Attachment 1
1997 Annual Radioactive Effluent Releases Report for TMI
1920-98-20209

Summary of Radioactive Liquid and Gaseous Effluents and Solid Waste Released from TMI during 1997

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

TMI-1

	UNITS	1997 1ST QUARTER	1997 2ND QUARTER	1997 3RD QUARTER	1997 4TH QUARTER	EST. TOTAL ERROR %
A. FISSION AND ACTIVATION GASES						
1. TOTAL RELEASE	Ci	2.17E-02	6.69E-01	6.49E+00	7.38E+00	25%
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	2.79E-03	8.50E-02	8.16E-01	9.29E-01	
3. PERCENT OF TECH SPEC LIMIT	%	*	*	*	*	
B. IODINES						
1. TOTAL IODINE I-131	Ci	4.74E-07	8.60E-07	4.07E-07	3.87E-07	25%
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	6.10E-08	1.09E-07	5.12E-08	4.87E-08	
3. PERCENT OF TECH SPEC LIMIT	%	*	*	*	*	
C. PARTICULATES						
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	Ci	9.09E-08	<1.00E-04	8.19E-08	2.77E-05	25%
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	1.17E-08	NA	1.03E-08	3.48E-06	
3. PERCENT OF TECH SPEC LIMIT	%	*	*	*	*	
4. GROSS ALPHA RADIOACTIVITY	Ci	<1.00E-11	<1.00E-11	<1.00E-11	<1.00E-11	
D. TRITIUM						
1. TOTAL RELEASE	Ci	2.02E+01	1.41E+01	4.80E+01	4.22E+01	25%
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	2.60E+00	1.80E+00	6.03E+00	5.31E+00	
3. PERCENT OF TECH SPEC LIMIT	%	*	*	*	*	

* % ODCM LIMITS: LISTED ON DOSE SUMMARY TABLE

NOTE: ALL LESS THAN (<) VALUES ARE IN uCi/ml

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (1997)

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

TMI-1

		CONTINUOUS		BATCH		CONTINUOUS		BATCH	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
1. FISSION GASES									
AR 41	Ci	<3.00E-07	<3.00E-07	3.00E-03	<3.00E-07	<3.00E-07	<3.00E-07	1.27E-01	1.33E-02
KR 85M	Ci	9.18E-05	<5.00E-08	<5.00E-08	1.09E-06	<5.00E-08	<5.00E-08	3.42E-04	<5.00E-08
KR 85	Ci	<8.00E-06	<8.00E-06	2.05E-03	3.20E-03	<8.00E-06	<8.00E-06	2.32E-03	1.29E-03
KR 87	Ci	<8.00E-08	<8.00E-08	<8.00E-08	3.12E-06	<8.00E-08	<8.00E-08	<8.00E-08	<8.00E-08
KR 88	Ci	<1.00E-07	<1.00E-07	<1.00E-07	3.06E-06	<1.00E-07	<1.00E-07	<1.00E-07	<1.00E-07
XE 131M	Ci	<3.00E-07	<3.00E-07	<3.00E-07	5.21E-04	<3.00E-07	<3.00E-07	3.74E-03	6.11E-03
XE 133M	Ci	<2.00E-07	<2.00E-07	<2.00E-07	7.41E-03	<2.00E-07	<2.00E-07	3.43E-02	1.13E-03
XE 133	Ci	<8.00E-08	<8.00E-08	9.97E-03	6.51E-01	9.41E-04	<8.00E-08	6.17E+00	5.56E+00
XE 135M	Ci	2.73E-03	3.08E-03	<5.00E-07	2.44E-06	1.76E-03	1.68E+00	<5.00E-07	<5.00E-07
XE 135	Ci	3.75E-03	2.15E-03	1.07E-04	1.78E-03	5.52E-03	8.39E-05	1.47E-01	1.26E-01
XE 138	Ci	<3.00E-07	<3.00E-07	<3.00E-07	<3.00E-07	<3.00E-07	<3.00E-07	<3.00E-07	<3.00E-07
TOTAL FOR PERIOD	Ci	6.57E-03	5.23E-03	1.51E-02	6.63E-01	8.22E-03	1.68E+00	6.48E+00	5.70E+00
2. IODINES									
I 131	Ci	4.64E-07	7.34E-08	<1.00E-08	7.87E-07	3.97E-07	1.35E-07	<1.00E-08	2.52E-07
I 133	Ci	6.48E-08	<1.00E-10	<1.00E-08	7.94E-06	<1.00E-10	<1.00E-10	9.07E-08	4.41E-07
TOTAL FOR PERIOD	Ci	5.29E-07	7.34E-08	0.00E+00	8.73E-06	3.97E-07	1.35E-07	9.07E-08	6.93E-07
3. PARTICULATES									
CO-58	Ci	<1.00E-12	<1.00E-12	<1.00E-12	<1.00E-12	<1.00E-12	2.76E-05	<1.00E-12	6.03E-08
CS 134	Ci	<1.00E-11	<1.00E-11	<1.00E-08	<1.00E-08	<1.00E-11	<1.00E-11	<1.00E-08	<1.00E-08
CS 137	Ci	<1.00E-11	<1.00E-11	9.09E-08	<1.00E-08	<1.00E-11	8.22E-09	8.19E-08	<1.00E-08

