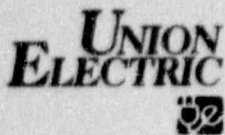


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August 18, 1995

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Gentlemen:

ULNRC-3255
TAC No. M90859

**CALLAWAY PLANT
DOCKET NUMBER 50-483
SECOND TEN-YEAR INTERVAL
INSERVICE INSPECTION PROGRAM PLAN**

References: 1) ULNRC-3086 dated October 12, 1994
2) L. R. Wharton (NRC) Letter to
D. F. Schnell dated May 23, 1995

The attachme. to this letter provides the information requested in Reference 2 in support of the Callaway Plant Inservice Inspection Program Plan for the second inspection interval.

If you have any questions concerning this information, please contact us.

Very truly yours,

Donald F. Schnell

WEK/sld

Attachment

000001

*AOA7
1/20/95 1 & 2*

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**ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
VOLUME 1**

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**SECOND TEN-YEAR INTERVAL
INSERVICE INSPECTION PLAN
FOR THE
CALLAWAY NUCLEAR POWER PLANT**

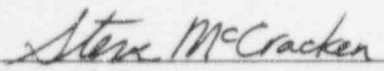
UNION ELECTRIC COMPANY

August 11, 1995

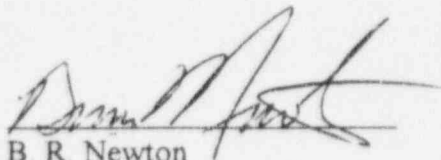
SECOND INTERVAL
INSERVICE INSPECTION PLAN

CALLAWAY NUCLEAR PLANT

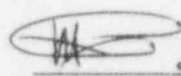
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ANII Review


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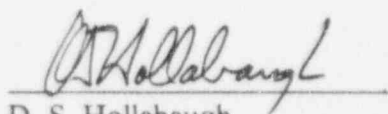

D. S. Hollabaugh
Supervising Engineer,
Performance/ISI

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REVISION SUMMARY SHEET

REVISION NO.	DATE	PAGE(S)	DESCRIPTION
0	10/12/94	All	Initial Issue
1	8/11/95	iv	Revised format of this Revision Summary Sheet.
		2-3	Corrected references to Bechtel Specifications MS-1 and MS-2.
		2-4 thru 6	Added the drawing revision column to Table 2.2.
		2-7 thru 10	Added the drawing revision column to Table 2.3.
		2-11	Added the drawing revision column to Table 2.4.
		2-12	Updated drawing references in Table 2.5.
		3-3	Added Item Number B5.70 to Table 3.1.
		3-7	Revised C3.20 number of components to incorporate CMP 90-1008 (BIT modification).
		3-8	Corrected C5.11 number of components to add an EN weld.
		3-11	<ol style="list-style-type: none"> 1) Revised F1.20 number of components to add EM hangers and to incorporate CMP 94-1001 and MM 92-4015 (snubber reduction). 2) Revised F1.30 number of components to incorporate CMP 92-1034 (GN modification). 3) Revised F1.40 number of components to add CRDM platform restraints and to incorporate CMP 94-1001.
		4-1	Reworded paragraph 4.1.2 for clarification.
		4-2	Deleted N-498 and added N-498-1 to Table 4.1. Code Case N-498-1 was approved for Callaway per special permission from the NRC in accordance with FSAR, Appendix 3A (Reference paragraph 4.1.2 of this ISI Plan).

SECTION 1.0
INTRODUCTION AND PLAN DESCRIPTION

1.1 Overview

- 1.1.1 This Inservice Inspection Plan outlines the requirements for the inspection of Class 1, 2, and 3 pressure retaining components and their supports at the Callaway Nuclear Power Plant.
- 1.1.2 This Inservice Inspection Plan will be effective from August 1, 1995, through and including December 18, 2004, which represents the second ten-year interval for the Callaway Nuclear Power Plant.
- 1.1.3 The key features of this Plan are the Introduction and Plan Description, Relief Requests, and Summary Tables. The details of the Inservice Inspection Program are addressed in other documents that are available at the Callaway Plant. These documents include, but are not limited to, inservice inspection boundary drawings, piping isometric drawings, equipment detail drawings, a component database listing of each weld, valve, support, etc., and documents supporting implementation of the Inservice Inspection Program

1.2 Basis of Inservice Inspection Plan

- 1.2.1 This Inservice Inspection Plan was developed in accordance with the requirements delineated in the December 31, 1992, issue of 10 CFR 50.55a and the 1989 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Subsections IWA, IWB, IWC, IWD, and IWF, for Inspection Program B. Accordingly, this Inservice Inspection Plan provides the details necessary for performing the inservice inspection of the Callaway Class 1, 2, and 3 pressure retaining components and supports.
- 1.2.2 The following ASME Section XI, 1989 Edition Subsections, Articles, or Paragraphs are not included or addressed in this Inservice Inspection Plan.
 - 1.2.2.1 The containment liner and concrete inspection and testing requirements of Subsections IWE and IWL are not included in this Inservice Inspection Plan. The rules of IWE and IWL are currently not required by 10 CFR 50.55a.
 - 1.2.2.2 The pump and valve testing requirements of Subsections IWP and IWV are not included in this Inservice Inspection Plan. The rules of IWP and IWV are addressed in a separate submittal to the NRC staff.

- 1.2.2.3 The snubber inservice inspection requirements of Paragraphs IWF-5200(a), IWF-5200(b), IWF-5300(a), and IWF-5300(b) are not addressed in this Inservice Inspection Plan. The extent, frequency, and acceptance standards for snubber assembly testing and inspection will be in accordance with Callaway Technical Specification 3/4.7.8.
- 1.2.2.4 The steam generator tubing examination requirements of Table IWB-2500-1, Examination Category B-Q and the acceptance standards of Paragraph IWB-3521.1 are not addressed in this Inservice Inspection Plan. The extent, frequency, and acceptance standards for steam generator tubing inspection and testing will be in accordance with Callaway Technical Specification 3/4.4.5.
- 1.2.3 Alternative requirements to ASME Section XI, 1989 Edition, are set forth in Section 4.0 of this Inservice Inspection Plan. Alternative requirements are in accordance with 10 CFR 50.55a and ASME Section XI.
- 1.2.4 With the exception of examinations that may be deferred until the end of the inspection interval as specified in Table IWB-2500-1, inservice inspections shall be performed in accordance with Inspection Program B as outlined in IWA-2432, IWB-2412, IWC-2412 and IWD-2412 of ASME Section XI. The inspection schedule for the second interval is divided into three periods such that approximately one third of the inspections will be completed every period. Successive inspections shall be in accordance with IWB-2420, IWC-2420, and Code Case N-491 -2420. Deviations to inspection schedules may occur provided compliance with Code requirements is maintained.
- 1.2.5 The commercial operating license date for the Callaway Nuclear Power Plant was December 19, 1984. As allowed by ASME Section XI, Paragraph IWA-2430, the first inspection interval was extended from December 18, 1994 to July 31, 1995.
- 1.2.6 The construction code for all ASME components is ASME Section III. The principal edition used for construction of the plant was the 1974 Edition thru Summer 1975 Addenda.

1.3 System Classification

- 1.3.1 The quality group classification system for radioactive water/steam-containing components important to the safety of water-cooled nuclear power plants is established by NRC Regulatory Guide 1.26, Revision 3, in conjunction with 10 CFR 50.55a. Regulatory Guide 1.26, "Quality Group Classification and Standards", defines the Quality Group Classification System consisting of four Quality Groups, A through D. The definition of Quality Group A is provided by 10 CFR 50.2 under "Reactor Coolant Pressure Boundary". The definitions of Groups B, C, and D are provided by Regulatory Guide 1.26.

- 1.3.2 Components subject to inservice inspection are shown on the Inservice Inspection Boundary Drawings listed in Section 2.2 of this Inservice Inspection Plan. Pursuant to 10 CFR 50.55a, the inservice inspection requirements of ASME Section XI have been assigned to these components within the constraints of existing plant design.

1.4 Augmented Inservice Inspection Requirements

Augmented inservice inspection requirements are those examinations that are specified by documents other than the ASME Section XI Code. The additional examinations required by the following documents have been added to the Callaway Inservice Inspection Program:

- 1.4.1 U.S. Nuclear Regulatory Commission Standard Review Plan (SRP), Section 3.6.1, Rev. 1, "Plant Design for Protection Against Postulated Piping Failures in Fluid Systems Outside Containment" (NUREG-0800). Several piping systems require augmented inspections for protection against postulated piping failures as outlined in SRP Section 3.6.1. Piping systems subject to the augmented inspection criteria of SRP Section 3.6.1 are shown on the Inservice Inspection Boundary Drawings listed in Table 2.2 of this Inservice Inspection Plan. In addition, detailed high energy pipe break isometric drawings of applicable systems are provided in Section 3.6.1 of the Callaway Plant FSAR. A summary of the number of welds subject to the augmented inspection criteria of SRP Section 3.6.1, is provided in Table 3.2 of this Inservice Inspection Plan.
- 1.4.2 U.S. Nuclear Regulatory Commission Standard Review Plan, Section 6.6, Rev. 1, "Inservice Inspection of Class 2 & 3 Components" (NUREG-0800).
- 1.4.3 U.S. Nuclear Regulatory Commission Regulatory Guide 1.14, Rev. 1, "Reactor Coolant Pump Flywheel Integrity".
- 1.4.4 U.S. Nuclear Regulatory Commission Regulatory Guide 1.65, Rev. 0, "Materials and Inspections for Reactor Vessel Closure Studs".
- 1.4.5 U.S. Nuclear Regulatory Commission Regulatory Guide 1.137, Rev. 0, "Fuel-Oil Systems for Standby Diesel Generators".
- 1.4.6 U.S. Nuclear Regulatory Commission Regulatory Guide 1.150, Rev. 1, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations", Regulatory Position C.8 (Alternative Method).
- 1.4.7 Code of Federal Regulations, Part 10, 50.55a(g)(6)(ii)(A), December 31, 1992, "Augmented Examination of Reactor Vessel".

SECTION 2.0
INSERVICE INSPECTION PROGRAM DRAWINGS

This section provides a listing of the various drawings applicable to the Callaway Inservice Inspection Program.

2.1 Drawing Nomenclature

2.1.1 System Designators

Table 2.1 below lists the two letter System Designator used for each piping system subject to inservice inspection at the Callaway Plant.

TABLE 2.1
SYSTEM DESIGNATORS

System Designator	System
AB	Main Steam
AE	Main Feedwater
AL	Auxiliary Feedwater
BB	Reactor Coolant System including: Reactor Pressure Vessel Pressurizer Steam Generators
BG	Chemical and Volume Control
BL	Reactor Make-up Water
BM	Steam Generator Blowdown
BN	Borated Refueling Water Storage
EC	Fuel Pool Cooling and Cleanup
EF	Essential Service Water
EG	Component Cooling Water
EJ	Residual Heat Removal
EM	High Pressure Coolant Injection
EN	Containment Spray
EP	Accumulator Safety Injection
FC	Auxiliary Feedwater Pump Turbine
GF	Miscellaneous Building HVAC
GG	Fuel Building
GK	Control Building HVAC
GL	Auxiliary Building HVAC
GN	Containment Cooling
GP	Containment Integrated Leak Rate Test

System Designator	System
GS	Containment Hydrogen Control
GT	Containment Purge HVAC
HB	Liquid Radwaste
HD	Decontamination
JE	Emergency Fuel Oil
KA	Compressed Air
KB	Breathing Air
KC	Fire Protection
KJ	Standby Diesel Generator
LF	Auxiliary Building Equipment
SJ	Nuclear Sampling

2.1.2 Piping Classifications

2.1.2.1 Piping classifications are designated by a three-letter code. Listed below are the appropriate letter designations for piping subject to inservice inspection. The first letter indicates the Standard Rating Class; the second letter the type of material; and the third letter the Code or standard to which the piping is designed.

