CLASS 1 INSPECTION PLAN
INSERVICE INSPECTION OF TMI-1
CLASS 1 COMPONENT PRESSURE BOUNDARY

I. Scope and Objectives

This attachment describes the Inservice Inspection Program for Class 1 (reactor coolant system) pressure boundary components of TMI-1.

II. Identification of Class 1 Boundary

The Class 1 boundary was established in accordance with 10 CFR 50, Paragraph 50.2(v) and footnote 2 to paragraph 50.55a(g)(1). The Class 1 boundary is shown in the attached drawings, Drawing Nos. C-300-004 and 5-GN1, C300-015 to 017-GN1, and C-300-019 and 020-GN1.

III. Applicable Code Edition and Addenda

In accordance with 10 CFR 50, Paragraph 50.55a(b), the applicable ASME Code Edition and Addenda are the 1974 Edition with Addenda through Summer 1975.

IV. Period of Applicability

In accordance with 10 CFR 50, Paragraph 50.55a(g)(4)(ii), this program is applicable from January 1978 to May 1981. Unless an extension is permitted per paragraph IWA-2400(a). However, the program is written in terms of the ASME Code required ten-year inspection interval, which started September 1974.

V. Inspection Program

As shown in Table A-1, inservice inspections will be carried out in accordance with the ASME Code, Section XI, 1974 Edition with Addenda through Summer 1975, except that alternate inspection techniques will be used for items B4.1 and B5.4 in Table A-1, because the inspection techniques required by the Code are impractical due to plant design features. In addition, some inspections of reactor vessel nozzles (Item B1.4) will be deferred to the end of the inspection interval since they cannot be performed until the core barrel is removed.

Any repairs found to be necessary as a result of inservice inspections will be performed in accordance with the ASME Code, Section XI, 1974 Edition with Addenda through Summer 1975.

VI. Exceptions

Specific exceptions to the ASME Code, Section XI requirements are identified in Table A-1, together with the basis for each exception requested. (See Items B1.4, B4.1 and B5.4).

TABLE A-1

CLASS 1

INSERVICE INSPECTIONS

ITEM NO. PER TABLE IWB-2610	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	EXCEPTIONS TO CODE REQUIREMENTS
B1.1	B-A	Longitudinal and circumferential welds and major weld repairs in the core beltline region. These welds include the two circumferential welds and four longitudinal welds in the beltline region.	Volumetric	At or near the end of the 10-year inspection interval, 10% of each longitudinal and 5% of each circumferential weld will be inspected. When the neutron fluence exceeds 10^{19} nvt (E_n of 1.0 Mev or greater), the length of each weld which is inspected will be increased to 50%. At least 50% of areas with major repairs shall be inspected by the end of the second 10-year inspection interval.	
B1.2	B-B	Longitudinal and circumferential welds in the shell and heads (other than those covered in Items B1.1 and B1.3.	Volumetric	The welds in this category are the circumferential weld just above the support skirt junction with the vessel, the lower head to vessel weld, and the circumferential nozzle in this category. At or near the end of the 10-year inspection interval, 5% of each of these circumferential welds will be inspected.	
B1.3	B-C	Vessel to flange and head to flange circumferential welds.	Volumetric	1/3 of these welds will be inspected about every 3-1/3 years. However, for the vessel to flange weld, inspection will only be from the flange face until the end of the 10-year interval per Code Case 1646. At the end of the 10-year interval, inspection will also be performed from the vessel ID.	
B1.4	B-D	Primary nozzle to vessel welds and nozzle inside radiused sections.	Volumetric	There are 8 nozzles (2 outlet, 4 inlet, and 2 core flood) in this category. The 2 outlet nozzles will be inspected in the second 3-1/3-year period, except that inspections from the vessel inside diameter will be deferred to the end of the 10-year interval per Code Case N-73.	The inlet and core flood nozzle inspection must be deferred until access is provided by removal of the core barrel at the end of the 10-year inspection interval.
B1.5	B-E	Pressure retaining partial penetration welds in the vessel.	Visual	The area around 25% of the control rod drive penetration nozzle welds will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B1.6	B-F	Primary nozzle to safe-end welds (dissimilar metal welds).	———	This inspection is covered in Item 4.1.	
B1.7	B-G-1	Closure studs, in-place.	———	Not applicable -- see Item B1.8	
B1.8	B-G-1	Closure studs and nuts 2 inches and over in diameter.	Volumetric and surface	Cumulative 100% with 33-1/3% being examined about every 3-1/3 years.	
B1.9	B-G-1	Ligaments between threaded stud holes.	Volumetric	Cumulative 100% with 33-1.3% being examined about every 3-1/3 years.	

TABLE A-1
CLASS 1
INSERVICE INSPECTIONS

ITEM NO. PER TABLE IWB-2500	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	EXCEPTIONS TO CODE REQUIREMENTS
B1.10	B-G-1	Closure washers, bushings.	Visual	Cumulative 100% with 33-1/3% being examined about every 3-1/3 years.	
B1.11	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	Cumulative 100% with 33-1/3% being examined about every 3-1/3 years.	
B1.12	B-H	Integrally welded vessel supports.	———	Inspection is not required since the skirt to vessel juncture is an integrally forged piece.	
B1.13	B-I-1	Closure head cladding.	Visual and surface	Two patches will be inspected each 3-1/3 years.	
B1.14	B-I-1	Vessel cladding.	Visual	Two patches will be inspected each 3-1/3 years.	
B1.15	B-N-1	Vessel interior.	Visual	Normally accessible areas will be visually inspected at the first refueling and every third year thereafter.	
B1.16	B-N-2	———	———	This inspection applies only to BWRs.	
B1.17	B-N-3	Removable core support structures.	Visual	This inspection will be performed once each 10-year inspection interval.	
B1.18	B-O	Control rod drive housings.	Volumetric	There are 24 peripheral control rod drive housings and, therefore, three housings will be inspected during the 10-year interval. Some or all of these inspections may be deferred to the end of the 10-year inspection interval.	
B1.19	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
Pressure Vessel					
B2.1	B-B	Longitudinal and circumferential welds.	Volumetric	10% of each longitudinal and 5% of each circumferential weld will be inspected each 10-year interval, with about 1/3 of these inspections being performed each 3-1/3 years.	
B2.2	B-D	Nozzle-to-vessel welds and nozzle-to-vessel radiused section.	Volumetric	There are five nozzles in this category. (one surge, one spray, and three safety relief) About 1/3 of these will be inspected each 3-1/3-year period.	

