

POST-DEFUELING MONITORED STORAGE SAFETY ANALYSIS REPORT

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3.1.1.45 10 CFR 50.55a - Codes and standards.

Article 50.55a requires each operating license for a nuclear power facility be subject to the inservice inspection requirements of paragraph (g) to Article 50.55a and that each construction permit be subject to the remaining paragraphs of the article. As this application is not for a construction permit, paragraph (g) of Article 50.55a is the only portion of the article potentially applicable to TMI-2 in PDMS.

Paragraph (g) (1) is the paragraph which applies to TMI-2. This paragraph requires that safety related components (including supports) meet the requirements of paragraph (g) (4) and (5). These paragraphs define the inservice inspection requirements and provides a mechanism for relief from impractical requirements based on a satisfactory demonstration of this action to the Nuclear Regulatory Commission. Relief from these requirements was sought and for the most part granted early in the TMI-2 Cleanup Program. The NRC granted the following relief for TMI-2 (Reference 3.1-5):

1. The provisions of IWA-2400 of Section XI of the ASME Boiler and Pressure Vessel Code (code) 1974 edition, Summer 1975 Addenda for extending the inspection interval for a period of time equivalent to the shutdown period of TMI-2 was applicable.
2. Testing of pumps in accordance with Section IWP-3400 of the code was only required for those pumps specified in the Recovery Technical Specifications.
3. Category A valves were defined to be containment isolation valves. The NRC agreed that these valves should not be exercised. However, 10 CFR Part 50 Appendix J Type "C" testing was required for any containment isolation valve that was opened and subsequently closed in order to verify its containment isolation function.
4. Category B and C valves in systems out-of-service need not be tested, however, Category B and C valves in safety related systems in service should be exercised at least once per 92 days.
5. The Mini Decay Heat Removal System was to be handled as a separate action.

During PDMS, the relief granted by the NRC still applies. In addition, based on the following justification, no further inservice inspection is required.

1. The PDMS Technical Specifications require no pumps to be operable. Therefore, based on the existing relief, testing of pumps in accordance with IWP-3400 would not be required during PDMS.
2. Performance of type "C" testing of containment isolation valves (Category A valves) in accordance with 10 CFR Part 50 Appendix J is not required at TMI-2. The NRC granted TMI-2 an exemption from Type "C" testing (Reference 3.1-4).

3.1.1.57 10 CFR 50.72 - Immediate notification requirements for operating nuclear power reactors.

With the exception of paragraphs 50.72(b)(2)(iv)(A), 50.72(b)(2)(iv)(B), 50.72(b)(2)(v), and 50.72(b)(2)(vi) the requirements for notification address events or situations which are related to the operation of the power plant and conditions which do, or may compromise the safe operation of the plant. Since TMI-2 will be specifically precluded from the operation of the plant during PDMS, the requirements of those paragraphs which relate to power plant operation will not apply.

Paragraphs 50.72(b)(2)(iv)(A) and 50.72(b)(2)(iv)(B) establish requirements for reporting liquid and gaseous effluents which exceed levels established by these paragraphs. These requirements are applicable to TMI-2 during PDMS.

Paragraphs 50.72(b)(2)(v) and 50.72(b)(2)(vi) require the reporting of any event requiring the transport of a radioactively contaminated person to an off-site medical facility for treatment and any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made. These requirements are also applicable to TMI-2 during PDMS.

3.1.1.58 10 CFR 50.73 - Licensee event report system.

Article 50.73 requires that the holder of an operating license for nuclear power plant (licensee) shall submit a Licensee Event Report (LER) for any event of the type described in this paragraph within 30 days after the discovery of the event. The requirements of this article are applicable to TMI-2 during PDMS.

TABLE 4.3-1 (Cont'd)
FINAL SNM INVENTORY BY LOCATION

Reactor Building

<u>LOCATION</u>	<u>DESCRIPTION</u>	<u>FUEL (kg)</u>
RB Basement	Letdown Coolers	3.7*
RB Basement	Reactor Coolant Drain Tank	0.1
RB Basement	RB Basement and Sump	1.3
RB	Fuel Transfer Canal	14.1 (Note 1)
RB	Core Flood System	4.4
RB	Incore Instrument Guide Tubes in the "A" D-ring	24.3
RB	Upper Endfitting Storage Area	6.3 (Note 1)
RB	Tool Decontamination Facility	0.2
RB	DWCS	2.3
RB	Defueling Tools	0.6 (Note 2)
RB	TRVFS	4.4
RB	RB Drains	5.1
TOTAL SNM INVENTORY		< 811.3

*Minimum Detectable Limit (MDL)

NOTES:

1. One container holding 3 upper endfittings will reside in the deep end of the FTC rather than in the endfitting storage container area as stated in Reference 4.3-10. There are 1.4 kg of residual fuel in this container. The residual fuel values in this table have been changed accordingly.
2. Contrary to the Reference 4.3-10 value for the Defueling Tool Racks, there is a total of 0.6 kg of residual fuel on the defueling tools staged in the Reactor Building per Reference 4.3-13.

TABLE 5.2-2 (Cont'd)

SPECIFIC DECONTAMINATION GOALS - AFHB

CUBICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS	
		GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION <7' Overheads (dpm/100 cm ²)
AX022	North Stairwell	< 2.5	< 1,000/< 10,000
AX023	Elevator Shaft	< 10	< 50,000/< N/A
AX024	Aux Bldg Sump Filters Rm	< 500	< 50,000/< 50,000
AX025	Area Between Service, Control, and RB	< 500	< 1,000/< 10,000
AX026	Seal Injection Filters Rm	< 500	< 50,000/< 50,000
AX027	South Stairwell	< 2.5	< 1,000/< 10,000
AX101	Radwaste Disposal Control Panel Area	< 2.5	< 1,000/< 10,000
AX102	RB Sump Pumps Filters Rm	< 1000	< 50,000/< 50,000
AX103	Motor Control Center 2-11EB Rm	< 2.5	< 1,000/< 10,000
AX104	Motor Control Center 2-21EB Rm	< 2.5	< 1,000/< 10,000
AX105	Substation 2-11E Rm	< 2.5	< 1,000/< 10,000
AX106	Substation 2-21E Rm	< 2.5	< 1,000/< 10,000
AX107	Motor Control Center 2-11EA Rm	< 2.5	< 1,000/< 10,000
AX108	Motor Control Center 2-21EA Rm	< 2.5	< 1,000/< 10,000
AX109	Nuclear Services Coolers and Pumps Area	< 2.5	< 1,000/< 10,000
AX110	Intermediate Coolers Area	< 2.5	< 1,000/< 10,000
AX111	Intermed Cooling Pumps and Filters Rm	< 50	< 1,000/< 10,000
AX112	Seal Return Coolers and Filter Rm	< 1000	< 50,000/< 50,000
AX113	Waste Gas Analyzer Rm	< 50	< 50,000/< 50,000
AX114	MUP Demineralizer 1A Rm	"AS IS"	"AS IS"
AX115	MUP Demineralizer 1B Rm	"AS IS"	"AS IS"
AX116	Makeup Tank Rm	< 500	< 50,000/< 50,000
AX117	MUP Filters Rm	< 1000	< 42,500,000*/< 50,000
AX118	Spent Fuel Coolers and Pumps Area	< 2.5	< 1,000/< 10,000

TABLE 5.2-2 (Cont'd)

SPECIFIC DECONTAMINATION GOALS - AREA

CUBICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS	
		GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION <7' Overheads (dpm/100 cm ²)
AX211	Fuel Handling Bldg Exhaust Unit A	< 50	N/A
AX212	Decay Heat Surge Tk and Substation Area	< 2.5	< 1,000/< 10,000
AX213	Unit Substations and Access Area	< 2.5	< 1,000/< 10,000
AX214	Decon Facility	< 2.5	< 1,000/< 10,000
AX215	Fuel Handling Bldg Supply Unit	< 2.5	N/A
AX216	Aux Bldg Supply Unit	< 2.5	N/A
AX217	Access Area	< 2.5	< 1,000/< 10,000
AX218	Concentrated Waste Storage Tank Rm	< 500	< 50,000/< 50,000
AX219	Inst Racks and Atmospheric Monitor Area	< 2.5	< 1,000/< 10,000
AX220	Caustic Liquids Mixing Area	< 500	< 1,000/< 10,000
AX221	Caustic Liquids Mixing Area Corridor	< 500	< 1,000/< 10,000
AX222	South Stairwell	< 2.5	< 1,000/< 10,000
AX223	Air Handling Units General Area	< 2.5	< 5,000/< 10,000
AX301	Elevator Shaft and Elevator Machine Rm	< 2.5	< 1,000/< 10,000
AX302	North Stairwell	< 2.5	< 1,000/< 10,000
AX303	Elevator and Stairwell Access	< 2.5	< 1,000/< 10,000
AX401	Roof	< 2.5	< 1,000/ N/A
AX402	Cooling Water Surge Tanks Rm	< 500	< 50,000/< 50,000
AX403	Damper Rm	< 500	< 50,000/< 50,000
AX501	RB Spray Pump 1A Rm	< 25	< 5,000/< 50,000
AX502	RB Spray Pump 1B Rm	< 25	< 950,000*/< 50,000
AX503	Decay Heat Remov Cooler and Pump 1A Rm	< 25	< 50,000/< 50,000
AX504	Decay Heat Remov Cooler and Pump 1B Rm	< 25	< 50,000/< 50,000
FH001	Makeup Suction Valve Rm	< 500	< 200,000*/< 50,000
FH002	Access Corridor	< 2.5	< 1,000/< 10,000
FH003a	Makeup Discharge Valve Rm	< 1000	< 50,000/< 100,000
FH003b	Makeup Discharge Valve Rm	< 1000	< 50,000/< 100,000

5.3.1.3 Remedial Decontamination Activities

In the event that changing conditions are indicated, an evaluation will be performed as to the need for, and form of, corrective action to be taken. In general, those areas requiring routine access such as hallways and corridors will be maintained at the decontamination endpoints. All other areas will be assessed on a case-by-case basis with the deciding factors being the area's impact on personnel exposure and the possibility of a release to the environment. The Unit 2 PDMS organization will be staffed to provide the capability to take corrective action or call upon additional resources necessary to take corrective action.

5.3.2 RADIOLOGICAL CONDITIONS AT BEGINNING OF PDMS

Table 5.3-1 lists the specific radiological goals for the TMI-2 Reactor Building and the corresponding radiological conditions as of the most current radiological survey existing in January 1991. These data were compiled in the manner described in Section 5.3.1.1.

Table 5.3-2 lists the equivalent information for the AFHB.

Table 5.3-3 provides a summary of the radiological conditions for the balance-of-plant areas not covered by Tables 5.3-1 and 5.3-2.

Tables 5.3-1, 2, and 3 will be updated when final radiological conditions have been determined and data is available.

5.3.2.1 Surface Contamination At Beginning Of PDMS

To establish a baseline at the beginning of PDMS, the radioactivity present as surface contamination in various areas of the facility has been evaluated. This information serves as an initial reference for the evaluation of any future activities in the respective areas.

In order to appraise the radioactivity present as loose surface contamination upon entry into PDMS, an analytical model was constructed utilizing available loose surface contamination data, generalized waste stream isotopic distributions and estimates of surface area. This information is formatted in a manner similar to the general area dose rate and loose surface contamination data presented in Tables 5.3-1, 5.3-2, and 5.3-3. Only surface contamination was considered; fixed contamination or contamination internal to piping systems or equipment was omitted. The generalized waste streams or distribution of principal isotopes are referenced on each of the tables.

Table 5.3-4 lists the data obtained from the analytical model described above for the TMI-2 Reactor Building. Table 5.3-5 lists the equivalent data for the AFHB and Table 5.3-6 provides a similar summary for the balance-of-plant areas. All of the calculations of the quantities of curies listed are based on the specific decontamination goals given on Tables 5.2-2 and 5.2-3. Tables 5.3-5 and 5.3-6 will be updated when final decontamination results become available.