2.1.2.2 First Letter - Primary Rating Class

- A - Specific pressure & specific temperature
- B - Class 2500
- C - Class 1500
- D - Class 900
- E - Class 600
- F - Class 400
- G - Class 300
- H - Class 150

Second Letter - Material

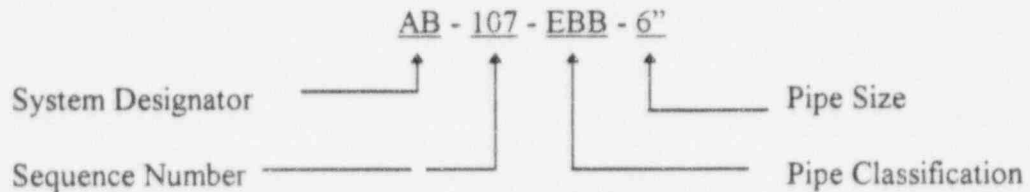
- B - Carbon Steel
- C - Austenitic Stainless Steel
- L - Carbon Steel - impact tested

Third Letter - Applicable Codes

- A - ASME B & PV Code, Section III, Class 1
- B - ASME B & PV Code, Section III, Class 2
- C - ASME B & PV Code, Section III, Class 3
- D - Power Piping Code, ANSI B31.1

2.1.3 Line Identification Numbers

The line numbers identified on the drawings listed herein provide useful information about the piping. The lines are identified using the following convention:



Each line, or portion of line, is assigned a system designator, line sequence number, pipe classification, and pipe size. The system designator and line sequence number can be cross referenced to Bechtel Specification MS-1 to determine the line description, design temperature and pressure, and service or normal operating temperature and pressure. The pipe classification can be cross referenced to Bechtel Specification MS-2 to determine the pipe schedule and material specification.

2.2 Inservice Inspection Boundary Drawings

Table 2.2 provides a listing of the Inservice Inspection Boundary Drawings applicable to the second interval at the Callaway Plant. These drawings are Callaway Plant Piping & Instrumentation Drawings that are color coded to identify the Quality Group A, B, and C piping and components subject to inservice inspection. The color code also identifies Non-Exempt, Exempt, and Augmented boundaries. Listed below is a brief description of each type boundary depicted on the boundary drawings.

2.2.1 Non-Exempt Boundaries

The non-exempt boundaries identify piping and components subject to the nondestructive examination, visual examination, and pressure test requirements of ASME Section XI, Subsections IWB, IWC, or IWD. Non-Exempt Quality Group A, B, and C boundaries are color coded red, blue, and green respectively.

2.2.2 Exempt Boundaries

The exempt boundaries identify piping and components that are subject only to the pressure test requirements of ASME Section XI, Articles IWB-5000, IWC-5000, and IWD-5000. As permitted by ASME Section XI, Paragraphs IWB-1220, IWC-1220, IWD-1220, and Code Case N-491, the piping, components, and supports within the exempt boundaries do not require nondestructive (i.e., volumetric or surface) examination or visual (i.e., VT-1 or VT-3) examination. Exempt Quality Group A, B, and C boundaries are color coded orange, light blue, and light green respectively.

2.2.3 Augmented Boundaries

The boundaries for the high energy lines that require augmented examination in accordance with NRC Standard Review Plan, Section 3.6.1 are identified by dashed colored lines on the applicable boundary drawings. In addition, the Diesel Generator Fuel Oil piping that requires augmented pressure testing in accordance with NRC Regulatory Guide 1.137 is identified on the applicable boundary drawings.

TABLE 2.2
INSERVICE INSPECTION BOUNDARY DRAWINGS

Drawing Number	Rev.	System
ISI-M-22AB01(Q)	A	Main Steam
ISI-M-22AB02(Q)	A	Main Steam
ISI-M-22AE02(Q)	A	Main Feedwater
ISI-M-22AL01(Q)	A	Auxiliary Feedwater
ISI-M-22BB01(Q)	A	Reactor Coolant
ISI-M-22BB02(Q)	A	Reactor Coolant
ISI-M-22BB03(Q)	A	Reactor Coolant
ISI-M-22BB04(Q)	A	Reactor Coolant
ISI-M-22BG01(Q)	A	Chemical and Volume Control
ISI-M-22BG02(Q)	A	Chemical and Volume Control
ISI-M-22BG03(Q)	B	Chemical and Volume Control
ISI-M-22BG04(Q)	A	Chemical and Volume Control
ISI-M-22BG05(Q)	A	Chemical and Volume Control
ISI-M-22BL01(Q)	A	Reactor Make-up Water
ISI-M-22BM01(Q)	A	Steam Generator Blowdown
ISI-M-22BN01(Q)	A	Borated Refueling Water Storage
ISI-M-22EC01(Q)	A	Fuel Pool Cooling and Clean-up
ISI-M-22EC02(Q)	A	Fuel Pool Cooling and Clean-up
ISI-M-2UEF01(Q)	A	Essential Service Water
ISI-M-22EF01(Q)	A	Essential Service Water

TABLE 2.2
INSERVICE INSPECTION BOUNDARY DRAWINGS (cont.)

Drawing Number	Rev.	System
ISI-M-22EF02(Q)	A	Essential Service Water
ISI-M-22EG01(Q)	A	Component Cooling Water
ISI-M-22EG02(Q)	A	Component Cooling Water
ISI-M-22EG03(Q)	A	Component Cooling Water
ISI-M-22EJ01(Q)	A	Residual Heat Removal
ISI-M-22EM01(Q)	A	High Pressure Coolant Injection
ISI-M-22EM02(Q)	B	High Pressure Coolant Injection
ISI-M-22EN01(Q)	A	Containment Spray
ISI-M-22EP01(Q)	A	Accumulator Safety Injection
ISI-M-22FC02(Q)	A	Auxiliary Feedwater Pump Turbine
ISI-M-22GF01(Q)	A	Miscellaneous Building HVAC
ISI-M-22GG02(Q)	A	Fuel Building HVAC
ISI-M-22GK01(Q)	A	Control Building HVAC
ISI-M-22GK03(Q)	A	Control Building HVAC
ISI-M-22GL01(Q)	A	Auxiliary Building HVAC
ISI-M-22GL02(Q)	A	Auxiliary Building HVAC
ISI-M-22GL03(Q)	A	Auxiliary Building HVAC
ISI-M-22GN01(Q)	B	Containment Cooling
ISI-M-22GP01(Q)	A	Containment Integrated Leak Rate Test
ISI-M-22GS01(Q)	A	Containment Hydrogen Control
ISI-M-22GT01(Q)	A	Containment Purge HVAC
ISI-M-22HB01(Q)	A	Liquid Radwaste
ISI-M-22HD01(Q)	A	Decontamination
ISI-M-22JE01(Q)	A	Emergency Fuel Oil
ISI-M-22KA01(Q)	A	Compressed Air
ISI-M-22KA02(Q)	A	Compressed Air (Service Air)
ISI-M-22KA05(Q)	A	Compressed Air
ISI-M-22KB01(Q)	A	Breathing Air
ISI-M-22KC02(Q)	A	Fire Protection
ISI-M-22KJ01(Q)	A	Standby Diesel Generator "A" Cooling Water
ISI-M-22KJ02(Q)	A	Standby Diesel Generator "A" Intake Exhaust, Fuel Oil and Starting Air
ISI-M-22KJ03(Q)	A	Standby Diesel Generator "A" Lube Oil
ISI-M-22KJ04(Q)	A	Standby Diesel Generator "B" Cooling Water
ISI-M-22KJ05(Q)	A	Standby Diesel Generator "B" Intake Exhaust, Fuel Oil and Starting Air
ISI-M-22KJ06(Q)	A	Standby Diesel Generator "B" Lube Oil

TABLE 2.2
INSERVICE INSPECTION BOUNDARY DRAWINGS (cont.)

Drawing Number	Rev.	System
ISI-M-22LF03(Q)	A	Auxiliary Building Floor and Equipment Drain
ISI-M-22LF09(Q)	A	Reactor Bldg. & Hot Machine Shop Floor and Equipment Drain
ISI-M-22SJ01(Q)	A	Nuclear Sampling
ISI-M-22SJ04(Q)	A	Nuclear Sampling

2.3 **Piping Isometric Drawings**

Table 2.3 provides a listing of the Piping Isometric Drawings for systems subject to inservice inspection. These drawings identify pipe welds, flange and valve bolted connections, pump and valve internal surfaces, integral attachments, and pipe supports that are within the non-exempt piping boundaries. In addition, system identification, location, room numbers, pipe classification, pipe size, and configuration are identified. Piping and components that are exempt from nondestructive and visual examination in accordance with ASME Section XI, Paragraphs IWB-1220, IWC-1220, and IWD-1220 are not normally depicted on these drawings. If exempt piping or components are shown, it is for information only.

**TABLE 2.3
PIPING ISOMETRIC DRAWINGS**

Drawing Number	Rev.	Title
		REFERENCE DRAWINGS
ISI-Ref., Sht. 1	0	Inservice Inspection Drawing Cross Reference
ISI-Ref., Sht. 2	0	Inservice Inspection Drawing Nomenclature
ISI-Ref., Sht. 3	1	Inservice Inspection Drawing Symbols
		MAIN STEAM
AB-01-01, Sht. 1	2	Loop 1
AB-02-01, Sht. 1	2	Loop 2
AB-03-01, Sht. 1	2	Loop 3
AB-04-01, Sht. 1	2	Loop 4
		MAIN FEEDWATER
AE-01-04, Sht. 1	2	Loop 1
AE-02-04, Sht. 1	2	Loop 2
AE-03-05, Sht. 1	2	Loop 3
AE-04-05, Sht. 1	2	Loop 4
		AUXILIARY FEEDWATER
AL-01-02, Sht. 1	1	Motor Driven Auxiliary Feedwater Pump "A" Discharge Piping
AL-02-03, Sht. 1	1	Motor Driven Auxiliary Feedwater Pump "B" Discharge Piping
AL-03-04, Sht. 1	1	Turbine Driven Auxiliary Feedwater Pump Discharge Piping
		REACTOR COOLANT
BB-00-01, Sht. 1	1	Primary Loop-General Layout
BB-01-01, Sht. 1	1	Loop 1
BB-01-02, Sht. 1	1	Pressurizer Relief Header
BB-01-04, Sht. 1	1	Pressurizer Spray Line
BB-01-04, Sht. 2	1	Pressurizer Spray Line
BB-01-08, Sht. 1	1	Pump "A" Seal Water Injection Line
BB-02-01, Sht. 1	1	Loop 2
BB-02-02, Sht. 1	1	Pressurizer Safety Valve Lines
BB-02-11, Sht. 1	1	Pump "B" Seal Water Injection Line
BB-03-01, Sht. 1	1	Loop 3
BB-03-09, Sht. 1	1	Pump "C" Seal Water Injection Line

TABLE 2.3
PIPING ISOMETRIC DRAWINGS (cont.)