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TABLE A-1
CLASS 1
INSERVICE INSPECTIONS

ITEM NO. PER TABLE IWB-2500	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	EXCEPTIONS TO CODE REQUIREMENTS
B2.3	B-E	Heater penetrations.	Visual	25% of these connections will be inspected during the pressure test conducted near the end of the 10-year inspection interval.	
B2.4	B-F	Nozzle-to-safe-end welds (dissimilar metal).	———	These dissimilar metal welds are covered in Item B3.1.	
B2.5, B2.6, and B2.7	B-G-1	Pressure retaining bolting 2 inches and greater in diameter.	Visual, volumetric, and surface	The bolting for the manway and the three heater bundles will be inspected during the 10-year inspection interval with one or two of these sets of bolting being checked about every 3-1/3 years. In-place visual and volumetric inspections will be performed unless the bolting is removed for other reasons, in which case surface inspections will also be performed.	
B2.8	B-H	Integrally welded vessel supports.	Volumetric	The eight supports will be inspected each 10-year inspection interval, with about 1/3 of them being inspected each 3-1/3 years.	
B2.9	B-I-2	Vessel cladding.	Visual	A 36 in.^{2} patch will be inspected once during the 10-year inspection interval.	
B2.10	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B2.11	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	This bolting will be visually inspected at least once during the 10-year interval. The inspections will be done in place unless breaking the connection is required for other reasons. 1/3 of these inspections will be done about every 3-1/3 years.	
Steam Generators (S.G.) and Let-Down Coolers (L.C.)					
B3.1	B-B	Longitudinal or circumferential welds in primary side shell.	Volumetric	S.G. -- The only welds in this category are the four tubesheet-to-head welds. Five percent of each of these welds will be inspected during the 10-year interval, with one or two welds being inspected each 3-1/3 years. L.C. -- A portion of the longitudinal seam weld on each of four primary manifolds is accessible at the manifold-to-pipe joint. The accessible portions of each manifold will be inspected during the 10-year inspection interval with one or two being inspected each 3-1/3 years.	

TABLE A-1
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INSERVICE INSPECTIONS

ITEM NO. PER TABLE IWB 2500	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
B3.2	B-D	Primary nozzle-to-head welds and nozzle inside radiused section.	Volumetric	S.G. -- There are six (6) nozzles in this category. All of these will be inspected during the 10-year inspection interval, with two (2) being inspected each 3-1/3 years. L. C. -- There are no L.C. welds in this category	
B3.3	B-F	Primary nozzle-to-safe-end welds (dissimilar metal).	———	S.G. and L.C. -- There are no welds in this category.	
B3.4, B3.5 and B3.6	B-G-1	Pressure retaining bolting 2 inches and over in diameter.	Visual, volumetric and surface	S.G. -- The bolting for the four manways will be inspected during the 10-year interval, with one or two manways being inspected each 3-1/3 years. In-place visual and volumetric inspections will be performed unless the bolting is removed for other reasons, in which case surface inspection will also be performed. L.C. -- There is no bolting in this category.	
B3.7	B-H	Integrally welded vessel supports.	Volumetric	S.G. -- Ten percent of the length of this weld on each steam generator will be inspected during the 10-year inspection interval with one weld being inspected during each of the first two 3-1/3-year periods. L.C. -- There are no supports in this category.	
B3.8	B-I-2	Vessel cladding.	Visual	S.G. -- A 36 in.^{2} patch will be inspected in each steam generator during the 10-year interval. L.C. -- There is no cladding in the L.C.	
B3.9	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B3.10	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	S.G. -- All of this bolting will be visually inspected during the 10-year inspection interval. The inspections will be done in place unless breaking the connection is required for other reasons. 1/3 of these checks will be done about every 3-1/3 years. L.C. -- There is no bolting in this category.	
Piping B4.1	B-F	Safe-end welds (dissimilar metal).	Volumetric and surface	28" pipe -- The eight bimetallic welds at the RC pumps will be inspected in the 10-year inspection interval, with about 1/3 of these being inspected each 3-1/3-year period.	

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TABLE A-1
CLASS 1
INSERVICE INSPECTIONS

ITEM NO. PER TABLE IWB 2600	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	EXCEPTIONS TO CODE REQUIREMENTS
Piping					
B4.1 (Cont'd)				14", 12" and 10" pipe -- There are five welds in this group: One decay heat outlet and one surge line dissimilar metal weld to the reactor coolant (RC) piping, one surge line dissimilar metal weld to the pressurizer and two core flood nozzle welds. All of these will be inspected in the 10-year interval with one or two being inspected each 3-1/3 years. 4" and under pipe -- The welds in this group include four high pressure injection, one letdown, and three drain line dissimilar metal welds to the RC piping, and three relief and one spray dissimilar metal welds to the pressurizer. About 1/3 of these welds will be inspected each 3-1/3-year period.	High radiation levels make surface inspection of the core flood nozzles impractical.
B4.2, B4.3 and B4.4	B-G-1	Pressure retaining bolting 2 inches and over in diameter.	———	There are no bolted joints in Class 1 piping with bolting 2 inches or over in diameter.	
B4.5	B-J	Circumferential and longitudinal pipe welds.	Volumetric	25% of the circumferential welds, and adjoining longitudinal welds, will be inspected each 10-year inspection interval, with about 1/3 of these being inspected each 3-1/3-year period.	
B4.6	B-J	Branch pipe connections (nozzle-to-pipe welds) over 6 inches in nominal diameter.	Volumetric	The only branch connections over 6 inches nominal pipe size are the decay heat-to-RC pipe connection, and the pressurizer surge line-to-RC piping connection. One of these will be inspected each 10-year inspection interval.	
B4.7	B-J	Branch pipe connections (nozzle-to-pipe welds) 6 inches or less in nominal diameter.	Surface	The nozzles in this category are the four HP injection nozzles, one spray line nozzle, three drain nozzles, and one letdown nozzle. 25% of these nozzles will be inspected during the 10-year inspection interval with about 1/3 of the 25% being inspected each 3-1/3-year period.	
B4.8	B-J	Socket welds.	Surface	25% of the socket welds 2 inches and under and larger than 1 inch will be inspected each inspection interval, with about 1/3 of the 25% being inspected each 3-1/3-year period.	
B4.9	B-K-1	Supports integrally welded to the pressure boundary.	Volumetric	There are two integrally welded supports, one on a decay heat line and one on a core flooding line. One support will be inspected each 10-year inspection interval.	
B4.10	B-K-2	Piping support components.	Visual	All of the support components will be inspected during the 10-year inspection interval. About 1/3 of the inspections will be completed each 3-1/3-year period.	