NOTE: ALL LESS THAN VALUES (<) ARE IN uCi/ml

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

TMI-1

	UNITS	1997 1ST QUARTER	1997 2ND QUARTER	1997 3RD QUARTER	1997 4TH QUARTER	EST. TOTAL ERROR %
A. FISSION AND ACTIVATION PRODUCTS						
1. TOTAL RELEASES (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	9.34E-04	6.25E-04	2.88E-03	2.54E-03	25%
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ml	1.48E-10	9.34E-11	5.39E-10	3.47E-10	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	*	*	
B. TRITIUM						
1. TOTAL RELEASE	Ci	2.07E+02	3.46E+02	1.70E+02	2.38E+01	25%
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ml	3.27E-05	5.17E-05	3.18E-05	3.25E-06	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	*	*	
C. DISSOLVED AND ENTRAINED GASES						
1. TOTAL RELEASE	Ci	1.49E-05	1.06E-04	<1.00E-04	<1.00E-04	25%
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ml	2.36E-12	1.58E-11	0.00E+00	0.00E+00	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	*	*	
D. GROSS ALPHA ACTIVITY						
1. TOTAL RELEASE	Ci	<1.00E-07	<1.00E-07	<1.00E-07	<1.00E-07	25%
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	liters	5.30E+06	1.31E+07	1.07E+07	9.57E+06	10%
F. VOLUME OF DILUTION WATER USED	liters	6.33E+09	6.69E+09	5.34E+09	7.33E+09	10%

* % ODCM LIMITS: LISTED ON DOSE SUMMARY TABLE

NOTE: ALL LESS THAN (<) VALUES ARE IN uCi/ml

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (1997)

LIQUID EFFLUENTS

TMI-1

		CONTINUOUS		BATCH		CONTINUOUS		BATCH	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
CR 51	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
MN 54	Ci	3.22E-06	<5.00E-07	<5.00E-07	<5.09E-07	<5.00E-07	<5.00E-07	<5.90E-07	1.28E-06
FE 55	Ci	6.22E-04	<1.00E-06	2.57E-05	<1.00E-06	<1.00E-06	<1.00E-06	5.71E-05	2.48E-04
FE 59	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	1.47E-06
CO 58	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	1.45E-04	2.62E-04
CO 60	Ci	<5.00E-07	<5.00E-07	1.51E-06	1.35E-06	<5.00E-07	<5.00E-07	2.17E-05	1.22E-05
ZN 65	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
SR 89	Ci	<5.00E-08	<5.00E-08	<5.00E-08	<5.00E-08	<5.00E-08	<5.00E-08	6.14E-05	<5.00E-08
SR 90	Ci	<5.00E-08	<5.00E-08	4.40E-06	6.53E-06	<5.00E-08	<5.00E-08	5.63E-05	6.28E-05
ZR 95	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
NB 95	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	4.11E-06
MO 99	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
TC 99M	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
AG 110M	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	3.05E-05	3.80E-05
I 131	Ci	<1.00E-06	<1.00E-06	<1.00E-06	<1.00E-06	<1.00E-06	<1.00E-06	<1.00E-06	<1.00E-06
CS 134	Ci	7.79E-06	8.29E-05	1.26E-05	1.02E-05	4.02E-04	2.29E-04	3.23E-05	4.78E-06
CS 137	Ci	1.85E-04	4.14E-04	7.16E-05	1.10E-04	1.71E-03	1.50E-03	3.66E-04	1.78E-04
BA 140	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
LA 140	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
CE 141	Ci	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07	<5.00E-07
TOTAL FOR PERIOD	Ci	8.18E-04	4.96E-04	1.16E-04	1.29E-04	2.11E-03	1.73E-03	7.71E-04	8.12E-04
XE-133	Ci	<1.00E-04	<1.00E-04	1.35E-05	9.29E-05	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04
XE 135	Ci	<1.00E-04	<1.00E-04	1.40E-06	1.28E-05	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04

NOTE: ALL LESS THAN VALUES (<) ARE IN uCi/ml

SUPPLEMENTAL INFORMATION

FACILITY: TMI UNIT 1 LICENSE: DPR 50-289

1. REGULATORY LIMITS - - - REFER TO TMI OFFSITE DOSE CALCULATION MANUAL

A. FISSION AND ACTIVATION GASES:
B. IODINES:
C. PARTICULATES, HALF-LIVES > 8 DAYS:
D. LIQUID EFFLUENTS:

2. MAXIMUM EFFLUENT CONCENTRATIONS - - - TEN TIMES 10 CFR 20, APPENDIX B TABLE 2

PROVIDE THE MAXIMUM EFFLUENT CONCENTRATIONS USED IN DETERMINING ALLOWABLE RELEASE RATES OR CONCENTRATIONS.

A. FISSION AND ACTIVATION GASES:
B. IODINES:
C. PARTICULATES, HALF-LIVES > 8 DAYS:
D. LIQUID EFFLUENTS:

3. AVERAGE ENERGY

PROVIDE THE AVERAGE ENERGY (E-BAR) OF THE RADIONUCLIDE MIXTURE IN RELEASES OF FISSION AND ACTIVATION GASES, IF APPLICABLE

E-BAR BETA =	2.93E-01
E-BAR GAMMA =	4.97E-01
E-BAR BETA AND GAMMA =	7.90E-01

4. MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

PROVIDE THE METHODS USED TO MEASURE OR APPROXIMATE THE TOTAL RADIOACTIVITY IN EFFLUENTS AND THE METHODS USED TO DETERMINE RADIONUCLIDE COMPOSITION.

A. FISSION AND ACTIVATION GASES: HPGE SPECTROMETRY, LIQUID SCINTILLATION
B. IODINES: HPGE SPECTROMETRY
C. PARTICULATES HPGE SPECTROMETRY, GAS FLOW PROPORTIONAL, BETA SPECTROMETRY
D. LIQUID EFFLUENTS: HPGE SPECTROMETRY, LIQUID SCINTILLATION

5. BATCH RELEASES

PROVIDE THE FOLLOWING INFORMATION RELATING TO BATCH RELEASES OF RADIOACTIVITY MATERIALS IN LIQUID AND GASEOUS EFFLUENTS.

