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ASME CODE BOUNDARIES

FOR

ASME SECTION XI

INSERVICE INSPECTION PROGRAM

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ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

"Introduction and Methodology"

I. INTRODUCTION

A. Legal Basis

The ASME Section XI Code, 1983 Edition through Summer 1983 Addenda, specifies in § IWA-1400(a) that it shall be the responsibility of the owner of the Nuclear Power System to determine the appropriate Code Class(es) for each component of the Nuclear Power Plant. Footnote Five of the same subsection identifies the classification criteria as being specified in 10CFR50. Whereas 10CFR50 defines the Reactor Coolant Pressure Boundary (RCPB) which primarily contains Class 1 Components, the Guidance for Classifying Class 2, 3 and non-safety related components is found in Regulatory Guide (RG) 1.26, "Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants."

B. Purpose of Boundary Classification Effort

To support the conduct of ASME Section XI Code Inservice Inspection Program and other safety-related activities at the Palisades Nuclear Power Plant, Consumers Power Company has established that the safety-related components subject to inservice inspection to be identified through the of color-coded P&ID's.

The benefits of such a classification effort include the following:

- Ensure proper scope of ASME Section XI Code Inservice Inspection Programs in areas of:
  - ASME Section XI hydrostatic and periodic pressure tests of components that are NDE-exempt and nonexempt: Visual examinations, for Class 1, 2, and 3.
  - ASME Section XI nondestructive examinations (NDE): volumetric, surface, and visual examinations of non-exempt pressure retaining components, including pressure boundary welds associated with non-exempt component support attachments.
  - ASME Section XI inspections of nonexempt support components (visual examinations).
  - ASME Section XI repairs, replacement and modification.
- Provide and interface with the ASME Section XI Pump and Valve Inservice test program for safety-related pumps and valves (primarily but not always Class 1, 2, 3).
- Revision and update of Q-list and other documents involving safety-related

components.

C. **Objective for Boundary Classification**

The objectives of the boundary classification:

Identify the Code Class 1, 2, and 3 boundaries for the ISI Program by color coding a set of P&IDs.

Record the bases that document the basic reasons for the Code Class boundaries so established. Per CPCo, bases for classifications would be extracted from 10CFR50 and RG 1.26, subject to the interpretation of CPCo.

II. SCOPE

A. **General Discussion**

The scope of the Boundary Classification is to identify all of the systems/components that are subject to the ASME Sec XI Code. Application of ASME Sec XI requires the identification of all Class 1, 2 and 3 components.

Class 1 components include those Reactor Coolant Pressure Boundary (RCPB) components as defined in the Code of Federal Regulations, 10CFR20.2v. The authorized exceptions to 10CFR50.2v are specified in 10CFR20.55a(g), Footnote 2. Class 1 correlates with NRC Quality Group A. Quality groups are specified in RG 1.26.

Class 2 and 3 components are classified using the guidance in NRC RG 1.26 relating these classes to NRC Quality Groups B and C, respectively. RG 1.26 also notes that components that are neither RCPB or Quality Group B or C even though they do contain water or steam should be considered as Quality Group D if they contain or may contain radioactive material.

Based on the RCPB definition of 10CFR50.2v and exceptions allowed by Footnote 2, 10CFR50.55a(g), the Class 1 boundaries were defined. Exceptions to 10CFR50 were also provided by the NRC's Standard Review Plan (SRP) NUREG 0800, Sec 3.2.2 ¶ III. Section 3.2.2 ¶ III of the NRC's SRP allows a Class "Break" to be taken in Class 1, 2, and 3 components with no valve present as long as a failure on the lower classified side of the class break does not affect the safety function of the higher classified side.

Support for tolerable line size breaks are provided by normal makeup feed capacities specified by the NSSS vendor and FSAR. Such justification is needed by the NRC to demonstrate compliance with ASME Section XI Code § IWB-1210(a) when a line break greater than 1 inch NPS is postulated (as allowed by 10CFR50). Classification of Reactor Recirculation pump seal instrumentation lines require guidance beyond the detail provided by the foregoing references. Therefore, ANSI/ANS-51.1-1983 was also used to make class breaks without a valve present.

Based on RG 1.26, the Class 2 and 3 Boundaries are developed in systems or portions of systems that perform safety-related functions (as specified by RG 1.26), **and** also contain water, steam and radioactive waste (except turbines and condensers).

Whereas the identification of Class 1 systems is relatively straight forward, the identification of applicable Class 2 and 3 systems (or portions) requires more information in order to identify all applicable Class 2 and 3 components. Class 1 components typically exist from the Reactor Vessel out to the various RCPB valves and other boundaries (blind flanges, instruments, etc.). Class 2 components don't necessarily begin where Class 1 ends. Class 3 does not necessarily begin where Class 1 or Class 2 ends. Knowledge of systems, system functions and intimate understanding of the proper use of guidance documents are the keys to success in system/components Code Classification.

Although B31.1 is the piping code used for the Palisades Plant, Component Code classes may have been identified prior to or subsequent to plant construction for the purposes of design and construction (eg, B31.7 and ASME Section III, Classes 1, 2 and 3 may have been assigned prior to ISI Classification). It is imperative that Class 1, 2 and 3 Code Boundaries be established for the ASME Code, Sec XI program for the following reasons:

- Construction criteria and practices may be different than those observed in identifying the "Inspection Boundaries for ISI." For example, safety function is emphasized as part of ISI.

- Construction boundaries remain unchanged, for the most part, after construction. Inservice Inspection requirements and philosophies continue to change based on Regulatory positions and Code development.

- Commitments in the FSAR, Technical Specifications and ISI Program for Sec XI are not usually relevant to construction commitments. The same goes for plant specific letter correspondence, post-construction.

B. **Approach**

1. P&IDs
   P&IDs were utilized for setting the System Boundaries. The P&IDs provide the degree of system detail needed and facilitate the transfer of component classifications to other documents such as equipment lists.

2. Method for Identification
   For scoping out the Boundaries, colored markups were selected to clearly highlight the classes on the P&IDs.

3. Scope of Systems Reviewed
   All P&ID sheets for P&ID number M-200 through M-922 (as listed on M-200 sheets) were reviewed for Class 1, 2 and 3 applicability. Other drawing/series' are not applicable to ISI.

4. Identification of System Boundaries
   After a P&ID was identified as containing one or more safety-related components in a system, the Boundaries were identified using the appropriate guidance documents

III. DETAILED CLASSIFICATION

A. **Generic Bases, Conventions and Practices**

The following ASME Code boundary conventions will be observed when designating systems, components and portions of systems as with Class 1, 2, 3 or non-safety class (per 10CFR50 and RG 1.26) for the purpose of ASME Sec XI Inservice Inspection program application in accordance with § IWA-1400(a), of the ASME Sec XI Code, 1983 Edition enough Summer 1983 Addenda:

1. Code Classification Assignments by color ranging from highest to lowest class:

   Class 1 = Any ***red*** color
   Class 2 = Any ***blue*** color
   Class 3 = Any ***green*** color

2. Exceptions to classification assignments due to size:

   There are no exceptions; all lines and other components that attach to and become part of a pressure-retaining Code Class 1, 2 or 3 boundary will be color coded, including all small instrumentation and sampling lines, vents, drains, test connections and other pressure-retaining items. This may include the representation of applicable lines in phantom.

3. Class boundary valve convention:

   At the boundary valve interface to a lower Code Class, the color coding of the higher of the Code Class lines will extend up to and will include the associated Class 1, 2 or 3 boundary valves.

   The classification convention is to include the entire valve symbol within the higher Code Class boundary with the understanding that the system-to-valve weld assumes the lower Code Classification, with one exception:

   - When color coding is being used to designate any possible NDE, valves with valve body welds on the lower classification side may be color coded to the valves middle (schematically) to indicate that welds may exist which might be examined to the lower classifications.

4. Instruments that are an integral part of a Code Class 1, 2, or 3 boundary will *not* be color coded because instruments are outside the scope of the ASME Code, Sec XI.

   However, the Class 1, 2 or 3 instrument line will be color coded up to the instrument, except in the case of a flow switch. When a flow switch is needed as a pressure boundary, the color coded line will continue through the P&ID flow switch symbol.

   Generally a pressure instrument line to the instrument symbol on the P&ID is a simplification for a much more complex arrangement of pressure retaining valving and piping within the code boundaries. The instrument is considered to include any appurtenances such as valves that may be an integral part of the instrument assembly.

   The straight line segment portion of the P&ID symbol for temperature sensing elements (TE) will be color coded to require identification of any pressure retaining welds.

5. Heat exchanger classification convention: Where both the primary and secondary sides of heat exchangers perform a Class 1, 2 or 3 system function, both sides of the heat exchanger will be color coded to the appropriate classification. Color coding should include phantom representations.

6. Downgrading of ASME Code Classification due to size (to reduce the potential for NDE):

   Class 1 lines may be electively downgraded to Class 2 due to size or other attributes that would meet the criteria of 10CFR50.55a(g), Footnote 2.

Plant specific calculations are necessary to satisfy the above criteria. The results of such calculations are available from the NSSS vendor and may be appropriately specified in the FSAR.

7. Determination of Code Class boundaries containing series ESF actuated valves:

   In-series, independently actuated ESFAS valves will be included at the higher level of classification when both valves are normally open. Otherwise, the standard application of 10CFR50 and RG 1.26 will be observed (ie, Double barrier for RCPB and single boundary for Classes 2 and 3).

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-201, Sh 1; PRIMARY COOLANT SYSTEM

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:		10CFR50.2v(1,2)
Reactor Vessel (N-50), Steam Generator (E-50A, B), Primary Side, Primary Coolant Pumps (P-50A, B, C, D)		
1. DPCT Isolation Valves		
MV-PC1033B	F-8	10CFR50.2v(2)(ii)
MV-PC1032C	A-8	10CFR50.2v(2)(ii)
MV-PC1021C	F-1	10CFR50.2v(2)(ii)
MV-PC1022C	D-1	10CFR50.2v(2)(ii)
MV-PC1094C	B-3	10CFR50.2v(2)(ii)
CV-3084		
2. Reactor Coolant Pump d-PI Isolation Valves	B-4	
MV-PC1061A MV-PC1062A	F-2	10CFR50.2v(2)(ii)
MV-PC1068A MV-PC1069B	A-3	10CFR50.2v(2)(ii)
MV-PC1075A MV-PC1076A	A-7	10CFR50.2v(2)(ii)
MV-PC1082A MV-PC1082B	E-7	
3. Other Double Barrier Isolation Boundaries (Note D)		10CFR50.2v(2)(ii)
MV-PC1012A MV-PC3091A	C-4	
MV-PC1060C MV-PC1060D	G-4	
MV-PC604B	C-8	
MV-PC605B	C-7	
MV-PC1093B	C-3	
4. Instruments (Note B)	Various	10CFR50.55a(g), Note 2
DPI-0129	F-7	Second Barrier After Valve Valve MV-PC 1083, MV-PC 1083B
5. Reactor Vessel Head Seal Leak Off		
Inner Seal (1st boundary before CV-0101)	F-4	10CFR50.55a(g), Note 2
6. Continuations to other P&ID's	Various	See other P&ID's with Class 1
CLASS 2 BASIS:		RG 1.26, C.1
1. Reactor Vessel Seal Leak off from Inner Seal		
CV-0101	G-5	RG 1.26, C.1.e
2. Steam Generator (E-50A, E-50B)	D-1, D-8	See P&ID M-207, SH. 1, 2
3. Instruments (Note B)	Various	10CFR50.55a(g), Note 2(a)
CLASS 3: None	N/A	No components per RG 1.26, C.2

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P&ID M-201, Sh 2; PRIMARY COOLANT SYSTEM

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:		10CFR50.2v
1. Pressurizer (T-72) Relief Valves		
RV-1039 RV-1040	D-5	10CFR50.2v(2)(iii)
RV-1041	D-4	10CFR50.2v(2)(iii)
2. Power Operated Relief Valves		
PRV-1042B	E-6	10CFR50.2v(2)(ii)
PRV-1043B	E-7	10CFR50.2v(2)(ii)
3. Reactor Head & Pressurizer Vents		
PRV-1071	B-8	10CFR50.2v(2)(ii)
PRV-1072	B-7	10CFR50.2v(2)(ii)
MV-PC 1060E & Blind Flange	A-7	10CFR50.2v(2)(ii)
4. Other Double Barrier Isolation Boundaries (Note D)		10CFR50.2v(2)(ii)
Valve 1044B PC MV-PC510	D-7	10CFR50.2v(2)(ii)
MV-PC512 MV-PC517	D-7	
MV-PC506 MV-PC508	D-6	
MV-PC164A	A-6	
MV-PC515	D-6	
5. Instruments (Note B)	Various	10CFR50.55a(g), Note 2(a)
CLASS 2:		
CK-V-0155B Penetration 44	G-7	RG 1.26, Note 4 (Note H)
MV-PC1126	G-7	
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-202, Sh 1; CHEMICAL & VOLUME CONTROL

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2:		
CV-2009	E-8	Note H
MV-2083, Penetration 44	G-4	Note H
CV-2099	G-4	Note H
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-202, Sh 1A; CHEMICAL & VOLUME CONTROL

