequacy of food, water, personal supplies, and bedding	☐	☐
• Ensure medical support and adequate medical supplies are available	☐	☐
• Perform communications checks of system in accordance with EPMP-EPP-02	☐	☐
4. Verify with Control Rooms that:		
• Walkdown of plant/environs are conducted, as necessary, inspecting for potential missiles	☐	☐
• Any equipment or materials outside are removed or secured (if high winds are anticipated)	☐	☐
MITIGATION		
1. Flooding/High Water Considerations		
a. Obtain sandbags and water pumps, if required. Contact Oswego County Emergency Management (591-9150) for assistance, if necessary	☐	☐
b. If flooding is expected, ensure the sewage treatment plant is in a stable condition. Contact Unit 1 Chemistry to verify this	☐	☐

Name:	Date:	Unit ☐ 1 ☐ 2

MITIGATION (continued)

	Complete	N/A
2. Heavy Snow		
a. Ensure that snow removal equipment and operators are available and pre-staged	☐	☐
3. Other Hazards		
a. Protect phone rooms from high water	☐	☐
b. Ensure portable radios are available in all emergency facilities	☐	☐
c. Establish a "family phone" in each emergency facility and distribute this number to staff in each facility. Family of staff may use this number for personal contact	☐	☐

ATTACHMENT 2: RECOVERY FROM NATURAL HAZARDS

Name:	Date:	Unit ☐ 1 ☐ 2

NOTE: 1. All steps should be performed.
2. Use N/A or N/R if appropriate.
3. Maintain a log documenting other activities

	Complete	N/A
RECOVERY ACTIONS - ONSITE		
1. Verify safe conditions before requiring personnel to go outside or to travel to/from site	☐	☐
2. Ensure plant structures and equipment are surveyed for damage	☐	☐
3. Direct EP to verify availability and operability of equipment and facilities necessary to implement the Site Emergency Plan	☐	☐
NOTE: Major loss of communications, dose assessment or notification capability may meet 10CFR50.72 notification requirements.		
4. Utilize EPIP-EPP-25 for developing a recovery plan, if needed	☐	☐
RECOVERY ACTIONS - OFFSITE		
1. Establish communication with County and State Emergency Management agencies using methods described in EPIP-EPP-20	☐	☐
2. Direct Emergency Preparedness to work with County and State Emergency Management agencies to verify the following:		
a. Operational status of prompt notification system (sirens, tone alert radios, emergency alert system) using EPIP-EPP-30 as a guide	☐	☐
b. Status of roadways and major evacuation routes (using current evaluation travel time estimates as a guide)	☐	☐

ATTACHMENT 2: RECOVERY FROM NATURAL HAZARDS

Name:	Date:	Unit ☐ 1 ☐ 2

	Complete	N/A
c. Capability of required emergency facilities, including:		
• New York State Fairground Reception Center	☐	☐
• Congregate Care Center	☐	☐
• Personnel Monitoring Center	☐	☐
• Oswego County Emergency Operations Center	☐	☐
d. Availability of transportation resources (buses, medical transport)		
e. Availability of offsite responders		
3. Determine the need to contact FEMA regarding the findings from the previous step	☐	☐

NOTE: FEMA may make a determination as to whether the health and safety of the public could be ensured in the event of an emergency at NMP.

6.7.2 Offsite Protective Actions (NUREG 0654 II.E.6, II.E.7, II.J.8)

a. Protective Actions Within Oswego County (NUREG 0654 II.J.8)

The responsibility for actions to protect offsite individuals rests with the County of Oswego and the New York State Department of Health as described in the New York State Radiological Emergency Preparedness Plan.

The NYS Department of Health is responsible for evaluating information obtained from the NMPNS and/or other sources and recommending appropriate offsite protective actions to the SEMO/OCEMO.

The principal offsite local coordinating agency for providing response to radiological emergencies in the vicinity of the NMPNS is the OCEMO. The entire 10-mile Emergency Planning Zone is contained within Oswego County.

A detailed study has been conducted of the status and capacities of roads, traffic patterns and demography within the 10-mile radius Emergency Planning Zone. This study includes the estimated times to evacuate all or specific segments of the population, identifies potential problem areas and provides contingencies for dealing with adverse conditions. The time estimates for various scenarios were performed: 1) Nighttime, normal weather; 2) Nighttime, adverse weather; 3) School in session, normal weather; 4) School in session, adverse weather. This study, "Evacuation Travel Estimates (ETE) for the James A. FitzPatrick/Nine Mile Point Emergency Planning Zone" is referenced in this Site Emergency Plan, Appendix F and was used in the development of detailed evacuation plans by the OCEMO. The ETE meets the criteria established in NUREG-0654.

b. Oswego County Prompt Notification System (NUREG 0654 II.J.10.c)

The physical and administrative means for alerting and warning the population of an incident at the Nine Mile Point Nuclear Station is described in detail in EPMP-EPP-08 and the Oswego County Radiological Emergency Response Plan.

The responsibility for activation of the Prompt Notification System (PNS) rests with the Chairman of the Oswego County Legislature or designee. The Oswego County Emergency Management Office administratively activates the warning system and supplies appropriate emergency messages to the Emergency Alert System (EAS) station serving the jurisdiction in accordance with the provisions of their emergency response plans. Siren activation equipment is located at the OCEMO and the Oswego County 911 Center.

The PNS consists of:

- Outdoor sirens (for heavily populated areas).
- Tone-alert radios (for less populated areas) activated by the National Weather Service.
- Mobile public address/siren systems (as back-ups to the above).
- Emergency Alert System.

This system meets NUREG-0654 and FEMA-REP-10 design and testing criteria. System design and testing requirements are detailed in Wyle Research Report WR 82-26 "Qualification of the Oswego County Prompt Notification System".

c. Protective Action Guides and Recommendation of Protective Action Recommendations (NUREG 0654 II.J.7, II.J.10.m)

Protective Action Guides (PAG's) identify protective actions to be taken prior to or following a significant release of radioactive material. They are based on the projected radiological dose, or dose commitment to individuals in the general public. PAGs for the "plume phase" have been established by the US Environmental Protection Agency.

The numerical guides for TEDE and CDE_T (child) dose to the general public are listed below. The procedure used by NMPNS personnel in determining the appropriate protective action recommendation is detailed in EPIP-EPP-08.

Protective Action Guidelines Early or Plume Phase		
	TEDE (rem)	CDE_T (rem)
Shelter	0.1 - 1	0.5 -5
Evacuate	>1	>5

The following principles guide the formulation of PARs for the NMPNS:

- Initial dose assessment (from the Control Room) does not take specific factors such as road condition, weather, evacuation travel time estimates or shelter vs. evacuation dose into account. New York State and Oswego County may take these factors into consideration, given that they have this information available to them. Refined dose assessment (from the EOF) does take these factors into account.
- No radiological protection factor is taken for sheltering. The purpose of sheltering is to bring the population at risk to a high state of readiness, should evacuation be needed.
- If determined to be appropriate by New York State or Oswego County Officials, Thyroid prophylaxis may be provided to the general public.