A. LIQUID (ALL TIMES IN MINUTES)	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4
1. NUMBER OF BATCH RELEASES:	5	25	29	20
2. TOTAL TIME PERIOD FOR BATCH RELEASES:	2815	8843	8388	6026
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE:	675	817	427	370
4. AVERAGE TIME PERIOD FOR BATCH RELEASES:	563	354	289	301
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE:	490	100	10	255
6. AVERAGE STREAM FLOW DURING PERIODS OF RELEASE OF EFFLUENT INTO A FLOWING STREAM: (CFM)	2.60E+07	1.41E+07	3.33E+06	1.06E+07

B. GASEOUS (ALL TIMES IN MINUTES)				
1. NUMBER OF BATCH RELEASES:	9	14	22	23
2. TOTAL TIME PERIOD FOR BATCH RELEASES:	142450	152830	365806	299513
3. MAXIMUM TIME PERIOD FOR A BATCH RELEASE:	44600	44600	50900	50300
4. AVERAGE TIME PERIOD FOR BATCH RELEASES:	15828	10916	16628	13022
5. MINIMUM TIME PERIOD FOR A BATCH RELEASE:	5	0	81	17

6. ABNORMAL RELEASES

A. LIQUID

1. NUMBER OF RELEASES:	-0-	-0-	-0-	-0-
2. TOTAL ACTIVITY RELEASED: (CURIES)	N/A	N/A	N/A	N/A

B. GASEOUS

1. NUMBER OF RELEASES:	-0-	-0-	-0-	-0-
2. TOTAL ACTIVITY RELEASED: (CURIES)	N/A	N/A	N/A	N/A

TABLE 1A

EFFLUENT AND WASTE D SPOSA', ANNUAL REPORT

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

TMI-2

	UNITS	1997 1ST QUARTER	1997 2ND QUARTER	1997 3RD QUARTER	1997 4TH QUARTER	EST. TOTAL ERROR %
A. FISSION AND ACTIVATION GASES						
1. TOTAL RELEASE	Ci	<LLD	<LLD	<LLD	<LLD	25%
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	N/A	N/A	N/A	N/A	
3. PERCENT OF TECH SPEC LIMIT	%	*	*	*	*	
B. IODINES						
NOT APPLICABLE FOR TMI-2						
C. PARTICULATES						
1. PARTICULATES WITH HALF-LIVES > 8 DAYS	Ci	<LLD	<LLD	<LLD	5.56E-06	25%
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	N/A	<N/A	<N/A	6.99E-07	
3. PERCENT OF TECH SPEC LIMIT	%	*	*	*	*	
4. GROSS ALPHA RADIOACTIVITY	Ci	<LLD	<LLD	<LLD	<LLD	
D. TRITIUM						
1. TOTAL RELEASE	Ci	1.88E+00	1.15E+00	4.55E-01	1.15E+00	25%
2. AVERAGE RELEASE RATE FOR PERIOD	uCi/sec	2.42E-01	1.46E-01	5.72E-02	1.45E-01	
3. PERCENT OF TECH SPEC LIMIT	%	*	*	*	*	
# BATCH RELEASES		0	0	0	0	

* % ODCM LIMITS: LISTED ON DOSE SUMMARY TABLE

NOTE: ALL LESS THAN (<) VALUES ARE IN uCi/ml

TABLE 1C

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

TMI-2

1997

		CONTINUOUS MODE		BATCH MODE		CONTINUOUS MODE		BATCH MODE	
NUCLIDES RELEASED	UNIT	1ST QUARTER	2ND QUARTER	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER	3RD QUARTER	4TH QUARTER
1. FISSION GASES									
KRYPTON-85	Ci	<8.00E-6	<8.00E-6	<8.00E-6	<8.00E-6	<8.00E-6	<8.00E-6	<8.00E-6	<8.00E-6
KRYPTON-85M	Ci	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8
KRYPTON-87	Ci	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8
KRYPTON-88	Ci	<1.00E-7	<1.00E-7	<1.00E-7	<1.00E-7	<1.00E-7	<1.00E-7	<1.00E-7	<1.00E-7
XENON-133	Ci	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8	<8.00E-8
XENON-135	Ci	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8	<5.00E-8
XENON-135M	Ci	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7
XENON-138	Ci	<3.00E-7	<3.00E-7	<3.00E-7	<3.00E-7	<3.00E-7	<3.00E-7	<3.00E-7	<3.00E-7
AR-41	Ci	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4	<1.00E-4
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2. IODINES									
NOT APPLICABLE TO TMI-2									
3. PARTICULATES									
STRONTIUM-90	Ci	<1.00E-11	<1.00E-11	N/A	N/A	<1.00E-11	<1.00E-11	N/A	N/A
COBALT 60	Ci	<1.00E-10	<1.00E-10	N/A	N/A	<1.00E-10	<1.00E-10	N/A	N/A
ANTIMONY 125	Ci	<1.00E-10	<1.00E-10	N/A	N/A	<1.00E-10	<1.00E-10	N/A	N/A
CESIUM-134	Ci	<1.00E-10	<1.00E-10	N/A	N/A	<1.00E-10	1.69E-06	N/A	N/A
CESIUM-137	Ci	<1.00E-10	<1.00E-10	N/A	N/A	<1.00E-10	3.87E-06	N/A	N/A
TOTAL FOR PERIOD	Ci	N/A	N/A	N/A	N/A	N/A	5.56E-06	N/A	N/A
4. TRITIUM									
TRITIUM	Ci	1.88E+00	1.15E+00	<1.00E-6	<1.00E-6	4.55E-01	1.15E+00	<1.00E-6	<1.00E-6