TABLE 5.3-1

PDMS RADIOLOGICAL CONDITIONS - REACTOR BUILDING

AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		PDMS RADIOLOGICAL CONDITIONS*	
	GENERAL AREA DOSE RATE {mR/hr}	SURFACE CONTAMINATION {dpm/100 cm ² }	GENERAL AREA DOSE RATE {mR/hr}	SURFACE CONTAMINATION {dpm/100 cm ² }
Elevation 305' to 347'	<100	< 50,000	25 - 150	150,000
Elevation 347' and Above	< 30	< 50,000	15 - 100	450,000
Refueling Canal	<100	< 50,000	2 - 10	120,000
D-Ring Interior, El. 349' and above				
"A" D-Ring	"AS IS"	"AS IS"	50 - 320	300,000
"B" D-Ring	"AS IS"	"AS IS"	80 - 1000	700,000
Top of D-Rings	<100	< 50,000	25 - 100	200,000
Basement, El. 282'	"AS IS"	"AS IS"	5000 - 200,000	Note 1

*The radiological conditions in this table reflect the most current survey data existing in January 1991.

NOTES:

1. This area is inaccessible; no meaningful data exists at this time.

TABLE 5.3-2

POMS RADIOLOGICAL CONDITIONS - AFHB

CUBICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		POMS RADIOLOGICAL CONDITIONS**	
		GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 7" Overheads (dpm/100 cm ²)	GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 7" Overheads (dpm/100 cm ²)
AX001	RB Emerg. Cooling Booster Pump Area	< 2.5	< 1,000/< 10,000	0.2 - 1.2	< 1,000/< 10,000
AX002	Access Corridor	< 2.5	< 1,000/< 10,000	0.4 - 1.5	< 1,000/< 10,000
AX003	Access Area	< 2.5	< 1,000/< 10,000	0.3 - 2.4	< 1,000/< 10,000
AX004	Seal Injection Valve Rm	< 1000	< 50,000/< 50,000	60 - 150	150,000/< 50,000
AX005	MUP Pump IC Rm	< 500	< 50,000/< 50,000	6 - 14	60,000/< 50,000
AX006	MUP Pump IB Rm	< 500	< 50,000/< 50,000	10 - 100	240,000/< 50,000
AX007	MUP Pump IA Rm	< 500	< 50,000/< 50,000	4 - 60	40,000/< 50,000
AX008	Spent Resin Storage Tank 1B Rm	< 500	< 150,000* / < 500,000**	30 - 2,500	150,000 / 475,000
AX009	Spent Resin Storage Tank 1A Rm	< 500	< 550,000* / < 50,000	100 - 3,000	550,000 / < 50,000
AX010	Spent Resin Transfer Pump Rm	< 500	< 10,400,000* / < 50,000	75 - 100	10,400,000 / < 50,000
AX011	Aux Bldg Sump Tank Pumps and Valve Rm	< 50	< 5,000 / < 50,000	3 - 8	10,000 / < 50,000
AX012	Aux Bldg Sump and Tank Rm	< 50	< 5,000 / < 50,000	100	90,000 / < 50,000
AX013	Evap Cond Tanks, Pumps and Densim Rm	< 500	< 1,000 / < 10,000	0.2 - 14	2,000 / < 10,000
AX014	RC Evaporator Rm	< 500	< 50,000 / < 50,000	3 - 26	100,000 / < 50,000
AX015a	Cleanup Filters Rm	< 500	< 50,000 / < 50,000	10 - 25	35,000 / < 50,000
AX015b	Cleanup After Filters Rm	< 500	< 50,000 / < 50,000	50 - 100	25,000 / < 50,000
AX016	Cleanup Demineralizer 2A Rm	< 500	< 50,000 / < 50,000	10 - 14	500,000 / < 50,000

*These contamination values reflect the existing condition. Further cubicle decontamination/cleanup will be evaluated on a case by case basis; however, it is not possible to set a reasonable goal at this time.

**The radiological conditions in this table reflect the most current survey data existing in January 1991. Surface contamination levels in the overheads are assumed to be at POMS decontamination goals unless otherwise noted.

N/A - Not Applicable

NOTES:

1. This area is currently underwater; no meaningful data exists at this time.
2. The surface contamination level below the waterline in Spent Fuel Pool "A" (FH30) was estimated by surveying the "bathtub ring" immediately above the current water level.
3. This area is currently inaccessible; no meaningful data exists at this time.

TABLE 5.3-2 (Cont'd)

POMS RADIOLOGICAL CONDITIONS - AFTER

CUBICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		POMS RADIOLOGICAL CONDITIONS**	
		GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 1" Overheads (dpm/100 cm ²)	GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 1" Overheads (dpm/100 cm ²)
AX017	Cleanup Demineralizer 2B Rm	< 500	< 50,000/< 50,000	100 - 220	110,000/< 50,000
AX018	Waste Transfer Pumps Rm	< 500	< 50,000/< 50,000	2 - 10	70,000/< 50,000
AX019	Waste Disposal Liquid Valve Rm	< 500	< 50,000/< 50,000	0.2 - 5	7,000/< 50,000
AX020	RC Bleed Holdup Tanks 1B and 1C Rm	< 500	< 50,000/< 50,000	12 - 450	290,000/< 50,000
AX021	RC Bleed Holdup Tank 1A Rm	< 500	< 50,000/< 50,000	1 - 60	1,000/< 50,000
AX022	North Stairwell	< 2.5	< 1,000/< 10,000	0.5	< 1,000/< 10,000
AX023	Elevator Shaft (Inside cab)	< 10	< 50,000/ N/A	3.2	< 1,000/ N/A
AX024	Aux Bldg Sump Filters Rm	< 500	< 50,000/< 50,000	4 - 25	60,000/< 50,000
AX025	Area Between Service, Control, and NB	< 500	< 1,000/< 10,000	1 - 10	1,000/< 10,000
AX026	Seal Injection Filters Rm	< 500	< 50,000/< 50,000	5	60,000/< 50,000
AX027	South Stairwell	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX101	Radiation Disposal Control Panel Area	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX102	RB Sump Pumps Filters Rm	< 1000	< 50,000/< 50,000	10	5,000,000/< 50,000
AX103	Motor Control Center 2-11EB Rm	< 2.5	< 1,000/< 10,000	< 0.2 - 0.4	< 1,000/< 10,000
AX194	Motor Control Center 2-21EB Rm	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX105	Substation 2-11E Rm	< 2.5	< 1,000/< 10,000	9.4	< 1,000/< 10,000
AX106	Substation 2-21E Rm	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000

TABLE 5.3-2 (Cont'd)

PLANS RADIOLOGICAL CONDITIONS - AFB

CURICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		PLANS RADIOLOGICAL CONDITIONS**	
		GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 7" Overhead (dpm/100 cm ²)	GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 7" Overhead (dpm/100 cm ²)
AX107	Motor Control Center 2-112A Rm	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX108	Motor Control Center 2-212A Rm	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX109	Nuclear Services Coolers and Pump Area	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX110	Intermediate Coolers Area	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX111	Intermed. Cooling Pump and Filter Rm	< 50	< 1,000/< 10,000	< 0.2 - 4	< 1,000/< 10,000
AX112	Seal Return Coolers and Filter Rm	< 1000	< 50,000/< 50,000	10 - 45	40,000/< 50,000
AX113	Waste Gas Analyzer Rm	< 50	< 50,000/< 50,000	1 - 15	20,000/< 50,000
AX114	MIP Demineralizer 1A Rm	"AS 1B"	"AS 1B"	> 100,000	-----NOTE 3-----
AX115	MIP Demineralizer 1B Rm	"AS 1B"	"AS 1B"	> 125,000	-----NOTE 3-----
AX116	Makeup Tank Rm	< 500	< 50,000/< 50,000	30 - 1000	10,000/< 50,000
AX117	MIP Filters Rm	< 1000	< 42,500,000/< 50,000	2,000	42,500,000/< 50,000
AX118	Spent Fuel Coolers and Pump Area	< 2.5	< 1,000/< 10,000	0.3 - 3	1,000/< 10,000
AX119	Spent Fuel Demineralizer Rm	< 2.5	< 1,000/< 10,000	0.2 - 2.4	4,000/< 10,000
AX120	Spent Fuel Filters Rm	< 2.5	< 1,000/< 10,000	0.2 - 2	30,000/< 10,000
AX121	Elevator Shaft (inside cab)	< 2.5	< 1,000/< 10,000	0.2	< 1,000/< 10,000
AX122	North Stairwell	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX123	Access Area	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000

TABLE 5.3-2 (Cont'd)

FMS RADIOLOGICAL CONDITIONS - AFMS

CUBICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		FMS RADIOLOGICAL CONDITIONS**	
		GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION <1/Overheads (dpm/100 cm ²)	GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION <1/Overheads (dpm/100 cm ²)
AX124	Concentrated Liquid Waste Pump Rm	< 500	< 50,000/< 50,000	2 - 26	8,000/< 50,000
AX125	Waste Gas Decay Tank 1B Rm	< 500	< 50,000/< 50,000	< 0.2	< 1,000/< 50,000
AX126	Waste Gas Filter Rm	< 500	< 50,000/< 50,000	< 0.2	< 1,000/< 50,000
AX127	Waste Gas Decay Tank 1A Rm	< 500	< 50,000/< 50,000	< 0.2 - 0.5	< 1,000/< 50,000
AX128	Valve and Instrument Rm	< 500	< 50,000/< 50,000	< 0.2 - 2	< 1,000/< 50,000
AX129	Deborating Demineralizer 1B Rm	< 500	< 50,000/< 50,000	0.2	< 1,000/< 50,000
AX130	Deborating Demineralizer 1A Rm	< 500	< 50,000/< 50,000	< 0.2	< 1,000/< 50,000
AX131	Miscellaneous Waste Holdup Tank Rm	< 50	< 5,000/< 50,000	5 - 160	15,000/< 50,000
AX132	Corridor Between Unit 1 and Unit 2	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX133	South Stairwell	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX134	Miscellaneous Waste Tank Pump Rm	< 50	< 50,000/< 50,000	3 - 20	500,000/< 50,000
AX135	Radiation Disposal Control Panels	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX201	North Stairwell	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX202	Elevator Shaft	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX203	4160V Switchgear 2-1E Rm	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX204	4160V Switchgear 2-2E Rm	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX205	NS Purge Air Sup. and Hy Ctrl Exh Area	< 2.5	< 1,000/< 10,000	< 0.2 - 5	< 1,000/< 10,000

TABLE 5.3-2 (Cont'd)

FEMS RADIOLOGICAL CONDITIONS - AFHB

CIRCLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		FEMS RADIOLOGICAL CONDITIONS**	
		GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 1" Overheads (dpm/100 cm ²)	GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 1" Overheads (dpm/100 cm ²)
AX206	RB Purge Air Exhaust Unit B	< 50	N/A	12	N/A
AX207	RB Purge Air Exhaust Unit A	< 50	N/A	15	N/A
AX208	Aux Bldg Exhaust Unit B	< 50	N/A	0.5	N/A
AX209	Aux Bldg Exhaust Unit A	< 50	N/A	0.5	N/A
AX210	Fuel Handling Bldg Exhaust Unit B	< 50	N/A	< 0.2	N/A
AX211	Fuel Handling Bldg Exhaust Unit A	< 50	N/A	< 0.2	N/A
AX212	Decay Heat Surge TX and Substation Area	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX213	Unit Substations and Access Area	< 2.5	< 1,000/< 10,000	< 0.2 - 1.5	< 1,000/< 10,000
AX214	Decon Facility	< 2.5	< 1,000/< 10,000	< 0.2 - 2	1,000/< 10,000
AX215	Fuel Handling Bldg Supply Unit	< 2.5	N/A	< 0.2	N/A
AX216	Aux Bldg Supply Unit	< 2.5	N/A	< 0.2	N/A
AX217	Access Area	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX218	Concentrated Waste Storage Tank Rm	< 500	< 50,000/< 50,000	7 - 32	2,000/< 50,000
AX219	Inst Rack and Atmospheric Monitor Area	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
AX220	Caustic Liquide Mixing Area	< 500	< 1,000/< 10,000	1.5	1,000/< 10,000
AX221	Caustic Liquide Mixing Area Corridor	< 500	< 1,000/< 10,000	< 0.2 - 1	< 1,000/< 10,000
AX222	South Stairwell	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000

TABLE 5.3-2 (Cont'd)