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TABLE A-1
CLASS 1
INSERVICE INSPECTIONS

ITEM NO. PER TABLE IWB 2600	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	EXCEPTIONS TO CODE REQUIREMENTS
B4.11	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B4.12	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	———	These joints are covered in the pressurizer and valve sections of this specification.	
Reactor Coolant Pumps					
B5.1, B5.2 and B5.3	B-G-1	Pressure retaining bolting 2 inches and over in diameter.	Visual, volumetric and surface	The bolting for the four RC pumps will be inspected during the 10-year inspection interval, with one or two pumps being inspected each 3-1/3 years. In-place visual and volumetric inspections will be performed unless the bolting is removed for other reasons, in which case surface inspection will also be performed.	
B5.4	B-K-1	Integrally welded supports.	Surface	One pump will be inspected each 10-year interval.	Lug welds on the pump casings cannot be meaningfully R.T. or U.T. inspected because of their geometry and since the casings are cast austenitic stainless steel. Therefore, LP will be used.
B5.5	B-K-2	Support components.	Visual	All the support components will be visually inspected during the 10-year inspection interval.	
B5.6	B-L-1	Pump casing seam welds.	———	There are no casing seam welds on Class 1 pumps.	
B5.7	B-L-2	Internal inspection of pump casings.	Visual	This inspection will be done to the extent practicable for one pump casing.	
B5.8	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B5.9	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	This bolting will be visually inspected at least once during the 10-year interval. The inspections will be done in place unless breaking the connection is required for other reasons. 1/3 of these inspections will be done about every 3-1/3 years.	

TABLE A-1
CLASS 1
INSERVICE INSPECTIONS

ITEM NO. PER TABLE IWB-2600	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
Valve Pressure Boundary					
Bo.1, Bo.2 and Bo.3	B-G-1	Pressure retaining bolting 2 inches and over in diameter.	———	None of the valves within the Class 1 boundary use bolting 2 inches or larger in diameter.	
Bo.4	B-K-1	Integrally welded supports.	———	Integrally welded supports are not used for valves within the Class 1 boundary.	
Bo.5	B-K-2	Support components.	Visual	All of the support components will be visually inspected during the 10-year inspection interval. About 1/3 of these inspections will be completed each 3-1/3-year period.	
Bo.6	B-M-1	Valve body seam welds.	———	None of the valves within the IS boundary have body seam welds.	
Bo.7	B-M-2	Internal inspection of valves over 4 inches in nominal size. This applies to:	Visual	Visual inspections will be performed on one valve of each design once during the 10-year inspection interval.	
		Valve Tag No.	Size and Type	Manufacturer Catalog No.	
		DH-V1	Gate-12 inches	Walworth 5262 } considered to be one design	
		DH-V2	Gate-12 inches	Walworth 5262 }	
		DH-V4A and B	Gate-10 inches	Walworth 5262	
		DH-V22A and B	Check-10 inches	Chapman 2573 } considered to be one design	
		CF-V4A and B	Check-14 inches	Rockwell 1570 }	
		CF-V5A and B	Check-14 inches	Rockwell 1570	
Bo.8	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
Bo.9	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	The bolting will be visually inspected at least once during the 10-year inspection interval. Inspections will be done in place unless breaking the connection is required for other reasons. About 1/3 of the bolts will be inspected each 3-1/3-year period.	

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THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 1 COMPONENT PRESSURE BOUNDARIES

TABLE A-1

AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
All Class 1 Systems as indicated on ISI Drawings C300-001 through C300-005 and C300-008 through C300-023	System Leakage and Hydrostatic Pressure Test per IWA 5000 and IWB 5000	System leakage test prior to startup following each refueling outage and a system hydrostatic pressure test at/or near the end of the inspection interval	

INSERVICE INSPECTION OF TMI-1,
CLASS 2 COMPONENT PRESSURE BOUNDARIES

I. Scope and Objectives

This attachment describes the Inservice Inspection Program for Class 2 pressure boundary components of TMI-1. The objective of the inservice inspection program is to provide assurance of the continuing integrity of the Class 2 system while at the same time minimizing radiation exposure to personnel and plant down time in the performance of the inspections.

II. Identification of Class 2 Boundaries

The Class 2 boundaries were established in accordance with the NRC Standard Review Plan Section 3.2.2 (11-24-75), ANSI N18.2A (1975) and Regulatory Guide 1.26 Revision 3, Quality Group B. The Class 2 systems and boundaries are shown in ISI Drawings C300-001 through C300-005 and C300-008 through C300-023.

III. Applicable Code Edition and Addenda

In accordance with 10 CFR 50 Paragraph 50.55a(b), the applicable Code Edition and Addenda are the 1974 Edition with Addenda through Summer 1975.

IV. Period of Applicability

In accordance with 10 CFR 50, Paragraph 50.55a(g)(4)(ii), this program is applicable from January 1978 to May 1981, unless an extension is permitted per paragraph IWA-2400(a). However, the program is written in terms of the Code required ten year inspection interval which started in September 1974. In addition, the inspection program is based upon a forty year service lifetime of the unit which ends in September, 2014.

V. Inspection Program

Inservice Inspections will be carried out in accordance with ASME Section XI, 1974 Edition with Addenda through Summer 1975 and specific inspections for this applicability will be performed as shown on Table B-1 attached.

Any repairs found to be necessary as a result of inservice inspections will be performed in accordance with Section XI, 1974 Edition with Addenda through Summer 1975.

VI. Exceptions

Specific exceptions to the ASME Section XI requirements are identified in the attached Table B-2 along with the basis for each exception requested.