NOTE: ALL LESS THAN (<) VALUES ARE IN uCi/ml

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

TMI-2

	UNITS	1997 1ST QUARTER	1997 2ND QUARTER	1997 3RD QUARTER	1997 4TH QUARTER	EST. TOTAL ERROR %
A. FISSION AND ACTIVATION PRODUCTS						
1. TOTAL RELEASES (NOT INCLUDING TRITIUM, GASES, ALPHA)	Ci	4.42E-06	8.41E-06	2.27E-06	9.84E-06	25%
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ml	6.98E-13	1.26E-12	3.52E-13	1.34E-12	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	*	*	
B. TRITIUM						
1. TOTAL RELEASE	Ci	7.21E-05	2.95E-04	<LLD	4.75E-05	25%
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ml	1.14E-11	4.41E-11	N/A	6.49E-12	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	*	*	
C. DISSOLVED AND ENTRAINED GASES						
1. TOTAL RELEASE	Ci	<LLD	<LLD	<LLD	<LLD	25%
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	uCi/ml	N/A	N/A	N/A	N/A	
3. PERCENT OF APPLICABLE LIMIT	%	*	*	*	*	
D. GROSS ALPHA ACTIVITY						
1. TOTAL RELEASE	Ci	<LLD	<LLD	<LLD	<LLD	25%
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	liters	1.25E+05	1.43E+05	1.53E+04	9.09E+04	10%
F. VOLUME OF DILUTION WATER USED	liters	6.34E+09	6.69E+09	6.47E+09	7.33E+09	10%
NUMBER OF BATCH RELEASES		11	15	6	8	

* % ODCM LIMITS: LISTED ON DOSE SUMMARY TABLE

NOTE: ALL LESS THAN (<) VALUES ARE IN uCi/ml

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

LIQUID EFFLUENTS

TMI-2

1997

NUCLIDES RELEASED	UNIT	CONTINUOUS MODE		BATCH MODE		CONTINUOUS MODE		BATCH MODE	
		1ST QUARTER	2ND QUARTER	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER	3RD QUARTER	4TH QUARTER
CO 60	Ci	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7
SR 90	Ci	<5.00E-8	<5.00E-8	1.08E-06	2.14E-06	<5.00E-8	<5.00E-8	7.33E-07	6.27E-07
SB 125	Ci	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7
CS 134	Ci	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7	<5.00E-7
CS 137	Ci	<5.00E-7	<5.00E-7	3.34E-06	6.27E-06	<5.00E-7	<5.00E-7	1.54E-06	9.22E-06
H-3	Ci	<1.00E-5	<1.00E-5	7.21E-05	2.95E-04	<1.00E-5	<1.00E-5	<1.00E-5	4.75E-05
TOTAL FOR PERIOD	Ci	0.00E+00	0.00E+00	7.65E-05	3.03E-04	0.00E+00	0.00E+00	2.27E-06	5.74E-05

NOTE: ALL LESS THAN VALUES (<) ARE IN uCi/ml

Attachment 2
1997 Annual Radioactive Effluent Releases Report for TMI
1920-98-20209

Solid Waste Shipped Offsite during 1997 for TMI-1
(No Solid Waste was shipped from TMI-2 during 1997)

TABLE 3A
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 01/01/97 – 12/31/97
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. Solid waste shipped off-site for burial or disposal (not irradiated fuel)			
1. Type of waste	UNIT	12 month period	EST. Total Error %
a. Spent resins, filter sludges, Evaporator bottoms, etc.	m^3 Ci	N/A	N/A
b. Dry compressible waste, contaminated equipment, etc.	m^3 Ci	58.9m^3 .827Ci	5%
c. Irradiated components, control rods, etc.	m^3 Ci	N/A	N/A
d. Other (describe)	m^3 Ci	N/A	N/A
2. Estimate of major nuclide composition (by type of waste)			
a. N/A	%		
	%		
b. Co 58	29.9%		
Cs 137	29.0%		
Ni 63	21.1%		
Fe 55	8.2%		
Co 60	3.21%		
c.N/A	%		
d. N/A	%		
3. Solid Waste Disposition Number of Shipments	Mode of Transportation		Destination
See attached			
B. Irradiated Fuel Shipments (Disposition)			
Number of Shipments	Mode of Transportation		Destination
One (1) shipment	Cask (NLI –1/2)		GE Nuclear-Pleasanton, CA

TABLE A.3.b

No. of Shipments	MODE OF TRANSPORTATION	DESTINATION
* One (1) shipment	Tractor – Flatbed	GTS – Duratek – Oak Ridge, TN

WASTE SHIPPED AS FOLLOWS

TABLE A.1.b

Two (2) Steel Boxe a 1040 Ft^3 each – Noncompacted DAW

* Material shipped to Waste Processor for volume reduction. Shipment was Type A – LSA II

Attachment 3
1997 Annual Radioactive Effluent Releases Report for TMI
1920-98-20209

Summary of Unplanned Releases from the TMI Site During 1997

There were no unplanned releases from either TMI-1 or TMI-2 site to unrestricted areas during 1997.

Attachment 4
1997 Annual Radioactive Effluent Releases Report for TMI
1920-98-20209

Changes to the Process Control Program and the Offsite Dose Calculation Manual during 1997, And a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census

1. There were no changes made to Procedure 1104-28I, " Process Control Program," in 1997. However, a Special Temporary Procedure (STP) was issued on April 23. 1997 to solidify and stabilize waste phosphoric acid. The STP provided instructions to the operator in the sequence of operations necessary to safely and adequately neutralize and implement the Process Control Program for Stabilization and Solidification of TMI Phosphoric Acid waste using Aquaset II-H Solidification Media.

2. The Offsite Dose Calculation Manual (ODCM) was modified two times during 1997. These changes did not reduce the accuracy or reliability of dose calculations or setpoint determinations. The level of effluent control required by 10 CFR 20.1301, 40 CFR 190, 10 CFR 50.36a, and Appendix I to 10 CFR 50 was not reduced and the accuracy or reliability of effluent, dose or setpoint calculations was not adversely impacted for the reasons stated below.

Revision 15 of the ODCM was issued on January 17, 1997. Revision 15 made the following changes to the ODCM:

1. Incorporated Figure 5-3 of the TMI Technical Specifications into the ODCM so that it would still be available following implementation of TSCR #257 that would remove this figure from the Technical Specifications.

2. Eliminated Section 4.0 of the ODCM Part II since this was not an ODCM effluent controls section per NUREG 1301. The definition of the site boundary formerly specified in this section was placed in the Part II, Section 1 definitions per the guidance of NUREG 1301.