BOUNDARY DESCRIPTION & NOTE	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		RG 1.26, C.1a(1), b(1)
1. Boric Acid Tanks T-53A & B to charging pump suction line via boric acid pumps P-56A&B	E-2 E-4	RG 1.26, C.1.b.1
NOTE: This flow path continues on M-202, Sh 1B (E-2)		
2. Major Boundary Valves	Various	RG 1.26, Note 4
RV-2238 RV-2240 RV-2239	E-6	
CK-CVC 2124 ½" Discharge (P-57)	B-6	
CK-CVC 2166, 3" Check Valve	E-6	
RV-2237	E-5	
RV-2236	E-4	
MO-2087	F-7	
RV-2234	E-4	
RV-2235	E-2	
RV-2230	D-4	
RV-2231	D-1	
RV-2232	C-3	
RV-2233	B-4	
3. All boric acid tank vent, drain, fill, instrument and other valves below the design water level (Note D)	E,F-1,2	RG 1.26 Note 4 and ASME XI Code, IWC-5000
T-53A	E-2	
MV-CVC 2173	E-2	
MV-CVC 2175	E-1	
MV-CVC 2187	F-2	
T-53B	E-4	
MV-CVC 2172	E-4	
MV-CVC 2174	D-3	
MV-CVC 2188	F-3	
4. Other single barrier isolation boundaries (Note D)		RG 1.26, Note 4
MV- CVC611 MV- VC613	B-3	
MV-CVC2156A MV-CVC2159	D-7	
MV-CVC614 MV-CVC616	A-3	
MV-CVC2148 MV-CVC2256	D-5	
MV-CVC2252 MV-CVC2253	C-6	
MV-CVC507 MV-CVC2171A	C-6	
MV-CVC2147	E-5	
CK-CVC2168	C-5	
MV-CVC2179	E-4	
MV-CVC2177	E-2	
MV-CVC2254	D-6	
MV-CVC2330	B-7	
MV-CVC618	B-3	
MV-CVC2161A	D-7	
MV-CVC619	A-3	
5. Instruments (Note B)		RG 1.26, Note 4
6. SIRW tank suction interconnection	D-6	RG 1.26, C.1.a(1)
NOTE: This flow path continues on P&ID M-204, Sh 1B (D-2)		
CLASS 3: None	N/A	No components per RG 1.26, C.2

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-202, Sh 1B; CHEMICAL & VOLUME CONTROL

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:		10CFR50.2v(i) & 10CFR50.55a(g), Note 2(b)
1. Major Boundary Valves		
CV-2002 (NOTE E)	E-8	10CFR50.55a(g), Note 2(b)
CV-2003 (NOTE E)	E-7	10CFR50.55a(g), Note 2(b)
CV-2004 (NOTE E)	E-7	10CFR50.55a(g), Note 2(b)
CV-2005 (NOTE E)	E-6	10CFR50.55a(g), Note 2(b)
CV-2113 (NOTE E)	C-7	10CFR50.55a(g), Note 2(b)
CV-2115 (NOTE E)	B-7	10CFR50.55a(g), Note 2(b)
CV-2117	A-7	10CFR50.55a(g), Note 2(b)
CK-CVC 2112, 2" Check Valve	C-7	10CFR50.55a(g), Note 2(b)
2. Other double barrier isolation boundaries (NOTE D)		
MV-CVC2289	C-7	10CFR50.2v(2)(ii)
MV-CVC2291	D-7	10CFR50.2v(2)(ii)
3. Instruments (NOTE B)	D-7	10CFR50.55a(g), Note 2(b)
4. Regenerate Heat Exchangers (E-56A, E-56B), Primary (Tube) Side	D/C-7	
CLASS 2 BASIS:		
1. Major Boundary Valves		
RV-2090	F-3	RG 1.26, Note 4
RV-2096	D-3	RG 1.26, Note 4
RV-2102	B-3	RG 1.26, Note 4
RV-2255	D-1	RG 1.26, Note 4
2. Charging Pumps P-55A, B & C and suction and discharge lines	E-3 C,D-3 B-3	RG 1.26, C.1.a(1) & b(1)
3. Other single barrer isolation boundaries (Note D)		RG 1.26, Note 4
MV-CVC2294 MV-CVC2296 MV-CVC2298	D-7	
MV-CVC508 MV-CVC2091		
MV-CVC510 MV-CVC2103	B-2	
MV-CVC590* MV-CVC591*	F-4	
MV-CVC706A MV-CVC2097	C-2	
MV-CVC2207 MV-CVC2210	E-3	
MV-CVC2208 MV-CVC2211	C-3	
MV-CVC617	C-1	
MV-CVC509	D-2	
MV-CVC2209	A-3	
MV-CVC2292	C-7	
MV-CVC2321	C-4	
* 3rd normally open valve in series		

P&ID M-202, Sh 1B; CHEMICAL & VOLUME CONTROL

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
4. Instruments (Note B)	Various	RG 1.26, Note 4
5. From containment side of Penetration 36 thru continuation to outside isolation M-202, Sh 1 (E-8)	H-5	Note H
6. Regenerative Heat Exchangers (E-56A, B) Secondary (Shell) Side	D/C-7	
CLASS 3 BASIS:		
From Class 1 boundary thru containment side of the penetration	C/6-8 to F-6	RG 1.26, C.2.C
1. Major Boundary Valves		
RV-2006	F-7	RG 1.26 Note 4
MV-CVC 2301, 1"	H-7	RG 1.26 Note 4
2. Letdown Heat Exchanger E-58 (tube side)	H-7	
3. Instrumentation (NOTE B)	Various	RG 1.26, Note 4

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-203, Sh 1; CONTAINMENT SPRAY & S.D. COOLING

BOUNDARY DESCRIPTION & NOTES		ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:			10CFR50.2v & 10CFR50.55a(g), Note 2
1. SI Tank Isolation Valves			
CK-ES3102	CV-3047	D-6	10CFR50.55a(g), Note 2(b)
CK-ES3117	CV-3046	D-5	10CFR50.55a(g), Note 2(b)
CK-ES3147	CV-3038	D-2	10CFR50.55a(g), Note 2(b)
CK-ES3132		D-3	10CFR50.55a(g), Note 2(b)
CV-3042		D-7	10CFR50.55a(g), Note 2(b)
2. Instrumentation (NOTE B)		C-7,5,3,2	10CFR50.55a(g), Note 2(b)
Pressure Transmitters			
PT-0342		C-7	
PT-0346		C-5	
PT-0347		C-3	
PT-0338		C-2	
CLASS 2 BASIS:			
SI Tanks T-82A, B, C & D, Safety Injection Lines to Class 1 boundary valves, and other pressure boundary components			RG 1.26, C.1a(1)
1. SI Tank Drain Isolation Valves			
CV-3039		E-7	RG 1.26, Note 4
CV-3043		E-5	RG 1.26, Note 4
CV-3004		E-3	RG 1.26, Note 4
CV-3003		E-2	RG 1.26, Note 4
2. Nitrogen Fill Isolation Valves			
CV-3040		G-6	RG 1.26, Note 4
CV-3044		G-5	RG 1.26, Note 4
CV-3048		G-3	RG 1.26, Note 4
CV-3050		G-2	RG 1.26, Note 4
3. SI Tank Relief Valve			
RV-3113		G-6	RG 1.26, Note 4
RV-3128		G-5	RG 1.26, Note 4
RV-3143		G-3	RG 1.26, Note 4
RV-3158		G-2	RG 1.26, Note 4
4. SI Tank Vent Isolation Valves			
CV-3067		F,G-7	
CV-3065		F,G-5	
CV-3063		F,G-4	
CV-3051		F,G-2	
5. Other Single Barrier Isolation Boundaries (NOTE D)		Various	RG 1.26, Note 4
6. Instruments (NOTE B)		Various	RG 1.26, Note 4
CLASS 3: None		N/A	No components per RG 1.26, C.2

P&ID M-203, Sh 2; SAFETY INJECTION, CONTAINMENT SPRAY & S.D. COOLING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:		
Safety Injection lines to Class 1 HP and LP Safety Injection lines	A-G/8	10CFR50.2v and 10CFR50.55a(g), Note 2
1. HPI, Train 1, Isolation Valves		
CK-ES3104	G-8	10CFR50.55a(2), Note 2(b)
CK-ES3119	F-8	10CFR50.55a(2), Note 2(b)
CK-ES3134	D-8	10CFR50.55a(2), Note 2(b)
CK-ES3149	B-8	10CFR50.55a(2), Note 2(b)
2. HPI, Train 2, Isolation Valves		
CK-ES3250	G-8	10CFR50.55a(2), Note 2(b)
CK-ES3251	E-8	10CFR50.55a(2), Note 2(b)
CK-ES3252	C-8	10CFR50.55a(2), Note 2(b)
CK-ES3253	B-8	10CFR50.55a(2), Note 2(b)
3. LPI Isolation Valves		
CK-ES3103	F-8	10CFR50.55a(2), Note 2(b)
CK-ES3118	D-8	10CFR50.55a(2), Note 2(b)
CK-ES3133	C-8	10CFR50.55a(2), Note 2(b)
CK-ES3148	A-8	10CFR50.55a(2), Note 2(b)
4. HPI, Hot Leg Isolation Valves		
CK-ES3408	E-5	10CFR50.55a(2), Note 2(b)
CK-ES3409	E-5	10CFR50.55a(2), Note 2(b)
5. Instruments (NOTE B)		
Flow Transducers (FT)	F,G-8	10CFR50.55a(2), Note 2(b)
FE-0308	E-8	10CFR50.55a(2), Note 2(b)
FE-0310, FE-0312,FE-0313	C-8	10CFR50.55a(2), Note 2(b)
	A-8	10CFR50.55a(2), Note 2(b)
Pressure Transducer PT-0377	E-4	10CFR50.55a(2), Note 2(b)
CLASS 2 BASIS:		
HPI & LPI Lines to Class 1 Boundary	A-G/4-8	RG 1.26, C.1.a(1) & C.1.b(2)
1. HP & LP Injection Header Relief Valves		
RV-3165	G-6	RG 1.26, Note 4
RV-3264	G-6	
RV-3162	E-6	
2. LPI to RCP Seal Cooler Isolation Valves		
MV-PC1155	F-6	RG 1.26, Note 4
MV-PC1156	D-6	
MV-PC1157	C-6	
MV-PC1158	A-6	

P&ID M-203, Sh 2; SAFETY INJECTION, CONTAINMENT SPRAY & S.D. COOLING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 2 BASIS: CON'T		
3. Other Single Barrier Isolation Boundaries (Note D)		RG 1.26, Note 4
MV-ES3007A	G-8	
MV-ES3008	F-8	
MV-ES3009A	E-8	
MV-ES3010	D-8	
MV-ES3011A	D-8	
MV-ES3012	C-8	
MV-ES3013A	B-7	
MV-ES3014	A-8	
4. Instruments (Note B)	Various	RG 1.26, Note 4
Flow Transducers (FT)		
Flow Elements (FE)		
FE-0307	F-6	
FE-0309	D-6	
FE-0311	C-6	
FE-0314	A-6	
FE-0316	E-5	
FE-0317	E-4	
CLASS 2 BASIS:		
Containment Spray Headers from Spray Pumps	A-D/1-4	RG 1.26, C.1.a(2,3)
1. Containment Spray Header and Nozzles	A-D/4-5	RG 1.26, C.1.a(2,3)
2. Recirc Valves to SIRW Tank		
MV-ES3217	C-2	RG 1.26, Note 4
MV-ES3227	D-2	
3. Other Single Barrier Isolation Boundaries (NOTE D)		RG 1.26, Note 4
MV-ES3244A	B-4	
MV-ES3246A	C-4	
MV-ES3344	C-3	
MV-ES3346	B-3	
4. Instruments (NOTE B)	Various	RG 1.26, Note 4
FT & FE-0301	C-2	RG 1.26, Note 4
FT & FE-0302	B-2	
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-204, Sh 1; SAFETY INJECTION, CONTAINMENT SPRAY & S.D. COOLING

BOUNDARY DESCRIPTION & NOTES		ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:			
MO-3016	RV-0401	G-1	10CFR50.55a(g), Note 2(b)
CLASS 2 BASIS:			
Containment Spray (P-54B, P-54C), HPI (P-66B) & LPI (P-67B), Pumps, Suction and Discharge Lines; Shutdown Cooling Heat Exchangers (E-60A, E-60B)			RG 1.26, C.1.a(1,2,3) and C.1.6(1,2)
1. Major Boundary Valves			
MV- ES3237		G-7	RG 1.26, Note 4
MV-ES3214		D,E-7	RG 1.26, Note 4
RV-0402		F-6	RG 1.26, Note 4
RV-0403		B-6	RG 1.26, Note 4
MV-ES3172		G-4	RG 1.26, Note 4
MV-ES3205		C-2	RG 1.26, Note 4
RV-3164		E-1	RG 1.26, Note 4
2. Other Single Barrier Isolation Boundaries (Note E)			RG 1.26, Note 4
MV-ES515	MV-ES617	D-3	
MV-ES606	MV-ES3288	F-3	
MV-ES612	MV-ES613	E-3	
MV-ES3200A	MV-ES3345	E-3	
MV-ES615	MV-ES3416	B-3	
MV-ES3291	MV-ES3413	F-3	
MV-ES3377	MV-ES3379	F-6	
MV-ES3378	MV-ES3380	F-6	
MV-ES3381	MV-ES3382	C-6	
MV-ES3383	MV-ES3384	C-6	
MV-ES3204		E-1	
MV-ES3205		C-2	
MV-ES3417		D-3	
MV-ES3420		A-4	
3. Instruments (Note B)		Various	RG 1.26, Note 4
Flow Transducer (FT)			
Flow Element (FE)			
FE-0306		A-7	
4. Containment Penetration 33 out to valves		G08	Note H
MV-ES 3234		G-7	
MV-ES 3348A		G-8	
CLASS 3:			
Component Cooling to Shutdown Cooling Heat Exchangers (E-60A, B)		F-6 C-6	See P&ID M-209, Sh 2; No other components per RG 1.26, C.2