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES

TABLE B-1

ITEM NO. PER TABLE IWC 2600	EXAMINATION CATEGORY TABLE IWC 2520	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
C1.1	C-A	Pressure vessels circumferential butt welds	Volumetric	8 welds will be inspected during the service life of the unit: Decay Heat System - 2 welds Steam Generator - 6 welds	
C1.2	C-B	Pressure vessel Nozzle-to-vessel welds	Volumetric	4 welds will be inspected during the service life of the unit: Decay Heat System - 2 welds Steam Generator - 2 welds	
C1.3	C-C	Pressure vessel Integrally - Welded Supports	-	N/A	Integrally welded steam generator supports are covered by Class 1 inspection program. There are no other integrally welded supports in Class 2 systems

THREE MILE ISLAND - UNIT NO. 1

IN SERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES

TABLE B-1

ITEM NO. PER TABLE IWC 2600	EXAMINATION CATEGORY TABLE IWC 2520	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
C1.4	C-D	Pressure vessel Pressure-Retaining Bolting	Visual & either surface or Volumetric	The pressure retaining bottling of 3 flanges will be inspected during the 10-year interval: Main Steam System - 2 flanges Decay Heat System - 1 flange	See Table B-2
C2.1	C-F, C-G	Piping Circumferential butt welds	Volumetric	174 welds will be inspected during the service life of the unit Main Steam Systems - 28 welds Decay Heat System - 113 welds Feedwater System - 18 welds Reactor Bldg. Emerg. Clg 2 welds Hydrogen Purge System - 5 welds Intermediate Cooling System - 4 welds Steam Generator - 4 welds.	

ITEM NO. PER TABLE IWC 2600	EXAMINATION CATEGORY TABLE IWC 2520	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
C2.2	C-F, C-G	Longitudinal weld joints in fittings	Volumetric	91 welds will be inspected during the service life of the unit Main Steam System - 5 welds Decay Heat System - 86 welds	
C2.3	C-F, C-G	Branch welds in piping	Volumetric	6 welds will be inspected during the service life of the unit. Main Steam System - 4 Decay Heat System - 2	
C2.4	C-D	Piping pressure retaining bolting	Visual & either surface or Volumetric	The pressure retaining bolting of 810 flanges will be inspected during the 10-year interval: Main Steam System - 4 flanges Decay Heat System - 4 flanges Air Handling System flanges - 2	

ITEM NO. PER TABLE IWC 2600	EXAMINATION CATEGORY TABLE IWC 2520	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
C2.5	C-E-1	Piping integrally welded supports. (Included in this category are the welds attaching the process pipe to the Reactor Building Containment Wall Penetrations Assembly outside of containment.)	Surface	86 integrally welded pipe supports will be inspected during the 10-year interval.	See Table B-2 (OTSG feedwater header support attachment welds)
C2.6	C-E-2	Piping support components	Visual	93 pipe hangers will be inspected during each inspection interval (10 years). Main Steam System - 32 Decay Heat System - 33 Feedwater System - 16 Steam Generator - 8 Hydrogen Purge System - 2 Intermediate Cooling - 2	

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES

TABLE B-1

ITEM NO. PER TABLE IWC 2600	EXAMINATION CATEGORY TABLE IWC 2520	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
C3.1	C-G	Pump casing welds	-	-	There are no welded pump casings in Class 2 systems
C3.2	C-D	Pump pressure retaining bolting	Volumetric	The pressure retaining bolting of 1 decay heat system flange will be inspected during the 10-year inspection interval.	
C3.3	C-E-1	Pump integrally welded supports	-	-	There are no integrally welded supports on Class 2 pumps
C3.4	C-E-2	Pump support components	Visual	The pump support component of 1 decay heat system pump will be inspected during the 10-year inspection interval.	

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES

TABLE B-1

ITEM NO. PER TABLE IWC 2600	EXAMINATION CATEGORY TABLE IWC 2520	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
C4.1	C-G	Valve body welds	Volumetric	Four welds in AH-V1A or AH-V1D will be inspected during the service life of the unit.	
C4.2	C-D	Valve pressure retaining bolting	Volumetric	The pressure retaining bolting of 3 valves will be inspected during the 10-year inspection interval. Main Steam System - 1 Decay Heat System - 2	
C4.3	C-E-1	Valve integrally welded supports	-	-	There are no integrally welded supports in Class 2 systems.
C4.4	C-E-2	Valve support components	-	-	There are no valve support components in Class 2 systems.

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES

TABLE B-1

Areas to be Examined	Inspection Method	Inspection Schedule and Extent	Remarks
All Class 2 systems as indicated on ISI Drawings C300-001 through C300-005 and C-30 -008 through C300-023.	Hydrostatic pressure test (Visual) per IWA 5000, IWC 5000 and IWC 2412 at 1.25 times design pressure.	100% inspection every 10 year inspection interval.	See exceptions (Table B-2).

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 EXCEPTIONS

TABLE B-2

COMPONENT	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
Penetration Pressurization System See ISI Dwg. 300-015	NON-NUCLEAR	IWC 2412 and IWC 2500	This system is an air system for containment integrity. The introduction of water into it for pressure testing will be harmful to it and associated components and will impair and degrade its subsequent operation.	This system is leak tested quarterly during normal operation utilizing permanently installed flow instrumentation.
OTSG feedwater header support attachment welds	NON-NUCLEAR	Table IWC-2600, Item C2.5 and Table IWC-2520, Catagory C-E-1.	Clearance between shell and FW header does not permit preparation of weld for surface examination.	Welds will be visually inspected for soundness when support is examined.