Drawing Number	Rev.	Title
		REACTOR COOLANT (cont.)
BB-04-01, Sht. 1	1	Loop 4
BB-04-07, Sht. 1	1	Pump "D" Seal Water Injection Line
BB-05-01, Sht. 1	1	Pressurizer Surge Line
BB-06-01, Sht. 1	1	Loop Drain to Reactor Coolant Drain Tank
		CHEMICAL AND VOLUME CONTROL
BG-01-01, Sht. 1	0	Normal Charging Line Containment Penetration
BG-01-21, Sht. 1	1	Normal & Alternate Charging Lines
BG-02-22, Sht. 1	1	Letdown Line
BG-02-22, Sht. 2	0	Letdown Line Containment Penetration
BG-03-23, Sht. 1	1	Excess Letdown Line
BG-04-09, Sht. 1	0	RCP Seal Water Injection Containment Penetration
BG-05-24, Sht. 1	1	Auxiliary Spray Line
BG-06-02, Sht. 1	1	CCP Suction
BG-06-02, Sht. 2	1	CCP Discharge (HPSI Discharge)
BG-06-10, Sht. 1	1	CCP Discharge to Seal Water Injection Filters
		STEAM GENERATOR BLOWDOWN
BM-01-01, Sht. 1	0	Loops "A" & "D"
BM-01-02, Sht. 1	0	Loops "B" & "C"
		ESSENTIAL SERVICE WATER
EF-01-01, Sht. 1	1	"A" Train Supply
EF-01-01, Sht. 2	0	"A" Train Supply
EF-01-02, Sht. 1	1	"A" Train Supply
EF-01-02, Sht. 2	1	"A" Train Supply
EF-01-03, Sht. 1	1	"A" Train Return
EF-01-03, Sht. 2	1	"A" Train Return
EF-01-07, Sht. 1	1	"A" Train Return
EF-01-08, Sht. 1	1	"A" Train Supply
EF-01-11, Sht. 1	0	"A" and "B" Train Return
EF-02-01, Sht. 1	1	"B" Train Supply
EF-02-01, Sht. 2	1	"B" Train Supply
EF-02-01, Sht. 3	1	"B" Train Return
EF-02-04, Sht. 1	1	"B" Train Supply
EF-02-05, Sht. 1	1	"B" Train Return
EF-02-05, Sht. 2	1	"B" Train Return
EF-02-06, Sht. 1	1	"B" Train Supply
EF-02-08, Sht. 1	1	"B" Train Supply
EF-02-08, Sht. 2	1	"B" Train Return
		COMPONENT COOLING WATER
EG-01-01, Sht. 1	1	"A" Train CCW Heat Exchanger
EG-01-02, Sht. 1	1	"A" Train Supply
EG-01-02, Sht. 2	1	"A" Train Return
EG-02-03, Sht. 1	1	"B" Train CCW Heat Exchanger

TABLE 2.3
PIPING ISOMETRIC DRAWINGS (cont.)

Drawing Number	Rev.	Title
		COMPONENT COOLING WATER (Cont.)
EG-02-03, Sht. 2	1	"B" Train
EG-02-05, Sht. 1	1	"B" Train Return
EG-02-05, Sht. 2	0	"B" Train Supply
EG-03-06, Sht. 1	1	Common Header
EG-03-07, Sht. 1	1	Common Header
EG-04-01, Sht. 1	1	RHR Heat Exchanger Supply
EG-04-01, Sht. 2	1	RHR Heat Exchanger Return
EG-05-06, Sht. 1	1	Letdown Heat Exchanger Supply
EG-05-06, Sht. 2	1	Letdown Heat Exchanger Return
EG-06-09, Sht. 1	1	RCP "B" & "C" Supply
EG-06-09, Sht. 2	1	RCP Return
		RESIDUAL HEAT REMOVAL
EJ-01-01, Sht. 1	1	"A" Train RHR Pump Suction
EJ-01-01, Sht. 2	1	"A" Train RHR Pump Discharge
EJ-01-01, Sht. 3	1	"A" Train RHR Pump Discharge
EJ-01-01, Sht. 4	1	"A" Train Pump Discharge to Safety Injection
EJ-01-01, Sht. 5	0	Return to Refueling Water Storage Tank
EJ-01-04, Sht. 1	1	"A" Train RHR Pump Suction
EJ-02-02, Sht. 1	1	"B" Train RHR Pump Suction
EJ-02-02, Sht. 2	1	"B" Train RHR Pump Discharge
EJ-02-02, Sht. 3	1	"B" Train RHR Pump Discharge
EJ-02-02, Sht. 4	1	"B" Train RHR Pump Discharge to Safety Injection
EJ-02-02, Sht. 5	1	"B" Train RHR Pump Discharge to Safety Injection
EJ-02-04, Sht. 1	1	"B" Train RHR Pump Suction
EJ-02-04, Sht. 2	1	"B" Train RHR Discharge to Accumulator Injection
EJ-02-04, Sht. 3	1	"B" Train RHR Pump Discharge to Safety Injection Loops 2 & 3
		HIGH PRESSURE COOLANT INJECTION
EM-01-01, Sht. 1	1	Safety Injection Pump "A" Suction
EM-02-01, Sht. 2	1	Safety Injection Pump "B" Suction
EM-03-05, Sht. 1	2	Safety Injection Pumps to RHR
EM-04-03, Sht. 1	1	Safety Injection Pumps to RCS
EM-05-01, Sht. 1	1	Safety Injection Pump Suction Cross Tie
EM-05-01, Sht. 2	1	Safety Injection Pump Suction Cross Tie to CVCS
EM-06-02, Sht. 1	2	HPSI Discharge to RCS
EM-06-02, Sht. 2	2	HPSI Discharge to RCS
EM-06-03, Sht. 1	1	HPSI Discharge to RCS
		CONTAINMENT SPRAY
EN-01-01, Sht. 1	1	"A" Train Pump Suction
EN-01-01, Sht. 2	1	"A" Train Pump Discharge
EN-02-02, Sht. 1	1	"B" Train Pump Suction
EN-02-02, Sht. 2	1	"B" Train Pump Discharge

TABLE 2.3
PIPING ISOMETRIC DRAWINGS (cont.)

Drawing Number	Rev.	Title
		ACCUMULATOR SAFETY INJECTION
EP-01-01, Sht. 1	1	Loop 1
EP-02-02, Sht. 1	1	Loop 2
EP-03-02, Sht. 1	1	Loop 3
EP-04-01, Sht. 1	1	Loop 4
		AUXILIARY TURBINE
FC-01-01, Sht. 1	0	Aux. Feedwater Pump Turbine Steam Supply Piping
		CONTAINMENT COOLING
GN-01-01, Sht. 1	1	"A" Train Supply
GN-01-01, Sht. 2	0	"A" Train Return
GN-01-01, Sht. 3	1	"A" Train Cooler "A" Supply and Return Headers
GN-01-01, Sht. 4	0	"A" Train Cooler "C" Supply and Return Headers
GN-01-02, Sht. 1	1	"A" Train Supply
GN-01-03, Sht. 1	1	"A" Train Return
GN-02-02, Sht. 1	1	"B" Train Supply
GN-02-02, Sht. 2	1	"B" Train Return
GN-02-02, Sht. 3	0	"B" Train Cooler "B" Supply and Return Headers
GN-02-02, Sht. 4	0	"B" Train Cooler "D" Supply and Return Headers
GN-02-04, Sht. 1	0	"B" Train Supply
GN-02-05, Sht. 1	1	"B" Train Return
		STANDBY DIESEL GENERATOR
KJ-01-01, Sht. 1	0	Diesel Generator "A" Cooling Water Piping
KJ-02-04, Sht. 1	0	Diesel Generator "B" Cooling Water Piping

2.4 Equipment Detail Drawings

Table 2.4 provides a listing of Equipment Detail Drawings for equipment welds or components subject to inservice inspection. These drawings display unique identification numbers for equipment welds, integral attachments, or bolted connections that require examination. In addition, weld joint details, component configuration details, weld locations, etc., are depicted.

**TABLE 2.4
EQUIPMENT DETAIL DRAWINGS**

Drawing Number	Rev.	Title
ISI-EBB01A, Sht. 1	1	Steam Generator "A" EBB01A ISI Equipment Welds
ISI-EBB01A, Sht. 2	0	Steam Generator "A" EBB01A ISI Equipment Welds
ISI-EBB01B, Sht. 1	1	Steam Generator "B" EBB01B ISI Equipment Welds
ISI-EBB01B, Sht. 2	0	Steam Generator "B" EBB01B ISI Equipment Welds
ISI-EBB01C, Sht. 1	1	Steam Generator "C" EBB01C ISI Equipment Welds
ISI-EBB01C, Sht. 2	0	Steam Generator "C" EBB01C ISI Equipment Welds
ISI-EBB01D, Sht. 1	1	Steam Generator "D" EBB01D ISI Equipment Welds
ISI-EBB01D, Sht. 2	0	Steam Generator "D" EBB01D ISI Equipment Welds
ISI-EEJ01A, Sht. 1	0	RHR Heat Exchanger "A" EEJ01A ISI Equipment Welds
ISI-EEJ01B, Sht. 1	0	RHR Heat Exchanger "B" EEJ01B ISI Equipment Welds
ISI-RBB01, Sht. 1	1	Reactor Vessel RBB01 ISI Equipment Welds
ISI-RBB01, Sht. 2	0	Reactor Vessel RBB01 ISI Equipment Welds
ISI-RBB01, Sht. 3	0	Reactor Vessel RBB01 ISI Equipment Welds
ISI-RBB01, Sht. 4	0	Reactor Vessel RBB01 ISI Equipment Welds
ISI-TBB03, Sht. 1	1	Pressurizer Vessel TBB03 ISI Equipment Welds
ISI-TBB03, Sht. 2	0	Pressurizer Vessel TBB03 ISI Equipment Welds
ISI-TBB03, Sht. 3	0	Pressurizer Vessel TBB03 ISI Equipment Welds
ISI-PUMPS, Sht. 1	1	Miscellaneous Pumps ISI Equipment Welds

2.5 Component/Equipment Support Drawings

Table 2.5 provides a listing of the Component/Equipment Support Drawings for component or equipment supports subject to inservice inspection. These drawings display the configuration of the supports and provide a unique location number for each support assembly that requires visual examination.