POMS RADIOLOGICAL CONDITIONS - AFHB

CUBICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		POMS RADIOLOGICAL CONDITIONS**	
		GENERAL AREA DOSE RATE ($\mu\text{R/hr}$)	SURFACE CONTAMINATION < 7" Overheads ($\text{dpm}/100\text{ cm}^2$)	GENERAL AREA DOSE RATE ($\mu\text{R/hr}$)	SURFACE CONTAMINATION < 7" Overheads ($\text{dpm}/100\text{ cm}^2$)
AX223	Air Handling Units General Area	< 2.5	< 5,000/ $\leq$ 10,000	< 0.2 - 8	< 1,000/ $\leq$ 10,000
AX301	Elevator Shaft and Elevator Machine Rm	< 2.5	< 1,000/ $\leq$ 10,000	< 0.2	< 1,000/ $\leq$ 10,000
AX302	North Stairwell	< 2.5	< 1,000/ $\leq$ 10,000	< 0.2	< 1,000/ $\leq$ 10,000
AX303	Elevator and Stairwell Access	< 2.5	< 1,000/ $\leq$ 10,000	< 0.2	< 1,000/ $\leq$ 10,000
AX401	Roof	< 2.5	< 1,000/ N/A	< 0.2	< 1,000/ N/A
AX402	Cooling Water Surge Tanks Rm	< 500	< 50,000/ $\leq$ 50,000	< 0.2	< 1,000/ $\leq$ 50,000
AX403	Damper Rm	< 500	< 50,000/ $\leq$ 50,000	< 0.2	< 1,000/ $\leq$ 50,000
AX501	RB Spray Pump 1A Rm	< 25	< 5,000/ $\leq$ 50,000	1 - 16	15,000/ $\leq$ 50,000
AX502	RB Spray Pump 1B Rm	< 25	< 950,000/ $\leq$ 50,000	28 - 140	950,000/ $\leq$ 50,000
AX503	Decay Heat Removal Cooler and Pump 1A Rm	< 25	< 50,000/ $\leq$ 50,000	1 - 60	50,000/ $\leq$ 50,000
AX504	Decay Heat Removal Cooler and Pump 1B Rm	< 25	< 50,000/ $\leq$ 50,000	2 - 5	40,000/ $\leq$ 50,000
FHD01	Makeup Suction Valve Rm	< 500	< 200,000/ $\leq$ 50,000	5 - 180	180,000/ $\leq$ 50,000
FHD02	Access Corridor	< 2.5	< 1,000/ $\leq$ 10,000	< 0.2 - 5	< 1,000/ $\leq$ 10,000
FHD02a	Makeup Discharge Valve Rm	< 1000	< 50,000/ $\leq$ 100,000	40 - 200	100,000/ $\leq$ 100,000
FHD02b	Makeup Discharge Valve Rm	< 1000	< 50,000/ $\leq$ 100,000	30 - 500	40,000/ $\leq$ 100,000
FHD04	Weatherhouse Valve Rm	< 500	< 50,000/ $\leq$ 50,000	0.2 - 25	75,000/ $\leq$ 50,000
FHD05	Mini Decay Heat Vault	< 500	< 50,000/ $\leq$ 50,000	1.5	3,000/ $\leq$ 50,000

TABLE 5.3-2 (Cont'd)

PIMS RADIOLOGICAL CONDITIONS - NFSS

VEHICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		PIMS RADIOLOGICAL CONDITIONS**	
		GENERAL AREA DOSE RATE ($\mu\text{R/hr}$)	SURFACE CONTAMINATION < 7" Overheads ($\text{dpm}/100\text{ cm}^2$)	GENERAL AREA DOSE RATE ($\mu\text{R/hr}$)	SURFACE CONTAMINATION < 7" Overheads ($\text{dpm}/100\text{ cm}^2$)
FH006	Decay Heat Service Coolers Area	< 500	< 1,000/ $\leq$ 10,000	0.2 - 3	< 1,000/ $\leq$ 10,000
FH007	Neutral and Boric Acid Access Area	< 500	< 1,000/ $\leq$ 10,000	0.2 - 8	1,500/ $\leq$ 10,000
FH008	Neutralizer Tanks Pump Rm	< 500	< 50,000/ $\leq$ 50,000	3 - 10	15,000/ $\leq$ 50,000
FH009	Neutralizer Tanks Rm	< 500	< 50,000/ $\leq$ 50,000	20 - 250	225,000/ $\leq$ 50,000
FH010	Reclaimed Boric Acid Tank Rm	< 500	< 50,000/ $\leq$ 50,000	2	3,000/ $\leq$ 50,000
FH011	Reclaimed Boric Acid Pump Rm	< 500	< 50,000/ $\leq$ 50,000	5 - 30	150,000/ $\leq$ 50,000
FH012	Neutralizer Tanks Filters Rm	< 500	< 50,000/ $\leq$ 50,000	< 0.2	2,000/ $\leq$ 50,000
FH013	Oil Drum Storage Area	< 500	< 1,000/ $\leq$ 10,000	80	< 1,000/ $\leq$ 10,000
FH014	Accusave	< 500	< 250,000/ $\leq$ 50,000	16 - 120	< 20,000/ $\leq$ 50,000
FH101	MUP Valve Rm	< 500	< 50,000/ $\leq$ 50,000	80 - 1,000	220,000/ $\leq$ 50,000
FH102	East Corridor	< 2.5	< 1,000/ $\leq$ 10,000	0.4 - 1.6	< 1,000/ $\leq$ 10,000
FH103	Sample Rm	< 50	< 50,000/ $\leq$ 50,000	0.3 - 4	3,000/ $\leq$ 50,000
FH104	West Corridor	< 2.5	< 1,000/ $\leq$ 10,000	< 0.2	< 1,000/ $\leq$ 10,000
FH105	Model Rm	< 2.5	< 1,000/ $\leq$ 10,000	0.2 - 120	< 1,000/ $\leq$ 10,000
FH106	Monitor Tanks and Sample Sink Area	< 2.5	< 1,000/ $\leq$ 10,000	0.4 - 1.2	2,000/ $\leq$ 10,000
FH107	Trash Compactor Area	< 2.5	< 1,000/ $\leq$ 10,000	0.5	1,000/ $\leq$ 10,000
FH108	Truck Bay	< 2.5	< 1,000/ $\leq$ 10,000	< 0.2	< 1,000/ $\leq$ 10,000

TABLE 5.3-2 (Cont'd)

FOMS RADIOLOGICAL CONDITIONS - AFIB

CURICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		FOMS RADIOLOGICAL CONDITIONS**	
		GENERAL AREA DOSE RATE ($\mu\text{R/hr}$)	SURFACE CONTAMINATION <7" Overheads ($\text{dpm}/100\text{ cm}^2$)	GENERAL AREA DOSE RATE ($\mu\text{R/hr}$)	SURFACE CONTAMINATION <7" Overheads ($\text{dpm}/100\text{ cm}^2$)
FR109	Spent Fuel Pool A	< 2.5	< 1,000/ $\leq$ 10,000	See FR301	
FR110	SDS Spent Fuel Pool	< 2.5	< 1,000/ $\leq$ 10,000	NOTE 1	
FR111	Fuel Cask Storage	< 1000	< 1,000/ $\leq$ 10,000	NOTE 1	
FR112	Annulus	< 100	< 50,000/ $\leq$ 50,000	1 - 25	4,000/ $\leq$ 50,000
FR201	East Corridor	< 2.5	< 1,000/ $\leq$ 10,000	0.4 - 8	3,000/ $\leq$ 10,000
FR202	West Corridor	< 2.5	< 1,000/ $\leq$ 10,000	0.2	3,000/ $\leq$ 10,000
FR203	Surge Tank Area	< 500	< 50,000/ $\leq$ 50,000	NOTE 3	
FR204	Standby Pressure Control Area	< 500	< 1,000/ $\leq$ 10,000	< 0.2 - 2	5,000/ $\leq$ 10,000
FR205	Annulus	< 100	< 50,000/ $\leq$ N/A	< 0.2 - 100	5,000/ $\leq$ N/A
FR301	Upper Spent Fuel Pool A Area (Below waterline, from 308" to 328" EL.) (Above waterline, from 328" to 348" EL.) (Above "fuel pool")	< 2.5 < 2.5 < 2.5	< 2,500,000*/N/A < 350,000*/ N/A < 1,000/ $\leq$ 10,000	NOTE 1 0.2 - 6 0.6 - 12	2,500,000(NOTE 2)/N/A 350,000/ N/A < 1,000/ $\leq$ 10,000
FR302	ZDS Operating Area	< 2.5	< 1,000/ $\leq$ 10,000	0.2 - 3.2	< 1,000/ $\leq$ 10,000
FR303	Upper Standby Pressure Control Area	< 2.5	< 1,000/ $\leq$ 10,000	< 0.2 - 1.6	< 1,000/ $\leq$ 10,000
FR304	Annulus	< 500	< 50,000/ $\leq$ 50,000	0.3 - 1.2	7,000/ $\leq$ 50,000
FR305	Spent Fuel Pool Access Area	< 2.5	< 1,000/ $\leq$ 10,000	0.6 - 12	< 1,000/ $\leq$ 10,000

TABLE 5.3-3

PMS RADIOLOGICAL CONDITIONS - OTHER BUILDINGS

CURICLE NUMBER	AREA DESCRIPTION	SPECIFIC DECONTAMINATION GOALS		PMS RADIOLOGICAL CONDITIONS*	
		GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 7"/Overheads (dps/100 cm ²)	GENERAL AREA DOSE RATE (mR/hr)	SURFACE CONTAMINATION < 7"/Overheads (dps/100 cm ²)
0000	Diesel Generator "A" El. 281*	< 2.5	< 1,000/< 10,000	< 0.2 - 0.6	< 1,000/< 10,000
S8000	Service Building El. 281*	< 2.5	< 1,000/< 10,000	< 0.2 - 5	< 1,000/< 10,000
S8500	Tendon Access Gallery	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
	Service Building El. 305*	< 2.5	< 1,000/< 10,000	0.2	< 1,000/< 10,000
S8002	M-20 Area	< 2.5	< 1,000/< 10,000	< 0.2 - 3	< 1,000/< 10,000
S8002	M-20 Area Sump	< 2.5	< 1,000/< 10,000	NOTE 1	
	Turbine Building El. 281*	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
	CNC Building	< 2.5	< 1,000/< 10,000	< 0.2 - 1.6	< 1,000/< 10,000
PA101	Proc. H ₂ O Storage Tank Sump	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000
BA104	Boiled H ₂ O Storage Tank Area	< 2.5	< 1,000/< 10,000	< 0.2	< 1,000/< 10,000

*The radiological conditions in this table reflect the most current survey data existing in January 1991. Surface contamination levels in the overhead are assumed to be at PMS decontamination goals unless otherwise noted.

NOTES:

1. This area is currently underwater; no meaningful data exists at this time.

addition to serving as a heat transport medium, the coolant also served as a neutron moderator and reflector, and a solvent for the soluble poison (boron in the form of boric acid).

The principal heat removal systems that were used to cool the RCS were the Steam and Feedwater Systems and the Decay Heat Removal System. The steam generators and the Steam, Feedwater, and Condensate Systems were required to remove decay heat from the RCS over the range of temperatures from normal operating temperature and pressure to the Decay Heat System actuation temperature and pressure. All active components necessary for emergency core cooling in these systems were duplicated for reliability. Either steam generator was capable of removing decay heat and sensible heat.

6.2.27.2 PDMS Function

This system provides no active function during PDMS. The passive function provided by this system during PDMS is contamination control. Contamination within the system is controlled by the isolation of the boundary valves and the installation of a contamination barrier over the open Reactor Vessel. This barrier consists of lead shielding installed above the shielded work platform to reduce radiation levels emanating from the Reactor Vessel and a moisture/contamination barrier. In addition, the RCS has been drained to the extent practical; less than 10 gallons of water remain in the Reactor Vessel and less than 100 gallons remain in each OTSG (including J-legs).

6.2.28 SOLID RADWASTE DISPOSAL SYSTEM

6.2.28.1 System Design

The Solid Radwaste Disposal System was designed to store and transfer resin, radioactive liquid wastes, and concentrated boric acid. The wastes were stored to allow radioactive decay to a lower level for processing, packaging, and subsequent transportation to a disposal site. The TMI-2 Solid Radwaste System did not include a solidification and packaging capability.