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 EXCEPTIONS

TABLE B-2

COMPONENT	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
Waste Gas Disposal System from WDG-V4 to Penet. #330 See ISI Dwg. 300-023	N-3	IWC 2412 and IWC 2500	These are systems which contain gas. The introduction of water into them for pressure testing will be harmful to them and associated components and will impair and degrade their subsequent operation.	These systems will be pneumatically pressure tested to Reactor Containment calculated accident pressure during Local Leak Rate Testing and leak checked (i.e. soap bubble method).
Nitrogen Supply System from NI-V26 to Penet. #307 See ISI Dwg. 300-023	Non-Nuclear			
Hydrogen Purge System from HP-V1 to Penet. #240 See ISI Dwg. 300-023	Non-Nuclear			
Service Air System from SA-V2 to Penet. #109 See ISI Dwg. 300-023	Non-Nuclear			
Containment Monitoring System from CM-V1 to Penet. #108 and CM-V4 to Penet. #108 See ISI Dwg. 300-023	Non-Nuclear			

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 EXCEPTIONS

TABLE B-2

COMPONENT	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
1¼ inch Decay Heat piping from DH-V6 A and B to Reactor Building Sump. See ISI Drawing 300-005	N-2	Table IWC 2600, Item 2.1 and Table IWC 2520 Category C-F	This piping is encased in concrete under the Reactor Building floor and therefore cannot be inspected volumetrically. The butt welds on DH-V6A and B cannot be inspected since these valves are located in a welded valve container and are not accessible.	None
10 inch Decay Heat piping elbow immediately upstream of DH-V4A and B. One butt weld and two longitudinal welds on each elbow See ISI Dwg. 300-005	N-2	Table IWC 2600, Item 2.1 and Table IWC 2520, Category C-F	This section of decay heat pipe is contained within a 1¼ inch guard pipe and is not accessible for inspection.	Pressure test per IWC-5000

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THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 EXCEPTIONS

TABLE B-2

COMPONENT	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
6 inch "Y" pattern strainer upstream of DH-V7A and B in Makeup Pump suction line. See ISI Dwg. 300-005	N-2	Table IWC 2600, Item 2.1 and Table IWC 2520, Category C-F	These strainers are located in 4 inch piping exempted by IWC 1220 (d)	Pressure test per IWC-5000

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 2 EXCEPTIONS

TABLE B-2

COMPONENT	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
Makeup System piping from pump to first downstream stop valves	N-2	IWC 2412 and IWC 2500	In order to hydro the piping between the MU pumps and the first down-stream valves it would be necessary to install a blank in the pump dis-charge flanges and remove the discharge check valve internals. To install a blank would require springing back relatively short lengths of thick wall pipe and/or disturbing pump alignment.	The sections of piping between the pumps and discharge valves will be examined for leakage with the suction side piping and pump hydros. In addition, the subject piping will be examined for leakage during the first ISI pump test subsequent to the hydro.

TABLE B-3

CHANGES TO TABLE B-1 OF THE ORIGINAL SUBMITTAL (INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES - UNIT 1)

NOTE: CHANGES ARE UNDERLINED

ITEM NO.	CHANGE	JUSTIFICATION
C1.2	Under Inspection Schedule and Extent column: <u>4</u> welds will be inspected during the service life of the unit: Decay Heat System - 2 welds Steam Generator - <u>2</u> welds	There are only two pressure-retaining nozzles in each steam generator that are over 4 inches in diameter. Per ASME Section XI, IWC-1220 (d) only components connections greater than 4 inches are to be examined and per IWC-2411 (Multiple Steam Analysis) only two steam generator nozzle welds are to be examined during the service life of the unit.
C1.4	Under Inspection Schedule and Extent Column: The pressure retaining bolting of <u>3</u> flanges will be inspected during 10-year inspection interval: Main Steam System: <u>2</u> flanges Decay Heat System: <u>1</u> flange	The original submittal had inadvertently included several bolted piping connections. This Item No. should include the pressure retaining bolting of pressure vessels only.

TABLE B-3

CHANGES TO TABLE B-1 OF THE ORIGINAL SUBMITTAL (INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES - UNIT 1)

NOTE: CHANGES ARE UNDERLINED

ITEM NO.	CHANGE	JUSTIFICATION
C2.1	Under Inspection Schedule and Extent column: 174 Welds will be inspected during the service life of the unit: Main Steam Systems - 28 welds Decay Heat System - 113 welds Feddwater System - 18 welds Reactor Bldg. Emerg. Clg. - 2 welds Hydrogen Purge System - 5 welds Intermediate Cooling System - 4 welds Steam Generator - 4 welds	The original submittal had mistakenly included four Air Handling System valve body welds in this item. These four Air Handling System valve body welds have been transferred to Item No. C4.1. In addition, an arithmetic error was made in the original submittal.
C2.2	Change total number of welds from 178 to 91. Also change number of decay heat system welds from 171 to 86.	A tabulation error was made when the original submittal was drafted.

TABLE B-3

CHANGES TO TABLE B-1 OF THE ORIGINAL SUBMITTAL (INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES - UNIT 1)

NOTE: CHANGES ARE UNDERLINED

ITEM NO.	CHANGE	JUSTIFICATION
C2.3	(a) Under inspection schedule and extent change total number of welds from 15 to 5 and main steam system welds from 11 to 3. (b) Also, change the words "Service life of the unit" to "10-year inspection interval".	(a) See Table B-2 - Class 2 exceptions. (b) The original submittal erroneously specified that a given number of areas would be examined during the service life of the unit. ASME Section XI, however, specifies those areas to be examined during the 10-year inspection interval and that change is therefore made.
C2.4	Change the words "Service life of the unit" to "10-year inspection interval".	The original submittal erroneously specified that a given number of areas would be examined during the service life of the unit. ASME Section XI, however, specifies those areas to be examined during the 10-year inspection interval and that change is therefore made.

TABLE B-3

CHANGES TO TABLE B-1 OF THE ORIGINAL SUBMITTAL (INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES - UNIT 1

NOTE: CHANGES ARE UNDERLINED

ITEM NO.	CHANGE	JUSTIFICATION
C2.5	Change inspection schedule and extent column to read: 84 integrally welded pipe supports will be inspected during the 10-year inspection interval. Main Steam System - 3 welds Decay Heat System - 8 welds Feedwater System - 5 welds Intermediate Closed Cooling System - 1 weld Penetration welds - 67 welds	67 welds attaching the penetration to process pipe (inside containment) are added to the program. 8 welds on the steam generator feedwater header are deleted. See Table B-2 for request for relief. The original submittal erroneously specified that a given number of areas would be examined during the service life of the unit. ASME Section XI, however, specifies those areas to be examined during the 10-year inspection interval and that change is therefore made.
C2.6	Change the words "Service life of the unit" to "10-year inspection interval".	The original submittal erroneously specified that a given number of areas would be examined during the service life of the unit. ASME Section XI, however, specifies those areas to be examined during the 10-year inspection interval and that change is therefore made.