**TABLE 2.5
COMPONENT/EQUIPMENT SUPPORT DRAWINGS**

Drawing Number	Component Description
OP-1459F01	Reactor Vessel (RBB01) Supports
OP-1459F02, OP-1459F04, OP-1459F08, OP-1459F09	Steam Generator "A", "B", "C" & "D" (E8801A, B, C & D) Supports
OP-1459F07, OP-1459F02	Reactor Coolant Pump "A", "B", "C", & "D" (PBB01A, B, C & D) Supports
OP-1459F10	Pressurizer (TBB03) Supports
5736	RHR Heat Exchanger "A" & "B" (EEJ01A & B) Supports
C-2S1904 C-2S1908	RHR Pump "A" & "B" (PEJ01A & B) Supports
C-2S1904	Containment Spray Pump "A" & "B" (PEN01A & B) Supports
M-721-040	Centrifugal Charging Pump "A" & "B" (PBG05A & B) Supports
OP-300-J49728	Safety Injection Pump "A" & "B" (PEM01A & B) Supports
OP-D-75-569	Chemical & Volume Control Letdown Heat Exchanger (EBG01) Supports
M-072-0001	Component Cooling Water Heat Exchanger "A" & "B" (EEG01A & B) Supports
M-082-012	Component Cooling Water Pump "A", "B", "C", & "D" (PEG01A, B, C & D) Supports
M-089-U0012	Essential Service Water Pump "A" & "B" (PEF01A & B) Supports
M-154-U0018	Essential Service Water Self Cleaning Strainer "A" & "B" (FEF02A & B) Supports
M-71-00001	Fuel Pool Cooling Heat Exchanger "A" & "B" (EEC01A & B) Supports
M-021-00045	Motor Driven Auxiliary Feed Water Pump "A" & "B" (PAL01A & B) Supports
M-021-005	Turbine Driven Auxiliary Feed Water Pump (PAL02) Supports
11908662	Diesel Generator Jacket Water Heat Exchanger "A" & "B" (EKJ04A & B) Supports
M-018-00091	Diesel Generator Intercooler Heat Exchanger "A" & "B" (EKJ03A & B) Supports
M-018-00724	Diesel Generator Lube Oil Heat Exchanger "A" & "B" (EKJ06A & B) Supports

SECTION 3.0
INSERVICE INSPECTION SUMMARY TABLES

This section provides a summary listing of all items subject to inservice inspection. Section 3.1 addresses the inservice inspections required by ASME Section XI while Section 3.2 covers augmented inspections.

3.1 ASME Section XI Inservice Inspections

The ASME Section XI Inservice Inspection Summary Table 3.1 provides the following information:

3.1.1 Examination Category

This column lists the examination category as identified in ASME Section XI, Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, and Code Case N-491 -2500-1. Only those examination categories applicable to the Callaway Plant are identified.

3.1.2 Item Number and Description of Components Examined

These columns list the item number and description as defined in ASME Section XI, Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, and Code Case N-491 -2500-1. Only those item numbers applicable to the Callaway Plant are identified.

3.1.3 Number of Components

This column lists the population of components potentially subject to examination. The number of components actually examined during the inspection interval will be based upon the Code requirements for the subject item number (e.g., 25% of Examination Category B-J, Item Number B9.11 components will be examined during the inspection interval).

3.1.4 Examination Method

The column lists the examination method(s) required by ASME Section XI, Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, and Code Case N-491 -2500-1.

3.1.5 Relief Request Number

This column provides a listing of applicable relief requests. If a relief request number is identified, see the corresponding relief request in Section 4.4.

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
B-A Pressure Retaining Welds in Reactor Vessel	B1.11	Circumferential Shell Welds	2	Volumetric	
	B1.12	Longitudinal Shell Welds	9	Volumetric	
	B1.21	Circumferential Head Welds	3	Volumetric	
	B1.22	Meridional Head Welds	8	Volumetric	
	B1.30	Shell-to-Flange Weld	1	Volumetric	
	B1.40	Head-to-Flange Weld	1	Volumetric & Surface	
B-B Pressure Retaining Welds in Vessels Other Than Reactor Vessels	B2.11	Pressurizer Circumferential Shell-to-Head Welds	2	Volumetric	
	B2.12	Pressurizer Longitudinal Shell-to-Head Welds	2	Volumetric	
	B2.40	Steam Generator Tube Sheet-to-Head Weld	4	Volumetric	
B-D Full Penetration Welds of Nozzles in Vessels	B3.90	Reactor Vessel Nozzle-to-Vessel Welds	8	Volumetric	ISI-05
	B3.100	Reactor Vessel Nozzle Inside Radius Section	8	Volumetric	ISI-05
	B3.110	Pressurizer Nozzle-to-Vessel Welds	6	Volumetric	
	B3.120	Pressurizer Nozzle Inside Radius Section	6	Volumetric	
	B3.140	Steam Generator (Primary Side) Inside Radius Section	8	Volumetric	

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
B-E Pressure Retaining Partial Penetration Welds in Vessels	B4.11	Partial Penetration Vessel Nozzle Welds	1	Visual, VT-2	
	B4.12	Partial Penetration Control Rod Drive Nozzle Welds	78	Visual, VT-2	
	B4.13	Partial Penetration Instrumentation Nozzle Welds	58	Visual, VT-2	
	B4.20	Partial Penetration Pressurizer Heater Penetration Welds	78	Visual, VT-2	
B-F Pressure Retaining Dissimilar Metal Welds	B5.10	Reactor Vessel Dissimilar Metal Nozzle-to-Safe End Butt Welds NPS 4 or Larger	8	Volumetric & Surface	ISI-05
	B5.40	Pressurizer Dissimilar Metal Nozzle-to-Safe End Butt Welds NPS 4 or Larger	6	Volumetric & Surface	
	B5.70	Steam Generator Dissimilar Metal Nozzle-to-Elbow Butt Welds NPS 4 or Larger	8	Volumetric & Surface	
B-G-1 Pressure Retaining Bolting Greater Than 2 in. in Diameter	B6.10	Reactor Vessel Closure Head Nuts	54	Visual, VT-1	
	B6.20	Reactor Vessel Closure Studs, in Place	54	Volumetric	
	B6.30	Reactor Vessel Closure Studs, when Removed	54	Volumetric & Surface	
	B6.40	Threads in Reactor Vessel Flange	54	Volumetric	
	B6.50	Reactor Vessel Closure Washers, Bushings	54	Visual, VT-1	
	B6.180	Bolts & Studs in Pumps	4	Volumetric	
	B6.190	Flange Surface, When Connection Disassembled, in Pumps	4	Visual, VT-1	
	B6.200	Nuts, Bushings, & Washers in Pumps	4	Visual, VT-1	

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
B-G-2 Pressure Retaining Bolting, 2 in. & Less in Diameter	B7.20	Bolts, Studs, & Nuts in the Pressurizer	1	Visual, VT-1	
	B7.30	Bolts, Studs, & Nuts in Steam Generators	8	Visual, VT-1	
	B7.50	Bolts, Studs, & Nuts in Piping	11	Visual, VT-1	
	B7.70	Bolts, Studs, & Nuts in Valves	25	Visual, VT-1	
B-J Pressure Retaining Welds in Piping	B9.11	Circumferential Welds in Piping NPS 4 or Larger	315	Volumetric & Surface	
	B9.12	Longitudinal Welds in Piping NPS 4 or Larger	N/A	Volumetric & Surface	ISI-04
	B9.21	Circumferential Welds in Piping Less than NPS 4	309	Surface	
	B9.31	Branch Pipe Connection Welds NPS 4 or Larger	13	Volumetric & Surface	
	B9.32	Branch Pipe Connection Welds Less than NPS 4	37	Surface	
	B9.40	Socket Welds	11	Surface	
B-K ¹ Integral Attachments for Class 1 Vessels, Piping, Pumps & Valves	B10.10 ¹	Integrally Welded Attachments to Vessels	5	Surface	ISI-06

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
B-L-2 Pump Casings	B12.20	Pump Casings	4	Visual, VT-3	
B-M-2 Valve Bodies	B12.50	Valve Bodies, Exceeding NPS 4	25	Visual, VT-3	
B-N-1 Interior of Reactor Vessel	B13.10	Vessel Interior	1	Visual, VT-3	
B-N-2 Integrally Welded Core Support Structures & Interior Attachments to Reactor Vessels	B13.60	Interior Attachments beyond Beltline Region in Reactor Vessel	6	Visual, VT-3	
B-N-3 Removable Core Support Structures	B13.70	Core Support Structure in Reactor Vessel	1	Visual, VT-3	

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
B-O Pressure Retaining Welds in Control Rod Housings	B14.10	Welds in CRD Housing	32	Volumetric or Surface	
B-P All Pressure Retaining Components (Class 1)	B15.10	RPV - System Leakage Test	1	Visual, VT-2	ISI-07
	B15.11	RPV - System Hydrostatic Test	1	Visual, VT-2	ISI-07
	B15.20	Pressurizer - System Leakage Test	1	Visual, VT-2	ISI-07
	B15.21	Pressurizer - System Hydrostatic Test	1	Visual, VT-2	ISI-07
	B15.30	Steam Generator - System Leakage Test	4	Visual, VT-2	ISI-07
	B15.31	Steam Generator - System Hydrostatic Test	4	Visual, VT-2	ISI-07
	B15.50	Piping - System Leakage Test	See Note 6	Visual, VT-2	ISI-07
	B15.51	Piping - System Hydrostatic Test	See Note 6	Visual, VT-2	ISI-07
	B15.60	Pumps - System Leakage Test	4	Visual, VT-2	ISI-07
	B15.61	Pumps - System Hydrostatic Test	4	Visual, VT-2	ISI-07
	B15.70	Valves - System Leakage Test	See Note 6	Visual, VT-2	ISI-07
B15.71	Valves - System Hydrostatic Test	See Note 6	Visual, VT-2	ISI-07	
B-Q Steam Generator Tubing	B16.20	Steam Generator Tubing in U-Tube Design	4	Volumetric ²	

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
C-A Pressure Retaining Welds in Pressure Vessels	C1.10	Shell Circumferential Welds	16	Volumetric	
	C1.20	Head Circumferential Welds	4	Volumetric	
	C1.30	Tubesheet-to-Shell Welds	4	Volumetric	
C-B Pressure Retaining Nozzle Welds in Vessels	C2.21	Nozzle-to-Shell (or Head) Weld without Reinforcing Plate in Vessels > 1/2" Nominal Thickness	8	Volumetric & Surface	
	C2.22	Nozzle Inside Radius Section	8	Volumetric	
	C2.33	Nozzle-to-Shell (or Head) Welds when Inside of Vessel is Inaccessible, for Vessels > 1/2" Nominal Thickness with Reinforcing Plates	4	Visual, VT-2	
C-C ¹ Integral Attachments for Class 2 Vessels, Piping, Pumps and Valves	C3.10 ¹	Integrally Welded Attachments to Pressure Vessels	2	Surface	ISI-06
	C3.20 ¹	Integrally Welded Attachments to Piping	100	Surface	ISI-06
	C3.30 ¹	Integrally Welded Attachments to Pumps	20	Surface	ISI-06

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Requests Number
C-D Pressure Retaining Bolting Greater Than 2 in. in Diameter	C4.40	Bolts and Studs in Valves	4	Volumetric	
C-F-1 Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping	C5.11	Circumferential Welds in Austenitic Stainless Steel or High Alloy Piping $\geq 3/8$ " Nominal Wall Thickness for Piping $>$ NPS 4	718	Volumetric & Surface	
	C5.12	Longitudinal Welds in Austenitic Stainless Steel or High Alloy Piping $\geq 3/8$ " Nominal Wall Thickness for Piping $>$ NPS 4	N/A	Volumetric & Surface	ISI-04
	C5.21	Circumferential Welds in Austenitic Stainless Steel or High Alloy Piping $\geq 1/5$ " in. Nominal Wall Thickness for Piping \geq NPS 2 and \leq NPS 4	177	Volumetric & Surface	
	C5.30	Socket Welds	20	Surface	
	C5.41	Circumferential Welds in Pipe Branch Connections of Branch Piping \geq NPS 2	14	Surface	