ASME CODE BOUNDARIES
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INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-204, Sh 1A; SAFETY INJECTION, CONTAINMENT SPRAY & S.D. COOLING

BOUNDARY DESCRIPTION & NOTES			ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None			N/A	No components per 10CFR50.2v
CLASS 2 BASIS:				
Containment Spray (P-54A) HPI (P-66A) & LPI (P-67A), pumps; Suction and Discharge Lines; Containment Sump Suctions				RG 1.26, C.1.a(1,2,3) and C.1.b(1,2)
1. Major Boundary Valves				
RV-3226			E-6	RG 1.26, Note 4
RV-3267			C-6	RG 1.26, Note 4
2. Other Single Barrier Isolation Boundaries (Note B)				RG 1.26, Note 4
MV-ES3287	MV-ES3290	MV-ES3412	C-5	
MV-ES513	MV-ES3191A	MV-ES3419	E-5	
MV-ES614	MV-ES3414	MV-ES3415	D-5	
MV-ES510	MV-ES3182A		E-3	
MV-ES3167A			D-3	
MV-ES608			B-5	
MV-ES610			E-4	
MV-ES611			F-5	
3. Instruments (NOTE B)			Various	RG 1.26, Note 4
CLASS 3: None			N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-204, Sh 1B; SAFETY INJECTION, CONTAINMENT SPRAY & S.D. COOLING

BOUNDARY DESCRIPTION & NOTES			ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None			N/A	No components per 10CFR50.2v
CLASS 2 BASIS:				
SIRW Tank (T-58), N_2H_4, Tank (T-102), NaOH Tank (T-103) to suction of HPI, LPI and Containment Spray Pumps				RG 1.26, C.1a(1,2,3) and C.1b(1,2)
1. All SIRW Tank vent, drain, fill, instrument and other boundaries/valves below the design water level (Note D)			D,E-6	RG 1.26, Note 4 ASME XI Code, IWC-5000
MV-ES107			F-7	
MV-ES509	MV-ES3343	MV-ES3418	C-6	
MV-ES3334A	MV-ES3335A	MV-ES3241	D-6	
MV-ES3215			G-8	
MV-ES3341			G-2	
MV-ES3342			A-6	
2. N_2H_4 Tank, T-102; Major Valves				RG 1.26, C.1.a(3) function
SV-0436B	MV-ES3346		G-5	RG 1.26, Note 4
MV-ES3362	MV-ES3360		G-4	RG 1.26, Note 4
RV-0438			H-3	RG 1.26, Note 4
3. NaOH Tank, T-103; Major Valves				RG 1.26, C.1a(1,2); C.1.b(2) functions
MV-ES3372	MV-ES3371		H-3	RG 1.26, Note 4
RV-0437			H-3	RG 1.26, Note 4
MV-ES3439			G-4	RG 1.26, Note 4
4. SIRW Tank t-58; Pump Recirc Valves				RG 1.26, C.1a(1,2); C.1b(2) functions
MV-ES502			D-2	RG 1.26, Note 4
MV-ES3271			D-2	RG 1.26, Note 4
5. Other single barrier isolation boundaries (NOTE D)				RG 1.26, Note 4
MV-ES505	MV-ES506		D-5	
MV-ES507	MV-ES508		F-3	
MV-ES3356	MV-ES3393		F-5	
MV-ES3361B	MV-ES3376		G-5	
MV-ES3367	MV-ES3368		G-3	
MV-ES3440	MV-ES3369A		G-3	
MV-ES3395			F-4	
MV-ES501			E-3	
MV-ES504			E-5	
6. Instruments (NOTE B)			Various	RG 1.26, Note 4
CLASS 3: None			N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-205, Sh 1; MAIN STREAM, MAIN & AUXILIARY TURBINE

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Continuation of Main Steam Lines to Steam Stop and Bypass Valves	G,H-7,8	RG 1.26, C.1.d
CV-0501	G-8	RG 1.26, C.1.d
CV-0510	G-7	RG 1.26, C.1.d
MO-0501	G-7	RG 1.26, C.1.d
MO-0510	G-7	RG 1.26, C.1.d
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-205, Sh 2; MAIN STEAM, MAIN & AUXILIARY TURBINE

BOUNDARY DESCRIPTION & NOTES		ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None		N/A	No components per 10CFR50.2v
CLASS 2 BASIS:			
Continuation of Auxiliary Steam Lines from Main Steam Line up to and including Auxiliary Steam Stops		G,H-3,4 F,G-6,7	RG 1.26, C.1.d and C.1.b(2)
1. Aux Steam Stops			
CV-0522A		H-3	RG 1.26, C.2.a(4)
CV-0522B		F-7	
2. Steam Line Drain Steam Trap			SRP, 3.2.2, ¶ III; downstream steam drain line is nonessential; can tolerate downstream break
ST-0522B (NOTE G)		F-6	
3 Other Single Barrier Isolation Boundaries (NOTE D)			RG 1.26, C.2.a(4)
MV-MS500	MV-FW711	F-6	SRP, 3.2.2, ¶ III; downstream steam drain line is nonessential; can tolerate downstream break
MV-FW508A	MV-FW712	F-6	
MV-MS500A		H-4	
CLASS 3 BASIS:			
Auxiliary Steam Lines Downstream of Auxiliary Steam Stop Valves to Auxiliary Feed Pump Turbine		G-H/3-8 C-H/7-8	RG 1.26, C.2.a(4)
1. Auxiliary Steam Line Drain Steam Traps			SRP, 3.2.2, ¶ III; downstream steam drain line is nonessential; can tolerate downstream break
ST-0521 (NOTE G)		H-5	
ST-0520 (NOTE G)		H-7	
2, Major Boundary Valves			
CV-0525		H-6	RG 1.26, Note 4
RV-0521		E-8	RG 1.26, Note 4
3. Other Single Barrier Isolation Boundaries (NOTE D)			RG 1.26, Note 4
MV-FW506	MV-FW647	F-8	
MV-FW715	MV-FW858	H-6	
MV-FW858	ST-0515	H-6	
MV-FW586		H-5	
MV-FW508		H-7	
MV-FW834		G-5	
4. Instruments (NOTE B)		Various	RG 1.26, Note 4
CLASS 3 BASIS:			
Continuation of aux feedwater from Turbine Driven Aux Feed Pump (P-8B) to Aux Feed Pump Bearings		D-7,8	RG 1.26, C.1.b

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-207, Sh 1; FEEDWATER & CONDENSATE

BOUNDARY DESCRIPTION & NOTES			ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:				
Steam Generator Primary Sides				10CFR50.2v(1); No other Class 1 components per 10CFR50.2v
CLASS 2 BASIS:				
Steam Generator (E-50A, E-50B) Secondary Sides (#1 & #2), Main Steam Lines, Aux Steam Lines, Feed Lines, etc (and P&ID continuations)			B-4 B-7	RG 1.26, C.1.d and C.1.b(2)
1. Main Steam Relief Valves				
RV-0701	RV-0707		H-3	RG 1.26, C.1.d
RV-0702	RV-0708		H-3	RG 1.26, C.1.d
RV-0711	RV-0709		G-3	RG 1.26, C.1.d
RV-0712	RV-0710		G-3	RG 1.26, C.1.d
RV-0720	RV-0721		G-3	RG 1.26, C.1.d
RV-0719	RV-0722		G-3	RG 1.26, C.1.d
RV-0705	RV-0703		H-6	RG 1.26, C.1.d
RV-0706	RV-0704		H-6	RG 1.26, C.1.d
RV-0714	RV-0715		G-6	RG 1.26, C.1.d
RV-0713	RV-0716		G-6	RG 1.26, C.1.d
RV-0723	RV-0717		G-6	RG 1.26, C.1.d
RV-0724	RV-0718		G-6	RG 1.26, C.1.d
2. Atmospheric Steam Dump Valves				
CV-0781	CV-0782		F-5	RG 1.26, C.1.d
CV-0780	CV-0779		F-4	RG 1.26, C.1.d
3. Main Steam Line Drain Steam Traps (Note F)				
ST-0791	ST-0792		F-6	SRP, 3.2.2, ¶ III: downstream steam drain line is nonessential; can tolerate downstream break
ST-0790	ST-0789		F-4	
4. Other Single Barrier Isolation Boundaries (Note D)				RG 1.26, C.1.d
MV-MS522	MV-MS586	MV-MS60005	E-6	
MV-MS 213	MV-MS214		D-4	
MV-MS837	MV-MS838		D-6	
MV-MS517	MV-MS521		F-5	
MV-MS525	MV-MS529		F-4	
MV-MS526	MV-MS585		E-3	
MV-FW748	MV-MS60007		B-5	
MV-FW749	MV-MS60002		B-4	
MV-MS832	MV-MS835		C-5	
MV-MS834	MV-MS836		C-4	
MV-MS211	MV-MS212		D-5	
MV-MS518			F-6	
MV-MS530			F-3	
MV-MS60004			E-2	
5. Instruments (Note B)			Various	RG 1.26, C.1.d
Flow Transducers (FT)	Flow Elements (FE)			
FE-701			A-5	
FE-702			E-6	
FE-703			A-4	
FE-704			E-3	
CLASS 3: None			N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
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INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-207, Sh 1A; FEEDWATER & CONDENSATE

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		RG 1.26; C.1.d & C.1.b(2)
Continuation of main & Aux Feed Lines to Boundary Valves		
1. Feed Line Isolation Valves		
CK-FW702	G-6	RG 1.26, C.1.d
CK-FW701	G-5	RG 1.26, C.1.d
MV-FW249	H-3	RG 1.26, Note 4
MV-FW248	H-3	RG 1.26, Note 4
2. Other Single Barrier Isolation Boundaries (Note D)		
MV-FW746	G-6	RG 1.26, C.1.d
MV-FW747	G-5	RG 1.26, C.1.d
CLASS 3:		
MV-FW238	H-1	RG 1.26, Note 4

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-207, Sh 1B; FEEDWATER & CONDENSATE

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:		
Aux Feed to and from Condensate Storage Tank (T-2) on P&ID M-220 via M-207, Sh 2; Isolation Valves		
CV-0731	C-3	RG 1.26, Note 4
MV-CD129	C-3	RG 1.26, Note 4
CV-0732	C-3	RG 1.26, Note 4
CV-0729	B-3	RG 1.26, Note 4
CV-0733	B-3	RG 1.26, Note 4
MV- CD139	A-3	RG 1.26, Note 4

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-207, Sh 2; AUXILIARY FEEDWATER

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:		
Primary Side of Steam Generators E-50A , B (Phantom)	C-2 & D-2	10CFR50.2v(1); no other components per 10CFR50.2v
CLASS 2 BASIS:		
Auxiliary Feed Lines from Steam Generator Secondary Sides to Class 2 Boundary Isolation Valves		
1. Auxiliary Feed Stop Valves		
CV-0737A CV-0737	A-4	RG 1.26, C.1.d, CIS Valves per Data Base
CV-0736A CV-0736	C-4	RG 1.26, C.1.d, CIS Valves per Data Base
CV-0727	G-4	RG 1.26, C.1.d, CIS Valves per Data Base
CV-0749	E-4	RG 1.26, C.1.d, CIS Valves per Data Base
2. Other single Barrier Isolation Boundaries (Note D)		RG 1.26, C.1.d
MV-FW716 MV-FW717 MV-FW800	C-3	
MV-FW718 MV-FW721	D-2	
MV-FW719 MV-FW720	A-3	
MV-FW722	E-2	
MV-FW763	G-3	
MV-FW764A	E-4	
MV-FW801	E-3	
MV-FW813	A-4	
3. Instruments (NOTE B)		RG 1.26, C.1.d
CLASS 3 BASIS:		
Auxiliary Feed Pump Suction Lines, Aux Feed Pumps P-8A, B, C and Discharge Lines to Class 2 Boundary Valves	A-H/4-8	RG 1.26, C.2.a(4) & C.2.6-b
1. Major Boundary Valves		
MV-FW0774	H-7	RG 1.26, Note 4
RV 0783	F-5	
2. Other Single Barrier Isolation Boundaries (NOTE B)		RG 1.26, Note 4
MV-FW810 MV-FW811 MV-FW756	B-6	
MV-FW505 MV-FW709	G-7	
MV-FW590 MV-FW774	H-7	
MV-FW672 MV-FW673	G-6	
MV-FW755 MV-FW758	B-7	
MV-FW757 MV-FW762	B-5	
MV-FW842* MV-FW843*	G-6	
MV-FW846* MV-FW847*	E-6	
MV-FW848* MV-FW849*	B-4	
MV-FW850* MV-FW851*	D-4	
MV-FW852* MV-FW853*	F-5	
MV-FW854* MV-FW855*	H-4	
*2nd Normally open valve in series		

ASME CODE BOUNDARIES
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INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-207, Sh 1B; FEEDWATER & CONDENSATE