TABLE B-3

CHANGES TO TABLE B-1 OF THE ORIGINAL SUBMITTAL (INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES - UNIT 1)

NOTE: CHANGES ARE UNDERLINED

ITEM NO.	CHANGE	JUSTIFICATION
C3.2	Change the words "Service life of the unit" to "10-year inspection interval".	The original submittal erroneously specified that a given number of areas would be examined during the service life of the unit. ASME Section XI, however, specifies those areas to be examined during the 10-year inspection interval and that change is therefore made.
C3.4	Change the words "Service life of the unit" to "10-year inspection interval".	The original submittal erroneously specified that a given number of areas would be examined during the service life of the unit. ASME Section XI, however, specifies those areas to be examined during the 10-year inspection interval and that change is therefore made.

TABLE B-3

CHANGES TO TABLE B-1 OF THE ORIGINAL SUBMITTAL (INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES - UNIT 1)

NOTE: CHANGES ARE UNDERLINED

ITEM NO.	CHANGE	JUSTIFICATION
C4.1	Under Inspection Method column: <u>Volumetric</u>	Statement of inspection method per Table IWC-2600.
C4.1	Under Inspection Schedule and Extent column: <u>Four welds in AH-V1A or AH-V1D will be inspected during the 10-year inspection interval.</u>	These are the four Air Handling valve body welds that were mistakenly included in Item No. C2.1.

TABLE B-3

CHANGES TO TABLE B-1 OF THE ORIGINAL SUBMITTAL (INSERVICE INSPECTION PROGRAM - CLASS 2 COMPONENT PRESSURE BOUNDARIES - UNIT 1)

NOTE: CHANGES ARE UNDERLINED

ITEM NO.	CHANGE	JUSTIFICATION
Ch.1	Change the words "Service life of the unit" to "10-year inspection interval".	The original submittal erroneously specified that a given number of areas would be examined during the service life of the unit. ASME Section XI, however, specifies those areas to be examined during the 10-year inspection interval and that change is therefore made.
Ch.2	The pressure retaining bolting of 3 valves will be inspected during the 10-year inspection interval. Main Steam System - 1 Decay Heat System - 2	The original submittal erroneously specified that a given number of areas would be examined during the service life of the unit. ASME Section XI, however, specifies those areas to be examined during the 10-year inspection interval and that change is therefore made.

INSERVICE INSPECTION OF TMI-1
CLASS 3 COMPONENT PRESSURE BOUNDARY

I. Scope and Objectives

This attachment describes the Inservice Inspection Program for Class 3 pressure boundary components of TMI-1. The objective of the inservice inspection program is to provide assurance of the continuing integrity of the Class 3 system while at the same time minimizing radiation exposure to personnel and plant downtime in the performance of the inspections.

II. Identification of Class 3 Boundaries

The Class 3 boundaries were established in accordance with the NRC Standard Review Plan Section 3.2.2 (11-24-75), ANSI N18.2A (1975) and Regulatory Guide 1.26 Revision 3 Quality Group C. The Class 3 systems and boundaries are shown in ISI Drawings C300-001 through C300-005 and C300-008 through C300-023.

III. Applicable Code Edition and Addenda

In accordance with 10 CFR 50 Paragraph 50.55a(b), the applicable Code Edition and Addenda are the 1974 Edition with Addenda through Summer 1975.

IV. Period of Applicability

In accordance with 10 CFR 50, Paragraph 50.55a(g)(4)(ii) this program is applicable from January 1978 to May 1981, unless an extension is permitted per Paragraph IWA 2400(a). However, the program is written in terms of the Code required ten year inspection interval which started September 1974.

V. Inspection Program

Inservice inspections will be carried out in accordance with Section XI, 1974 Edition with Addenda through Summer 1975, and the specific inspections will be performed in accordance with Table C-1 attached.

Any repairs found to be necessary as a result of inservice inspections will be performed in accordance with Section XI, 1974 Edition with Addenda through Summer 1975.

VI. Exceptions

Specific exceptions to the ASME Section XI requirements are identified in the attached Table C-2 along with the basis for each exception requested.

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 3 COMPONENT PRESSURE BOUNDARIES

TABLE C-1

Areas To Be Examined	Inspection Method	Inspection Schedule And Extent	Remarks
All Class 3 systems as indicated on ISI Dwgs. C300-001 thru C300-005 and C300-008 thru C300-023	Visual per IWA 5000, IWD 5000 (except buried piping) and IWD 2600 at 1.1 times design pressure	100% inspection every 10 year inspection interval	Testing of buried piping per IWD 2600 (b) will not be performed. See exception request Table A-2
All Class 3 systems as indicated on ISI Dwgs. C300-001 thru C300-005 and C-300-008 thru C300-023	Visual per IWA 5240 and IWD 2600 (except buried piping) while at normal operating pressure	100% inspection every 40 month inspection interval	Testing of buried piping per IWD 2600 (b) will not be performed. See exception request Table A-2

THREE MILE ISLAND - UNIT NO. 1

INSERVICE INSPECTION PROGRAM - CLASS 3 EXCEPTIONS

TABLE C-2

COMPONENT	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
Nuclear Service River Water-underground piping between valves NR-V3 and NR-V4B and NR-V5 shown on Drawing C300-002	Non-Nuclear	IWS 2400(b)	These sections of piping are underground and therefore cannot be visually inspected. They also cannot be isolated with tight closing valves as required by IWD 2600(b). Therefore, during a pressure test, leakage through installed valves would invalidate the results of the test. These systems are low pressure/high volume systems (i.e.: Nuclear Service River Water System - 20 to 40 psig, Decay Heat River Water System 20-30 psig and Reactor Building Emergency Cooling System 60 psig). This piping was not designed to be inspected or tested in this manner and therefore this testing is not required by 10 CFR 50 50.55a(g)(4). In addition, the Decay Heat River Water Syster and the Reactor Building Emergency Cooling System are each a 100% redundant system and loss of one underground line would only result in loss of system redundancy. In emergency situations the Nuclear Services Closed Cooling System can be cross connected with the secondary.	None
Decay Heat River Water underground - piping between valves DR-V1A(B), DR-V2A(B) & DR-V1 & A(B) shown on Drawing C300-002.	Non-Nuclear			
Reactor Building Emergency Cooling - underground piping between valves RR-V1A (B) and RR-V3A (B) (C) and NS-V8 and NS-V85 and EF-V4 shown on Drawings C300-002 and C300-010	Non-Nuclear			

INSERVICE INSPECTION OF TMI-1 PUMPS PROVIDED WITH EMERGENCY POWER SOURCES

I. Scope and Objectives

The attachment describes the Inservice Inspection Program for all Class 1, 2, and 3 pumps which are provided with an emergency power source. The objective of this program is to provide assurance of the operational readiness of these pumps during their service life.