6.2.28.2 PDMS Function

This system provides no active function during PDMS. The passive function provided by this system during PDMS is contamination control. Contamination within the system is controlled by the isolation of the boundary valves for the contaminated portions of the system.

6.2.29 REACTOR FEEDWATER HEAT SYSTEM

6.2.29.1 System Design

The Reactor Feedwater Heat System was designed and installed to provide a method to heat and add chemicals to the RCS water. The system was rendered obsolete before its construction was completed. The pump, heaters, and chemical addition

equipment for the system have been removed. Only miscellaneous piping and valves remain.

6.2.29.2 PDMS Function

This system provides no active function during PDMS. The passive function provided by this system during PDMS is contamination control. Contamination within the system is controlled by the isolation of the boundary valves for the contaminated portions of the system.

6.2.30 STEAM GENERATOR SECONDARY VENTS & DRAINS SYSTEM

6.2.30.1 System Design

The Steam Generator Secondary Side Vents and Drains System was designed to drain the water from the secondary side of the steam generators. In addition, it provided a flow path for nitrogen to purge all non-condensable gases from the OTSGs. It also provided the flow paths for sampling and chemical cleaning of the OTSGs.

6.2.30.2 PDMS Function

This system provides no active function during PDMS. The passive function provided by this system during PDMS is Containment isolation. The Containment isolation function is provided by maintaining valves SV-V18, SV-V55, and SV-V66 in the closed position.

6.2.31 DEWATERING SYSTEM

6.2.31.1 System Design

The Dewatering System was designed and installed during the TMI-2 cleanup period. This system removed and filtered the water from submerged defueling canisters and provided a transfer path to the Defueling Water Cleanup System for processing. The Dewatering System also provided the cover gas for canister shipping.

The water was removed from the defueling canisters to reduce the weight of the canisters for shipping and prevent the hydrogen and oxygen catalysts from being submerged. A cover of argon was provided to reduce water intrusion when the canister was in the water, reduce air intrusion when the canister was out of the water, and reduce the pyrophoricity potential of the debris within the canister.

6.2.31.2 PDMS Function

This system provides no active function during PDMS. The passive function provided by this system during PDMS is contamination control. Contamination within the system is controlled by the isolation of the boundary valves for the contaminated portions of the system.

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capable of withstanding the original design basis events (except internal pressurization) during the PDMS period without further analysis.

The internal pressure of the Containment during PDMS is controlled by a passive breather system (see Section 7.2.1.2). This system will maintain the Reactor Building in equilibrium with atmospheric pressure via the Auxiliary Building at all times during its use. In addition, a range of postulated events has been investigated (see Chapter 8) and none of these events could result in any significant pressurization of the Containment. Therefore, even with the reduced pressure capabilities due to the existence of modified penetrations, the Containment is capable of performing its intended function of contamination isolation throughout the range of normal and postulated unanticipated events.

The Containment will remain isolated during PDMS. No active functions are required to maintain this isolation (see Section 7.2.1.1).

7.1.2 AUXILIARY BUILDING

7.1.2.1 PDMS Function

The Auxiliary Building will serve primarily to support operation of the liquid radwaste, Auxiliary Building sump, ventilation, and effluent monitoring systems required for PDMS activities.

7.1.2.2 Facility Description

The Auxiliary Building shares a common wall with the Fuel Handling Building on the west side and has a vertical air intake shaft attached to the east wall. The Auxiliary Building is rectangular in plan with three main floors of slab-beam and flat slab construction. At the east exterior wall, a large door opening is located at grade level. This door opening is not protected from an aircraft impact loading or external missiles (see Section 3.5). The Auxiliary Building is accessible from the Service Building, the Fuel Handling Building, and the Unit 1 - Unit 2 corridor.

During PDMS, the Auxiliary Building Ventilation System and filters will be maintained in an operational condition and operated as required. When the Auxiliary Building Ventilation System is not in operation, the atmospheric pressure will be equalized with the outside environment via a HEPA filter in the existing exhaust line filter housing. The auxiliary sump, auxiliary sump tank, and associated level indication will remain operational as well as the 480/277 VAC power to lighting, fire detectors, and sump level indication circuits. Most loads of 480 VAC and above have been deenergized at the switchboards and/or motor control centers. However, selected loads (e.g., welding receptacles, heaters, pump motors, and fan motors) will remain energized and available for use, as needed. The Auxiliary Building will be locked, but accessible for periodic surveillance entries and other limited activities. The entire Auxiliary Building is classified as a locked, controlled area.

The following sections describe the systems that will be maintained in an operational condition during PDMS. Table 7.2-1 provides a listing of those systems. Also listed are the system code, status of containment isolation function, internal contamination, and any relevant remarks regarding operation in the PDMS configuration.

Each of the following sections addresses the PDMS function of the specific system, system description, and an evaluation. A list of reference drawings providing more detailed information is included in Section 7.3.

As required by the PDMS Quality Assurance Plan, procedures are in-place to control the operations, surveillance, testing, modifications, and maintenance of the operational systems.

7.2.1 CONTAINMENT SYSTEMS

The following systems or portions of systems provide the necessary measures to ensure that the Containment maintains its primary function as a contamination barrier throughout PDMS:

- a. Portions of systems consisting of Containment penetrations
- b. Containment Ventilation and Purge System
- c. Containment Atmospheric Breather
- d. Containment Airlocks and Equipment Hatch.

7.2.1.1 Containment Isolation

An operating nuclear power plant requires double barrier isolation capabilities so that no single, credible failure or malfunction of an active component can result in leakage due to loss of Containment isolation. The installed double barriers in piping systems usually include various types of valves located inside and outside of the Reactor Building penetration. Due to the non-operating and defueled condition of TMI-2 during PDMS, there are no piping systems which penetrate the Containment that require active isolation capability. Therefore, except for the Containment Atmospheric Breather, all piping penetrations will be isolated by a single, passive barrier either inside or outside of Containment. Locked closed valves, closed and deactivated remote manual valves, closed and deactivated automatic valves, and blind flanges are examples of acceptable means of Containment isolation during PDMS.

Table 7.2-2 describes the means of isolation for each Containment penetration. Any system required to be operated during PDMS which necessitates the opening of a Containment isolation feature shall be controlled by procedures which delineate the requirements for opening and reestablishing isolation of the penetration.

Several Containment penetrations were modified during the cleanup period to

provide capabilities necessary for cleanup operations. The piping penetration modifications installed during the cleanup period were designed to withstand a maximum of 5 psig of pressure, (Reference 7.2-1). All other piping penetrations that have not been modified are presumed to have a retained capability at or near their original design pressure.

Although Table 7.2-2 provides a listing of specific means of Containment isolation, any equivalent means of isolation is acceptable and will not constitute a change to the Containment isolation capability. For example, a valve may be removed and replaced by a blind flange and result in no change in the Containment isolation capability.

7.2.1.2 Containment Atmospheric Breather

7.2.1.2.1 PDMS Function

The Containment Atmospheric Breather has been added to the Containment to provide passive pressure control of the Containment relative to ambient atmospheric pressure via the Auxiliary Building and to establish a "most probable pathway" through which the Containment will "breathe". The Containment Atmospheric Breather is designed to provide a specific pathway through which the Containment atmosphere can aspirate to maintain pressure equilibrium with the environment external to the Containment. The Breather is designed so that the Containment atmosphere will preferentially aspirate through it to the Auxiliary Building rather than through other potential Containment leak paths. In addition to assuring that the Containment structure will not experience significant pressure differential, positive or negative, which could threaten the structural capability of the contamination boundaries provided by the Containment, the pathway assures that effluents from the Containment to the environment will pass through the filtered Breather pathway.

The Breather is a passive system which requires only periodic inspection of the HEPA filter. There are no active parts which can fail and cause the Breather to become inoperative. The Containment Atmospheric Breather model is shown on Figure 7.2-1.

The Breather is assured to be the "most probable" pathway because the size of the Breather is very large compared to other potential leak paths. The analysis which demonstrates that the Containment Atmospheric Breather is the most probable pathway is given in Section 7.2.1.2.3.

7.2.1.2.2 System Description

The breather is a passive system consisting of a 6 in. diameter duct with the HEPA filter and two (2) sample filter papers downstream of the HEPA. It has been installed in the 6 in. hydrogen control system line between the existing filter train and the exhaust fan (AH-E-34). Provisions have been made to allow semi-annual sample filter paper removal and assay and reinstallation or replacement of the DOP-tested HEPA. The PDMS configuration is shown on Figure 7.2-2.

This gives the ratio of mass flow rates as:

$$(\dot{m}_i / \dot{m}_v) = (0.00717 + 0.312) / 2675 = 0.00012$$

Therefore, the Containment Atmospheric Breather clearly is "the most probable pathway".

As stated in Section 7.2.1.2.2, there are two sample filter papers installed downstream of the HEPA filter. The air flow into and out of the containment via the breather also passes through the two sample filters. (For the purposes of this discussion, the sample filter paper closest to the breather HEPA will be referred to as Filter #1 and the sample filter paper farthest from the breather HEPA and closest to the Auxiliary Building atmosphere as Filter #2.) The breather HEPA filters the air leaving the Containment into the Auxiliary Building. Filter #1 collects the material that may pass through the HEPA filter. Filter #2 filters and samples the air coming back into the Containment from the Auxiliary Building.

Filter #1 is removed and assayed for radioactivity semi-annually. If any activity is found on Filter #1, it will be assumed that, for the sampling time period, a like amount of activity was released from the Containment into the Auxiliary Building (i.e., an assumed efficiency of 50%). This is a very conservative approach since the sample filter papers used have a collection efficiency of greater than 90%. Using this methodology, there will be no LLD (in $\mu\text{Ci/cc}$), because any activity assumed to be released is captured on the filter and will be assumed to have been released over the six month time period. Since the filter deposition is cumulative, this method provides determinative (but not real time) monitoring to verify that effluents through the breather are within the calculated values in Chapter 8. Due to the extremely low releases calculated for PDMS, the sample filter paper is deemed adequate for determining the releases anticipated during PDMS.

7.2.1.3 Containment Ventilation and Purge

7.2.1.3.1 PDMS Function

During PDMS, the Containment vent and purge system ensures that uncontrolled atmospheric migration of radioactive contamination will not create a hazard to either the public or site personnel.

7.2.1.3.2 System Description

The Containment purge and purification subsystem will be maintained in an operational condition to support activities in the Containment (e.g., surveillance entries, maintenance) during PDMS. It consists of two Containment purge exhaust units and associated ductwork, dampers, and filters. The purge exhaust units (25,000 cfm each) draw air from the D-rings through HEPA filters, and discharge either to the station vent (purge mode) or back into the Containment (purification mode). The PDMS configuration is shown on Figure 7.2-2.

7.2.1.3.3 Evaluation

Operation of the Containment Vent and Purge System provides fresh air to the Containment while providing a filtered, monitored exhaust path. Atmospheric radiation monitoring, as described in Section 7.2.4, provides for monitoring of airborne releases from the system by using monitors located in the exhaust duct and in the station vent. This ensures that releases from the Containment to the environment are minimal.

7.2.1.4 Containment Airlocks and Equipment Hatch

7.2.1.4.1 PDMS Function

The airlock doors will be used during PDMS for Containment ingress and egress. The airlocks are designed as a double-door system with one of the doors always closed during routine entry into the Containment. Under these conditions, the Containment remains isolated (an enclosed volume) at all times and the amount of Containment air which could be released to or from the Containment is limited to the volume inside of an airlock assembly.

7.2.1.4.2 System Description

The Equipment Hatch is located in the southwest quadrant of the Containment. It is a 24 ft. 8 inch diameter, 20.5 ton cover for a 23 ft. diameter penetration in the Containment wall. Its design purpose is to accommodate the movement of large objects into and out of the Containment.

A removable personnel airlock assembly (airlock 1) is incorporated into the Equipment Hatch. The airlock has a 9 ft. outside diameter, a 12 ft. 6 in. length, and weighs approximately 15 tons. Both the Equipment Hatch and the airlock are double gasketed with the Equipment Hatch bolted to a steel flange on the Containment wall.

A separate personnel airlock assembly (airlock 2) is located in the southeast quadrant of the Containment. Its use is intended primarily for personnel access and is permanently mounted in the Containment wall.