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
2. Other Single Barrier Isolation Boundaries (NOTE B) CON'T		
MV-FW272	G-4	
MV-FW285	E-4	
MV-FW710	E-5	
MV-FW760	D-6	
MV-FW761	F-4	
MV-FW273	A-4	
MV-FW281	A-6	
MV-FW754	B-8	
MV-FW765	C-4	
MV-FW284	C-6	
3. Instruments (NOTE B)	Various	RG 1.26, Note 4

ASME CODE BOUNDARIES
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INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-208, Sh 1A; SERVICE WATER

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:		
Critical Service Water Header A (north and B (south) supplying emergency Diesel Generator Cooling System Heat Exchangers (K-6A, K-6B), Control Room HVAC Condenser (P&ID M-208, Sh 1B) interties, and interties to P&ID M-208, Sh 1B, for Component Cooling Water Heat Exchangers (E-54A, E-54B), Containment Air Coolers and Engineered Safeguards Cooling, Supply and Return. Includes non-safety related components and safety-related return to makeup basin		
1. Major Boundary Valves		
Locked shut valves of old Control Room AC Units VC-1A & B (valves locked shut)	C-E/4-5	AC Cond Units VC-1A, B retired from service
MV-SW120	E-3	RG 1.26, Note 4
MV-SW117	E-3	RG 1.26, Note 4
MV-SW126	E-3	RG 1.26, Note 4
MV-SW125	E-3	RG 1.26, Note 4
2. Other Single Barrier Isolation Boundaries (NOTE D)		RG 1.26, Note 4
MV-SW528 MV-SW533 MV-SW534	A-6	
MV-SW535 MV-SW536 MV-SW666	A-6	
MV-SW529 MV-SW530 MV-SW531	B-6	
MV-SW532 MV-SW664 MV-SW665	B-6	
MV-SW667 MV-SW680 MV-SW681	B-6	
MV-SW541 MV-SW678 MV-SW679	F-3	
MV-SW676 MV-SW677	H-3	
MV-SW682 MV-SW683	A-5	
MV-SW118	D-4	
MV-SW321	H-7	
MV-SW340	H-2	
3. Instruments (NOTE B)	Various	RG 1.26, Note 4
Flow Transducer (FT)		
Flow Elements (FE)		
FE-0883	G-4	
4. Class Break in critical service water 1" supply lines to instrument air compressors C-2A, C and after coolers E-18A,C at outlet side of the following 2" supply isolation valves (Note I.1)		RG 1.26, Note 4 and SRP 3.2.2, ¶ III (Inst air compressors are nonessential; can tolerate supply break)
SV-0801	E-3	RG 1.26
SV-0803	C-3	RG 1.26
Assoc. w/C-2B, E - 18A	D-3	RG 1.26

ASME CODE BOUNDARIES
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INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-208, Sh 1A; SERVICE WATER

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 3: CON'T		
5. Class break in service water discharge line from turbine line oil coolers to main discharge line to makeup basin (NOTE I.2) JB-1-14"	H-2 Break Point	SRP 3.2.2, ¶ III (no loss of safety function for postulated break between critical and non-critical SW discharge lines)
6. Class break in 16" service water discharge line in turbine building upstream of Emergency Diesel Generator Cooler discharge header in turbine building high (590') elevation JB-1-16"	H-2 Break Point	SRP 3.2.2, ¶ III (no loss of safety function for postulated break between critical and non-critical SW discharge lines)

ASME CODE BOUNDARIES
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INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-208, Sh 1B; SERVICE WATER

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
1. Containment Penetration 12 out to Valve:	D-4	Note H
CV-0847	D-2	
MV-SW571	D-3	
Containment Penetration 13 out to Valve:	D-4	Note H
CV-0824	D-3	
MV-SW572	D-4	
2. Instruments (NOTE B)		
Flow Transducer (FT)		RG 1.26, Note 4
Flow Element (FE)		
CLASS 3 BASIS:		
Critical Service Water to Component Cooling Heat Exchangers, Engineered Safeguards Room Coolers, containment Air Coolers (VHX-1,2,3,4), interties to Engineered Safeguards Pump Seal Cooling and Control Room HVAC Condensers (VC10,11)		RG 1.26, C.2.a and C.2.b
1. Major Boundary Valves		
MV-SW207	C-8	RG 1.26, Note 4
MV-SW206	D-8	RG 1.26, Note 4
2. Other Single Barrier Isolation Boundaries (NOTE D)		RG 1.26, Note 4
MV-SW265 MV-SW266 MV-SW568	D-5	
MV-SW580 MV-SW581 MV-SW582	E-5	
MV-SW569 MV-SW570	D-5	
MV-SW583 MV-SW685	E-5	
MV-SW686 MV-SW687	C-4	
MV-SW688 MV-SW689	E-7	
MV-SW690 MV-SW691	C-7	
MV-SW692 MV-SW693	H-1	
MV-SW694 MV-SW695	F-1	
MV-SW674 MV-SW684	E-6	
MV-SW289	F-3	
MV-SW290	G-2	
MV-SW291	G-3	
MV-SW584	C-8	
MV-SW585	B-7	
MV-SW586	D-8	
MV-SW587	F-7	
MV-SW668	F-5	
MV-SW670	B-5	
MV-SW671	C-5	
MV-SW672	B-8	
MV-SW288	F-2	
3. Instruments (NOTE B)	Various	RG 1.26, Note 4

ASME CODE BOUNDARIES
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INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-209, Sh 1; COMPONENT COOLING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:		
Primary Coolant Pump Seals. Primary Coolant Pump internal pressure breakdown device (not shown on P&ID) upstream of lower seal, for pumps P-50A,B,C,D; adequate for taking Class 1 to 2 break; but taking break at lower seal.	G-7 E-7 C-7 A-7	10CFR50.2v For Class 1 10CFR50.55a(g), Footnote 2(a) in conjunction with RG 1.26, C.a.e; SRP 3.2.2, ¶ III; also, ANSI/ANS 51.1-1983
MV-PC1152	G-6	10CFR50.55a(g), Note 2(b)
MV-PC1151	E-6	10CFR50.55a(g), Note 2(b)
MV-PC1154	C-6	10CFR50.55a(g), Note 2(b)
MV-PC1153	A-6	10CFR50.55a(g), Note 2(b)
CLASS 2 BASIS:		
Primary Coolant Pump middle seal up t but not including upper seal and CCW containment penetration	Zone Same as Class 1	RG 1.26, C.1.e; SRP 3.2.2, ¶ III; ANSI/ANS 51.1-1983, Note H
1. Instrumentation (NOTE B)	Various	RG 1.26, Note 4 adaptation
2. Other Single Barrier Isolation Boundaries (NOTE D)		RG 1.26, Note 4
MV-PC1064D	E-6	
MV-PC1071D	G-6	
MV-PC1078D	A-6	
MV-PC1085D	C-6	
MV-PC1098	E-5	
MV-PC1102	G-5	
MV-PC1106	A-5	
MV-PC1110	C-5	
3. Containment Penetration 14 out to valve:	E-2	Note H
CK-CC910	E-1	
CK-CC507	E-1	
Containment Penetration 15 out to valve:	B-2	Note H
CV-0940	B-1	
CK-CC508	B-2	
CLASS 3 BASIS:		
Primary Coolant Pump upper seal up to but not including vapor seal which is non-classed. CCW lines outside of containment	Zone Same as Class 1	RG 1.26, C.2.c as clarified by SRP 3.2.2, ¶ III; ANSI/ANS 51.1-1983, Note H
1. Instrumentation (NOTE B)	Various	RG 1.26, Note 4 adaptation
2. Other Single Barrier Isolation Boundaries (NOTE D)		RG 1.26, Note 4
MV-CC543	E-1	
MV-PC1063D	E-6	
MV-PC1070D	G-6	
MV-PC1077D	A-6	
MV-PC1084D	C-6	
MV-PC1097	E-5	
MV-PC1101	G-5	
MV-PC1105	A-5	
MV-PC1109	C-5	

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-209, Sh 2; COMPONENT COOLING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2:		
HP side of S.D. Cooling Heat Exchangers (Phantom)	H-6 F-6	No other components per RG 1.26, C.1
CLASS 3 BASIS:		
Component Cooling for Shutdown Cooling Heat Exchangers (E-60A,B) and non-safety related loads; cross connect to critical service water to Engineered Safeguards Pump Seal Coolers	F-H/4-8 A-F/2-7 F-H/1-2	RG 1.26, C.2.a and C.2.b
1. Major Boundary Valves		
RV-0954	G-6	RG 1.26, Note 4
RV-0955	F-6	RG 1.26, Note 4
2. Other Single Barrier Isolation Boundaries (NOTE D)		
MV-CC517 MV-CC617	H-6	
MV-CC518 MV-CC616	G-6	
MV-CC519 MV-CC520	F-6	
MV-CC618 MV-CC619	F-6	
MV-CC569	E-3	
3. Instruments (NOTE B)	Various	RG 1.26, Note 4

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-209, Sh 2; COMPONENT COOLING

BOUNDARY DESCRIPTION & NOTES			ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None			N/A	No components per 10CFR50.2v
CLASS 2: None			N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:				RG 1.26, C.2.a and C.2.b
Component Cooling surge Tank (T-3) to Pumps P-52A, B, C; supply and return headers for component Cooling Heat Exchangers (E,54A,B), Charging Pumps (P-55A,B,C) and safety-related interties to other P&ID's				
1. Major Boundary Valves				
CV-0915			H-4	RG 1.26, Note 4
CV-0918			G-3	RG 1.26, Note 4
MV-CC182			G-3	RG 1.26, Note 4
MV-CC178			F-4	RG 1.26, Note 4
RV-0915			G-3	RG 1.26, Note 4
MV-CC177			G-4	RG 1.26, Note 4
MV-CC134			E-4	RG 1.26, Note 4
CV-0944			E-8	RG 1.26, Note 4
CV-0977B			D-1	RG 1.26, Note 4
RV-0952			H-1	RG 1.26, Note 4
RV-0953			G-1	RG 1.26, Note 4
2. Other Single Barrier Isolation Boundaries (NOTE D)				RG 1.26, Note 4
MV-CC191	MV-CC 558	MV-CC664	A-4	
MV-CC189	MV-CC190	MV-CC557	B-4	
MV-CC556	MV-CC656	MV-CC657	C-4	
MV-CC660	MV-CC661		B-4	
MV-CC122	MV-CC123		D-4	
MV-CC503	CC 504		F-5	
MV-CC514	CC 516		G-1	
MV-CC501	CC 502		G-5	
MV-CC665			A-4	
MV-CC506			C-3	
MV-CC658			C-6	
MV-CC505			D-5	
MV-CC659			D-6	
MV-CC532			E-3	
MV-CC533			E-7	
MV-CC603A			E-4	
MV-CC539			F-4	
MV-CC513			G-2	
MV-CC185			G-3	
MV-CC612			G-4	
MV-CC622			G-7	
MV-CC623			G-8	
MV-CC515			H-2	
MV-CC620			H-7	
MV-CC621			H-8	
3. Instruments (NOTE B)			Various	RG 1.26 Note 4

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-210, Sh 1A; CONTAINMENT ISOLATION VALVES

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Containment Penetration 41 out to valves	H-7	Note H
CK-CRW407	H-8	
MV-CRW506	H-8	
Containment Penetration 67 out to valves	B-4	Note H
CK-CRW408	B-5	
MV-CRW515	B-5	
Containment Penetration 25 out to valves	F-2	Note H
CV-1064	F-1	
MV-CRW512	F-1	
MV-CRW647A	F-2	
Containment Penetration 40 out to valves	B-7	Note H
CV-1036	B-6	
MV-CRW513	B-7	
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-210, Sh 1B; CONTAINMENT ISOLATION VALVES

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Containment Penetration 69 out to valves	G-1	Note H
CV-1044	F-1	
MV-CRW518	G-2	
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-210, Sh 1C; SAFETY INJECTIONS VALVES

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
MV-CRW175	G-7	RG 1.26, Note 4
CLASS 3: None	N/A	No components per RG 1.26, C.2

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-210, Sh 2; CONTAINMENT ISOLATION VALVES

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Containment Penetration 47 out to valves	D-7	Note H
CV-1007	B-7	
MV-CRW502	C-7	
Containment Penetration 37 out to valves	E-6	Note H
CK-CRW 403	E-5	
MV-CRW503	E-5	
CLASS 3: None	N/A	No components per RG 1.26, C.2

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-211, Sh 1; DIRTY WASTE & GASEOUS WASTE

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:	F-7,8	RG 1.26, C.1.a and C.1.b
Containment Sump Drain Line to Isolation Valve		
1. CV-1104	F-7	RG 1.26, Note 4
MV-DRW500	F-7	
2. Instruments (NOTE B)	F-7	RG 1.26, Note 4
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-211, Sh 2; CONTAINMENT ISOLATION VALVE

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Containment Penetration 46 out to valves	G-7	Note H
CV-1102	G-6	
MV-WG511	F-6	
CLASS 3: None	N/A	No components per RG 1.26, C.2

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-212, Sh 1; SERVICE AND INSTRUMENT AIR SYSTEM

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Containment Penetration 10 out to valves	A-3	Note H
MV-CAS142	A-3	
MV-CAS728	A-3	
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-212, Sh 4; CONTAINMENT ISOLATION VALVES

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS		
1. Containment Penetration 65 out to valves	F-2	Note H
MV-CA612	E-2	
CK-CA400	E-2	
2. Instruments (NOTE B)	E-2	
CLASS 3: None	N/A	No components per RG 1.26, C.2