II. Identification of Class Boundaries

Class 1, 2, and 3 boundaries were established in accordance with the NRC Standard Review Plan Section 3.2.2 (11-24-75), ANSI N18.2A (1975), and Regulatory Guide 1.26 Revision 3.

III. Applicable Code Edition and Addenda

In accordance with 10 CFR 50, Paragraph 50.55a(b), the applicable Code Edition and Addenda are the 1974 Edition with Addenda through Summer 1975.

IV. Period of Applicability

In accordance with 10 CFR 50, Paragraph 50.55a(g)(4)(iv), this program is applicable from September 1979 to the expiration of the second 40 month period.

V. Inspection Program

The inspection program, which is detailed in the attached Table D-1, will be carried out in accordance with ASME Section XI, 1974 Edition with Addenda through Summer 1975. Specific exceptions to the ASME XI Code requirements for each component are identified in attached Table D-2 along with the basis for each exception requested.

THREE MILE ISLAND UNIT NO. 1

INSERVICE INSPECTION PROGRAM - PUMPS

TABLE D-1

PUMP NAME	PUMP NUMBER(S)	FLOW DIAGRAM	ISI DRAWING	TEST QUANTITIES MEASURED *							TEST INTERVAL
				N	Pi	ΔP	Q	V	LUBR LEVEL	T_b	
SPENT FUEL	SF-P1A SF-P2A	C-302-630	300-018-GN1				X	X	X		Monthly During Operation
EMERGENCY FEED-WATER (MOTOR DRIVE)	EF-P2A EF-P2B	C-302-081	300-009-GN1		X	X	X	X	X	X	Quarterly During Operation
EMERGENCY FEED-WATER (TURBINE DRIVE)	EF-P1	C-302-081	300-009-GN1	X	X	X	X	X	X	X	Quarterly During Operation
MAKE-UP AND PURIFICATION	MU-P1A MU-P1B MU-P1C	C-302-661	300-017-GN1		X	X		X	X	X	Monthly During Operation
NUCLEAR SERVICE RIVER WATER	NR-P1A NR-P1B NR-P1C	C-302-202	300-002-GN1		X	X					Monthly During Operation
NUCLEAR SERVICE CLOSED COOLING WATER	NS-P1A NS-P1B NS-P1C	C-302-610	300-010-GN1		X	X		X	X	X	Monthly During Operation
REACTOR BUILDING EMERGENCY COOLING	RR-P1A RR-P1B	C-302-202	300-002-GN1		X	X	X				Quarterly During Operation

* SEE ASME SECTION XI FOR DEFINITION OF TEST QUANTITIES

THREE MILE ISLAND UNIT NO. 1

INSERVICE INSPECTION PROGRAM - PUMPS

TABLE D-1

PUMP NAME	PUMP NUMBER(S)	FLOW DIAGRAM	ISI DRAWING	TEST QUANTITIES MEASURED *							TEST INTERVAL
				N	Pi	ΔP	Q	V	LUBR. LEVEL	T_b	
SCREEN WASH	SW-P1A SW-P1B	C-302-203	300-014-GN1		X	X					Monthly During Operation
SCREEN HOUSE VENTILATION EQUIPMENT	SW-P2A SW-P2B	C-302-203	300-014-GN1		X	X					Monthly During Operation
CONTROL BUILDING CHILLED WATER	AH-P3A AH-P3B	C-302-847	300-011-GN1		X	X		X	X		Monthly During Operation
BORIC ACID	CA-P1A CA-P1B	C-302-670	300-021-GN1					X	X		Plant Refueling Outages
BUILDING SPRAY	BS-P1A BS-P1B	C-302-712	300-012-GN1		X	X	X	X	X	X	Quarterly During Operation
DECAY HEAT REMOVAL	DH-P1A DH-P1B	C-302-640	300-005-GN1		X	X	X	X	X	X	Quarterly During Operation
DECAY HEAT CLOSED COOLING WATER	DC-P1A DC-P1B	C-302-645	300-003-GN1			X	X	X	X	X	Quarterly During Operation
DECAY HEAT RIVER WATER	DR-P1A DR-P1B	C-302-202	300-002-GN1		X	X	X				Monthly During Operation

* ASME SECTION XI FOR DEFINITION OF TEST QUANTITIES

THREE MILE ISLAND - UNIT NO. 1
INSERVICE INSPECTION PROGRAM - PUMPS
EXCEPTIONS TO ASME XI REQUIREMENTS

TABLE D-2

PUMP NAME	PUMP NO.	ASME XI CODE CLASS	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED *	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
REACTOR BUILDING EMERGENCY COOLING	RR-P1A	3	Non-Nuclear	V	See Note 1	Motor Vibration will be measured
	RR-P1B			T_b	See Note 2	None
				Lubr. Level	See Note 2	None
				Monthly Testing	See Note 10	Quarterly Testing
SCREEN WASH	SW-P1A	3	Non-Nuclear	Q	See Note 7	Visual Observation of Flow
	SW-P1B			V	See Note 1	Motor Vibration will be meas.
				T_b	See Note 2	None
				Lubr. Level	See Note 2	None
SCREEN HOUSE VENTILATION EQUIPMENT	SW-P2A	3	Non-Nuclear	Q	See Note 3	None
	SW-P2B			V	See Note 1	Motor Vibration will be meas.
				T_b	See Note 2	None
				Lubr. Level	See Note 2	None
CONTROL BUILDING CHILLED WATER	AH-P3A	3	Non-Nuclear	Q	See Note 3	None
	AH-P3B			T_b	See Note 5	None
DECAY HEAT RIVER WATER	DR-P1A	3	Non-Nuclear	V	See Note 1	Motor Vibration will be meas.
	DR-P1B			T_b	See Note 2	None
				Lubr. Level	See Note 2	None
SPENT FUEL	SF-P1A	3	N-3	Pi	See Note 4	Pi will be calculated
	SF-P1B			ΔP	See Note 4	None
				T_b	See Note 5	None