7.2.1.4.3 Evaluation

There are situations when it is necessary to open both doors of an airlock assembly simultaneously, as is the case of movement of a long piece of equipment into or out of the Containment. The relevant issues associated with opening both airlock doors simultaneously during PDMS include:

- a. Release of radioactivity during maintenance or surveillance activities, transient conditions, or other natural or man-made events.
- b. Assurance that the airlock doors can be closed.

Typically, both airlock doors would be open only for the period of time necessary

to complete the relevant activity and the Reactor Building Purge System would be operating, thereby minimizing any effluent.

Natural phenomena, such as floods and high winds, are not considered to pose a safety concern because there is adequate warning to ensure that the airlock doors could be closed prior to a significant release. From a seismic standpoint, the airlocks serve no structural function, and therefore, will not affect the seismic integrity of the Containment.

7.2.2 FIRE PROTECTION, SERVICE, AND SUPPRESSION

Fire Protection is provided during PDMS to minimize the potential for a release of radioactive material due to a fire in a contaminated area, protect systems maintained operational during PDMS, minimize the liability and property risk from potential fires, and minimize any potential risk to the operating unit on the same site.

These objectives are achieved by minimizing the potential for a fire by strict control of combustible materials and ignition sources and by providing a system of detection and suppression suitable to deal with any potential fire.

7.2.2.1 PDMS Function

The overall fire protection objectives are achieved by providing a system of fire protection features designed to ensure the following primary functional requirements:

- a. Fire detection shall be provided to the extent that any credible fire will be detected.
- b. Automatic fire suppression shall be provided to areas of the facility and systems which contain significant amounts of combustibles and possible ignition sources (e.g., the auxiliary transformers).
- c. Hose reel and hose cabinet station shall be provided in areas of the facility where systems or equipment are maintained operational for PDMS.
- d. Portable fire extinguishers shall be provided in areas of the facility, as necessary, to provide adequate fire suppression capability.
- e. Presence of flammable and/or combustible liquids and materials shall be minimized to the maximum extent practical.

7.2.2.2 System Description

The original TMI-2 system of fire protection has been modified to address the functional requirements for fire protection for PDMS. The Fire Detection, Service, and Suppression System as configured for PDMS are shown on Figures 7.2-3

and 7.2-4. The measures required to provide the necessary degree of fire protection are described below.

- a. The yard fire main will be maintained pressurized using the station fire pumps in Unit 1 with the altitude tanks as a backup pressure source. The Unit 2 Fire Protection System draws its supply water from the tie-in to the yard fire main.
- b. The fire protection zone detection system originally provided at TMI-2 will remain operational throughout operational areas of the plant. Table 7.2-4 lists those areas where fire detection is operational (PDMS status "OS") or deactivated (PDMS status "DS"). Remote monitoring capabilities are provided in the TMI-1 Control Room via the PDMS Alarm and Monitoring System. The specific zone in which the fire is located will be identified by that system.

The operable portion of the fire detection and alarm systems will be tested every 6 months by performing channel functional tests and supervised circuit tests. For non-supervised circuits between the local panels and the remote monitoring station in the TMI-1 Control Room, testing will be performed every 31 days to demonstrate operability.

- c. Equipment-related fire detectors, installed on various components within the plant to monitor a specific hazard and automatically trip the associated fire suppression system, have been deactivated for areas in which the hazard has been removed and the related fire suppression system deactivated.
- d. The Halon systems protecting the Air Intake Tunnel have been deactivated by removing the Halon cylinders and deenergizing the ultraviolet and pressure detectors. The Halon system protecting the relay room has been deactivated by disconnecting the cylinders and removing them. The ionization detection system will remain operational to monitor these areas.
- e. Portable fire extinguishers are located in those areas where there is no immediate fire suppression capability or where additional fire suppression capability is necessary. The number, type, and locations of portable fire extinguishers are identified on Figures 7.2-6 and 7.2-7. Those in the fire brigade lockers in the Unit 1/Unit 2 corridor, the Laundry and Respirator Facility, and WHPF will be available for fire brigade use.
- f. Self-contained breathing apparatus, as shown on Figures 7.2-6 and 7.2-7, will be available for fire fighting purposes.
- g. Transient combustibles inside the Containment and the AFHB have been removed to the maximum extent practical.

- h. The oil has been drained from the main turbine, main feedwater pumps, emergency feedwater pumps, steam generator feed pumps condensate booster pump reservoirs, and the hydrogen seal oil unit.
- i. The charcoal filters have been removed from all HVAC systems in Unit 2.
- j. Due to the lack of normal heating and ventilation in parts of the plant, freeze protection has been added to applicable portions of the fire main.
- k. The 12 in. fire service loop, which runs through the Diesel Generator Building, AFHB, Control Building area and Turbine Building (east and west), has been isolated. The Diesel Generator Building has been turned over to TMI-1. As part of the modifications to support TMI-1 use of the Diesel Generator Building, the fire system line will be cut and blanked off at the Fuel Handling Building where the fire system line runs from the Diesel Generator Building. This modification eliminates the need for freeze protection of the fire system in the AFHB from this end of the fire system loop.

To prevent the fire system loop from repressurizing due to seat leakage through closed loop isolation valves (supplies on the east and west Turbine Building headers), 1 inch drain valves have been installed. These drains are piped to the Turbine Building sumps and will remain open while the system is isolated to provide for freeze protection. These drain valves which are normally open for drainage purposes will be inspected monthly during freezing weather (October through April).

- l. All portions of the Fire Protection System located inside buildings in areas where the fire hazard risk is small have been deactivated. The system has been placed in a configuration which allows reactivation of the deactivated portions by the realignment of valves if necessary.
- m. The station fire brigade has been fully trained to assure that the personnel are familiar with system configurations, plant layout, and the procedures in Unit 2.
- n. The deluge systems for the auxiliary transformers and east wall curtain are maintained in the Turbine Building.

7.2.2.3 Evaluation

The scope of fire protection has been reduced for areas in which systems have been deactivated and combustibles have been significantly reduced, so that the corresponding fire hazards have been minimized.

Deluge systems for the auxiliary transformers and east wall curtain are maintained in the Turbine Building. Actuation of these systems will not cause

damage to any equipment required to support PDMS. Deluge systems in the Auxiliary and Control Buildings have been deactivated for PDMS. There are no deluge systems in the Containment.

Detection devices provide contacts for supervisory indication that each device is operational and, in the event of detector actuation, indicates which detector actuated the alarm or trip function until reset.

The station fire brigade is under the supervisory control of Unit 2. Upon detection of a fire in Unit 2, the station fire brigade will respond to the specific location in Unit 2. This response in accordance with ongoing station fire brigade training and procedures will ensure mitigation of a fire in Unit 2 during PDMS. The fire protection and suppression systems are configured to provide adequate capability to extinguish any potential fire during PDMS.

7.2.3 RADIOACTIVE WASTE MANAGEMENT

Liquid radwaste management systems that are operational during PDMS are the Radioactive Waste - Miscellaneous Liquids System and the Sump Pump Discharge and Miscellaneous Sumps System. Major portions of these two systems are operational during PDMS to prevent localized flooding and to provide proper disposal of effluents.

7.2.3.1 Radioactive Waste - Miscellaneous Liquids

7.2.3.1.1 PDMS Function

During the PDMS period, portions of the WDL system remain operational. This status provides assurance that significant quantities of liquid wastes will not accumulate in an uncontrolled manner in the Auxiliary Building and Containment. Liquid radwaste in these buildings may result from either rainwater inleakage or PDMS activities. The WDL system achieves its objective by meeting the following criteria.

- a. Existing sumps in the Auxiliary Building and Containment will be monitored and pumped, as required.
- b. Tie-ins to the EPICOR II system will be maintained so that accumulated liquids can be processed, as necessary.
- c. Liquid storage capabilities have been provided for accumulation until sufficient quantities are available for batch processing through the EPICOR II system.
- d. Existing Unit 1 and Unit 2 WDL system tie-ins have been isolated. The capability to process Unit 1 low-level liquid radwastes through the EPICOR II system has been retained for PDMS.

7.2.3.1.2 System Description

The WDL system is designed to receive liquids from the Auxiliary and Fuel Handling Buildings, assorted equipment in these buildings, and from the Containment sump. This system has the capability to retain waste liquids for radioactive decay, sampling, filtering, or transferring liquids for disposal. During the TMI-2 cleanup, the capability to send water from the Miscellaneous Waste Holdup Tank (MWHT) to EPICOR II was added. The PDMS configuration is shown on Figures 7.2-8 and 7.2-9.

Liquid waste sources from the AFHB and Containment include tank drains, vents, filter drains, flush line drains, and floor drains. Rain water inleakage into the AFHB also accumulates in the Auxiliary Building sump.

The WDL components that will be utilized during PDMS include:

- a. MWHT (WDL-T-2) - This 19,518 gallon capacity, stainless steel, horizontal tank is currently tied into the EPICOR II system to provide the waste water feed for EPICOR II. It collects water from the operable sumps, which are preferentially lined up to it. The tank has redundant inlet filters (WDL-F-8A & B) to partially clean up the influent.
- b. Sumps - The Containment Basement and Auxiliary Building sumps are lined with stainless steel. Level indication will be maintained for the Auxiliary Building Sump and Containment Basement.
- c. Sump pumps - The Auxiliary Building sump has dual pumps that operate automatically and alternately to equalize run times. The Reactor Building Spray and DHR sumps (four total) have a single pump that operates automatically. Capacities of the pumps are as follows: Auxiliary Building sump pumps - 100 gpm; Reactor Building Spray and DHR sump pumps - 50 gpm. These pumps will be maintained operational and placed in a manual control mode.
- d. ABST (WDL-T-5) - This 3,085 gallon capacity, stainless steel, horizontal tank and its associated equipment will be maintained operational as a backup in case the MWHT is not available for extended periods.

Selected WDL tanks (e.g., the MWHT and ABST) have been isolated from the Radwaste Disposal Gas System and vented to the Auxiliary Building atmosphere by disconnecting and opening either the vent header connection, relief valve, or rupture disc. Cartridge type HEPA filters are installed on the selected opening(s) to protect against airborne releases from these tanks.

During PDMS, the Auxiliary Building Ventilation System is not required for waste water transfer operations in the Auxiliary Building. These transfer operations do not pose an airborne problem since any airborne contaminants would be released from the water prior to entering the MWHT or the ABST. Contaminants stirred up in the MWHT or ABST will be contained by the HEPA filters installed on these WDL

tanks.

The Containment Sump and Sump Pumps are in an undetermined condition. Because the existing plant sump pumps WDL-P-2A and 2B have not been refurbished, an alternate flow path will be utilized to drain down the RB basement floor. A tie-in to the WDL system has been provided outside of penetration R-593. This tie-in runs from the decay heat removal pump suction header isolation valve test connection to the RB spray pump room sump.

Freeze protection has been provided for portions of the WDL system determined to be subject to freezing due to deactivation of building ventilation systems.

Since the instrument air system is not operational during PDMS, alternate provisions have been provided for operating the air operated valves required for the WDL system during PDMS.

7.2.3.1.3 Evaluation

Because a majority of plant systems are deactivated, have been drained, and placed in a layup condition, there are a limited number of activities that can generate liquid waste during PDMS. Liquid waste in the remaining systems and accumulated water inleakage will be adequately handled by periodic batch processing using the operational portions of the WDL system through EPICOR II and discharged via approved pathways. This ensures minimum exposure to plant personnel and minimizes releases to the environment in accordance with 10 CFR 20 and 50.

7.2.3.2 Sump Pump Discharge and Miscellaneous Sumps System

7.2.3.2.1 PDMS Function

There are a number of sumps in TMI-2 that will be maintained in an operational condition during PDMS. The various sumps and their locations are listed in Table 7.2-3.

Maintaining the various building sumps operational assures that water buildup does not cause adverse localized flooding. These sumps will contain water that is either clean or slightly radioactive. Clean water is presently routed to the Industrial Waste Treatment System (IWTS). Radioactive water requiring processing will be routed to EPICOR II and discharged via approved pathways; slightly radioactive water will be pumped to the IWTS and released in accordance with 10 CFR 20 and NPDES regulations.