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
C-F-2 Pressure Retaining Welds in Carbon or Low Alloy Steel Piping	C5.51	Circumferential Welds in Carbon or Low Alloy Steel Piping $\geq 3/8$ " Nominal Wall Thickness for Piping > NPS 4	303	Volumetric & Surface	
	C5.52	Longitudinal Welds in Carbon or Low Alloy Steel Piping $\geq 3/8$ " Nominal Wall Thickness for Piping > NPS 4	N/A	Volumetric & Surface	ISI-04
	C5.81	Circumferential Welds in Carbon or Low Alloy Steel Pipe Branch Connections of Branch Piping \geq NPS 2	2	Surface	
C-G Pressure Retaining Welds in Pumps and Valves	C6.10	Pump Casing Welds	8	Surface	
C-H All Pressure Retaining Components (Class 2)	C7.10	Pressure Vessels - System Pressure Test	See Note 6	Visual, VT-2	ISI-07
	C7.20	Pressure Vessels - System Hydrostatic Test ⁵	See Note 6	Visual, VT-2	ISI-07
	C7.30	Piping - System Pressure Test	See Note 6	Visual, VT-2	ISI-07, 09
	C7.40	Piping - System Hydrostatic Test ⁵	See Note 6	Visual, VT-2	ISI-07, 09
	C7.50	Pumps - System Pressure Test	See Note 6	Visual, VT-2	ISI-07
	C7.60	Pumps - System Hydrostatic Test ⁵	See Note 6	Visual, VT-2	ISI-07
	C7.70	Valves - System Pressure Test	See Note 6	Visual, VT-2	ISI-07
	C7.80	Valves - System Hydrostatic Test ⁵	See Note 6	Visual, VT-2	ISI-07

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
D-A ¹ Integral Attachments for Class 3 Vessels, Piping, Pumps & Valves	D1.10 ¹	Integrally Welded Attachments to Pressure Vessels	42	Visual, VT-1	ISI-06
	D1.20 ¹	Integrally Welded Attachments to Piping	165	Visual, VT-1	ISI-06
	D1.30 ¹	Integrally Welded Attachments to Pumps	4	Visual, VT-1	ISI-06
D-A Systems in Support of Reactor Shutdown Function	D1.10	Class 3 Pressure Retaining Components			
		- System Pressure Test	See Note 6	Visual, VT-2	
		- System Hydrostatic Test	See Note 6	Visual, VT-2	
D-B Systems in Support of Emergency Core Cooling, Containment Heat Removal, Atmosphere Cleanup, and Reactor Residual Heat Removal	D2.10	Class 3 Pressure Retaining Components			
		- System Pressure Test	See Note 6	Visual, VT-2	
		- System Hydrostatic Test	See Note 6	Visual, VT-2	

TABLE 3.1
ASME SECTION XI
INSERVICE INSPECTION SUMMARY TABLE (cont.)

Examination Category	Item Number	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
D-C Systems in Support of Residual Heat Removal from Spent Fuel Storage Pool	D3.10	Class 3 Pressure Retaining Components			
		- System Pressure Test	See Note 6	Visual, VT-2	
		- System Hydrostatic Test	See Note 6	Visual, VT-2	
F-A ^{3,4} Supports	F1.10 ³	Class 1 Piping Supports	297	Visual, VT-3	
	F1.20 ³	Class 2 Piping Supports	378	Visual, VT-3	
	F1.30 ³	Class 3 Piping Supports	656	Visual, VT 3	
	F1.40 ³	Supports Other Than Piping Supports (Class 1, 2, and 3)	169	Visual, VT-3	ISI-03

Notes:

1. Reference Callaway Relief Request ISI-06 for a description of the Examination Categories and Item Numbers used for the inservice inspection of integrally welded attachments.
2. The extent, frequency and acceptance standards for the examination of Steam Generator tubing will be in accordance with Callaway Technical Specification 3/4.4.5.
3. Reference Code Case N-491 for a description of the Examination Category and Item Numbers used for the inservice inspection of supports.
4. Snubber assemblies will be tested and inspected in accordance with Callaway Technical Specification 3/4.7.8. Integral and non-integral attachments for snubbers, including lugs, bolting, pins, and clamps, shall be examined in accordance with the requirements of Code Case N-491.
5. The system hydrostatic pressure test will be performed to the alternate rules for 10-year hydrostatic pressure testing delineated in Code Case N-498.
6. Pressure retaining components (e.g., pressure vessels, pumps, valves, piping, etc.) that are subject to a system pressure or hydrostatic test are identified on Inservice Inspection Boundary Drawings. Reference Section 2.2 of this Plan for details pertaining to these drawings.

3.2 **Augmented Inservice Inspections**

The Augmented Inservice Inspection Summary Table 3.2 provides the following information:

3.2.1 Implementing Document

This column lists the basis document for the augmented inservice examination.

3.2.2 Description of Components Examined

This column provides a description of the components subject to augmented inservice inspection.

3.2.3 Number of Components

This column lists the population of components potentially subject to augmented examination. The number of components actually examined during the inspection interval will be in accordance with the requirements of the implementing document.

3.2.4 Examination Method

This column lists the examination method required by the implementing document.

3.2.5 Relief Request Number

This column provides a listing of applicable relief requests. If a relief request number is identified, see the corresponding relief request in Section 4.4.

**TABLE 3.2
AUGMENTED INSERVICE INSPECTION
SUMMARY TABLE**

Implementing Document	Description of Components Examined	Number of Components	Examination Method	Relief Request Number
NRC Standard Review Plan Sections 3.6.1 and 6.6	Circumferential, Longitudinal and Branch Welds in Piping 2" NPS and Greater	376	Volumetric	
	Circumferential Welds in Piping 1 1/2" NPS	16	Surface	ISI-02
	Socket Welds in Piping 1 1/2" NPS and Greater	105	Surface	
Regulatory Guide 1.14	RCP Flywheel in Areas of Higher Stress Concentration at the Bore and Keyway	4	Volumetric	
	RCP Flywheel at Exposed Surfaces	4	Surface	
	RCP Flywheel, Entire Volume	4	Volumetric	
Regulatory Guide 1.65	Reactor Vessel Closure Studs, When Removed	54	Surface	
Regulatory Guide 1.137	Fuel System for Standby Diesel Generators	2	Visual, VT-2	
Regulatory Guide 1.150	Reactor Vessel Welds	32	Volumetric	

SECTION 4.0
ALTERNATIVE REQUIREMENTS TO ASME SECTION XI, 1989 EDITION

This section lists the alternative requirements to ASME Section XI, 1989 Edition, being adopted for the Second Interval Inservice Inspection Program at the Callaway Plant. The alternative requirements presented are in accordance with ASME Section XI and 10 CFR 50.55a, as applicable.

4.1 Adoption of Code Cases

This Section addresses the adoption of Code Cases during the Second Inservice Inspection Interval at the Callaway Plant. Code Cases adopted for Inservice Inspection use during the Second Interval will be listed in Table 4.1 of this Inservice Inspection Plan. Code Cases for Repair/Replacement activities are not addressed in this Inservice Inspection Plan. In all cases, the use and adoption of Code Cases will be in accordance with ASME Section XI, IWA-2440 and 10 CFR 50.55a. The methodology for adopting Code Cases is divided into the four categories clarified below.

4.1.1 Adoption of Code Cases Listed for Generic Use in Regulatory Guide 1.147

Code Cases that are listed for generic use in Regulatory Guide 1.147, Revision 10, and later, will be adopted for use during the Second Inservice Inspection Interval by listing them in Table 4.1 of this Inservice Inspection Plan. All conditions or limitations delineated in Regulatory Guide 1.147 for a particular Code Case will apply.

4.1.2 Adoption of Code Cases Not Listed for Generic Use in Regulatory Guide 1.147

Code Cases that have been approved by the Board of Nuclear Codes and Standards, but that have not been listed for generic use in Regulatory Guide 1.147, may be submitted in the form of a Relief Request in accordance with 10 CFR 50.55a(a)(3). Alternatively, Code Cases may be adopted for use by special permission from the NRC as specified in Callaway FSAR, Appendix 3A.

4.1.3 Adoption of Code Cases Listed for Generic Use in Regulatory Guide 1.147 But Subsequently Annulled by ASME Section XI

Under certain circumstances, it may be necessary to adopt a Code Case that has been listed for generic use in Regulatory Guide 1.147, but subsequently annulled by ASME Section XI. Therefore, Union Electric Company endorses all revisions of Regulatory Guide 1.147 from Revision 10 up to and including the most recent revision. Endorsement of these revisions of Regulatory Guide 1.147 does not commit the Callaway Plant to all Code Cases listed therein, but rather allows for selection of a previously accepted Code Case. The purpose of this endorsement is to identify all Code Cases that could potentially be incorporated into the Inservice Inspection Plan in accordance with IWA-2441.

4.1.4 Adoption of Code Cases Issued Subsequent to Filing this Inservice Inspection Plan

Code Cases issued by ASME Section XI subsequent to filing this Inservice Inspection Plan will be proposed for use in amendments to this Plan in accordance with ASME Section XI, IWA-2441(d).

**TABLE 4.1
LIST OF ADOPTED CODE CASES**

CODE CASE NO.	TITLE	REG. GUIDE 1.147 REVISION	DATE ADOPTED
N-460	Alternative Examination Coverage for Class 1 and Class 2 Welds	10	8/1/95
N-461	Alternative Rules for Piping Calibration Block Thickness	10	8/1/95
N-489	Alternative Rules for Level III NDE Qualification Examinations	10	8/1/95
N-491	Alternative Rules for Examination of Class 1, 2, 3 and MC Component Supports of Light Water Cooled Power Plants	10	8/1/95
N-498-1	Alternative Rules for 10-Year Hydrostatic Testing for Class 1, 2 and 3 Systems	N/A	8/1/95

4.2 Use of Subsequent Editions of ASME Section XI

In accordance with 10 CFR 50.55a(g)(3)(v), components (including supports) may meet the requirements set forth in subsequent editions of Codes and Addenda, or portions thereof, which are incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed therein. This Section of the Inservice Inspection Plan provides for alternative requirements from approved subsequent Code editions that may be adopted during the Second Inservice Inspection Interval. This Inservice Inspection Plan will be amended for adoption of subsequent Code rules.

4.3 Inservice Inspection Relief Request Index

This section provides a summary listing and revision status of all Relief Requests related to inservice inspections at the Callaway Plant.