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-213, Sh -; SERVICE WATER, SCREEN STRUCTURE AND CHLORINATOR

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:		
Service Water Pumps/Suctions P-7A, B, C to non-critical supply header isolation; and critical supply headers A & B	F-1,2,3	RG 1.26, C.2.a and C.2.b
1. Pump Suction Bells at intake structure (P-7A,B,C)	F-1,2,3	Necessary for system functions of RG 1.26, C.2
2. Major Boundary Valves		
MV-FP131	G-4	RG 1.26, Note 4
MV-FP130	H-1	RG 1.26, Note 4
CV-1359 (non-critical SW supply isolation)	G-5	RG 1.26, Note 4
3. Other Single Barrier Isolation Boundaries (NOTE B)		RG 1.26, Note 4
MV-SW344 MV-SW663	E-2	
MV-SW343 MV-SW660	E-3	
MV-SW101 MV-SW502	G-5	
MV-SW342	E-4	
MV-SW827	F-2	
MV-SW825	F-3	
MV-SW823	F-4	
MV-SW501	H-4	
4. Instruments (NOTE B)	Various	RG 1.26, Note 4

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-214, Sh 1; LUBE OIL FUEL OIL & DIESEL GENERATOR SYSTEMS

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:	A-C/1-4	RG 1.26, C.2.b
Diesel Generator Jacket Cooling System		
1. Surge Tank and connecting line at and below the design water level	B,C-2,3	RG 1.26, Note 4 boundaries and ASME XI Code, IWD-5000
2. Other Single Barrier Isolation Boundaries	Various	RG 1.26, Note 4
MV-DE517 MV-DE518	B-3	
LG-1482 LC-1492	C-3	
3. Instruments (NOTE B)	Various	RG 1.26, Note 4

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-215, Sh 1; PLANT HEATING SYSTEM

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Containment Penetration 38 out to valves	C-2	Note H
CV-1502	G-3	
MV-VA502	G-3	
Containment Penetration 39 out to valves	H-2	Note H
Blind Flange	H-3	
MV-VA503	H-3	
CLASS 3 BASIS:		
Phantom presentation of Condensate Storage Tank Heat Exchanger and Supply/Return Lines from P&ID M-220	A-4,5	Part of Class 3 pressure boundary (see P&ID M-220)

P&ID M-218, Sh 2;

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
1. Containment Penetration 1A out to valves:	D-4	Note H
CV-1806 MV-VA506	D-6	
MV-VA101 MV-VA507	D-5	
Containment Penetration 1C out to valves	D-4	Note H
CV-1808	D-6	
MV-VA508	D-6	
Containment Penetration 17 out to valves	G-4	Note H
MV-1814B	H-5	
Containment Penetration 18 (Fuel Transfer Tube) to valves	D-1	Note H
MV-SFP141	D-1	
Containment Penetration 27 out to valves	E-1	Note H
MO-P1	E-1	
MV-VA605	E-1	
Blind Flange (inside containment)	E-2	
Containment Penetration 48 out to valves	F-4	Note H
MV-1815B	F-5	
Containment Penetration 66 out to valves	F-1	Note H
L-VA6	F-1	
MV-VA601 (inside containment)	F-1	
MV-VA602	F-1	
MV-VA603	F-1	
Containment Penetration 68 out to valves	C-3	Note H
CV -814	B-3	
MV-VA505	C-2	
2. Instruments (NOTE B)	Various	
CLASS 3: None	N/A	No components per RG 1.26, C.2

P&ID M-218, Sh 7; HEATING, VENTILATION & AIR CONDITIONING CONTROL ROOM

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:		
1. Details of control Room Air conditioning Units VC-10, 11, critical service water sides	See Below	See also P&ID M-208, Sh 1
Service water-side water box(es)/nozzles, and other single barrier vent/drain lines (NOTE D); see P&ID M-20	A-B-6 E,F-6	Part of Class 3 boundary; RG 1.26, Note 4
MV-VA528	A-6	
MV-VA529	E-6	
Continuation of Critical Service Water Instrument Lines (NOTE B)	E,F-4,5	RG 1.26, Note 4

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-219, Sh 1B; PROCESS SAMPLING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1 BASIS:		
Continuation of Primary Coolant System via sampling points SX-1045, 1034 & 1023		
1. Capped line containing valve MV-600 (NOTE D)	G-7	10CFR50.55a(g), Note 2(b)
2. Valve N210M3, ½" Check	E-7	10CFR50.55a(g), Note 2(b)
3. CV-1910	C-7	10CFR50.55a(g), Note 2(b)
CLASS 2 BASIS:	G/1-3	RG 1.26, C.1.a & C.1.b
Continuation of Class 2 safety-related systems via sampling points SX-3336, 3333, 3247 & 3337		
Class break at sampling station downstream of ½" valves V-5, V-11, V-13 & V-15	G-3/2/1	SRP 3.2.2, ¶ III (sample line is nonessential; can tolerate downstream break)
From the Class 1 boundary valve to the downstream boundaries: CV-1911 & MV-PC1170A	B-8	Note H
CLASS 3 BASIS:		
Continuation of Components Cooling to Sample Coolers and Instruments (NOTES B & D)	D-H/4-5 D-E/2-7	Class 3 pressure boundary of RG 1.26, C.2; RG 1.26 Note 4 adaptation

ASME CODE BOUNDARIES
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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-220, Sh 1; MAKEUP DOMESTIC WATER & CHEMICAL INJECTION

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:		
Condensate Storage Tank T-2 with Suction Line to Aux Feed Pumps P-8A, B, C and Condensate Makeup and reject Lines (pump on P&ID M-207, Sh 2)	A-C/3-5	RG 1.26, C.2.a and C.2.b
1. Major Boundary Valves		
CV-2010	E-3	RG 1.26, Note 4
MV-DMW138	E-3	RG 1.26, Note 4
MV-CD171	B-7	RG 1.26, Note 4
MV-CD177	B-7	RG 1.26, Note 4
CK -CD407	B-4	RG 1.26, Note 4
2. Other Single Barrier Isolation Boundaries (NOTE D)		
MV-FW278	C-5	RG 1.26, Note 4
MV-CD537	A-6	RG 1.26, Note 4
MV-CD540	A-6	RG 1.26, Note 4
MV-CD562	A-7	RG 1.26, Note 4
3. Instruments (NOTE B)	Various	RG 1.26, Note 4 adaptation
4. All Condensate Storage Tank vent, fill drain, instrument and any other isolation boundaries below the design water level (NOTE D)	B,C-4,5	RG 1.26, Note 4 & ASME XI Code, IWD-5000
5. Condensate Storage Tank Heat Exchanger E-27 (tube side)	A-6	

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-220, Sh 2; CHEMISTRY MAKEUP TO AUX FEED

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:		
From Hydrazine Pump Discharge Line Isolation Valve to its continuation to the Auxiliary Feed Pump suction on P&ID M-207, Sh 2		Part of Class 3 pressure boundary per RG 1.26, C.2.a and C.2.b
MV-FW218	A-7	RG 1.26, Note 4

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Attachment 1
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P&ID M-221, Sh 1;

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
1. Major Boundary Valves		Note H
Containment Penetration 11 out to valves		
MV-CD536	D-2	
MV-CD401	D-2	
CLASS 3: None	N/A	No components per RG 1.26, C.2

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Attachment 1
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P&ID M-221, Sh 2; SPENT FUEL POOL COOLING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
1. Fuel Pool Cooling Pump Suction Line continuation from SIRW Tank to the Isolation Valve		
MV-ES3263	C-4	RG 1.26, Note 4
2. MV-SPF126 MV-SFP127	C-6	RG 1.26, Note 4
3. Containment Penetration 72 from valve SFP 117 (inside containment) out to valves	C-2	Note H
MV-SFP118	C-4	
MV-SFP 515	C-2	
Containment Penetration 64 from valve SFP 121 (inside containment) out to valves)	C,D-2	Note H
MV-SFP120	C-2	
MV-SFP514	D-2	
CLASS 3 BASIS:		
1. Spent Fuel Pool liner and other Fuel Pool pressure boundary components necessary to prevent draining of Spent Fuel Pool, such as siphon breather line and instrument lines	B,C-2,3	RG 1.26, C.2, Spent Fuel Storage Pool
Spent Fuel Pool liner up to design capacity		RG 1.26, C.2, first par storage tank function
a. Instruments (NOTE B)	Various	RG 1.26, Note 4 adaptation
b. Other Single Barrier Isolation Boundaries (NOTE D)	Various	RG 1.26, Note 4
MV-SFP124 MV-SFP129 MV-SFP130	C-4	
MV-SFP119 MV-SFP509 MV-SFP513	E-6	
MV-SFP506 MV-SFP510	D-6	
MV-SFP108 MV-SFP137	E-5	
MV-SFP507 MV-SFP511	D-7	
MV-SFP508 MV-SFP512	E-7	
MV-SFP132 MV-SFP133	F-6	
MV-SFP131	A-4	
MV-SFP601	A-5	
MV-SFP606	B-6	
MV-SFP605	B-7	
MV-SFP123	C-5	
MV-SFP113	D-3	
MV-SFP140	D-5	
RV -2109	E-8	

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Attachment 1
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P&ID M-221, Sh 2; SPENT FUEL POOL COOLING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 3 BASIS: CON'T		
2. Continuation of component Cooling Water Supply and return lines via Spent Fuel Pool Heat Exchanger (E-53A,B), CCW-Side from M-209, Sh 3	C-F/7-8	Part of class 3 pressure boundary; see P&ID M-209, Sh 3
a. Other Single Barrier Isolation Boundaries (NOTE D)	Various	RG 1.26, Note 4
MV-CC509 MV-CC510	D-7	
MV-CC511 MV-CC512	E-7	
b. Instruments (NOTE B)	Various	RG 1.26, Note 4 adaptation

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Attachment 1
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P&ID M-222, Sh 1; PENETRATION 26

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2:	D-3	Note H
Containment Penetration 26 out to valves		
MV-$N_2$581	D-3	Note H
MV-$N_2$400	D-3	Note H
CLASS 3: None	N/A	No components per RG 1.26, C.2

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Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-223, Sh 1B; RADIATION MONITORING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:		
Continuation of component Water Supply and return through the CCW Monitor (detail)	D/3-5	Portion of Class 3 pressure boundary; see P&ID M-209, Sh 3(C-4)
1. Single Barrier Isolation Boundaries (NOTE D)		RG 1.26, Note 4
MV-CC538	D-4	
MV-CC540	E-5	
MV-CC541	D-4	
2. Radiation Monitor (NOTE B)	D-4	RG 1.26, Note 4 adaptation
CLASS 3 BASIS:		
Phantom continuation of Service Water Discharge thru SW Discharge Monitor	E-6,7	Portion of Class 3 pressure boundary; see P&ID M-208, Sh 1A (F-8)

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Attachment 1
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P&ID M-224, Sh 1; GAS ANALYZING

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Containment Penetration 28 out t to valves	F-7	
MV-VA142	E-7	Note H
MV-VA510	E-7	Note H
CLASS 3 BASIS:		
Continuation of Component Cooling water for Gas Analyzer Cooler	B/6-7	Portion of Class 3 pressure boundary; see P&ID M-209, Sh 2 (F-1, 2)
MV-CC119	B-6	RG 1.26, Note 4
MV-CC120	B-6	RG 1.26, Note 4

P&ID M-224, Sh 2; PENETRATIONS 21, 21A, 40A & 40B

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Containment Penetration 21 out to valves	G-8	Note H
MV-WG531B	G-7	
SV-2415B	G-7	
Containment Penetration 21A out to valves	F-8	Note H
MV-WG531A	F-7	
SV-2413B	F-8	
Containment Penetration 40A out to valves	D-8	Note H
MV-WG530B	D-7	
SV-2414B	D-7	
Containment Penetration 40B out to valves	C-8	Note H
MV-WG530A	C-7	
SV-2414B	C-7	
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-226, Sh 1; STEAM GENERATOR MODIFICATION

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2 BASIS:		
Continuation of Steam Generator surface and bottom blowdown line to isolation valve	F-8 F-8 C,D-7,8 B,C-7	Portion of Class 2 pressure boundary; see P&ID M-207, Sh 1
MV-MS567	E-8	
CV-0771	F-7	RG 1.26, Note 4
CV-0770	E-7	
MV-MS568	E-8	
CV-0739	C,D-7,8	RG 1.26, Note 4
CV-0738	C-7	
CLASS 3: None	N/A	No components per RG 1.26, C.2

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

Attachment 1
"Detailed Justifications for Basis Document"

P&ID M-653, Sh 3; COOLING TOWER SYSTEM

BOUNDARY DESCRIPTION & NOTES	ZONE	BOUNDARY JUSTIFICATION
CLASS 1: None	N/A	No components per 10CFR50.2v
CLASS 2: None	N/A	No components per RG 1.26, C.1
CLASS 3 BASIS:		
Continuation of Service Water Discharge from P&ID M-208, Sh 1A to Makeup Basin (no boundary valves)	D-G/3-8	Continuation of clear discharge path from Class 3 cooling loads on P&ID M-208, Sh 1A (F-8)

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

NOTES
CPCo Palisades Boundary Classification Policies/Practices

A. Within the Reactor Coolant Pressure Boundary, piping and components for which small break LOCA is postulated will not be classified as Code Class 2 in lieu of Code Class 1 (as permitted by 10CFR50.55a(g), Footnote 2(a) and US NRC RG 1.26, Regulatory Position C.1.e, where the limiting line size would be 1" NPS. On July 15, 1985, CPCO (VanWagner) provided the decision regarding the above option which was based on no real benefit precluded the need for an ASME XI relief from Class 2 pressurization limits. Therefore all RCPB lines 1" NPS and smaller are Class 1.