7.2.3.2.2 System Description

The designs of the various sumps are delineated in the applicable documents referenced in Section 7.3. The PDMS configuration is shown on Figure 7.2-10. Each sump has two pumps capable of automatic operation and a high level alarm that annunciates in the control room and PDMS alarm and monitoring station. Sump level is controlled by three float switches located in the respective sumps. The sump pumps will normally be operated in a manual control mode.

Water from the floor drains that enters these sumps is generally not contaminated, although sumps within the Turbine Building, Control Building Area, Control and Service Building, and Tendon Access Gallery have recirculation and grab sample lines to enable sampling for radioactivity.

7.2.3.2.3 Evaluation

In general, the functional requirements of each sump and sump pump have been determined on an individual basis.

Monitoring of level in the various sumps by remote means and/or visual inspections ensures that accumulated leakage is transferred for processing in a timely manner. Sampling will be used to quantify radioactive content and ensure proper waste stream processing.

Therefore, operation of the sump pump discharge system ensures liquid waste streams generated during PDMS are adequately transferred for ultimate processing and do not adversely affect the PDMS plant conditions.

7.2.4 RADIATION MONITORING

7.2.4.1 PDMS Function

During PDMS, the radiation monitoring requirements for the facility are primarily those associated with assuring the stability of the radiological conditions in the facility and effluent monitoring. The off-site dose calculations for normal time periods and unanticipated events (see Chapter 8) are based on assumed and measured radiological conditions associated with the various areas of the facility. In order to assure that the off-site dose calculations for the various events remain bounding, the radiological conditions must be periodically monitored to assure they remain within acceptable bounds. In addition, all effluents must be monitored to assure all off-site releases are within acceptable bounds, as well as to meet regulatory requirements for effluent reporting.

Broader radiological conditions monitoring will be conducted throughout the facility to assure compliance with good radiological conditions practices and 10 CFR 20. These radiological monitoring activities are required to support other PDMS activities such as visual inspections, preventive maintenance or other routine tasks.

7.2.4.2 Radiological Surveys

7.2.4.2.1 AFHB Radiological Surveys

Radiological surveys will be conducted on a periodic basis to monitor radiological conditions in the Auxiliary and Fuel Handling Buildings. These radiological surveys will be conducted quarterly except during the initial period of PDMS (minimum of 6 months) when monthly radiological surveys in the AFHB will be performed in order to develop an adequate data base. The surveys will consist of air sampling, loose surface contamination, and radiation dose rate surveys. In addition, TLDs may be placed in fixed locations and changed out periodically

to monitor dose rates over a long-term period. Radiological survey results will be reviewed and evaluated for trends to provide early detection of deteriorating radiological conditions.

7.2.4.2.2 Containment Radiological Surveys

Periodic Containment radiological surveys are required to provide information regarding the stability of the radiological conditions inside the Containment. As stated in Section 7.2.4.1, this information is necessary to periodically validate the off-site releases as calculated in Chapter 8. Radiological surveys in the Containment will be conducted quarterly, as expressed in Regulatory Guide 1.86 Position 3.C, at the approximate locations shown on Figures 7.2-11 and 7.2-12. During the initial period of PDMS (minimum of 6 months), monthly radiological surveys in the Containment will be performed in order to develop an adequate data base. These surveys will consist of air sampling, loose surface contamination, and radiation dose rate surveys. In addition, TLDs may be placed in fixed locations and changed out periodically to monitor dose rates over a long-term period. These surveys will be reviewed and evaluated for any indicated trends. This will either provide assurance that contamination conditions inside the Containment are stable or will provide early indication of any changing conditions which may require corrective action.

7.2.4.3 Effluent Monitoring

Airborne effluents will be monitored during active and passive ventilation of the Containment. Periodic operation of the Reactor Building Purge and AFHB exhaust will be necessary during personnel entries. During Reactor Building Ventilation System operation, the station ventilation stack monitor, HP-R-219 or HP-R-219A, will provide real time monitoring of releases. The Reactor Building effluent monitoring system is shown on Figure 7.2-13. During periods when the Containment ventilation systems are not operating, airborne effluents from the Containment will continue to be monitored as discussed in Section 7.2.1.2.3.

The Containment is passively vented to the Auxiliary Building through a breather pathway which will be filtered using a HEPA filtration system. During periods of Reactor Building Purge operation the breather pathway will be isolated. During passive ventilation the purge exhaust will be isolated and the Containment will be vented through the breather HEPA filter. On a semi-annual basis, a sample filter paper installed downstream of the HEPA filter will be assayed for its radioactivity content to evaluate any release to the environment during periods of inactivity.

The Containment Atmospheric Breather System allows pressure equilization between the Containment and the environment via the Auxiliary Building. For this reason there is no motive force to cause contamination to leak out other than through the Containment Atmospheric Breather. Therefore, it is not anticipated that releases to the environment will occur through pathways other than the breather. Operating procedures for Containment isolation and inspection of airlock door seals, whenever the doors are opened, will be used during PDMS to ensure isolation is maintained.

In the AFHB, negligible airborne effluent discharges are anticipated during normal events. This conclusion is based on three factors: 1) de facto isolation of the AFHB, 2) prevention of airborne events within the AFHB, and 3) the periodic monitoring of radiological conditions. Isolation of the AFHB is maintained by securing all building access points in a locked, controlled manner. In addition, when the AFHB heating and ventilation system is not operating, the system supply dampers are shut. The system exhaust dampers, however, remain open, thereby creating a most probable pathway for AFHB airborne effluents while allowing pressure equalization with the environment. The ventilation system exhaust, as shown in Figures 7.2-43 and 7.2-44, houses a prefilter for large particulates, and two banks of DOP-tested HEPA filters in series. With the AFHB essentially isolated, there is no motive force to generate significant airborne contamination levels, and any airborne contamination that might develop is filtered by the ventilation system exhaust pathway prior to release at the Station Vent.

Prevention of airborne contamination within the AFHB is accomplished, in part, by the lessened level and frequency of plant system operations and reduced access and activities of plant personnel. In addition, internally contaminated systems inside (and outside) the AFHB are drained of liquids, and isolated by closing the respective boundary valves. Individual cubicles or areas are sealed if they contain contamination sufficient to pose a potential for an airborne release.

Throughout PDMS, an ongoing radiological surveillance program will monitor radiological conditions within the AFHB. By means of various surveys, as described in Section 7.2.4.2, potential degradation of radiological conditions will be identified in order for appropriate remedial actions to be taken. A special monitoring program of AFHB airborne levels was conducted in the two year period prior to PDMS, and will be continued for a minimum of one year after implementation of PDMS. The information gathered during these evaluations constitutes an extensive data base that provides additional assurance that AFHB airborne effluent releases will be insignificant in nature. In addition to the special monitoring program, whenever the AFHB ventilation systems are operated during PDMS, the HEPA filtered exhaust is also monitored by the real time sampling of the Station Vent Monitor, thus assuring a controlled, monitored effluent release.

Considering that the AFHB has orders of magnitude less contamination than the Containment, the airborne effluent controls described above are sufficient for assuring airborne effluent releases from the AFHB during normal events will be insignificant.

A certain amount of inleakage into sumps is anticipated during PDMS and periodic discharges will be necessary. Initial and mid-batch samples will be taken and analyzed to quantify radioactive effluents. All radioactive liquid discharges will be via an approved pathway which will provide dilution and monitoring capabilities.

7.2.4.4 General Radiological Monitoring

It is anticipated that the routine radiological surveys will only be performed

in areas requiring access for visual inspection, preventive maintenance, or other routine tasks. "High radiation," "high contamination," and sealed areas will not normally be accessed for routine surveys unless access is required for some other purpose. Radiological support of work during PDMS will be conducted in accordance with Radiological Controls procedures and good radiological work practices.

7.2.4.5 Evaluation

The radiological effluent and monitoring programs described above address the principal radiological concerns for PDMS. These programs assure the radiological conditions in the facility are monitored and any significant deteriorating conditions will be identified in a timely period and appropriate correction action taken. Also, both liquid and gaseous effluents are monitored to assure all radioactive releases are within acceptable bounds. These monitoring programs, in conjunction with general radiological controls activities, assure that the radiological aspects of PDMS are appropriately addressed.

7.2.5 ELECTRICAL SYSTEMS

During PDMS, various plant systems will be required to remain operational to support the monitoring, protection, and surveillance activities associated with PDMS. Some systems require continuous operation while others require only intermittent operation. Due to the need for electrical power support for these activities, portions of the Auxiliary Electrical Distribution System will be maintained operational and remain energized during PDMS.

7.2.5.1 Auxiliary Electrical Distribution System

7.2.5.1.1 PDMS Function

During PDMS, portions of the TMI-2 Auxiliary Electrical Distribution System will be maintained operational and energized to provide reliable power sources for the PDMS support systems and their associated controls and instrumentation. Power will also be available for area lighting, receptacles, heating and ventilation to support PDMS surveillance activities. In some instances, systems utilized for PDMS surveillance activities may require energization from local control stations prior to commencing the surveillance activity.

7.2.5.1.2 System Description

The TMI-2 Auxiliary Electrical Distribution System consists of two full size auxiliary transformers (2A and 2B) connected to two separate 230 KV buses. The secondaries of these transformers provide 4.16 KV power to buses 2-1E, 2-2E, 2-3E, 2-4E, 2-3, 2-4, 2-5, 2-6, 2-7, and 2-8. The load of the 4.16 KV buses is equally distributed between the two auxiliary transformers 2A and 2B. The 6.9 KV buses were designed solely to power the RCP motors, which have been deactivated. For PDMS, the 6.9 KV buses will remain de-energized. The 4.16 KV buses 2-1E through 2-4E will no longer be classified as Class 1E vital buses and do not have connection capability to the emergency diesel generators, which have

been turned over to Unit 1.

The 4.16 KV buses provide power to twenty-six 480-volt unit substations which consist of a 4.16 KV incoming cable compartment, a 4.16 KV/480-volt dry type transformer and 480-volt drawout switchgear. Some units may also contain a 480-volt motor control section.

The 480-volt unit substations provide power to twenty-six 480-volt motor control centers which contain combination motor starters using molded case circuit breakers and magnetic contactors. Some units may also contain power distribution panel sections which utilize 480/120-volt dry type transformers and 120-volt molded case circuit breakers. Unit substations 2-12E and 2-22E also provide power to 125/250-volt DC buses 2-1DC and 2-2DC, respectively, through a group of four static rectifiers. During PDMS, DC power will be supplied through the 2-1DC and 2-2DC buses.

The five 120-volt AC power supplies (2-1V through 2-5V) receive their normal power from 250-volt DC buses 2-1DC and 2-2DC. Their alternate power is supplied from 480-volt unit substations 2-12E and 2-22E.

The ten 125/250-volt DC power panels provide power to control and power loads requiring DC power. The DC power panels consist of fusible distribution panelboards with main lugs and fusible quick-make quick-break switches with current limiting fuses for branch circuits. The 125/250-volt DC power panels receive their power from DC buses 2-1DC and 2-2DC.

The regulated 120-volt AC power system supplies control, instrumentation, and power loads requiring regulated 120-volt AC power. The five regulated transformers associated with the vital power system supply 120-volt AC regulated power through the static switches to the vital power panels. The remaining two regulated transformers power the two regulated voltage power supply distribution panelboards 2-12R and 2-22R. The regulated 120-volt AC power system receives its power through 480/120-volt step-down transformers from unit substations 2-12E and 2-22E.

The low voltage 120/208-volt AC distribution system supplies control, instrumentation, and power loads requiring unregulated 120/208-volt AC power. It consists of distribution panelboards, branch breakers, and transformers located in and powered from 480-volt motor control centers.