**TABLE 4.3
INSERVICE INSPECTION
RELIEF REQUEST INDEX**

Relief Request	Page	Rev.	Date	Topic
ISI-01	4.4-2	0	10/12/94	Exemption from Appendix VII Ultrasonic Examination Personnel Qualification Requirements
ISI-02	4.4-4	0	10/12/94	Exemption of Circumferential Welds in 1 1/2" NPS Piping from Volumetric Examination Requirements of NRC Standard Review Plan, Section 3.6.1
ISI-03	4.4-6	0	10/12/94	Limited Examination of Reactor Vessel Supports
ISI-04	4.4-9	0	10/12/94	Alternate Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping
ISI-05	4.4-10	0	10/12/94	Alternate Rules for Deferral of Inspections on Nozzle-to-Vessel Welds, Inside Radius Sections and Nozzle-to-Safe End Welds of the Reactor Vessel
ISI-06	4.4-15	0	10/12/94	Alternate Rules for the Selection and Examination of Class 1, 2 and 3 Integrally Welded Attachments
ISI-07	4.4-21	0	10/12/94	Alternate Rules for Insulation Removal During IWB-5000 and IWC-5000 Pressure Tests at Bolted Connections in Systems Borated for the Purpose of Controlling Reactivity

TABLE 4.3
INSERVICE INSPECTION
RELIEF REQUEST INDEX
(cont.)

Relief Request	Page	Rev.	Date	Topic
ISI-08	4.4-24	0	10/12/94	Alternate Rules for Corrective Measures if Leakage Occurs at a Bolted Connection
ISI-09	4.4-26	0	10/12/94	Alternate Provisions for Pressure Testing Code Class 2 Piping and Valves at Containment Penetrations Where the Balance of the System is Outside the Scope of Section XI

4.4 **Inservice Inspection Relief Requests**

- 4.4.1 This section contains Relief Requests written in accordance with 10 CFR 50.55a(g)(5) when specific ASME Section XI requirements for inservice inspection are considered impractical. The enclosed Relief Requests are subject to change throughout the inspection interval. If examination requirements are determined to be impractical during the course of the interval, additional or modified relief requests shall be submitted in accordance with 10 CFR 50.55a(g)(5).
- 4.4.2 Exceptions to Code required examinations may also be authorized by NRR, as allowed by 10 CFR 50.55a (a)(3), provided that design, fabrication, installation, testing and inspection performed in compliance with Codes and Section XI requirements would result in hardship without a compensating increase in the level of quality and safety, or provided that the proposed alternative examination will assure an acceptable level of quality and safety. Specific exceptions may also be documented in the form of Relief Requests and included in this Section, as applicable.
- 4.4.3 Relief Requests for incomplete examinations shall be submitted in accordance with 10 CFR 50.55a(g)(5)(iv) throughout the interval as limitations are identified. Due to ongoing changes in nondestructive examination procedures, techniques and requirements, the Union Electric Company considers that submitting Relief Requests for incomplete examinations when they are evaluated will provide a more accurate representation of the limitations.

RELIEF REQUEST NUMBER: ISI-01

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COMPONENT IDENTIFICATION

Code Classes: 1 and 2
References: IWA-2311(b) and Appendix VII
Examination Categories: B-A, B-B, B-D, B-F, B-G-1, B-J, C-A, C-B, C-D, C-F-1, C-F-2
Item Numbers: B1.11, B1.12, B1.21, B1.22, B1.30, B1.40, B2.11, B2.12, B2.40, B3.90, B3.100, B3.110, B3.120, B3.140, B5.10, B5.40, B5.70, B6.20, B6.30, B6.40, B6.180, B9.11, B9.12, B9.31
C1.10, C1.20, C1.30, C2.21, C2.22, C4.40, C5.11, C5.12, C5.21, C5.51, C5.52
Description: Exemption from Appendix VII Ultrasonic Examination Personnel Qualification Requirements
Component Numbers: All Class 1 and 2 components requiring ultrasonic examination

CODE REQUIREMENT

Paragraph IWA-2311(b) specifies that the training, qualification, and certification of ultrasonic examination personnel shall also comply with the requirements of Appendix VII.

Appendix VII provides requirements for the employer's written practice, qualification of ultrasonic examiners, qualification records, and the minimum content of initial training courses for the ultrasonic examination method in addition to those required in SNT-TC-1A.

BASIS FOR RELIEF

Union Electric requests relief from implementation of Appendix VII until the performance demonstration requirements of Appendix VIII are fully implemented. Implementation of Appendix VII prior to full implementation of Appendix VIII is considered impractical and without a compensating increase in quality and safety.

Appendix VII was first introduced in the 1988 Addenda to Section XI. This Appendix represents a dramatic change from previous Code editions and current industry practices in the requirements for qualification of ultrasonic examination personnel. New training programs must be developed and taught by trained instructors, employer's written practices must be completely rewritten, examination question banks must be developed, flaw specimens containing actual or simulated flaws must be acquired, and performance demonstrations (practical examinations) must be completed.

RELIEF REQUEST NUMBER: ISI-01

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Implementation of Appendix VII will require a substantial industry effort. Although work is progressing towards compliance with Appendix VII, full implementation has not yet been achieved. Since Appendix VII provides for use of specimens prepared for ultrasonic performance demonstrations per Appendix VIII, many NDE vendors are developing these two programs concurrently in order to avoid duplicated effort. Though currently not required, the nuclear industry anticipates that the Appendix VIII performance demonstration requirements will be mandated by a backfit ruling in the Federal Register. In anticipation of this ruling, the Performance Demonstration Initiative (PDI) Committee is currently leading an industry wide effort to implement Appendix VIII. The tentative completion dates for pipe weld performance demonstrations and reactor vessel performance demonstrations are January of 1996, and January of 1997, respectively.

The Union Electric Company intends to fully implement Appendix VII when the performance demonstrations of Appendix VIII are mandated by a backfit ruling in the Federal Register.

PROPOSED ALTERNATE PROVISIONS

The Callaway Plant shall utilize ultrasonic examination personnel qualified in accordance with the requirements of IWA-2300, except for IWA-2311(b). The additional Appendix VII training, qualification, and certification requirements referenced in IWA-2311(b) shall be fully implemented when the performance demonstrations of Appendix VIII are mandated by a ruling in the Federal Register.

RELIEF REQUEST NUMBER: ISI-02

(Page 1 of 2)

COMPONENT IDENTIFICATION

Code Class: 2
References: NRC Standard Review Plan, Section 3.6.1 (NUREG-0800)
Examination Category: N/A
Item Number: N/A
Description: Exemption of Circumferential Welds in 1 1/2" NPS Piping from the Volumetric Examination Requirements of NRC Standard Review Plan, Section 3.6.1

Component Numbers: RCP "A" Seal Water Injection Line Welds
2-BG-09-FW387 2" x 1 1/2" Reducer to 1 1/2" Pipe
2-BG-09-FW386 1 1/2" Pipe to Valve
2-BG-09-FW385 1 1/2" Pipe to Valve
2-BG-09-FW384 2" x 1 1/2" Reducer to 1 1/2" Pipe

RCP "B" Seal Water Injection Line Welds
2-BG-09-FW432 2" x 1 1/2" Reducer to 1 1/2" Pipe
2-BG-09-FW431 1 1/2" Pipe to Valve
2-BG-09-FW430 1 1/2" Pipe to Valve
2-BG-09-FW429 2" x 1 1/2" Reducer to 1 1/2" Pipe

RCP "C" Seal Water Injection Line Welds
2-BG-09-FW417 2" x 1 1/2" Reducer to 1 1/2" Pipe
2-BG-09-FW416 1 1/2" Pipe to Valve
2-BG-09-FW415 1 1/2" Pipe to Valve
2-BG-09-FW414 2" x 1 1/2" Reducer to 1 1/2" Pipe

RCP "D" Seal Water Injection Line Welds
2-BG-09-FW402 2" x 1 1/2" Reducer to 1 1/2" Pipe
2-BG-09-FW401 1 1/2" Pipe to Valve
2-BG-09-FW400 1 1/2" Pipe to Valve
2-BG-09-FW399 2" x 1 1/2" Reducer to 1 1/2" Pipe

AUGMENTED REQUIREMENT

Standard Review Plan, Section 3.6.1 requires that circumferential welds in piping exceeding 1" NPS be subject to volumetric examination.

RELIEF REQUEST NUMBER: ISI-02

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BASIS FOR RELIEF

The sixteen welds listed above are all within portions of the Reactor Coolant Pump Seal Water Injection Lines which are schedule 160, 1 1/2" NPS. A combination of the small pipe diameter and pipe thickness cause the volumetric examinations to yield meaningless results.

PROPOSED ALTERNATE EXAMINATIONS

As an alternative to the requirements of NRC Standard Review Plan, Section 3.6.1, liquid penetrant examinations shall be performed on all sixteen of the subject welds. In addition, a visual VT-2 examination shall be performed on these welds as specified in ASME Section XI.

RELIEF REQUEST NUMBER: ISI-03

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COMPONENT IDENTIFICATION

Code Class: 1
References: Code Case N-491, Table -2500-1
Examination Category: F-A
Item Number: F1.40
Description: Limited Examination of Reactor Vessel Supports
Component Numbers: 2-RBB01-01, 2-RBB01-02, 2-RBB01-03, and 2-RBB01-04

CODE REQUIREMENT

ASME Section XI, Code Case N-491, Table -2500-1 requires that 100% of Class 1 supports, other than piping, be subject to a visual VT-3 examination once every inspection interval.

BASIS FOR RELIEF

The Callaway Reactor Vessel is supported by two cold leg nozzles and two hot leg nozzles. There is a support assembly at each of these nozzles that consists of a nozzle weld build up, shoe plate, air cooled box, and steel support structure embedded in the primary shield wall. Figure ISI-03 depicts these support assemblies. As shown in the figure, only the nozzle weld build up and shoe plate are completely accessible for a visual VT-3 examination. The majority of the air cooled box and the entire steel support structure are located beneath a steel walk plate and only the top of the air cooled box is directly accessible. An additional 20 to 30 percent of the air cooled box and a very small percentage of the steel support structure would be made accessible if the steel walk plate and insulation were removed.

The Reactor Vessel supports are located in a confined space below the refueling pool permanent seal ring. The area can only be accessed through four seal ring hatches. In addition to difficult access, the radiation in the area is between 1.5 to 2.0 man-rem per hour. It is estimated that the removal and re-installation of the walk plate and insulation in this confined space, combined with the visual VT-3 examination, would result in an exposure of approximately 36 man-rem. Removal of the walk plate and insulation under these conditions to increase the examination of the air cooled box by approximately 20 to 30 percent and a very small percentage of the steel support structure is considered impractical without a commensurate increase in quality or safety. Based on this, relief is requested from the visual VT-3 examination of the air cooled box and steel support structure that is obstructed by the walk plate and insulation.