B. The pressure boundary of Class 1, 2, and 3 systems will include the piping and instrument tubing up to but not including the instrument, unless otherwise specified.

The instrument shall be considered to include all parts and pressure boundary components and "gage" valves that are integral to the instrument. Instruments are outside the scope of ASME Codes, Section III and Section XI.

C. Where there are power operated valves in series, and only one is required as a pressure boundary per US NRC RG 1.26, only one will be included regardless of the electrical power supply to the valve.

For example, on P&ID M-201, Sh 1 (Rev 32) at B-3, valve CV-3084 and upstream check valve CK-ES3410 provide the necessary two-valve, Class 1 boundary; valve CV-3085 is not required.

D. Other isolation barriers shall include vent, drain, test connection lines and other components meeting the Class 1 (double Barrier) or Class 2,3 (single Barrier) criteria required by 10CFR50.2v and US NRC RG 1.26, respectively. These "other "Class 1 components presenting a single barrier meet either 10CFR50.2v(1) and/or footnote 2(a) to 10CFR50.55a(g).

E. On P&ID M-202, Sh 1B, Rev 2, the Class 1 boundary has been indicated at CV-2002, 2003, 2004 and 2005 in the letdown lines (where CV-2001 is the first boundary valve) and at CV-2113 and 2115, respectively, is the first boundary valve. The NRC allows for remote manual operation of open valves that may not be shut by automatic actuation under all conditions in the above letdown and charging lines. Note that the letdown line has been classified as Class 3 to the containment side of the penetration to further enhance system integrity (by interpretation of the intent of RG 1.26 and Position C.1.C) and Class 2 through CV-2009 (per Note I). The charging line upstream of the above designated Class 1 boundary valves is Class 2 up to and including the outermost containment isolation valve (and beyond) to support the charging system safety function which is a Class 2 function.

F. Line Break Downstream of Seam Line Drain Steam Trap: A line break downstream of the steam trap is acceptable because the steam trap would limit the flow of steam in preference to passing condensate based on its design function.

The water and steam leakage based on the postulated line break would not impair the operation of equipment or performance of personnel, or allow the offsite dose limits of 10CFR100 to be exceeded.

G. On P&ID M-205, Sh 2, a line break in Auxiliary Feed Pump Turbine atmospheric exhaust line upstream of interconnecting Auxiliary Steam Discharge Lines: A line break downstream of Auxiliary Feed Pump Turbine exhaust from the pump casing downstream is acceptable because any steam discharged from the break(s) hypothesized will not impair the operation of equipment or the performance of personnel.

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

NOTES
CPCo Palisades Boundary Classification Policies/Practices

H. CONTAINMENT PENETRATIONS

All containment penetration assemblies will be considered ASME Class 2 out to the second isolation valve where applicable. It should be noted that in some cases there may be single isolation (eg, MSS, FWS). It should also be noted that where a Class 3 system penetrates containment, that portion should be considered Class 2 and treated as such (ie, ASME Section XI Interpretation BC84-603). In the case of Class 1 systems penetrating containment, the penetration will be considered Class 1.

I. EVALUATIONS FOR SERVICE WATER SYSTEM, P&ID M-208, SH 1A

1. Class Break for Instrument Air Compressor (C-2A, B & C) Supply Piping from Critical Service Water Header: The class break is taken immediately downstream of the inlet solenoid valves which will shut upon loss of nonessential electrical power (or when the compressor is stopped with power available).

   Leakage from any break postulated downstream of the class break (shut solenoid valves) will be tolerable because the discharge lines in the nonclassed portions of piping are located in the Turbine Building. Thus, a postulated line break in the unclassed portion is acceptable because (1) the break is isolated on the supply side and any loss of fluid on the discharge side will occur in a nonessential area where flooding, equipment operability and personnel performance would occur at acceptable levels (besides, the area affected are nonessential).

2. Class Breaks on Discharge Side of Critical and Noncritical Service Water Header:

   a. One class break is taken in 16" discharge line (JB-1-16") just upstream of the junction of critical service water line (JB-1-8") (where JB-1-16" has reached the 590' elevation). The portion of JB-1-16" at low elevation in the Turbine Building including the safety-related discharges via JB-1-16" are Class 3.

      This break is acceptable because (!) the noncritical service water is isolated on the supply side; (2) any leak from the postulated discharge line break will occur at high elevation against approximately an eight foot water head (590' - 582') such that any fluid loss will be minimal, and (3) the postulated break would occur in a nonessential area (Turbine Building).

   b. One Class break is taken in the 24" portion of the Discharge Line (JB-1-24") in the pipe run downstream of the turbine lube oil coolers (but upstream of its interconnection with safety-related portion of JB-1-16" in the Turbine Building, at low elevation).

      This break is acceptable because (1) the noncritical service water supply is isolated; (2) the postulated break would occur in a nonessential area (Turbine Building) where significant discharge could occur but would run onto other nonessential areas.

ASME CODE BOUNDARIES
FOR ASME SECTION XI
INSERVICE INSPECTION PROGRAM

NOTES
CPCo Palisades Boundary Classification Policies/Practices

J. M-216, Sh 1B Classification of Primary Sampling Line Outside Containment: The Class 1 Reactor Coolant Pressure boundary has been designated at automatic isolation valve SV-1910. Supplementing this boundary is remote manual valve SV-1901, upstream.

K. M-219, Sh 1B Class 2 Sampling Line Breaks at Sampling Station: A break in these nonessential lines can be tolerated, and as such is permissible per the NRC's Standard Review Plan (NUREG 0800), Section 3.2.2, Paragraph III and ANSI/ANS 5/1/1. The break is acceptable because (1) the loss of system capacity would be insignificant; (2) the break is postulated to occur in a nonessential area and a location where (3) the break will not impair the operation of equipment or the performance of personnel, or allow the offsite dose limits of 10CFR100 to be exceeded.

Note that the postulated breaks would be isolable using the sampling line valves upstream of the class break.

ATTACHMENT 5

CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
INSERVICE INSPECTION PROGRAM

MAIN COOLANT LOOP O.D. EXAMINATION EQUIVALENCY STANDARD

REPORT OF DESIGN BASIS AND NDE INVESTIGATIONS

CONSUMERS POWER COMPANY

PALISADES NUCLEAR PLANT

MAIN COOLANT LOOP O.D. EXAMINATION

EQUIVALENCY STANDARD

REPORT OF DESIGN BASIS AND NDE INVESTIGATIONS

1995

WESTINGHOUSE ELECTRIC CORP
NUCLEAR TECHNOLOGY DIVISION

A) Design Basis for the

Main Coolant Loop

Equivalency Standard

NZL-MKP-52-PAL

Palisades Nuclear Plant
Main Coolant Loop Examination Equivalency Standard

3a) DESIGN BASIS FOR REFERENCE STANDARD NZL-MKP-52-PAL

Introduction

Pursuant to the requirements of Palisades Request for Relief RR-2, Examination Catagory B-J, Items B9.11 and B9.12,: Pressure Retaining welds in Class1 Piping", Consumers Power Company issued an order for a Calibration Standard for NDE under Westinghouse shop order M5LP-138.

Westinghouse proposed to fabricate a curved reference specimen with a wall thickness of 3.0" and a width of approximately 60 degrees. The specimen would be composed of three segments, with nozzle and spool piece held together by a circular weld and the spool piece joined with a circ seam to a piping segment containing a fabricated long seam. The inside diameter across all three surfaces would be clad. Reference reflectors would be EDM Slots 0.020" wide.

1) Materials

Palisades Primary System Materials

Reactor Vessel Nozzles:	A-508	Carbon steel forging with cladding applied
Nozzle Extension Forging	A-508	Carbon steel forging with cladding applied
Primary Pipe	SA 264	Cladded carbon steel plate (carbon steel plate with rolled cladding) with longitudinal weld seams.

Welding: Primary coolant pipe welded by stick E-7018 (per Consumers Power records)

Cladding: E-309 first layer (Per Consumers Power Records)
E308L second layer (Per Consumers Power Records)

Palisades Equivalency Reference Standard NZL-MKP-52-PAL

Reactor Vessel Nozzle Segment: A-508 - Carbon steel forging with cladding applied. (cancelled plant reactor vessel nozzle)

Nozzle Extension Forging Segment: A-508 - Carbon Steel forging with cladding applied

Primary Pipe: A-516 Gr. 70 Carbon steel plate with applied cladding and a longitudinal weld seam.

Welding: Stick, E7018

Cladding: Stick, E-309 First Layer
E-308L Second Layer

In constructing a reference standard which is truly representative of the Palisades system, materials, welding and cladding parameters were matched up as closely as possible.

Dimensional Verifications

Notch Length Specified at 0.875"

Reference: ASME Sec. XI, 1983 Edition Table 1WB-3514-4 "Allowable Linear Flaws" (Surface or Volumetric Method) for 3.0" avg. thickness is 7/8" (0.875").

Notch Width Specified at 0.20"

(as narrow as possible per TSI shop practice)

Notch Depth 5% "t", 7.5% "t" and 10% "t"
5% of average "t" of 3.0" = 0.150"
7.5% of average "t" of 3.0" = 0.225"
10% of average "t" of 3.0" = 0.30"

Reference: ASME Section XI, 1983 Edition Table 1WB3514-1 allowable a/t% for surface flaw detected by volumetric method is 13.2% = 0.396".

Construction Thickness

Cold Leg - ID = 30" Nom T = 3.152
Ref. CE: 232-114-8

Hot Leg - ID = 42" Nom T = 4.0
Ref. CE: 232-114-8

Reference Std - ID 30 Nom T = 3.3

Code Applicability

1) For piping greater than 20" dia:
1989 Code Section XI, Appendix 1,
Supplement 3, "Examination surface curvature must be 0.9 to 1.5 calibration block curvature"
(Exam surface is 1.4 x reference standard I.D.)

2) Flat blocks are allowable per Supplement 3, (3).

3) Reference Standard Thickness Applicability:
Code Case N-461, (Nov. 1988)
Reference Standard is within $\pm$ 25% of
pipe wall thickness to be examined.

CLAD FERRITIC STEEL CRACKED TEST SPECIMEN CSCL-53-PAL

A clad ferritic test specimen is provided for validation of calibration sensitivity in the Palisades Main Coolant Loop O.D. Equivalency Demonstration. The block was manufactured under the supervision of Westinghouse Nuclear Technology Division, Metallurgical and NDE Analysis Group for a joint ultrasonic sizing program with Mitsubishi Heavy Industries in 1990. Documentation of the ferritic test samples is provided in MT-MNA-188 (90) Westinghouse report. The blocks made available for the Palisades equivalency demonstration is 3 3/32" thick, 4" wide and 13" long as follows:

Specimen I.D.	Material	Crack Type	Through-Wall Depth
CSCL-53-PAL	SA533	Fatigue	6.4mm

B) RESULTS OF NDE INVESTIGATIONS AND SUPPORTING DATA

3b. Results of NDE Investigations and Supporting Data

Introduction

On March 6, 1995 a qualification demonstration was conducted at Wesdyne International, Export Pa. The purpose of the exercise was to verify technical parameters associated with the performance of alternative examinations on Palisades Main Coolant piping, specifically, the ability of UT technique applied from the clad I.D. surface to detect O.D. surface defects as an alternative to O.D. surface examinations. A reference standard was fabricated to simulate the Palisades piping configurations as closely as possible. This standard, identified as NZL-MKP-52-PAL, is fabricated with two circular pipe welds and an attached long seam in the piping segment. (Ref. Sec. 2 of this report). The I.D. surface is clad to the nominal cladding specifications of the Palisades main coolant loop. A series of notches were installed in the specimen outside diameter. A second specimen, identified as CSCL-53-PAL is a clad carbon steel test specimen containing a 6mm deep mechanical fatigue crack intersecting the O.D. surface. On the demonstration, the notched mock-up was used to establish test sensitivity and the cracked specimen was used to validate the probability of detection at notch calibration sensitivity.

Test Equipment

The demonstration was performed using the UDRPS 2 data acquisition system with the Dynapulser ultrasonic instrument integrated with a Wesdyne Dynascanner. The search unit chosen for the demonstration was a Technasonic 2.25 MHz. 0.5 x 1.0", 45 degree shear in a 30 x 30 mm stainless steel case. The 2.25 MHz single element 45° shear search unit was chosen because the base metals and filler metals in the mock-up and at the Palisades plant are acoustically homogenous carbon steels, capable of sustaining shear waves at 45° refracted angles while providing reasonably high signal to noise response from surface breaking planar flaws. The 30 x 30 case size maintains good contact about the inner diameter surface of the curved block. Acquisition was conducted at a steady speed of 3 inches per second with room temperature water used as a couplant. Axial and circumferential scans were performed on test block NZL-MKP-52-PAL, with axial scans performed on cracked block CSCL-53-PAL.

