ATTACHMENT

Technical Specification Change

1.2.7 REFUELING OPERATION

An operation involving a change in core geometry by manipulation of fuel or control rods when the reactor vessel head is removed.

1.2.8 REFUELING INTERVAL

Time between normal refuelings of the reactor. This is defined as once per 24 months.

1.2.9 STARTUP

The reactor shall be considered in the startup mode when the shutdown margin is reduced with the intent of going critical.

1.2.10 T_{ave}

T_{ave} is defined as the arithmetic average of the coolant temperatures in the hot and cold legs of the loop with the greater number of reactor coolant pumps operating, if such a distinction of loops can be made.

1.2.11 HEATUP - COOLDOWN MODE

The heatup-cooldown mode is the range of reactor coolant temperature greater than 200°F and less than 525°F.

1.2.12 STATION, UNIT, PLANT, AND FACILITY

Station, unit, plant, and facility as used in these technical specifications all refer to TMI Unit 1.

1.3 OPERABLE

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s) and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

1.4 PROTECTION INSTRUMENTATION LOGIC

1.4.1 INSTRUMENT CHANNEL

An instrument channel is the combination of sensor, wires, amplifiers, and output devices which are connected for the purpose of measuring the value of a process variable for the purpose of observation, control, and/or protection. An instrument channel may be either analog or digital.

1.19 PURGE - PURGING

PURGE or PURGING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating conditions in such a manner that replacement air or gas is required to purify the confinement.

1.20 VENTING

VENTING is the controlled process of discharging air as gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating conditions in such a manner that replacement air or gas is not provided. Vent used in system name does not imply a VENTING process.

1.21 REPORTABLE EVENT

A REPORTABLE EVENT shall be any of those conditions specified in 10 CFR 50.73.

1.22 MEMBER(S) OF THE PUBLIC

MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the GPU System, GPU contractors or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries.

1.23 SUBSTANTIVE CHANGES

SUBSTANTIVE CHANGES are those which affect the activities associated with a document or the document's meaning or intent. Examples of non-substantive changes are: (1) correcting spelling; (2) adding (but not deleting) sign-off spaces; (3) blocking in notes, cautions, etc.; (4) changes in corporate and personnel titles which do not reassign responsibilities and which are not referenced in the Appendix A Technical Specifications; and (5) changes in nomenclature or editorial changes which clearly do not change function, meaning or intent.

1.24 CORE OPERATING LIMITS REPORT

The CORE OPERATING LIMITS REPORT is a TMI-1 specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.5. Plant operation within these operating limits is addressed in individual specifications.

1.25 FREQUENCY NOTATION

The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.2. All Surveillance Requirements shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval. The 25% extension applies to all frequency intervals with the exception of "F." No extension is allowed for intervals designated "F."

TABLE 1.2

FREQUENCY NOTATION

NOTATION	FREQUENCY
S	Shiftly (once per 12 hours)
D	Daily (once per 24 hours)
W	Weekly (once per 7 days)
M	Monthly (once per 31 days)
Q	Quarterly (once per 92 days)
S/A	Semi-Annually (once per 184 days)
R	Refueling Interval (once per 24 months)
P S/U	Prior to each reactor startup, if not done during the previous 7 days
P	Completed prior to each release
N/A (NA)	Not applicable
E	Once per 18 months
F	Not to exceed 24 months

Bases

Section 1.25 establishes the limit for which the specified time interval for Surveillance Requirements may be extended. It permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operating conditions that may not be suitable for conducting the surveillance; e.g., transient conditions or other ongoing surveillance or maintenance activities. It also provides flexibility to accommodate the length of a fuel cycle for surveillances that are performed at each refueling outage and are specified with a fuel cycle length surveillance interval. It is not intended that this provision be used repeatedly as a convenience to extend surveillance intervals beyond that specified for surveillances that are not performed during refueling outages. The limitation of Section 1.25 is based on engineering judgement and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the Surveillance Requirements. This provision is sufficient to ensure that the reliability ensured through surveillance activities is not significantly degraded beyond that obtained from the specified surveillance interval.