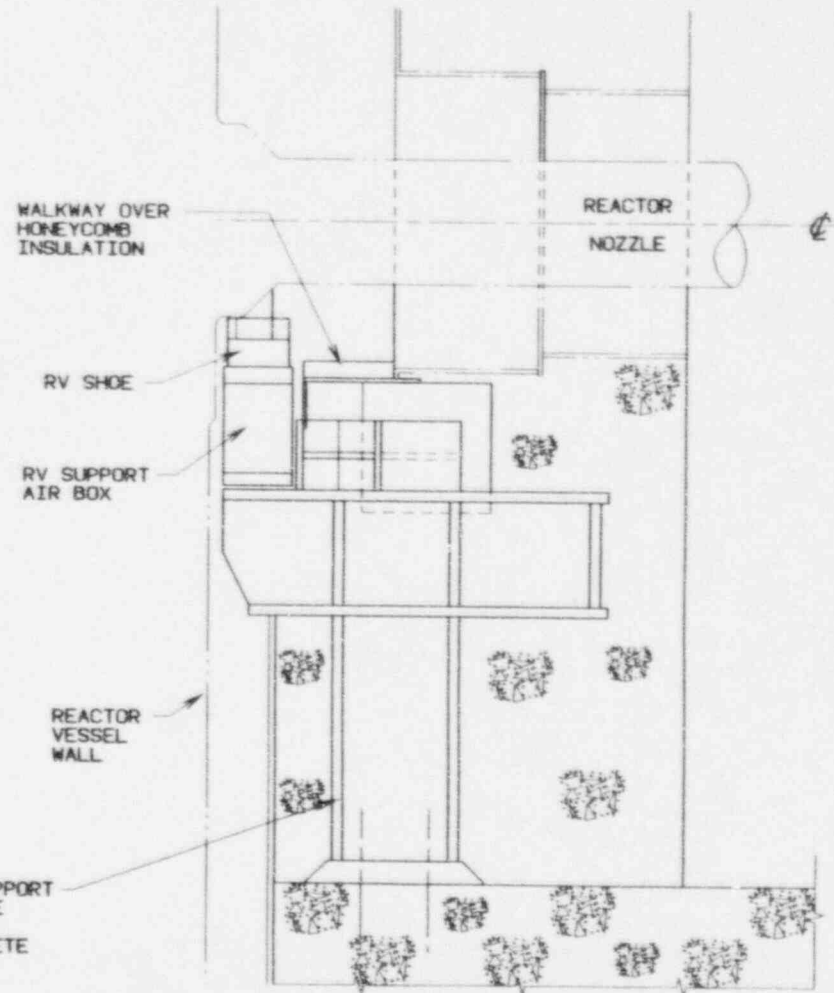
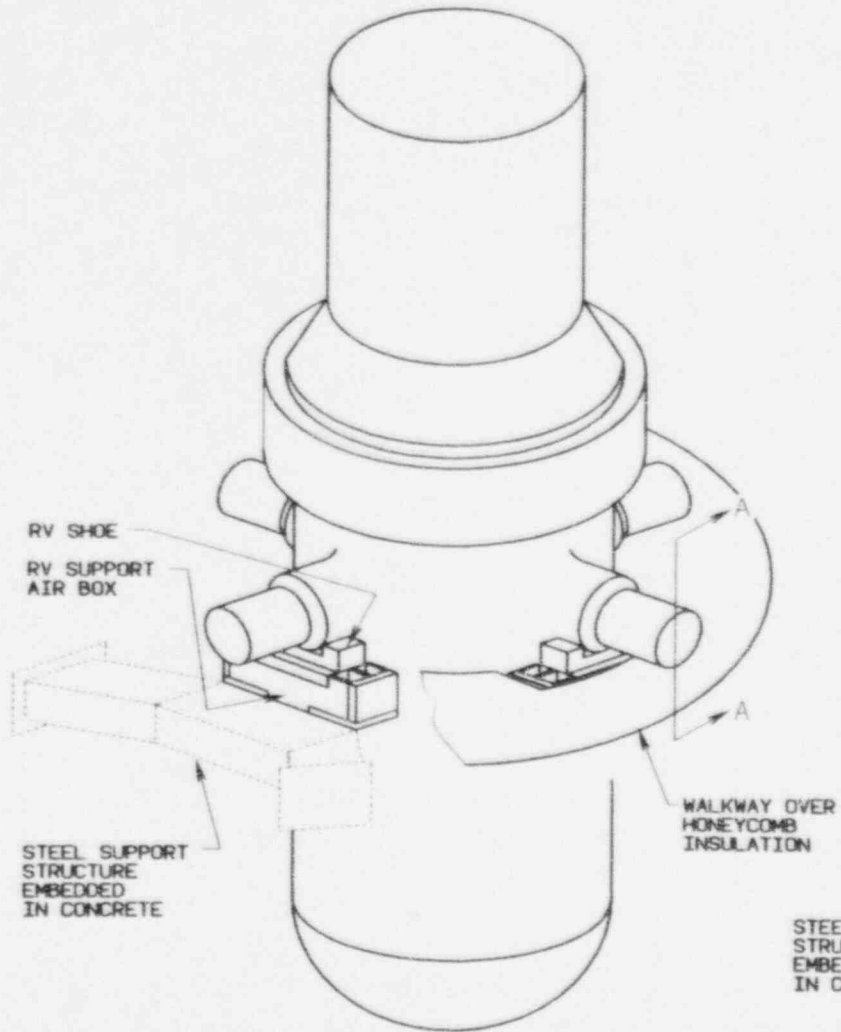
RELIEF REQUEST NUMBER: ISI-03

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PROPOSED ALTERNATE EXAMINATION

A limited visual VT-3 examination, with the walk plate and insulation installed, shall be performed on the accessible NF portions of the Reactor Vessel support assemblies to satisfy the requirements of Code Case N-491, Table -2500-1, Item No. F1.40. If conditions are discovered during this limited VT-3 examination that do not meet the acceptance standards of N-491, -3400, the walk plate or insulation will, if necessary, be removed to meet the evaluation requirements of N-491, -3112.2 or -3112.3.

4.4-8



SECTION A-A

RELIEF REQUEST NUMBER: ISI-04

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COMPONENT IDENTIFICATION

Code Classes: 1 and 2
References: Table IWB-2500-1, Table IWC-2500-1
Examination Categories: B-J, C-F-1, C-F-2
Item Numbers: B9.12, B9.22, C5.12, C5.22, C5.42, C5.52, C5.62, and C5.82
Description: Alternate Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping
Component Numbers: All Class 1 and 2 Longitudinal Piping Welds Subject to Surface or Volumetric Examination

CODE REQUIREMENTS

Class 1 Piping:

Table IWB-2500-1 requires the performance of surface and volumetric examinations on Item No. B9.12 longitudinal welds, and a surface examination on Item No. B9.22 longitudinal welds. The examination includes at least a pipe diameter length, but not more than 12 in., of each longitudinal weld intersecting the circumferential welds required to be examined by Examination Categories B-F and B-J.

Class 2 Piping:

Table IWC-2500-1 requires the performance of surface and volumetric examination on Item Nos. C5.12, C5.22, C5.52 and C5.62, and a surface examination on Item Nos. C5.42 and C5.82. The examination includes a length of 2.5t at the intersecting circumferential welds required to be examined by Examination Categories C-F-1 and C-F-2.

BASIS FOR RELIEF

Based on the reasons stated below, the performance of surface and volumetric examination on longitudinal piping welds has a negligible compensating effect on the quality or safety of Class 1 and 2 piping. In addition, there is little, if any, technical benefit associated with the performance of these examinations, but they result in a substantial man-rem exposure and cost.

- 1) Throughout the nuclear industry, there has been no evidence of rejectable service induced flaws being attributed to longitudinal piping welds.
- 2) During the first inservice inspection interval at the Callaway Plant, no inservice flaws have been detected in longitudinal piping welds.

RELIEF REQUEST NUMBER: ISI-04

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- 3) There are distinct differences between the processes used in the manufacturing of longitudinal and circumferential welds which enhance the integrity of longitudinal welds. First, longitudinal welds are typically manufactured under controlled shop conditions whereas circumferential welds are produced in the field under less ideal conditions. Secondly, longitudinal welds usually undergo heat treatment in the shop which improves their material properties and relieves the residual stresses created by welding. Finally, shop manufacturing inspections can be performed under more favorable conditions which further increase the confidence level of the longitudinal weld quality.
- 4) During field installation of piping, the ends of the longitudinal welds may be affected during welding of the intersecting circumferential field welds. This small area falls within the circumferential weld inspection boundaries. Therefore, the ends of the longitudinal welds will still be subject to examination.
- 5) From an industry-wide standpoint, there has been no evidence of longitudinal weld defects compromising safety at nuclear generating facilities.
- 6) No significant loading conditions or known material degradation mechanisms have become evident to date which specifically relate to longitudinal seam welds in nuclear plant piping.
- 7) There is a significant accumulation of man-rem exposure and cost associated with the inspection of Class 1 and 2 longitudinal piping welds.
- 8) The alternative examinations proposed below provide an acceptable level of quality and safety without causing undue hardship or difficulties.

PROPOSED ALTERNATE EXAMINATION

Surface and volumetric examinations shall be performed, as applicable, on the length of the longitudinal weld that is normally examined during inspection for the intersecting circumferential weld(s). The volumetric examination at the intersection of circumferential and longitudinal welds will include both transverse and parallel scans within the length of the longitudinal weld that falls within the circumferential weld examination boundary.

RELIEF REQUEST NUMBER: ISI-05

(Page 1 of 4)

COMPONENT IDENTIFICATION

Code Class: 1
References: IWB-2500, Table IWB-2500-1
Examination Categories: B-D, B-F
Item Numbers: B3.90, B3.100, B5.10
Description: Alternate Rules for the Deferral of Inspections on Nozzle-to-Vessel Welds, Inside Radius Sections and Nozzle-to-Safe End Welds of the Reactor Vessel

Component Numbers: Nozzle-to-Vessel Welds (Item No. B3.90)
2-RV-105-121-A
2-RV-105-121-B
2-RV-105-121-C
2-RV-105-121-D
2-RV-107-121-A
2-RV-107-121-B
2-RV-107-121-C
2-RV-107-121-D

Inner Radius Sections (Item No. B3.100)
2-RV-105-121-A-IR
2-RV-105-121-B-IR
2-RV-105-121-C-IR
2-RV-105-121-D-IR
2-RV-107-121-A-IR
2-RV-107-121-B-IR
2-RV-107-121-C-IR
2-RV-107-121-D-IR

Nozzle-to-Safe End Welds (Item No. B5.10)
2-RV-301-121-A
2-RV-301-121-B
2-RV-301-121-C
2-RV-301-121-D
2-RV-302-121-A
2-RV-302-121-B
2-RV-302-121-C
2-RV-302-121-D

RELIEF REQUEST NUMBER: ISI-05

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CODE REQUIREMENT

ASME Section XI, 1989 Edition, Table IWB-2500-1, Examination Category B-D requires volumetric examination of reactor vessel nozzle-to-vessel welds and their inside radius sections once each ten-year inspection interval. Note (2) of Examination Category B-D states that at least 25 percent, but not more than 50 percent (credited), of the reactor vessel nozzles shall be examined by the end of the first inspection period, and the remainder by the end of the inspection interval.

Table IWB-2500-1, Examination Category B-F, Note (1) states that the reactor vessel nozzle-to-safe end weld examinations may be performed coincident with the vessel nozzle examinations required by Examination Category B-D.

BASIS FOR RELIEF

Relief is requested to defer 100 percent of the reactor vessel nozzle-to-vessel weld examinations, the nozzle inside radius section examinations, and the nozzle-to-safe end weld examinations to the end of Callaway's second ten-year inspection interval.

Union Electric believes that performing 25 percent to 50 percent of the reactor vessel nozzle examinations in the first period of the second inspection interval is impractical for the following reasons:

- 1) The vendor cost alone (not including site training, plant support, or potential critical path time) to perform these examinations with automated tooling in the first inspection period is currently estimated at \$250,000. The cost to perform these same examinations at the end of the second inspection interval concurrent with the reactor vessel ten-year examination is estimated at only \$25,000. The major expense associated with the first inspection period examinations is the added equipment and personnel mobilization costs and equipment assembly and disassembly costs.
- 2) Approximately three to four man-rem exposure is currently expended for automated equipment assembly and disassembly in the reactor cavity area. In addition to exposure, there are approximately two to three cubic feet of solid radwaste generated during performance of automated examinations in the reactor vessel. Under current Code rules, this personnel exposure and radwaste generation would be incurred twice, once for the nozzle first inspection period examinations and again for the reactor vessel examinations at the end of the inspection interval. Performing the nozzle examinations concurrent with the reactor vessel ten-year examinations will save approximately three to four man-rem exposure and two to three cubic feet of solid radwaste.