TABLE 7.2-2 (Cont'd)

CONTAINMENT ISOLATION TABLE

<u>Penetration</u>	<u>Service</u>	<u>System</u>	<u>Operational System</u>	<u>Line Size (inches)</u>	<u>Isolation Valves</u>	<u>Status</u>
R-622	Main Steam to Turbine	MS	NO	24	MS-V4A	De-energized-L.C.
				6	MS-V1A	Manual-L.C.
				3/4	MS-V2A	Manual-L.C.
				1	MS-V50A	Manual-L.C.
				3/4	MS-V226	Manual-L.C.
				2	GR-V1A	Manual-L.C.
R-623	Emergency Feedwater to OTSG "A"	EF	NO	6	EF-V12A	De-energized-L.C.
				4	EF-V33A	De-energized-L.C.
				6	Blind Flange	
				6	Blind Flange	
R-626	Sump Sucker Feedline (SWS-P-1 Retagged WDL-P-2C)	WDL (SWS)	NO	2	SWS-V8	Blind Flanged
R-401	RB Basement Level Indication	RBS	YES	1/2	RBS-IV-1009	Operational
				1/2	RBS-IV-1011	Operational
				1/2	RBS-IV-1013	Operational
				1/2	RBS-IV-1014	Operational

TABLE 8.1-1

SUMMARY OF SOURCE TERMSROUTINE RELEASES:

Airborne Concentration	Cs-137 = 1×10^{-8} $\mu\text{Ci/ml}$ Sr-90 = 3×10^{-9} $\mu\text{Ci/ml}$
Reactor Building Atmosphere Particulate Content	50 Containment volumes per year
Filter efficiency	99%
Particulate source term	Cs-137 = 2.8×10^{-4} Ci/year Sr-90 = 8.5×10^{-5} Ci/year
Transuranic source term	3.7×10^{-8} Ci/year
(See Table 8.1-3 for isotopic composition)	

LIQUID RELEASES:

Quantity	5000 gal/year
Cs source term	7.6×10^{-5} Ci/year
Sr source term	1.9×10^{-4} Ci/year

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1.0 DEFINITIONS

REPORTABLE EVENTS

1.13 A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 of 10 CFR Part 50.

STAGGERED TEST BASIS

1.14 A STAGGERED TEST BASIS shall consist of:

- a. A test schedule for n systems, subsystems, trains or designated components obtained by dividing the specified test interval into n equal subintervals,
- b. The testing of one system, subsystem, train or designated components at the beginning of each subinterval.

TABLE 1.1
FREQUENCY NOTATION

<u>NOTATION</u>	<u>FREQUENCY</u>
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 184 days.
A	At least once per 12 months.
R	At least once per 18 months.
P	Completed prior to each release.
N/A	Not applicable.

3/4.1 CONTAINMENT SYSTEMS

3/4.1.1 PRIMARY CONTAINMENT

CONTAINMENT ISOLATION

LIMITING CONDITIONS FOR MODE 4

3.1.1.1 Primary CONTAINMENT ISOLATION shall be maintained.

APPLICABILITY: Mode 4

ACTION:

With CONTAINMENT ISOLATION not in accordance with requirements, restore CONTAINMENT ISOLATION within 24 hours.

SURVEILLANCE REQUIREMENTS

4.1.1.1 Primary CONTAINMENT ISOLATION shall be verified quarterly with the following exceptions:

- a. Isolation valves that are locked closed shall be verified annually on a STAGGERED TEST BASIS. If a valve is found to be out of position, a complete verification check shall be performed.
- b. An independent verification of all isolation valve position changes shall be performed.
- c. Bolted or welded blind flanges which form a containment isolation boundary will be visually inspected for signs of degradation and/or leakage every five years on a STAGGERED TEST BASIS. If a problem is discovered with a flange, a complete verification check shall be performed.

TABLE 4.2-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) ($\mu\text{Ci/ml}$)(Note a.)
A. Unit Exhaust Vent Release Points	Continuous (during system operation)	W Grab Sample Particulate	H-3 Principle Gamma Emitters (Note b.)	1×10^{-6} 1×10^{-11}
		M Composite Particulate	Gross Alpha Sr-90	1×10^{-11} 1×10^{-11}
B. Reactor Building Purge	P Each Purge Grab Sample	P Each Purge	H-3 Principle Gamma Emitters (Note b.)	1×10^{-6} 1×10^{-4}
	Grab Sample	W	H-3	1×10^{-6}
C. Reactor Building Breather System	-----	Semi-Annual Assay	Sr-90 Gross Alpha Principle Gamma Emitters-Particulates (Note b.)	Note c.

TABLE 4.2-2 (Cont'd)

TABLE NOTATION

- b. The detectability limits for radioactive analysis are based on the technical feasibility and on the potential significance in the environment of the quantities released. All radionuclides that are identifiable and measured shall be reported in the Semi-Annual Effluent Release Report pursuant to Technical Specification 6.7.1.1.
- c. The activity released from the RB Breather System will be determined directly from filter analysis.

3/4.3 REACTOR VESSEL FUEL

3/4.3.1 REACTOR VESSEL FUEL REMOVAL/REARRANGEMENT

LIMITING CONDITIONS FOR MODE 4

- 3.3.1.1 No more than 42 kg of fuel (i.e., UO_2) may be removed from the Reactor Vessel without prior NRC approval.

APPLICABILITY: Mode 4

ACTION:

When more than 42 kg of fuel has been removed from the Reactor Vessel, suspend all further fuel removal activities and submit a safety analysis to the NRC for approval of this activity and any further fuel removal activities.

- 3.3.1.2 No more than 42 kg of fuel in the Reactor Vessel may be rearranged outside the analyzed geometries in the Defueling Completion Report without prior NRC approval.

APPLICABILITY: Mode 4

ACTION:

When more than 42 kg of fuel in the Reactor Vessel has been rearranged, suspend all further fuel rearrangement activities and submit a safety analysis to the NRC for approval of this activity and any further fuel rearrangement activities.

SURVEILLANCE REQUIREMENTS

- 4.3.1.1 None required as long as no fuel is removed from the Reactor Vessel.
- 4.3.1.2 None required as long as no fuel in the Reactor Vessel is rearranged.

3/4.4 CRANE OPERATIONS

LIMITING CONDITIONS FOR MODE 4

3.4.1 Loads in excess of 50,000 lbs. shall be prohibited from travel over the Reactor Vessel unless a docketed Safety Evaluation for the activity is approved by the NRC.

APPLICABILITY: MODE 4

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition and correct the circumstances which caused or allowed the Limiting Condition for Mode 4 to be exceeded prior to continuing crane operations limited by Specification 3.4.1. Prepare and submit a special report to the Commission pursuant to Specification 6.7.2 within the next 30 days.

3/4.1 CONTAINMENT SYSTEMS

BASES

3/4.1.1 PRIMARY CONTAINMENT

3/4.1.1.1 CONTAINMENT ISOLATION

Containment Isolation is maintained to assure the Containment is properly maintained as a contamination barrier for the residual contamination which remains inside the Containment. One barrier either outside or inside of the Containment on each penetration is acceptable. See the PDMS SAR Section 7.2.1.1. Verification of Containment Isolation is primarily accomplished by visual inspection; however, in cases where this is not practical due to the valve or valves being located in a locked high radiation area, documented evidence of the valves closure may be used. Penetrations which have been isolated by chain locked valves provide a high degree of assurance that Containment Isolation is being maintained and, therefore, require only annual surveillance on a STAGGERED TEST BASIS. Penetrations which have been closed by bolted or welded blind flanges provide an even higher degree of assurance that Containment is being maintained and, therefore, require surveillance only every five years also on a STAGGERED TEST BASIS. However, if a valve is found out of position or a problem with a flange is discovered, a complete verification check would be performed to provide assurance that containment isolation is being maintained.

3/4.1.1.2 CONTAINMENT AIR LOCKS

The Containment Air Locks must be maintained OPERABLE to provide CONTAINMENT ISOLATION. These air locks will be used during entries into the Containment to ensure that radioactive materials are not unnecessarily being released to the environs. The preferred method for ensuring that radioactive materials are not released during these entries is to maintain at least one door closed at all times; however, if circumstances require, both doors may be open simultaneously in accordance with approved procedures.

3/4.3 REACTOR VESSEL FUEL

BASES

3/4.3.1 REACTOR VESSEL FUEL REMOVAL/REARRANGEMENT

NRC Inspection Report 50-320/90-03, dated June 14, 1990, imposed restrictions on the removal and/or rearrangement of the residual fuel in the Reactor Vessel. In particular, the NRC stated in Section 3.0, "Safe Fuel Mass Limit," of that inspection report that the appropriate safe fuel mass limit in the Reactor Vessel (RV) was determined to be 93 kg of core debris. Based on industry practice, a limit of 45% of the SFML was placed on the amount of core debris that may be removed from the RV or rearranged in the RV. This limit is specified to ensure subcriticality even after dual errors. Thus, if the fuel in the RV is rearranged outside the analyzed geometries used in the Defueling Completion Report RV criticality analysis, the 42 kg limit will apply to the rearranged fuel. Further, if any fuel is removed from the RV in the future, the 42 kg limit will also apply to that fuel.

3/4.4 CRANE OPERATIONS

BASES

A load drop into the RV may cause reconfiguration of the core debris outside the analyzed geometries used in the Defueling Completion Report RV criticality analysis.

ADMINISTRATIVE CONTROLS

ANNUAL REPORTS (Cont'd)

Reports required on an annual basis shall include:

- a. A tabulation of the number of station, utility and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man rem exposure according to work and job functions², e.g., surveillance, routine maintenance, special maintenance (the description of various duty functions may be estimates based on pocket dosimeter, TLD, or film badge measurements). Small exposures totaling less than 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total whole body dose received from external sources shall be assigned to specific major work functions.
- b. All changes made to the PDMS SAR during the previous calendar year.
- c. All changes, tests, or experiments meeting the requirements of 10 CFR 50.59.

SPECIAL REPORTS

6.7.2 Special reports shall be submitted in accordance with 10 CFR 50.4 within the time period specified for each report.

6.8 RECORD RETENTION

6.8.1 The following records shall be retained for at least five years:

- a. Records of sealed source and fission detection leak tests and results.
- b. Records of annual physical inventory of all sealed source material of record.

6.8.2 The following records shall be retained as long as the Licensee has an NRC license to operate or possess the Three Mile Island facility.

- a. Records and logs of unit operation covering time interval at each power level.
- b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety and radioactive waste systems.

² This tabulation supplements the requirements of Article 20.407 of 10 CFR 20.

TABLE 2-1 (Cont'd)

MODIFIED CONTAINMENT PENETRATIONS

<u>PENETRATION NUMBER</u>	<u>MODIFICATION</u>
R-546	The penetration was modified to provide a flow path into and out of the RB for the DWCS. This penetration modification consisted of providing piping for a hose connection on the inboard side and tying-in with pipe* on the outboard side.
R-553	The penetration was modified to provide a flow path into and out of the RB for the DWCS. This penetration modification consisted of providing piping for a hose connection on the inboard side and tying-in with pipe* on the outboard side.
R-554	The penetration was modified to provide a source of clean compressed air for use with pneumatic controls and operators. This penetration modification consisted of replacing two (2) outboard containment isolation valves with three (3) valves and adding a flow limiter and quick disconnect on the inboard side.
R-562	The penetration was modified to provide a flow path for sludge transfer from the RB to the spent resin storage tank in the Auxiliary Building. This penetration modification consisted of adding a double valve pressure boundary on the outboard side and piping for a hose connection on the inboard side.
R-565	The penetration was modified to provide a means of transferring shield water to the containment sump. This penetration modification consisted of adding a piping support assembly to the outboard side of the penetration.
R-626	The penetration was initially modified to insert an antenna and camera arrangement into Containment. These were subsequently removed and the penetration was modified to allow pumping out of the RB basement. This penetration modification consisted of installing a new spool piece and piping. For WDMS, all existing piping will be removed and a cover bolted over the penetration with a single pipe centered in the cover. This pipe will be blind flanged off for future possible use.

*"Tying-in with pipe" can be effected in one of two ways:

1. Cutting the existing pipe completely and adding a "T" fitting; or
2. Cutting a circular hole in the existing pipe and welding a new pipe to it.

In either case, the end result is two parallel flow paths where one previously existed.

34. Please address the surveillance testing of the protection systems, equipment, and fire walls. Will surveillance testing of fire protection equipment, valve positions, fire wall integrity, etc. occur during PDMS? Will the equipment be maintained and checked in accordance with recognized standards such as those of the NFPA?

RESPONSE: Testing, preventive, and corrective maintenance currently in place will continue for those systems and components required to be functional during PDMS. Testing requirements and frequencies for operable PDMS fire detection systems (see Supplement 4 Question No. 4) are described in SAR Section 7.2.2.2 b. Any changes to the Fire Protection Program will be evaluated under the provisions of 10 CFR 50.59; deficiencies in the program, systems, or components will be reported in accordance with PDMS Technical Specifications Section 6.7.1. On the subject of fire walls, the FPPE, discussed in response to Question No. 17, supported the deletion of all barriers with the exception of containment.