TABLE 4.1-1

INSTRUMENT SURVEILLANCE REQUIREMENTS

	CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE	REMARKS
1.	Protection Channel Coincidence Logic	NA	M	NA	
2.	Control Rod Drive Trip Breaker and Regulating Rod Power SCRs	NA	M	NA	(1) Includes independent testing of shunt trip and undervoltage trip features.
3.	Power Range Amplifier	D(1)	NA	(2)	(1) When reactor power is greater than 15%. (2) When above 15% reactor power run a heat balance check once per shift. Heat balance calibration shall be performed whenever heat balance exceeds indicated neutron power by more than two percent.
4.	Power Range Channel	S	M	M(1)(2)	(1) When reactor power is greater than 60% verify imbalance using incore instrumentation. (2) When above 15% reactor power calculate axial offset upper and lower chambers after each startup if not done within the previous seven days.
5.	Intermediate Range Channel	S(1)	PS/U	NA	(1) When in service.
6.	Source Range Channel	S(1)	PS/U	NA	(1) When in service.
7.	Reactor Coolant Temperature Channel	S	M	F	

TABLE 4.1-1 (Continued)

CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE	REMARKS
8. High Reactor Coolant Pressure Channel	S	M	R	
9. Low Reactor Coolant Pressure Channel	S	M	R	
10. Flux-Reactor Coolant Flow Comparator	S	M	F	
11. (Deleted)	--	--	--	
12. Pump Flux Comparator	S	M	R	
13. High Reactor Building Pressure Channel	S	M	F	
14. High Reactor Building Logic Channels	NA	Q	NA	
15. High Pressure Injection Analog Channels				
a. Reactor Coolant Pressure Channel	S(1)	M	R	(1) When reactor coolant system is pressurized above 300 psig or T_{ave} is greater than 200°F.
16. Low Pressure Injection Logic Channel	NA	Q	NA	
17. Lower Pressure Injection Analog Channels				
a. Reactor Coolant Pressure Channel	S(1)	M	R	(1) When reactor coolant system is pressurized above 300 psig or T_{ave} is greater than 200°F.
18. Reactor Building Emergency Cooling and Isolation System Logic Channel	NA	Q	NA	

TABLE 4.1-1 (Continued)

CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE		REMARKS
19. Reactor Building Emergency Cooling and Isolation System Analog Channels					
a. Reactor Building 4 psig Channels	S(1)	M(1)	F	(1)	When CONTAINMENT INTEGRITY is required.
b. RCS Pressure 1600 psig	S(1)	M(1)	NA	(1)	When RCS Pressure > 1800 psig.
c. RPS Trip	S(1)	M(1)	NA	(1)	When CONTAINMENT INTEGRITY is required.
d. Reactor Bldg. 30 psig	S(1)	M(1)	F	(1)	When CONTAINMENT INTEGRITY is required.
e. Reactor Bldg. Purge Line High Radiation (AH-V-1A/D)	W(1)	M(1)	F	(1)	When CONTAINMENT INTEGRITY is required.
f. Line Break Isolation Signal (ICCW & NSCCW)	W(1)	M(1)	R	(1)	When CONTAINMENT INTEGRITY is required.
20. Reactor building Spray System Logic Channel	NA	Q	NA		
21. Reactor Building Spray System Analog Channels					
a. Reactor Building 30 psig Channels	NA	M	F		
22. Pressurizer Temperature Channels	S	NA	R		
23. Control Rod Absolute Position	S(1)	NA	R	(1)	Check with Relative Position Indicator.
24. Control Rod Relative Position	S(1)	NA	R	(1)	Check with Absolute Position Indicator.
25. Core Flooding Tanks					
a. Pressure Channels	S(1)	NA	F	(1)	When Reactor Coolant system pressure is greater than 700 psig.
b. Level Channels	S(1)	NA	F		
26. Pressurizer Level Channels	S	NA	R		