Revision 16 of the ODCM was issued on June 30, 1997. Revision 16 made the following changes to the ODCM:

1. Changed the sampling and collection frequency for sediment and fish by eliminating the requirement that the interval not exceed 184 days. This change still requires that the samples be collected twice a year. As a result, it will not change the numbers of samples that are

collected and analyzed. The change enhances personnel safety by eliminating the need to collect samples during adverse river conditions.

2. Eliminated requirements for sampling and analysis of fruits and vegetables since no irrigation of by water is practiced in the area proximal to TMI. This practice is consistent with the recommendations of USNRC Branch Technical Position (BTP) and NUREG 1301.

3. Deleted several stations for air particulate and iodine sampling, raw water sampling, environmental TLD sampling, aquatic sediment sampling, milk sampling, since the ODCM requirements for the TMINS REMP can be met or exceeded with the remaining sampling stations.

4. Revised REMP location maps to reflect the above changes.

5. Added a bioaccumulation factor (per Reg Guide 1.109) for Ag-110m to permit liquid effluent dose calculations for this isotope.

3. In accordance with Part III, Section 8.2 of the Three Mile Island Nuclear Station (TMINS) Offsite Dose Calculation Manual (ODCM), a land use census was conducted in 1997. The purpose of the census was to identify the location of the nearest milk animal, the nearest residence and the nearest garden of greater than 50 m^2 (500 ft^2) producing broad leaf vegetation within a distance of 8km (5 miles) in each of the 16 meteorological sectors. The results of the 1997 land use census were included in the 1997 TMINS Annual Radiological Environmental Operating Report pursuant to Part IV, Section 1.2 of the TMINS ODCM.

   The 1997 land use census did not identify a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 20% greater than at a location from which samples are currently being obtained in accordance with Table 8.1. Therefore, no new locations were required to be added to the 1997 TMINS Radiological Environmental Monitoring Program (REMP).

   Additionally, the 1997 land use census did not identify a location(s) that yields a calculated dose or dose commitment greater than those identified in the 1996 land use census. However, during the preparation of the 1997 Annual Radioactive Effluent Release Report, it was determined that a change identified in the 1991 land use census was not reported in

the Semi-annual Radioactive Effluent Release Report for the second half of 1991. The change that was identified in 1991 is as follows:

The closest residence was changed from 1710 meters in the SE sector to 1140 meters in the SE sector.

Following the 1991 land use census, the change was incorporated into the model that calculates doses based on TMINS effluents. As a result, the offsite doses reported in the Semi-annual and Annual Radioactive Effluent Release Reports for the period of 1991 to the present are correct and no revisions to these reports are required.

Attachment 5
1997 Annual Radioactive Effluent Releases Report for TMI
1920-98-20209

Instrumentation not returned to Operable status within 30 days during 1997

There was no instrumentation not returned to operable status within 30 days per the TMI ODCM Part 1, Sections 2.1.1.b and 2.1.2.b and Part 2, Section 2.1.2.b during 1997.

Attachment 6
1997 Annual Radioactive Effluent Releases Report for TMI
1920-98-20209

Annual Summary of Hourly Meteorological Data for 1997

TABLE K-1

Meteorological Data
1997 Joint Frequency Tables

Hours at Each Wind Speed and Direction
Period of Record: 97010100 - 97123123
Stability Class: **A**
Sensor Height: 100 ft.

Winds From	Wind Speed (mph) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	16	39	4	3	0	0	62
NNE	6	7	3	0	0	0	16
NE	6	3	2	0	0	0	11
ENE	3	10	2	0	0	0	15
E	1	19	4	0	0	0	24
ESE	3	9	6	2	0	0	20
SE	10	4	3	0	0	0	17
SSE	6	6	3	0	0	0	15
S	4	12	3	1	0	0	20
SSW	10	48	31	4	0	0	93
SW	14	58	22	3	0	0	97
WSW	19	36	12	5	0	0	72
W	23	22	17	2	1	0	65
WNW	31	43	30	5	0	0	109
NW	65	112	64	18	7	0	266
NNW	53	147	40	9	1	0	250
TOTAL	270	575	246	52	9	0	1152

TABLE K-1
(Continued)

Meteorological Data
1997 Joint Frequency Tables

Hours at Each Wind Speed and Direction
Period of Record: 97010100 - 97123123
Stability Class: **B**
Sensor Height: 100 ft.

Winds From	Wind Speed (mph) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	2	7	0	0	0	0	9
NNE	1	5	0	0	0	0	6
NE	0	3	1	0	0	0	4
ENE	2	4	2	0	0	0	8
E	5	10	5	0	0	0	20
ESE	3	3	13	3	0	0	22
SE	5	5	3	2	0	0	15
SSE	2	5	2	0	0	0	9
S	5	4	6	0	0	0	15
SSW	4	19	18	3	0	0	44
SW	5	5	6	0	0	0	16
WSW	3	5	3	2	0	0	13
W	6	5	9	19	1	0	40
WNW	2	13	12	15	0	0	42
NW	7	17	29	40	3	0	96
NNW	6	12	6	3	3	1	31
TOTAL	58	122	115	87	7	1	390

TABLE K-1

(Continued)

Meteorological Data
1997 Joint Frequency Tables

Hours at Each Wind Speed and Direction
Period of Record: 97010100 - 97123123
Stability Class: C
Sensor Height: 100 ft.

Winds From	Wind Speed (mph) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	2	5	0	0	0	0	7
NNE	1	2	1	0	0	0	4
NE	1	0	0	0	0	0	1
ENE	4	8	1	0	0	0	13
E	5	5	4	0	0	0	14
ESE	0	3	4	0	0	0	7
SE	2	2	3	0	0	0	7
SSE	2	3	0	0	0	0	5
S	1	2	3	0	0	0	6
SSW	1	10	3	0	0	0	14
SW	2	7	5	0	0	0	14
WSW	1	1	1	1	0	0	4
W	0	3	10	7	1	0	21
WNW	2	10	10	20	1	0	43
NW	7	15	17	18	10	3	70
NNW	7	9	7	6	1	4	34
TOTAL	38	85	69	52	13	7	264

TABLE K-1
(Continued)

Meteorological Data
1997 Joint Frequency Tables

Hours at Each Wind Speed and Direction
Period of Record: 97010100 - 97123123
Stability Class: **D**
Sensor Height: 100 ft.