A.13. What is the maximum overpressure anticipated in the reactor containment building from the maximum fire, assuming that the breather is operational assuming that the breather is plugged?

RESPONSE: The calculated maximum overpressure in Containment from the postulated worst case fire is estimated to be approximately 5 psid. Whether or not the RB breather is plugged has no affect with regard to this calculated overpressure.

A.16. Does the current TMI environmental monitoring program include catching and analyzing rodents or other animals. Are any rodents, captured as part of the TMI rodent control program, analyzed for radioactive material and what are the results of any analyses performed to date?

RESPONSE: Currently, rodent control at TMI-2 is on an as needed basis as determined by employee requests. Such requests are infrequent as may be expected with a substantially reduced work force, absence of vending machines and lunch activities, etc. However, when needed, tracking powder or baits using anti-coagulant poisons are deployed. Following contact, the rodent ingests the poison and eventually dies back at it's nest or other secluded area. Generally, carcasses are not recoverable.

An exception to this method of control is the use of catch-all traps at the TMI cafeteria. Traps are checked monthly but the rodent population apparently is small as catches are uncommon. However, when available, GPU Nuclear will analyze a limited number of carcasses for gamma emitting isotopes as part of the non-routine Radiological Environmental Monitoring Program (REMP).

Another part of the TMI REMP involves the analysis of deer flesh from roadkills on and around TMI. Each sample is analyzed for Sr-89, Sr-90, H-3 and gamma emitting radionuclides. For comparison, deer flesh samples from locations greater than 10 miles from TMI are also analyzed. These latter samples (controls) are provided by local hunters. The deer flesh samples are collected and analyzed to assess the radiological impact of TMI operations; they are not collected as part of a pest control program. No other animal flesh samples are included in the TMI REMP.

As stated in Supplement 2, Question B.5., GPU Nuclear maintains a contract with a local pest control service which covers insect, rodent, spider, and bird control and live animal removal. In recent years, only skunks have been captured by the pest control service. None of these skunks have been analyzed for radioactive content. In 1981, two rats were analyzed; the results of these analyses are listed in Table A.16-1.

1. Provide an estimate of the total quantity of contamination (in curies) in the Auxiliary and Fuel Handling Buildings. Include both fixed and removable contamination.

RESPONSE: The response to PDMS SAR Supplement 2, Question B.8. provided the estimated total activity present as loose surface contamination in the AFHB and the seven other contaminated facilities at TMI-2. The current question extends that request for information to also include fixed contamination. The data necessary to provide a response to this request has not been obtained. An assessment of the quantity of fixed contamination in two AFHB cubicles will be available for NRC review by October 1991. If the methodology used is acceptable, the fixed contamination in the rest of the AFHB will be estimated. However, the draining and cleaning of the "A" spent fuel pool will not be completed until late 1992. Therefore, one of the largest single sources of contamination will not be available for assessment until that time.

2. Will sumps and floor drains in the AFHB be capped or sealed during PDMS? If some will not, identify which ones which will not be capped or sealed and indicate the methods to be used to ensure that activity within floor drain piping and sumps does not move outside as they dry. If no methods are to be used, provide an estimate of the number of curies located in the floor drains or sumps.

RESPONSE: Current plans are to leave drains open assuming no cause exists which requires sealing. The best example of a reason for sealing would be the spread of contamination caused by a ΔP across the drain line. However, in the past several years, the drains have not been a source of contamination. In fact, we discontinued the practice of keeping water in drain line loop seals, but maintained our radiological survey program, which included areas adjacent to the drains. Since that time, there has been only one cubicle where the associated drains presented a problem, i.e., the drains in cubicle FH201. In that case, proximity to the annulus caused a situation wherein positive airflow through the drains occurred resulting in airborne contamination. The solution was to plug/seal the drains involved after conducting the appropriate decontamination. During the cleanup program, we routinely survey the facility for surface contamination and when necessary, conduct decontamination. It is this past surveying experience that forms the basis for the conclusion that the drains will not be a source of contamination during PDMS.

Regarding a curie estimate, the response to PDMS SAR Supplement 4, Question 1, when available, will include a bounding value for the activity contained in the sumps or floor drains in the AFHB. A precise value is difficult to obtain since some cubicles have high radiation levels. Considering the minimal benefit derived from obtaining an exact curie value, the absorbed dose to the workers by this effort would not be in keeping with the ALARA principle.

SUPPLEMENT 4

3. If your calculation of pressure rise due to the maximum credible fire in containment is based on Calculation Number 4710-3220-87-037 (December 11, 1987), RB Fire HEPA Filter $\Delta P/\Delta t$:
- 1) Indicate the similarities and difference between a postulated fire in TMI-2 and the laboratory fire data from Lawrence Livermore Laboratory and indicate why the Lawrence Livermore Laboratory system was thought to be a good model for the TMI-2 facility.
 - B) An attachment to the above calculation (Memorandum O'Connor to Buchanan, Subject: TMI-2 Reactor Building Fire, 3370-87-C213, December 16, 1987) indicates a 20,976,000 BTU fire in the TMI-2 containment building would result from 138 gallons of oil. Based on a fire of 20,976,000 BTUs in the TMI-2 containment building, a pressure inside the building of much greater than 4 in. water can be calculated. Indicate the basis for assuming (in your response to question A.13, Supplement 3 to the SAR on PDMS) that 4 in. water is the correct maximum pressure in the passive breather line.

If your calculation of pressure rise due to the maximum credible fire was not based on Calculation Number 4710-3220-87-037, indicate the code used, the calculation methods, and the assumptions that were made in determining that a fire in the reactor building would have a 6 minute duration and an expected pressure rise of 1.2 in. water at the HEPA filter in the passive breather line.

RESPONSE: The referenced calculation was the basis for the initial response to Question A.13 of Supplement 3. However, a reanalysis of the postulated fire scenario resulted in an estimated maximum Containment overpressure of approximately 5 psid. This potential pressure rise exceeds the design basis for the RB breather HEPA filter. Therefore, a modification to the breather flow path is necessary. GPU Nuclear will provide the details of this modification when they are finalized.

4. Several questions have asked about the design and location for the PDMS Alarm and Monitoring System (SAR page S1-8 and S1-21). Provide the answers to the previously unanswered questions. If final design and location of the system has not been decided provide the status of the review and an estimate of when this information will be available.

RESPONSE: The project to design and install the PDMS Alarm and Monitoring System is proceeding. A preliminary list of TMI-2 parameters and alarms to be monitored remotely by TMI-1 is included on Table 4-1. This list is being used to evaluate the suitability of the existing instrumentation to be used long-term in the PDMS plant environment. The current concept for the system is to transmit the instrument outputs to the TMI-1 Control Room via the TMI-1 plant computer. The existing CRTs in the TMI-1 Control Room would display the status of the monitored functions in a manner similar to TMI-1 plant parameters.

The current schedule for this project is to complete preliminary engineering in the third quarter 1991 with installation in late 1992.

TABLE 4-1TMI-2 ALARMS

Effluent/Radiation Monitors

Alarms:

WHPF Rad Level Hi
 HPR-219A Trouble
 WHPF Exhaust Rad Monitor Failed
 Chemical Cleaning Facility Rad Monitor Failed
 Chemical Cleaning Facility Area Rad Level Hi
 Chemical Cleaning Facility Area Rad Monitor Failed
 Chemical Cleaning Facility Rad Level Hi
 WHPF Exhaust Rad Level Trouble

ANALOG Signals:

Station Vent 219 Rad Level
 Station Vent Flow

Fire

Alarms:

FHB 347' Fire
 RB Fire
 FHB Exhaust 280'6" Fire
 FHB 305' Fire
 FHB Supply Unit Fire
 FHB Exhaust Fire
 Aux. Bldg. Supply Unit Fire
 Aux. Bldg. Exhaust Fire
 Aux. Bldg. 280'6" Fire
 Aux. Bldg. 305' Fire
 Aux. Bldg. 328' Fire
 Service Bldg. 280'6" Fire
 Service Bldg. 305' Fire
 Service Bldg. 322' Fire
 Control Building (CB) Control Room Fire
 CB Cable Room Fire
 CB Mech. Room Fire
 CB Area West Fire
 CB CRD Trans. Room Fire
 CB Battery Room 1 Fire (N)
 CB Battery Room 2 Fire (S)
 River Water Pump House Fire
 Circ. Water Pump House Fire

TAB 4-1 (Cont'd)TMI-2 ALARMS

Alarms: (Cont'd)

CB Area East Fire
 Battery/SWGear/Inverter Room 1 Fire
 Battery/SWGear/Inverter Room 2 Fire
 Battery Room Mezzanine Fire (Cable Spreading)
 Aux. Trans. 2A Fire
 Turbine Bldg. East Fire
 Aux. Trans. 2B Fire
 Chlorinator/Resp. Cleaning Facility Fire
 Coagulator Bldg. Fire
 Intake Vert. Shaft Fire
 Intake North of Divider Fire
 Intake South of Divider Fire
 WHPF Fire
 Diesel Fire Pump Room Fire
 CR Filter Assm. By-Pass Fire
 Service Bldg. Soiled Exhaust Fire
 Service Bldg. Clean Return/Exhaust Fire
 Service Bldg. Multizone Unit Fire
 Service Bldg. Mech. Equip. Room Fire
 Turbine Bldg. El. 281'6" Fire
 Turbine Bldg. El. 305' Fire
 Turbine Bldg. El. 331'6" Fire
 Panel 709 CR Bypass Filter Deluge Trouble*
 Panel 727 Cable Room System Trouble*
 Panel 706 Intake Deluge Trouble*
 Panel 705 Intake Deluge Trouble*
 Zone Panel 711 Aux. Bldg. Trouble*
 Zone Panel 713 Circ. Water Trouble*
 Zone Panel 715 CB Trouble*
 Zone Panel 719 FHB Trouble*
 Zone Panel 721 Service Bldg. Trouble*
 Zone Panel 712 Chlor/Panel 730 Resp Cln Trouble*
 Zone Panel 714 Coag Bldg. Trouble*
 Zone Panel 716 CB Area Trouble*
 Zone Panel 718 River Water Trouble*
 Zone Panel 720 RB Trouble*
 Zone Panel 722 Turbine Bldg. Trouble*
 Zone Panel WHP-XFA-1 WHPF Trouble*

*Troubles may have a common alarm.

TABLE 4-1 (Cont'd)

TMI-2 ALARMS

Sumps

Alarms:

Aux. Bldg. Sump Hi
 Tendon Gallery Sump Hi
 Solid Waste Staging Sump 50% Full
 Turbine Bldg. Sump Hi
 Control/Service Bldg. Sump Hi
 Control/Service Bldg. (M 20 Area) Sump Hi
 Radwaste Panel Trouble
 (Local Aux. Bldg. Alarms:
 2A RB Spray Pump Room Sump Hi
 2B RB Spray Pump Room Sump Hi
 2A DH Rem. Pump Rm. Sump Hi
 Aux. Bldg. Sump Tank Hi
 2B DH Rem. Pump Rm. Sump Hi)
 Contam. Drain Tank Rm. Sump Hi
 Intake Tunnel Deluge Sump Pump Run
 Chem. Cleaning Bldg. Sump Hi

Ventilation

Alarms:

RB Purge Exhaust Fan Trip
 CR Supply Bypass Fan AH-E-4A/B Trip
 CR Exhaust Fan AH-E-35 Trip
 CR Fan-Coil Unit AH-C-16A/B Trip
 Aux. Bldg. Supply Fans Trip
 Aux. Bldg. Exhaust Fans Trip
 FHB Supply Fan AH-E-9A/B Trip
 FHB Exhaust Fan AH-E-10A/B/C/D Trip
 CB Chiller Unit Exp. Tank Level Hi/Lo
 WHPF Exhaust Fans Trip
 EPICOR Vent System Trouble

Miscellaneous

RB Pressure Hi
 1B Condensate Storage Tank Hi/Lo
 Multiplexer Test Circuit (New Alarm)
 Battery Room 1 H2 Conc. Hi
 Battery Room 2 H2 Conc. Hi