TABLE 4.1-1 (Continued)

CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE	REMARKS
27. Makeup Tank Level Channels	D(1)	NA	F	(1) When Makeup and Purification System is in operation.
28. Radiation Monitoring Systems*	W(1)(3)	M(3)	Q(2)	(1) Using the installed check source when background is less than twice the expected increase in cpm which would result from the check source alone. Background readings greater than this value are sufficient in themselves to show that the monitor is functioning. (2) Except area gamma radiation monitors RM-G5, RM-G6, RM-G7 and RM-G21 which are located in the Reactor Building. When purging is permitted per T.S. 3.6, RM-G5 and RM-G21 will be calibrated quarterly. If purging is not permitted per T.S. 3.6, RM-G5 and RM-G21 shall be calibrated at the next scheduled reactor shutdown following the quarter in which calibration would normally be due. RM-G6 and RM-G7, which are in high radiation areas shall be calibrated at the next scheduled reactor shutdown following the quarter in which calibration is due, if a shutdown during the quarter does not occur. (3) Surveillances are required to be performed only when containment integrity is required. This applies to monitors which initiate containment isolation only.
29. High and Low pressure Injection Systems: Flow Channels	N/A	N/A	F	

*Does not include the monitors covered under Specification 3.5.5.2 and 4.1.3 or Specification 3.21.1, 3.21.2 and 4.21.1, 4.21.2.

TABLE 4.1-1 (Continued)

CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE		REMARKS
30. Borated Water Storage Tank Level Indicator	W	NA	F		
31. Boric Acid Mix Tank					
a. Level Channel	NA	NA	F		
b. Temperature Channel	M	NA	F		
32. Reclaimed Boric Acid Storage Tank					
a. Level Channel	NA	NA	F		
b. Temperature Channel	M	NA	F		
33. Containment Temperature	NA	NA	F		
34. Incore Neutron Detectors	M(1)	NA	NA	(1)	Check functioning; including functioning of computer readout or recorder readout when reactor power is grater than 15%.
35. Emergency Plant Radiation Instruments	M(1)	NA	F	(1)	Battery check.
36. Strong Motion Accelerometer	Q(1)	NA	Q	(1)	Battery check.
37. Reactor Building Sump Level	NA	NA	R		

TABLE 4.1-1 (Continued)

CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE	REMARKS
38. OTSG Full Range Level	W	NA	R	
39. Turbine Overspeed Trip	NA	R	NA	
40. BWST/NaOH Differential Pressure Indicator	NA	NA	R	
41. Sodium Hydroxide Tank Level Indicator	NA	NA	R	
42. Diesel Generator Protective Relaying	NA	NA	R	
43. 4 KV ES Bus Undervoltage Relays (Diesel Start)				
a. Degraded Grid	NA	M(1)	R	(1) Relay operation will be checked by local test pushbuttons.
b. Loss of Voltage	NA	M(1)	R	(1) Relay operation will be checked by local test pushbuttons.
44. Reactor Coolant Pressure DH Valve Interlock Bistable	S(1)	M	R	(1) When reactor coolant system is pressurized above 300 psig or T_{ave} is greater than 200°F.
45. Loss of Feedwater Reactor Trip	S(1)	M(1)	R	(1) When reactor power exceeds 7% power.
46. Turbine Trip/Reactor Trip	S(1)	M(1)	F	(1) When reactor power exceeds 45% power.
47. a. Pressurizer Code Safety Valve and PORV Tailpipe Flow Monitors	S(1)	NA	F	(1) When T_{ave} is greater than 525°F.
b. PORV - Acoustic/Flow	NA	M(1)	R	(1) When T_{ave} is greater than 525°F.
48. PORV Setpoints	NA	M(1)	R	(1) Per Specification 3.1.12 excluding valve operation.