Qualification Protocol

A protocol was established and documented for the testing activities. Block scans, measurement of target response in the processed data and documentation of test results were witnessed by representatives of Consumers Power Company and the Palisades Authorized Nuclear Inservice Inspector (Attachment I). The objective of the qualification scans was simply to document the responses from 5%, 7.5% & and 10% deep notches in the mock-up, scan the cracked specimen and arrive at a conclusion about the appropriate sensitivity level for maximum detection in the Palisades O.D. equivalency examinations. A total of 3 scans were performed on specimen NZL-MKP-52-PAL (1 axial and 2 circumferential).

Axial scans (dataset PDEMOAXIB) included notches 1 through 6. Circumferential scans (dataset Demo Circ 1) included notches 8, 9, 10, and 11, with dataset Demo Circ 2 encompassing notches 13, 14, 15, 16, and 17. Cracked specimen CSCL-53-PAL was scanned and the dataset is identified as DEMOX3.

Results and Conclusion

Scans performed on both the qualification specimen and cracked specimen verified our assumption that detection of cracks and EDM slots, both representative of O.D. surface defects, is easily accomplished in the clad-carbon steel main coolant loop pipe weld geometry. The 45° shear wave 2.25 MHz single element search unit performed well in penetrating through the I.D. cladding and carbon steel welds in specimen NZL-MKP-52-PAL, resolving notches at the O.D. surface which were both in the weld and heat-affected zone alongside the weld. Notch depths of 5% "t", 7.5% "t" and 10% "t" were well defined as individual flaw targets in the processed data. The 10% and 7.5% "t" notches were noted at an amplitude of 98% Full Screen Height, with the background material noise level around 5% Full Screen Height. This is a signal to noise (SNR) relationship of nearly 20:1 which is ideal for interpretation and investigation purposes.

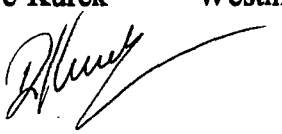
On the first scan of block NZL-MKP-52-PAL, the 10% "t" notches and the 7.5% "t" notches responded at 98% full screen height with a Dynapulser attenuation value of 20 coarse/37 fine. The 5% "t" notches responded at a peak amplitude value of 62 and 68% full screen height. Without changing the attenuator value, the circumferential notches in block NZL-MKP-52-PAL were scanned. The 5% "t", 7.5% "t" and 10% "t" circ notches were all seen in the processed data between 91 and 98% full screen height. (Section 3B, Attachment 1).

A test scan of cracked specimen CSCL-53-PAL was then performed at the same attenuator value of 20/37. Peak specular response from the crack was about 50% full screen height with excellent signal to noise characteristics. A gain value of +6dB was added and the cracked specimen was officially scanned. The crack response of 98% full screen height was noted.

After scanning the qualification specimen and then the cracked block, it was clear that the crack response was about 6dB lower than the 10% "t" notch response. To assure conservatism in terms of crack detection in the Palisades O.D. equivalency examination, the following course of action was agreed upon.

1) Calibrations for the O.D. Equivalency examination would be conducted using the 5% "t" notch (#3)
2) The notch response would be sat at 80% full screen height during calibrations.
3) Interpretation and investigation would be conducted at 40% FSH
4) Procedure CPAL-254 would be edited to reflect these changes.

Dave Kurek Westinghouse NTD 03-13-95



SECTION 3b
ATTACHMENT #1

WesDyne International
03-06-95

NDE INVESTIGATION PROTOCOL - PALISADES O.D. EQUIVALENCY

1) Scanning of Qualification Specimen NZL-MKP-52-PAL

a) Transducers:

_____ RTD 45°s, 2.0MHz, 30 x 25mm Ellipse, 40 x 40 mm case

__X__ Technasonic 45°s, 2.25 MHz, 12 x 25 rectangle, 31 x 31 mm case

_____ RTD 45°L dual 2(20 x 34mm) 2MHz, 125mmFS, IR 15 AX.

b) Notch Resolution: Axial

Notch I.D.	%t x L	(%FSH) Response	L	Dataset
1	10 x 0.875"	98	.75	PDEMOAX1B 20/37
2	7.5 x 0.875"	98	.75	ATTENUATION
3	5 x 0.875"	62	.9	
4	5 x 0.875"	68	.75	
5	7.5 x 0.875"	98	.75	
6	10 x 0.875"	98	.9	

c) Notch Resolution: Circ

Notch I.D.	%t x L	(%FSH) Response	L	Dataset
7	10 x 0.875"			DEMO CIRC 1 20/37
8	7.5 x 0.875"	98	.9 est	ATTENUATION
9	5 x 0.875"	98	.9 est	
10	5 x 0.875"	98	.9 est	
11	7.5 x 0.875"	98	.9 est	
12	10 x 0.875"			
13	7.5 x 0.875"	91	.9 est	DEMO CIRC 2 20/37 ATTENUATION

c) Notch Resolution: Circ (continued)

Notch I.D.	%t x L	(%FSH) Response	L.	Dataset
14	10 x 0.875"	98		
15	5 x 0.875"	91		
16	10 x 0.875"	91	8 sup.	
17	7.5 x 0.875"	98		20/37 = 98

2) Scanning of Cracked Specimen CSCL 53-PAL

Detectability:

ATTENUATION 20/31
Crack Response - 98%FSH
UDRPS FILE - DEMOX3

3) Examination Parameters to assure POD

1) Compared with 10% "t" notch, 6dB of additional gain was required to detect crack at 99% full screen height.

Procedure Resolution

a) Calibrate for O.D. Equivalency using 5% "t" OD Notches, set at 80% FSH
b) Investigate and interpret at 40% FSH (50% DAC).

Westinghouse NTD — David Kurek — Date 03-13-95

Consumers Power Company — Tom Fouty — Date 4/12/95

Palisades Authorized Nuclear Inservice Inspector — Ken Blake — Date 7-14-95

Additional Supporting Data

February 1995 NDE Investigations for Maine Yankee

using Millstone Reference Standard UT-15

- **Geometry and Material Similar to Palisades**
- **Acquisition Techniques Similar to those intended for the Palisades 1995 Examination**

MAINE YANKEE

O.D. EQUIVALENCY DEMONSTRATION

PURPOSE

To provide a basis for the performance of an alternative examination for the code required surface examination of specific piping welds at the Maine Yankee facility a demonstration was performed on a cracked specimen. The main purpose of the demonstration was to provide a measure of flaw detectability and a comparison of sensitivity based on the basic calibration block.

TEST SET UP

The demonstration was performed using the UDRPS 2 data acquisition system and the Dynapulser ultrasonic instrument coupled with the WesDyne Dynascanner. The area of interest was interrogated with two search units. The first a 45° 2.25 MHz longitudinal wave 40 mm dual Technisonics s/n H-3869 and the second an RTD 2MHz shear wave 30x25 mm Eliptical element s/n 93-414. The transducers were originally calibrated on the basic calibration block TB-57 utilizing the OD notch response as the principal reflector and scanning was performed in the axial and circumferential directions on test block UT-15. Figure 1 depicts the basic scan areas and the resultant flaw and notch positions from the scans performed.

RESULTS / CONCLUSIONS

The results of the longitudinal wave scans are depicted in Figure 2. The sensitivity used to provide non-saturated signals from the OD surface reflectors was 12 to 14 dB less than the notch response of calibration block TB-57.

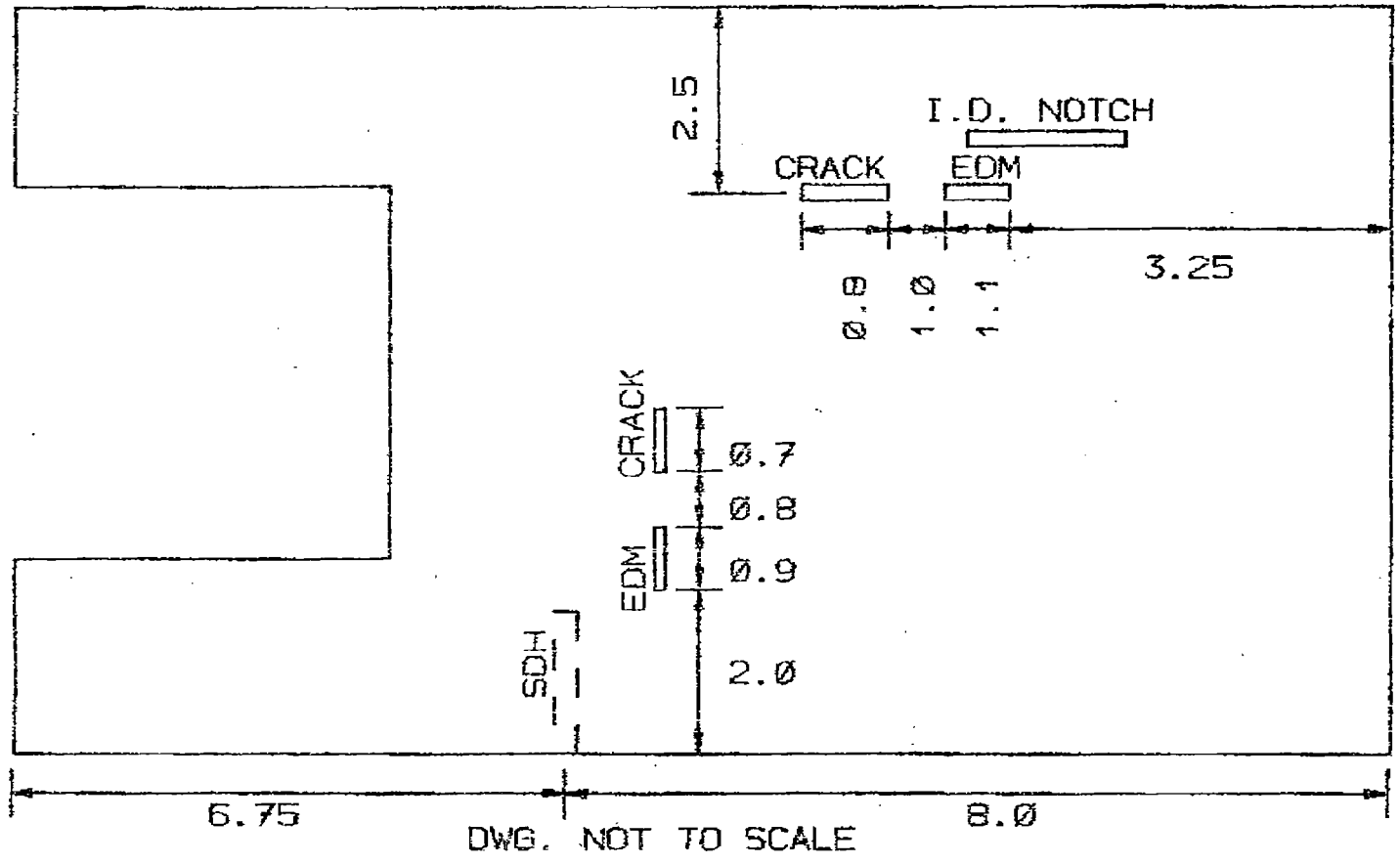
The results of the shear wave scans are depicted in Figures 3, 4, 5 and 6. The sensitivity used to provide non-saturated signals from the OD reflectors was 1 to 2 dB less than the calibration notch response.

It can be concluded from the UDRPS data that the shear wave will produce excellent detection capabilities at sensitivities near the code required calibration. The size of the OD reflectors in the test block are larger than actual based on the inherent beam spread characteristics of the search unit. The longitudinal data will provide more precise sizing information due to the focused nature of the probe. A realistic scenario for examination of the required areas of interest would include an initial scan using the shear wave units and if required a scan of specific areas of interest using the longitudinal wave search units for precise sizing information.