Winds From	Wind Speed (mph) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	33	58	20	4	0	2	117
NNE	20	35	3	0	0	0	58
NE	27	41	4	0	0	0	72
ENE	23	50	7	0	0	0	80
E	30	82	63	2	0	0	177
ESE	32	53	101	5	0	0	191
SE	20	54	48	2	0	0	124
SSE	23	59	18	0	0	0	100
S	11	45	46	7	0	0	109
SSW	10	54	36	12	0	1	113
SW	16	39	21	5	0	0	81
WSW	17	52	22	4	0	0	95
W	20	81	100	42	6	1	250
WNW	25	88	219	164	24	7	527
NW	24	106	172	173	59	7	541
NNW	33	80	72	29	11	10	235
TOTAL	364	977	952	449	100	28	2870

TABLE K-1
(Continued)

Meteorological Data
1997 Joint Frequency Tables

Hours at Each Wind Speed and Direction
Period of Record: 97010100 - 97123123
Stability Class: **E**
Sensor Height: 100 ft.

Winds From	Wind Speed (mph) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	42	97	14	0	0	0	153
NNE	24	44	0	0	0	0	68
NE	41	46	3	0	0	0	90
ENE	42	48	5	0	0	0	95
E	59	63	31	2	0	0	155
ESE	56	37	31	1	0	0	125
SE	37	32	13	0	0	0	82
SSE	33	46	5	0	0	0	84
S	37	83	27	3	0	0	150
SSW	30	100	45	19	1	0	195
SW	42	77	37	5	2	0	163
WSW	54	91	11	1	0	0	157
W	51	128	35	18	4	1	237
WNW	58	83	73	43	4	1	262
NW	54	73	65	42	10	0	244
NNW	46	88	25	11	4	1	175
TOTAL	706	1136	420	145	25	3	2435

TABLE K-1
(Continued)

Meteorological Data
1997 Joint Frequency Tables

Hours at Each Wind Speed and Direction
Period of Record: 97010100 - 97123123
Stability Class: **F**
Sensor Height: 100 ft.

Wi Fr	Wind Speed (mph) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	26	39	1	0	0	0	66
NNE	17	4	0	0	0	0	21
NE	13	3	0	0	0	0	16
ENE	21	9	0	0	0	0	30
E	52	20	0	0	0	0	72
ESE	67	12	2	0	0	0	81
SE	45	8	0	0	0	0	53
SSE	53	7	0	0	0	0	60
S	41	13	1	0	0	0	55
SSW	35	29	1	0	0	0	65
SW	60	19	1	0	0	0	80
WSW	74	20	0	0	0	0	94
W	77	32	1	0	0	0	110
WNW	60	21	2	1	0	0	84
NW	54	16	1	1	1	0	73
NNW	51	33	3	4	0	0	91
TOTAL	746	285	13	6	1	0	1051

TABLE K-1
(Continued)

Meteorological Data
1997 Joint Frequency Tables

Hours at Each Wind Speed and Direction
Period of Record: 97010100 - 97123123
Stability Class: **G**
Sensor Height: 100 ft.

Winds From	Wind Speed (mph) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	7	4	0	0	0	0	11
NNE	6	2	0	0	0	0	8
NE	10	4	0	0	0	0	14
ENE	9	4	0	0	0	0	13
E	16	8	0	0	0	0	24
ESE	24	6	1	0	0	0	31
SE	19	1	0	0	0	0	20
SSE	19	2	0	0	0	0	21
S	17	1	0	0	0	0	18
SSW	31	17	1	0	0	0	49
SW	47	9	0	0	0	0	56
WSW	33	6	0	0	0	0	39
W	31	11	1	0	0	0	43
WNW	23	12	0	0	0	0	35
NW	14	7	1	0	0	0	22
NNW	15	11	0	0	0	0	26
TOTAL	321	105	4	0	0	0	430

TABLE K-1
(Continued)

Meteorological Data
1997 Joint Frequency Tables

Hours at Each Wind Speed and Direction
Period of Record: 97010100 - 97123123
Stability Class: **ALL**
Sensor Height: 100 ft.

Winds From	Wind Speed (mph) 1-3	4-7	8-12	13-18	19-24	>24	TOTAL
N	128	249	39	7	0	2	425
NNE	75	99	7	0	0	0	181
NE	98	100	10	0	0	0	208
ENE	104	133	17	0	0	0	254
E	168	207	107	4	0	0	486
ESE	185	123	158	11	0	0	477
SE	138	106	70	4	0	0	318
SSE	138	128	28	0	0	0	294
S	116	160	86	11	0	0	373
SSW	121	277	135	38	1	1	573
SW	186	214	92	13	2	0	507
WSW	201	211	49	13	0	0	474
W	208	282	173	88	13	2	766
WNW	201	270	346	248	29	8	1102
NW	225	346	349	292	90	10	1312
NNW	211	380	153	62	20	16	842
TOTAL	2503	3285	1819	791	155	39	8592
HOURS OF MISSING/INVALID DATA :					168		

Assessment of Radiation Doses Due to Radioactive Liquid and Gaseous Effluents Released from TMI during 1997

TMI-1

The attached table presents the maximum hypothetical doses to an individual and the general population resulting from 1997 TMI-1 releases of gaseous and liquid effluents. Provided below is a brief explanation of the table.