TABLE 4.1-1 (Continued)

CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE		REMARKS
49. Saturation Margin Monitor	S(1)	M(1)	R	(1)	When T_{ave} is greater than 525°F.
50. Emergency Feedwater Flow Instrumentation	NA	M(1)	F	(1)	When T_{ave} is greater than 250°F.
51. Heat Sink Protection System					
a. EFW Auto Initiation Instrument Channels				(1)	Includes logic test only.
1. Loss of Both Feedwater Pumps	NA	Q(1)	F		
2. Loss of All RC Pumps	NA	Q(1)	R		
3. Reactor Building Pressure	NA	Q	F		
4. OTSG Low Level	W	Q	R		
b. MFW Isolation OTSG Low Pressure	NA	Q	R		
c. EFW Control Valve Control System					
1. OTSG Level Loops	W	Q	R		
2. Controllers	W	NA	R		
d. HSPS Train Actuation Logic	NA	Q(1)	R		
52. Backup Incore Thermocouple Display	M(1)	NA	R	(1)	When T_{ave} is greater than 250°F.
53. Chlorine Detection System Instrumentation	W	M	F(1)	(1)	Calibration is a one concentration point check (need not be traceable to NBS standards).
54. RCS Inventory Trending System					
a. Level	NA	NA	F		
b. Void Fraction	W	NA	F		

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TABLE 4.1-2

MINIMUM EQUIPMENT TEST FREQUENCY

	Item	Test	Frequency
1.	Control Rods	Rod drop times of all full length rods	Each Refueling shutdown
2.	Control Rod Movement	Movement of each rod	Every two weeks, when reactor is critical
3.	Pressurizer Safety Valves	Setpoint*	50% each refueling period
4.	Main Steam Safety Valves	Setpoint	Approximately 50% each refueling period
5.	Refueling System Interlocks	Functional	Start of each refueling period
6.	Main Steam Isolation Valves	(See Section 4.8)	
7.	Reactor Coolant System Leakage	Evaluate	Daily, when reactor coolant system temperature is greater than 525°F
8.	(Deleted)	--	--
9.	Spent Fuel Cooling System	Functional	Each refueling period prior to fuel handling
10.	Intake Pump House Floor (Elevation 26' ft. 6 in.)	(a) Silt Accumulation-Visual inspection of Intake Pump House Floor	Not to exceed 24 months
		(b) Silt Accumulation Measurement of Pump House Flow	Quarterly
11.	Pressurizer Block Valve (RC-V2)	Functional**	Quarterly

* The setpoint of the pressurizer code safety valves shall be in accordance with ASME Boiler and Pressurizer Vessel Code, Section III, Article 9, Winter, 1968.

** Function shall be demonstrated by operating the valve through one complete cycle of full travel.

TABLE 4.1-4

POST ACCIDENT MONITORING INSTRUMENTATION

FUNCTION	INSTRUMENTS	CHECK	TEST	CALIBRATE	REMARKS
1.	Noble Gas Effluent				
	a. Condenser Vacuum Pump Exhaust (RM-A5-Hi)	W	M	F	(1) Using the installed check source when background is less than twice the expected increase in cpm which would result from the check source alone. Background readings greater than this value are sufficient in themselves to show that this monitor is functioning.
	b. Condenser Vacuum Pump Exhaust (RM-G25)	W(1)	M	F	
	c. Auxiliary and Fuel Handling Building Exhaust (RM-A8-Hi)	W	M	F	
	d. Reactor Building Purge Exhaust (RM-A9-Hi)	W	M	F	
	e. Reactor Building Purge Exhaust (RM-G24)	W(1)	M	F	
	f. Main Steam Lines Radiation (RM-G26/RM-G27)	W(1)	M	F	
2.	Containment High Range Radiation (RM-G22/G23)	W	M	R	
3.	Containment Pressure	W	N/A	F	
4.	Containment Water Level	W	N/A	R	
5.	Containment Hydrogen	W	M	F	
6.	Wide Range Neutron Flux	W	N/A	F	