MILLSTONE BLOCK

UT-15

VIEW FROM CLAD SURFACE



DWG. NOT TO SCALE

FIGURE 1

(C) DSI 1990

Data File : /vme/DcalblockB
Time Stamp: Thu Jan 26 1995
Pulse Echo:
Raw Data : Sweep 4
1.0 Inch SML:1

Part Number : WIDOWS CREEK #7
IRP : DOUBL
Zone Number : im 16 characters
Serial Number: 122H119\A

MAINE YANKEE
NEAR SURFACE DEMONSTRATION

CAL BLOCK TB-5 1

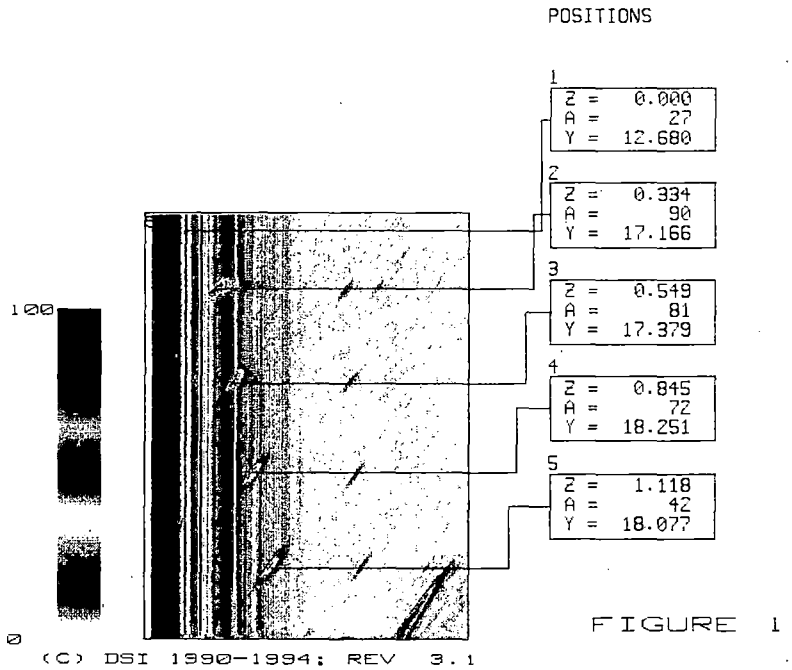


FIGURE 1

(C) DSI 1990

Data File : /vme/DMYCL2B
Time Stamp: Fri Feb 10 1995
Pulse Echo:
Raw Data : Sweep 4.
1.0 Inch SML:1

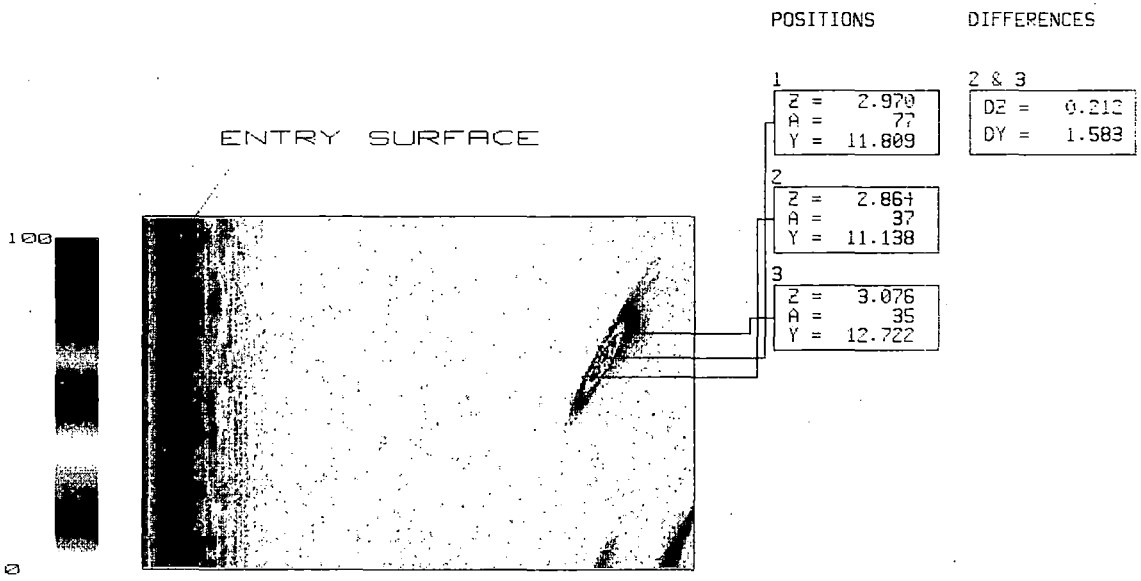
Part Number : WIDOWS CREEK #?
IRP : DOUBL
Zone Number : >m 16 characters
Serial Number: 122H119VA

MAINE YANKEE
OD DEMONSTRATION

EDM NOTCH
CIRCUMFRENTIAL

DEPTH = .212"

LENGTH = 1.1"



[C] DSI 1990

Data File : /vme/DadcireB
Time Stamp: Wed Feb 08 1995
Pulse Echo:
Raw Data : Sweep 5
1.0 Inch SML:1

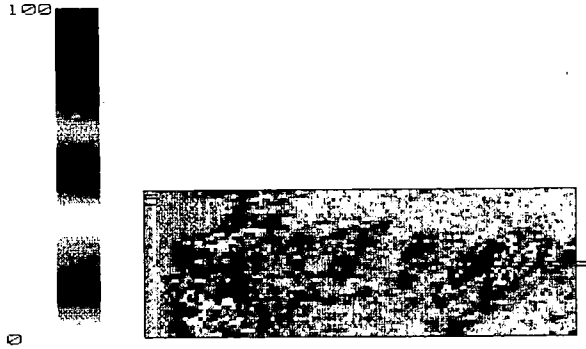
Part Number : WIDOWS CREEK #7
IRP : DOUBL
Zone Number : im 16 characters
Serial Number: 122H119VA

MAINE YANKEE
OD DEMONSTRATION
CRACK - AXIAL

LONGITUDINAL WAVE

DEPTH = .260

LENGTH = .60



POSITIONS

1
Z = 2.895
A = 100
Y = 4.427

2
Z = 3.155
A = 80
Y = 4.768

DIFFERENCES

1 & 2
DZ = 0.260
DY = 0.341

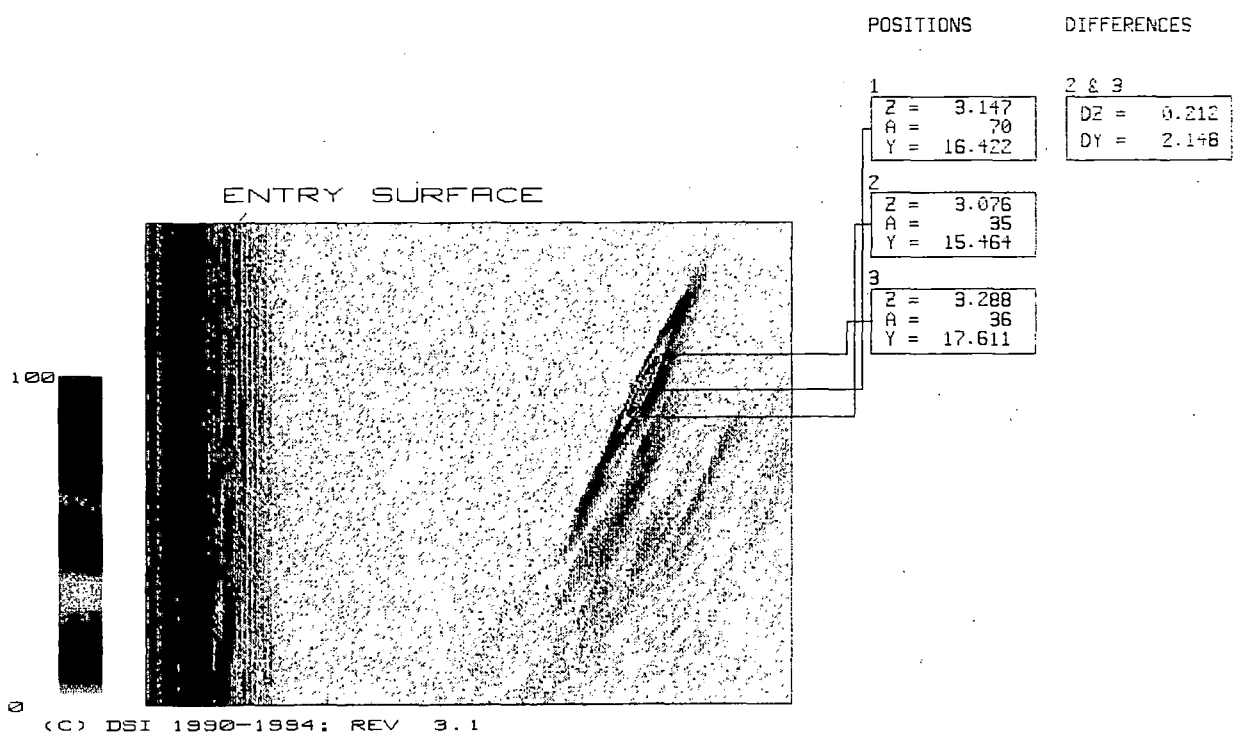
(C) DSI 1990

Data File : /vme/DMYAL2B
Time Stamp: Fri Feb 10 1995
Pulse Echo:
Raw Data : Sweep 27
1.0 Inch SML:1

Part Number : WIDOWS CREEK #7
IRP : DOUBL
Zone Number : in 16 characters
Serial Number: 122H119VA

MAINE YANKEE
OD DEMONSTRATION
CRACK - AXIAL

DEPTH = .212"
LENGTH = .70"



[C] DSI 1990

Data File : /vme/DMYAL2B
Time Stamp: Fri Feb 10 1995
Pulse Echo:
Raw Data : Sweep 30
1.0 Inch SML:1

Part Number : WIDOWS CREEK #7
IRP : DOUBL
Zone Number : in 16 characters
Serial Number: 122H119VA

MAINE YANKEE
OD DEMONSTRATION
EDM NOTCH - AXIAL

DEPTH = .283

LENGTH = .900

POSITIONS

1
Z = 3.076
A = 100
Y = 15.222

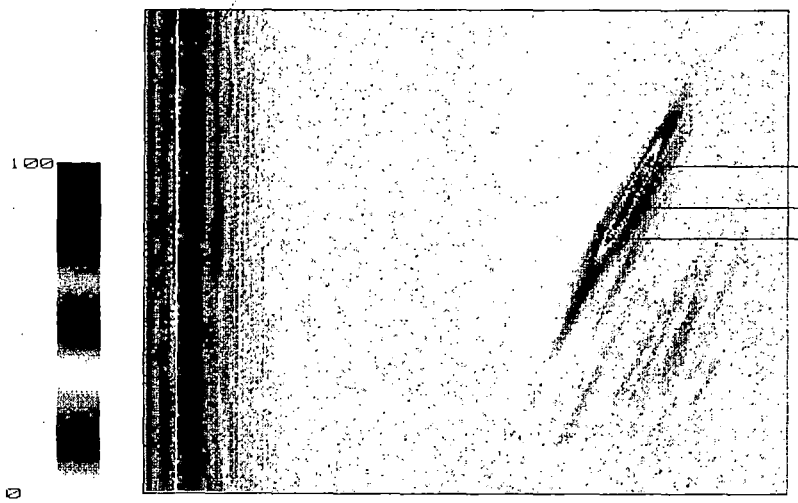
2
Z = 2.952
A = 52
Y = 14.130

3
Z = 3.235
A = 54
Y = 16.671

DIFFERENCES

2 & 3
DZ = 0.283
DY = 2.541

ENTRY SURFACE



(C) DSI 1990-1994: REV. 3.1

[C] DSI 1990

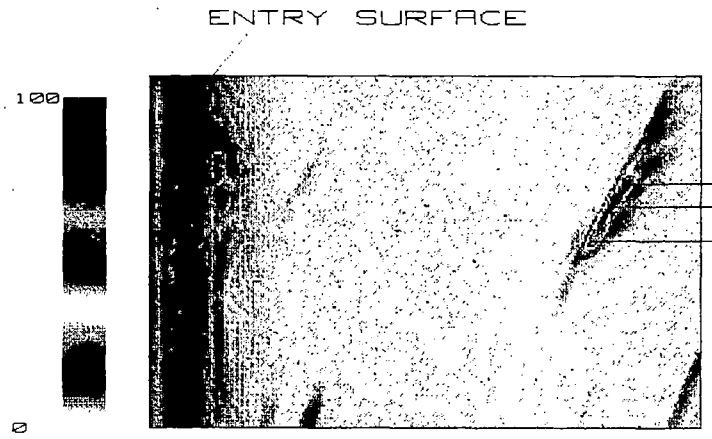
Data File	: /vme/DMYCL2B	Part Number	: WIDOWS CREEK #7
Time Stamp	: Fri Feb 10 1995	IRP	: DOUBL
Pulse Echo	:	Zone Number	: im 16 characters
Raw Data	: Sweep 32	Serial Number	: 122H119VA

1.0 Inch SML:1

MAINE YANKEE
OD DEMONSTRATION
CRACK - CIRCUMFRENTIAL

DEPTH = .212

LENGTH = .80



POSITIONS		DIFFERENCES	
1		3 & 2	
Z =	2.970	DZ =	0.212
A =	100	DY =	1.562
Y =	6.353		
2			
Z =	2.828		
A =	56		
Y =	5.446		
3			
Z =	3.041		
A =	48		
Y =	7.008		

ATTACHMENT 6

CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
INSERVICE INSPECTION PROGRAM

DRAWINGS

List of Drawings

Drawing No.	Description	Relief Request(s)
E-232-118	Closure Head Forming and Welding	2, 8
E-70277-371-021	Surface Preparation and Weld Seam Marking - Unit #2 - Steam Generator	3
E-70277-221-001	Upper Vessel Assembly - Steam Generator	3
E-70277-201-001	Top Head Welded Assembly - Steam Generator	3
E-RSG90-C271-001	General Arrangement - Unit #1 - Steam Generator	3
E-RSG90-C251-001	Primary Head Assembly - Unit #1 - Steam Generator	4
E-RSG90-C251-003	Primary Head Assembly - Unit #1 - Replacement Steam Generator	4
D-1733-6	Regenerative Heat Exchanger	5
D-1759-4	Regenerative Heat Exchanger Erection Details	5
E-231-982	Vessel Forming and Welding for Pressurizer	6
E-231-983	Top Head Forming and Welding for Pressurizer	6
E-231-984	Bottom Head Forming and Welding for Pressurizer	6
E-231-985	Nozzle Details for Pressurizer	6
E-231-986	Nozzle Details - Pressurizer	6
E-231-987	Heater Arrangement and Detail for Pressurizer	6
E-231-988	Vessel Assembly and Final Machining for Pressurizer	6
DD-15080	Shutdown Cooling Heat Exchanger	7
CEU-B-15080	Integral Chan. & Tube Sheet, Chan. Cvr. & Tube Bundle	7
E-232-139	Material Identification- Closure Head for Pressurizer	8
E-232-113	Bottom Head Forming and Welding for Pressurizer	11
Sketch NTD-MNA-DSD9515	Bottom Head Merdional Welds	11