*See ASME Section XI for Definition of Test Quantities

THREE MILE ISLAND - UNIT NO. 1
INSERVICE INSPECTION PROGRAM - PUMPS
EXCEPTIONS TO ASME XI REQUIREMENTS

TABLE D-2

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PUMP NAME	PUMP NO.	ASME XI CODE CLASS	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED *	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
MAKEUP AND PURIFICATION	MU-P1A MU-P1B MU-P1C	2	N-2	Q	See Note 8	None
NUCLEAR SERVICE RIVER WATER	NR-P1A NR-P1B	3	Non-Nuclear	Q	See Note 6	Will be measured during Plant Shutdown
				V	See Note 1	Motor Vibration will be meas.
	NR-P1C			T_b	See Note 2	None
				Lubr. Level	See Note 2	None
NUCLEAR SERVICE CLOSED COOLING	NS-P1A NS-P1B NS-P1C	3	Non-Nuclear	Q	See Note 9	None
EMERGENCY FEEDWATER (MOTOR DRIVE)	EF-P2A EF-P2B	2	Non-Nuclear	Monthly Testing	See Note 10	Quarterly Testing
EMERGENCY FEEDWATER (TURBINE DRIVE)	EF-P1	2	Non-Nuclear	Monthly Testing	See Note 10	Quarterly Testing
BUILDING SPRAY	BS-P1A BS-P1B	2	N-2	Monthly Testing	See Note 10	Quarterly Testing

*See ASME Section XI for Definition of Test Quantities

THREE MILE ISLAND - UNIT NO. 1
INSERVICE INSPECTION PROGRAM - PUMPS
EXCEPTIONS TO ASME XI REQUIREMENTS

TABLE D-2

PUMP NAME	PUMP NO.	ASME XI CODE CLASS	ASME III CODE CLASS	ASME XI EXCEPTION REQUESTED *	JUSTIFICATION	TESTING PERFORMED IN LIEU OF CODE REQUIREMENT
DECAY HEAT REMOVAL	DH-P1A DH-P1B	2	N-2	Monthly Testing	See Note 10	Quarterly Testing
DECAY HEAT CLOSED COOLING WATER	DC-P1A DC-P1B	3	Non-Nuclear	Monthly Testing	See Note 10	Quarterly Testing
BORIC ACID	CA-P1A CA-P1B	3	Non-Nuclear	Monthly Testing Q Pi ΔP T_b	See Note 11 See Note 3 See Note 4 See Note 4 See Note 5	Refueling Interval Testing None

*See ASME Section XI for Definition of Test Quantities

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JUSTIFICATION NOTES

FOR TABLE D-2

Note 1

This is a vertical deep well type pump with the pump submerged under water at all times. It is not practical to measure pump vibration in this type of installation. Past operating experience has shown that motor vibration is indicative of pump mechanical problems in this type of installation. Therefore, motor vibration will be measured in lieu of pump vibration.

Note 2

This is a vertical deep well type pump with the pump submerged under water at all times. Pump bearings are lubricated by the fluid being pumped. There are no installed means of measuring bearing temperature and the pump design and installation makes it impractical to measure in any other manner.

Note 3

There are no flow meters installed in the flow path of this pump therefore test quantity "Q" cannot be measured. An exception is requested per 10 CFR 50, 50.55 a (g) (4) since measurement of system flow would require a design change to this system and therefore not be within the limits of the current design.

Note 4

Since there is no pump inlet pressure gauge installed, test quantities Pi and ΔP cannot be directly measured. An exception is requested per 10 CFR 50, 50.55 a (g) (4) since measurement of pump inlet pressure would require a design change to this system and therefore not be within the limits of the current design. However, pump inlet static pressure will be calculated based upon the difference in elevation between pump suction and the source of pump suction fluid.

Note 5

Pump bearing temperature cannot be measured on this pump since the bearings are located deep inside the pump casing and are surrounded by an oil reservoir. An exception is requested per 10 CFR 50, 50.55 a (g) (4) in that measurement of parameter T_b is not practical within the limits of design of this pump.

Note 6

Flow metering for this system is located in the common discharge lines from all three pumps. Plant operating requirements dictate the operation of at least two Nuclear Service River Water pumps during plant operations, thereby making it impossible to measure flow for a single pump. Pump flow will be measured for each pump during plant shutdown when operation of only one pump is required.

During accident conditions flow to a significant portion of the Nuclear Services Closed Cooling System is shut off, thereby reducing the heat load on the Nuclear Service River Water System. Therefore, if the Nuclear Service River Water System is adequate during normal operation it will be more than adequate at accident conditions when the heat load is reduced.

Note 7

There are no flow instruments in the flow path of these pumps and therefore, test quantity "Q" cannot be measured. As an alternative, the discharge at the spray nozzles will be observed during each test to determine if sufficient flow is available to wash the screens.

Note 8

There are no flow meters installed in the flow path of this pump, therefore test quantity "Q" cannot be measured. An exception is requested per 10 CFR 50, 50.55a(g)(4) since measurement of system flow would require a design change to this system and therefore not be within the limits of the current design.

The high pressure injection system is, however, tested during cooldown/ heatup between 275°F and 380°F at cold shutdown head.

Note 9

Flow metering for this system is located in the common discharge lines from all three pumps. Plant operating requirements dictate the operation of at least two Nuclear Service Closed Cooling Water pumps during plant operations, thereby making it impossible to measure flow for a single pump. Pump flow will be measured for each pump during plant shutdown when operation of only one pump is required.

During accident conditions flow to a significant portion of this system is shut off, thereby reducing the heat load. Therefore, if the system is adequate during normal operation it will be more than adequate at accident conditions when the heat load is reduced.

Note 10

During normal operation there are several pumps that are lined up for emergency standby and only operate during surveillance tests. For those pumps relief is requested from monthly ISI testing since operating experience has demonstrated that degradation of a non-operating pump is improbable. Quarterly testing will be substituted in order to ensure the operational readiness of the pumps and to obtain data for evaluation of pump degradation.

In addition, quarterly testing will enhance nuclear safety in that it reduces the number of times an emergency standby system loop is removed from service for testing.

Note 11

The Boric Acid Pumps will be tested only during refueling outages since the only method of testing these pumps is to inject concentrated boric acid into the Reactor Coolant Makeup System. This would adversely affect plant operations and result in additional significant volumes of radioactive waste.