TABLE 4.1-4 (Continued)

POST ACCIDENT MONITORING INSTRUMENTATION

FUNCTION	INSTRUMENTS	CHECK	TEST	CALIBRATE	REMARKS
7.	Reactor Coolant System Cold Leg Water Temperature (TE-959, 961; TI-959A, 961A)	W	N/A	R	
8.	Reactor Coolant System Hog Leg (TE-958, 960; TI-958A, 960A)	W	N/A	R	
9.	Reactor Coolant System Pressure (PT-949, 963; PI-949A, 963)	W	N/A	R	
10.	Steam Generator Pressure (PT-950, 951, 1180, 1184; PI-950A, 951A, 1180, 1184)	W	N/A	R	
11.	Condensate Storage Tank Water Level (LT-1060, 1061, 1062, 1063; LI-1060, 1061, 1062, 1063)	W	N/A	F	

4.4.4 Hydrogen Recombiner System

Applicability

Applies to the testing of the hydrogen recombiner and associated controls.

Objective

To verify that the hydrogen recombiner and associated controls are operable.

4.4.4.1 Specification

a. At least once per 6 months, perform a hydrogen recombiner system functional test to demonstrate that the minimum reaction chamber gas temperature is maintained ≥ 600°F for at least 2 hours.

b. At least once per refueling interval, perform the following surveillances:

1. A channel calibration of all recombiner instrumentation and control circuits (interval not to exceed 24 months).

2. Verify through a visual examination that there is no evidence of abnormal conditions (i.e., loose wiring or structural connections, deposits of foreign materials, etc.)

3. Verify during a recombiner system functional test that the reaction chamber gas temperature is maintained ≥1200°F for at least 4 hours.

4. Verify the integrity of the heater electrical circuits by performing a continuity and resistance to ground test. The resistance to ground for any heater phase shall be ≥10,000 ohms.

Bases

The surveillance program described above provides high assurance that the hydrogen recombiner system will be available to perform its post-LOCA function of maintaining the containment hydrogen concentration below 4.1 volume percent. This system is not credited to mitigate any accident analyzed in Chapter 14 of the TMI-1 FSAR. The frequency of the surveillance of the hydrogen recombiner system is based on the safety significance of the system. TMI-1 FSAR Section 6.5.3.1 indicates that the hydrogen recombiner system is not required until 9.8 days following a LOCA. This is adequate time to place a hydrogen recombiner in service.

4.12 AIR TREATMENT SYSTEM

4.12.1 EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM

Applicability

Applies to the emergency control room air treatment system and associated components.

Objective

To verify that this system and associated components will be able to perform its design functions.

Specification

4.12.1.1 At least every refueling interval, the pressure drop across the combined HEPA filters and charcoal adsorber banks of AH-F3A and 3B shall be demonstrated to be less than 6 inches of water at system design flow rate (±10%).

4.12.1.2

a. The tests and sample analysis required by Specification 3.15.1.2 shall be performed initially and at least once per year for standby service or after every 720 hours of system operation and following significant painting, steam, fire or chemical release in any ventilation zone communicating with the system that could contaminate the HEPA filters or charcoal adsorbers.

b. DOP testing shall be performed after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing which could affect the HEPA filter bank bypass leakage.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of the charcoal adsorber bank or after any structural maintenance on the system housing which could effect the charcoal adsorber bank bypass leakage.

d. Each AH-E18A and B (AH-F3A and B) fan/filter circuit shall be operating at least 10 hours every month.

4.12.1.3 At least once per refueling interval, automatic initiation of the Control Building isolation and recirculation Dampers AH-D28, 37, 39, and 36 shall be demonstrated as operable.