A. Liquid (Individual)

Calculations were performed on the four age groups and eight organs recommended in Regulatory Guide 1.109. The pathways considered for TMI-1 were the consumption of drinking water and fish and standing on the shoreline influenced by TMI-1 effluents. The latter two pathways are considered to be the primary recreational activities associated with the Susquehanna River in the vicinity of TMI. The "critical receptor" or Receptor 1 was that individual who 1) consumed Susquehanna River water from the nearest downstream drinking water supplier (Wrightsville Water Supply), 2) consumed fish residing in the vicinity of the TMI-1 liquid discharge outfall and 3) occupied an area of shoreline influenced by the TMI-1 liquid discharge.

For 1997, the calculated maximum whole body dose from TMI-1 liquid effluents was 1.32E-1 mrem to an adult (line 1). The maximum organ dose was 1.88E-1 mrem to the liver of a teen (line 2).

B. Gaseous (Individual)

There were six major pathways considered in the dose calculations for TMI-1 gaseous effluents. These were: (1) plume exposure (2) inhalation, consumption of; (3) cow milk, (4) vegetables and fruits, (5) meat, and (6) standing on contaminated ground. Real-time meteorology was used in all dose calculations for gaseous effluents.

Lines 3 and 4 present the maximum plume exposure at or beyond the site boundary. The notation of "air dose" is interpreted to mean that these doses are not to an individual, but are considered to be the maximum doses that would have occurred at or beyond the site boundary. The table presents the distance in meters to the location in the affected sector (compass point) where the theoretical maximum plume exposures

occurred. The calculated maximum plume exposures would have been 3.23E-4 mrad and 5.36E-4 mrad for gamma and beta, respectively.

Lines 5 and 6 present the doses which could actually be received by an individual from the noble gas effluents for 1997. The calculated maximum whole body dose received by anyone from noble gases would have been 1.74E-4 mrem and the maximum dose to the skin would have been 3.47E-4 mrem.

The maximum organ dose due to the release of iodines, particulates and tritium from TMI-1 in 1997 was 8.95E-3 mrem to the thyroid of a child residing 2150 meters from the site in the NNE sector (line 7). This dose again reflects the maximum exposed organ for the appropriate age group.

C. Liquid and Gaseous (Population)

Lines 8 - 11 present the person-rem doses resulting from 1997 TMI-1 liquid and gaseous effluents. These doses were summed over all pathways and the affected populations. The person-rem doses from liquid effluents were based upon the population encompassed within the region from the TMI-1 outfall extending down to the Chesapeake Bay (approximately 5,000,000 people). The person-rem doses from gaseous effluents were based upon the 1980 population and considered the population out to a distance of 50 miles around TMI (approximately 2,200,000 people). Population doses were summed over all distances and sectors to give an aggregate dose.

The calculated maximum whole body dose to the affected population from TMI-1 liquid effluents was 8.71E0 person-rem. The maximum critical organ population dose from liquid effluents was 8.75E0 person-rem to the liver. TMI-1 gaseous effluents resulted in a whole body population dose of 3.98E-1 person-rem and a maximum critical organ population dose of 3.98E-1 person-rem to the liver, thyroid, kidney, lung and GI tract.

For 1997, TMI-1 liquid and gaseous effluents resulted in maximum hypothetical doses that were a small fraction of the quarterly and yearly 10 CFR 50 Appendix I dose limits.

TMI-1

SUMMARY OF MAXIMUM INDIVIDUAL DOSES FOR TMI-1 FROM
January 1, 1997 through December 31, 1997

Effluent	Applicable Organ	Estimated Dose (mrem)	Age Group	Location Dist (m)	Location Dir (toward)	% of Applicable Limit Quarter	% of Applicable Limit Annual	10 CFR 50 Appendix I Limits (mrem) Quarter	10 CFR 50 Appendix I Limits (mrem) Annual
(1) Liquid	Total Body	1.32E-1	Adult	Receptor 1		8.80E0	4.40E0	1.5	3
(2) Liquid	Liver	1.88E-1	Teen	Receptor 1		3.76E0	1.88E0	5	10
(3) Noble Gas	Air Dose (gamma-mrad)	3.23E-4	---	2000	NNE	6.46E-3	3.23E-3	5	10
(4) Noble Gas	Air Dose (beta-mrad)	5.36E-4	---	2000	SSE	5.36E-3	2.68E-3	10	20
(5) Noble Gas	Total Body	1.74E-4	All	2150	NNE	---	---	---	---
(6) Noble Gas	Skin	3.47E-4	All	2150	NNE	---	---	---	---
(7) Iodine, Tritium & Particulates	Thyroid	8.95E-3	Child	2150	NNE	1.19E-1	5.97E-2	7.5	15

SUMMARY OF MAXIMUM POPULATION DOSES FOR TMI-1 FROM
January 1, 1997 through December 31, 1997

Effluent	Applicable Organ	Estimated Population Dose (person-rem)
(8) Liquid	Total Body	8.71E0
(9) Liquid	Liver	8.75E0
(10) Gaseous	Total Body	3.98E-1
(11) Gaseous	Liver, Thyroid, Kidney, Lung & GI	3.98E-1

TMI-2

The attached table presents the maximum hypothetical doses to an individual and the general population resulting from 1997 TMI-2 releases of gaseous and liquid effluents. Provided below is a brief explanation of the table.

A. Liquid (Individual)

Calculations were performed on the four age groups and eight organs recommended in Regulatory Guide 1.109. The pathways considered for TMI-2 were the consumption of drinking water and fish and standing on the shoreline influenced by TMI-2 effluents. The latter two pathways are considered to be the primary recreational activities associated with the Susquehanna River in the vicinity of TMI. The "critical receptor" or Receptor 1 was that individual who 1) consumed Susquehanna River water from the nearest downstream drinking water supplier (Wrightsville Water Supply), 2) consumed fish residing in the vicinity of the TMI-2 liquid discharge outfall and 3) occupied an area of shoreline influenced by the TMI-2 liquid discharge.