4.12.1.4 An air distribution test shall be performed on the HEPA filter bank initially, and after any maintenance or testing that could affect the air distribution within the system. The air distribution across the HEPA filter bank shall be uniform within ±20%. The test shall be performed at 40,000 cfm (±10%) flow rate.

4.12.2 REACTOR BUILDING PURGE AIR TREATMENT SYSTEM

Applicability: Applies to the reactor building purge air treatment system and associated components (Reference 1).

Objective: To verify that this system and associated components will be able to perform its design functions.

Specification

4.12.2.1 At least once per refueling interval, it shall be demonstrated that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at system design flow rate (±10%).

4.12.2.2

a. The tests and sample analysis required by Specification 3.15.2.2, shall be performed initially, once per refueling interval, or within 30 days prior to the movement of irradiated fuel in containment and following significant painting, steam, fire, or chemical release in any ventilation zone communicating with the system that could contaminate the HEPA filters or charcoal adsorbers.

b. DOP testing shall be performed after each complete or partial replacement of a HEPA filter bank or after any structural maintenance on the system housing which could affect HEPA frame bypass leakage.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any structural maintenance on the system housing which could affect the charcoal adsorber bank bypass leakage.

d. The DOP and halogenated hydrocarbon testing shall be performed at the maximum available flow considering physical restrictions, i.e., purge valve position, and gaseous radioactive release criteria.

e. Each refueling, AH-E7A&B shall be shown to operate within ± 5000 cfm of design flow (50,000 cfm) with purge valves fully open.

4.12.2.3 An air distribution test shall be performed on the HEPA filter bank initially and after any maintenance or testing that could affect the air distribution within the system. The air distribution across the HEPA filter bank shall be uniform within ±20%. The test shall be performed at 50,000 cfm (±10%) flow rate with purge valves fully open.

4.17 SHOCK SUPPRESSORS (SNUBBERS)

SURVEILLANCE REQUIREMENTS

4.17.1 Each snubber shall be demonstrated OPERABLE by performance of the following inspection program.

a. Snubber Types
As used in this specification, type of snubber shall mean snubbers of the same design and manufacturer, irrespective of capacity.

b. Visual Inspections
Snubbers are categorized as inaccessible or accessible during reactor operation and may be treated independently. The TMI-1 Manager, Radiological Controls, will ensure that a review is performed for ALARA considerations on all snubbers which are located in radiation areas for the determination of their accessibility. This review shall be in accordance with the recommendations of Regulatory Guides 8.8 and 8.10. The determination shall be based upon the known or projected radiation levels at each snubber location which would render the area inaccessible during reactor operation and based upon the expected time to perform the visual inspection. Snubbers may also be determined to be inaccessible because of their physical location due to an existing industrial safety hazard at the specific snubber location. This determination shall be reviewed and approved by the Supervisor of Safety and Health.

Snubbers accessible during reactor operation shall be inspected in accordance with the schedule stated below. Snubbers scheduled for inspection that are inaccessible during reactor operation because of physical location or radiation levels shall be inspected during the next reactor shutdown greater than 48 hours where access is restored* unless previously inspected in accordance with the schedule stated below.

Visual inspections shall include all safety related snubbers and shall be performed in accordance with the following schedule:

No. Inoperable Snubbers of Each Type per Inspection Period	Subsequent Visual Inspection Period**#
0	24 months ± 25%
1	16 months ± 25%
2	6 months ± 25%
3, 4	124 days ± 25%
5, 6, 7	62 days ± 25%
8 or more	31 days ± 25%

* Snubbers may continue to be inaccessible during reactor shutdown greater than 48 hours (e.g. if purging of the reactor building is not permitted).

** The inspection interval for each type of snubber shall not be lengthened more than one step at a time unless a generic problem has been identified and corrected; in that event the inspection interval may be lengthened one step the first time and two steps thereafter if no inoperable snubbers of that type are found.

\# The provisions of Table 1.2 are not applicable.