For 1997, the calculated maximum whole body dose from TMI-2 liquid effluents was 4.92E-4 mrem to an adult (line 1). The maximum organ dose was 8.07E-4 mrem to the bone of a child (line 2).

B. Gaseous (Individual)

There were six major pathways considered in the dose calculations for TMI-2 gaseous effluents. These were: (1) plume exposure (2) inhalation, consumption of; (3) cow milk, (4) vegetables and fruits, (5) meat, and (6) standing on contaminated ground. Real-time meteorology was used in all dose calculations for gaseous effluents.

Since there were no noble gases released from TMI-2 during 1997, the gamma and beta air doses (lines 3 and 4, respectively) were zero.

The maximum organ dose due to the release of particulates and tritium from TMI-2 in 1997 was 1.49E-4 mrem to the liver of a child residing 2000 meters from the site in the SE sector (line 5).

C. Liquid and Gaseous (Population)

Lines 6 - 9 present the person-rem doses resulting from 1997 TMI-2 liquid and gaseous effluents. These doses were summed over all pathways and the affected populations. The person-rem doses from liquid effluents were based upon the population encompassed within the region from the TMI-2 outfall extending down to the Chesapeake Bay (approximately 5,000,000 people). The person-rem doses from gaseous effluents were based upon the 1980 population and considered the population out to a distance of 50 miles around TMI (approximately 2,200,000 people). Population doses were summed over all distances and sectors to give an aggregate dose.

The calculated maximum whole body dose to the affected population from TMI-2 liquid effluents was 1.12E-3 person-rem. The maximum critical organ population dose from liquid effluents was 4.24E-3 person-rem to the bone. TMI-2 gaseous effluents resulted in a whole body population dose of 7.10E-3 person-rem and a maximum critical organ population dose of 7. 20E-3 person-rem to the liver.

For 1997, TMI-2 liquid and gaseous effluents resulted in maximum hypothetical doses that were a small fraction of the quarterly and yearly 10 CFR 50 Appendix I dose limits.

TMI-2

SUMMARY OF MAXIMUM INDIVIDUAL DOSES FOR TMI-2 FROM
January 1, 1997 through December 31, 1997

Effluent	Applicable Organ	Estimated Dose (mrem)	Age Group	Location Dist (m)	Location Dir (toward)	% of Applicable Limit Quarter	% of Applicable Limit Annual	10 CFR 50 Appendix I Limits (mrem) Quarter	10 CFR 50 Appendix I Limits (mrem) Annual
(1) Liquid	Total Body	4.92E-4	Adult	Receptor 1		3.28E-2	1.64E-2	1.5	3
(2) Liquid	Bone	8.07E-4	Child	Receptor 1		1.61E-2	8.07E-3	5	10
(3) Noble Gas	Air Dose (gamma-mrad)	0	---	---	---	0	0	5	10
(4) Noble Gas	Air Dose (beta-mrad)	0	---	---	---	0	0	10	20
(5) Tritium & Particulate	Liver	1.49E-4	Child	2000	SE	1.99E-3	9.93E-4	7.5	15

SUMMARY OF MAXIMUM POPULATION DOSES FOR TMI-2 FROM
January 1, 1997 through December 31, 1997

Effluent	Applicable Organ	Estimated Population Dose (person-rem)
(6) Liquid	Total Body	1.12E-3
(7) Liquid	Bone	4.24E-3
(8) Gaseous	Total Body	7.10E-3
(9) Gaseous	Liver	7.20E-3

Attachment 8
1997 Annual Radioactive Effluent Releases Report for TMI
1920-98-20209

Assessment of Radiation Doses from Liquid and Gaseous Effluents Releases to Members of the Public within the TMI Site Boundaries during 1997

The Offsite Dose Calculation Manual requires an assessment of the radiation doses from radioactive liquid and gaseous effluents to members of public due to their activities inside the site boundary during the reporting period. The public did not have unrestricted access to the TMI site during 1997. Therefore no assessment of this dose is applicable.

Attachment 9
1997 Annual Radioactive Effluent Releases Report for TMI
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Assessment of Radiation Dose to Most Likely Exposed Real Individual per 40 CFR 190

Dose calculations were performed to demonstrate compliance with 40 CFR 190 (ODCM Part IV Section 2.10). Gaseous and liquid effluents released from TMI-1 and TMI-2 in 1997 would have resulted in maximum individual doses (regardless of age group) of 2.36E-2 mrem to the thyroid and 1.98E-1 mrem to any other organ including the whole body. The direct radiation component was determined using the highest 1997 fenceline exposure rate as measured by a TLD and subtracting from it the lowest TLD exposure rate. This method more accurately determines the exposure from TMINS by subtracting out the exposure rate from other sources of radiation in the environment. Based on the maximum exposure rate of 6.72E0 mR/standard month, a person residing at the fenceline for 67 hours (shoreline exposure from Reg. Guide 1.109) would have received an exposure of 6.17E-1 mR. Based on the lowest exposure rate of 2.88E0 mR/standard month and converting it by the same method gives a background exposure of 2.64E-1 mR. Therefore, the net exposure from direct radiation from TMI is 3.53E-1 mR. Combining the direct radiation exposure (assumed to be equal to dose) with the maximum organ doses from liquid and gaseous releases, the maximum potential (total) dose would have been 3.77E-1 mrem to the thyroid and 5.51E-1 mrem to any other organ. Both doses are well below the limits specified in 40 CFR 190.

Attachment 10
1997 Annual Radioactive Effluent Releases Report for TMI
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Deviation from the ODCM Effluent Sampling and Analysis Regime during 1997

There were no deviations from the effluent sampling and analysis regime specified in the TMI Offsite Dose Calculation Manual during 1997.

Enclosure 1
1997 Annual Radioactive Effluent Releases Report for TMI
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TMI Offsite Dose Calculation Manual, Revision 16
6610-PLN-4200.01

(Revisions 15 and 16 were implemented on January 17, 1997 and June 30, 1997 respectively)