RELIEF REQUEST NUMBER: ISI-05

(Page 3 of 4)

For reasons listed below, Union Electric believes that deferral of 100 percent of the reactor vessel nozzle examinations to the end of the second inspection interval will provide an acceptable level of safety and quality.

- 1) All four of Callaway's Reactor Vessel hot leg nozzle-to-vessel welds, hot leg nozzle inside radius sections, and hot leg nozzle-to-safe end welds were examined in 1987 during the first period of the first ten-year inspection interval. No indications or relevant conditions were discovered that required successive inspections in accordance with Paragraph IWB-2420(b). Furthermore, no inservice repairs or replacements by welding have ever been performed on any of the nozzle-to-vessel welds, nozzle inside radius sections, or nozzle-to-safe end welds at Callaway.
- 2) From an industry perspective, there are two reasons why deferral of Callaway's nozzle examinations to the end of the second inspection interval will not decrease the level of quality and safety. First, PWR reactor vessels similar to Callaway's have been operating for over 20 years with no recorded inservice induced flaws or potential degradation mechanisms. Since each PWR reactor vessel in operation is representative of the operating conditions throughout the industry, continued inspection of these vessels ensures that any potential degradation mechanism will be detected. Second, given the present large population of PWR reactor vessels in operation, the examination of nozzles within the industry during any ten-year interval is evenly distributed. This distribution is essentially equivalent, regardless of whether or not a percentage of the nozzle examinations are performed in the first inspection period or performed concurrent with the reactor vessel ten-year examinations at the end of the inspection interval.
- 3) The pressurizer and primary steam generator nozzle-to-vessel welds, inside radius sections, and nozzle-to-safe end welds are similar in configuration, material properties, weld process parameters, and operate in the same reactor coolant system environment as the reactor vessel nozzles. Due to this similarity, distribution of the pressurizer and steam generator nozzle examinations in accordance with Examination Category B-D and Examination Category B-F will further substantiate the integrity of the reactor vessel nozzles until they are examined at or near the end of the second inservice inspection interval.
- 4) Performing all the automated reactor vessel examinations during a single refueling outage improves consistency of the examinations by utilizing the same equipment, personnel, and procedures. Moreover, this improves the reliability and reproducibility of the examinations.

RELIEF REQUEST NUMBER: ISI-05

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PROPOSED ALTERNATE EXAMINATION

Union Electric shall complete the required nozzle-to-vessel weld examinations, the nozzle inside radius section examinations, and the nozzle-to-safe end weld examinations concurrent with the reactor vessel ten-year examinations at or near the end of the second ten-year inservice inspection interval. In addition, the reactor vessel hot leg nozzle inside surfaces, including the inside radius sections and nozzle-to-safe end weld areas, that are made accessible with the upper internals removed and lower internals (core barrel) installed, shall be visually VT-3 examined once each inspection period of the second ten-year inservice inspection interval.

RELIEF REQUEST NUMBER: ISI-06

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COMPONENT IDENTIFICATION

Code Classes: 1, 2 and 3
References: Table IWB-2500-1, Table IWC-2500-1, Table IWD-2500-1
Examination Categories: B-H, B-K-1, C-C, D-A, D-B, D-C
Item Numbers: B8.10, B8.20, B8.30, B8.40, B10.10, B10.20, B10.30, C3.10,
C3.20, C3.30, C3.40, D1.20, D1.30, D1.40, D1.50, D1.60, D2.20,
D2.30, D2.40, D2.50, D2.60
Description: Alternate Rules for the Selection and Examination of Class 1, 2
and 3 Integrally Welded Attachments
Component Numbers: All Class 1, 2 and 3 Integral Attachments Subject to Inservice
Inspection

CODE REQUIREMENTS

Class 1 Attachments:

Table IWB-2500-1, Examination Categories B-H and B-K-1 require the performance of surface or volumetric examinations, as applicable, on integral attachments with a design thickness of 5/8" or greater.

Class 2 Attachments:

Table IWC-2500-1, Examination Category C-C requires the performance of a surface examination on integral attachments with a design thickness of 3/4" or greater.

Class 3 Attachments:

Table IWD-2500-1, Examination Categories D-A, D-B and D-C require the performance of a visual VT-3 inspection on integral attachments.

For complete details on ASME Section XI Code examination requirements, see Tables IWB-2500-1, IWC-2500-1 and IWD-2500-1.

RELIEF REQUEST NUMBER: ISI-06

(Page 2 of 6)

BASIS FOR RELIEF

Relief is being requested to allow the use of alternate requirements for the examination of Class 1, 2 and 3 integral attachments. The basis for this request is as follows:

- 1) During the first inservice inspection interval at the Callaway Plant, no inservice flaws were detected in integrally welded attachments which would affect safety or compromise the integrity of the plant.
- 2) Within the nuclear industry, failures in integral attachments have been very rare and have not affected plant safety. When failures or inservice defects are found in integral attachments, they are usually associated with a support which has been damaged during operation. Therefore, flawed or broken integral attachments are typically detected during the investigation of damaged supports rather than during Code scheduled inservice inspections. One purpose of the alternative examination proposed below is to focus the inspection of integral attachments on those instances where the associated supports show signs of damage. This will increase the likelihood of locating damaged integral attachments.
- 3) There is a significant amount of man-rem exposure and cost associated with the scheduled inspection of Class 1, 2, and 3 integral attachments.
- 4) Unlike ASME Section XI, the alternate examinations proposed below do not impose a minimum thickness requirement for the inspection of an integral attachment. Therefore, a greater population of integral attachments will be available for inspection because inspections will not be limited to thick attachments. This provision improves the quality and safety level established by these examinations.
- 5) The alternate examinations proposed below provide an acceptable level of quality and safety without causing undue hardship or difficulties.

PROPOSED ALTERNATE EXAMINATION

The following rules will be used to select and examine integrally welded attachments:

- 1) This Relief Request is limited to Examination Categories B-H, B-K-1, C-C, D-A, D-B and D-C.
- 2) Class 1, 2 and 3 component supports shall be selected for examination in accordance with Code Case N-491.
- 3) Except for the selection of component supports for examination, all references to Section XI within this Relief Request are from the 1989 Edition.

RELIEF REQUEST NUMBER: ISI-06

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Scope

These requirements apply to examination and sample selection of Class 1, 2, and 3 integrally welded attachments of vessels, piping, pumps, and valves listed in Table 2500-1 as follows:

- a) Table 2500-1, Examination Category B-K shall be used for Class 1 integrally welded attachments in Examination Categories B-H and B-K-1 of IWB.
- b) Table 2500-1, Examination Category C-C shall be used for Class 2 integrally welded attachments in Examination Category C-C of IWC.
- c) Table 2500-1, Examination Category D-A shall be used for Class 3 integrally welded attachments in Examination Categories D-A, D-B, and D-C of IWD.

Exemption Criteria

- a) The exemption criteria provided in IWB-1220, IWC-1220, and IWD-1220 may be applied to Class 1, 2, and 3 components respectively, with integrally welded attachments, required to be examined in accordance with Table 2500-1.
- b) Class 1, 2, and 3 integrally welded attachment examinations performed as a result of component support deformation cannot be credited under the requirements of IWB-2411 or IWB-2412, IWC-2411 or IWC-2412, and IWD-2411 or IWD-2412, respectively.

Inspection Schedule

Class 1, 2, or 3 integrally welded attachments selected for examination by sample selection criteria in accordance with Table 2500-1, Examination Categories B-K, C-C and D-A, shall meet the requirements of IWB-2411 or IWB-2412, IWC-2411 or IWC-2412, or IWD-2411 or IWD-2412, respectively.

Additional and Successive Examinations

- a) Class 1, 2, and 3 additional and successive examination requirements of IWB-2430 and IWB-2420 for Class 1, IWC-2430 and IWC-2420 for Class 2 and 3 as applicable, shall be applied to integrally welded attachments whose examinations reveal flaws or relevant conditions that exceed the acceptance standards of IWB-3000, IWC-3000, and IWD-3000, respectively.

When integrally welded attachments are examined as a result of identified component support deformation and the results of these examinations exceed the applicable acceptance standards listed above, additional or successive examinations shall be performed when determined necessary based on an evaluation.

RELIEF REQUEST NUMBER: ISI-06

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**TABLE 2500-1
EXAMINATION CATEGORIES**

EXAMINATION CATEGORY B-K, INTEGRAL ATTACHMENTS FOR CLASS 1 VESSELS, PIPING, PUMPS, AND VALVES						
Item No.	Parts Examined¹	Examination Requirements/Fig. No.	Examination Method	Acceptance Standard	Extent of Examination^{2,3}	Frequency of Examination⁴
B10.10	Pressure Vessels Integrally Welded Attachments	IWB-2500-13, -14, and -15	Surface ⁷	IWB-3516	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval ⁴
B10.20	Piping Integrally Welded Attachments	IWB-2500-13, -14, and -15	Surface	IWB-3516	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval ⁵
B10.30	Pumps Integrally Welded Attachments	IWB-2500-13, -14, and -15	Surface	IWB-3516	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval ⁵
B10.40	Valves Integrally Welded Attachments	IWB-2500-13, -14, and -15	Surface	IWB-3516	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval ⁵

- NOTES:
- (1) Examination is limited to those integrally welded attachments that meet the following conditions:
 - (a) the attachment is on the outside surface of the pressure retaining component;
 - (b) the attachment provides component support as defined in NF-1110; and
 - (c) the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.
 - (2) The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination.
 - (3) Selected samples of integrally welded attachments shall be examined each inspection interval.
 - (4) In the case of multiple vessels of similar design, function and service, only one integrally welded attachment of only one of the multiple vessels shall be selected for examination.
 - (5) For piping, pumps, and valves, a sample of 10% of the welded attachments associated with the component supports selected for examination under Code Case N-491 shall be examined.
 - (6) Examination is required whenever component support member deformation (e.g., broken, bent, or pulled out parts) is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.
 - (7) For the configuration shown in Fig. IWB-2500-14, a volumetric examination of volume A-B-C-D from side (B-C) of the circumferential welds may be performed in lieu of the surface examination of surfaces A-D and B-C.

RELIEF REQUEST NUMBER: ISI-06

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**TABLE 2500-1 (cont'd)
EXAMINATION CATEGORIES**

EXAMINATION CATEGORY C-C, INTEGRAL ATTACHMENTS FOR CLASS 2 VESSELS, PIPING, PUMPS, AND VALVES						
Item No.	Parts Examined¹	Examination Requirements/Fig. No.	Examination Method	Acceptance Standard	Extent of Examination^{2,3}	Frequency of Examination⁴
C3.10	Pressure Vessels Integrally Welded Attachments	IWC-2500-5	Surface	IWB-3512	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval ⁴
C3.20	Piping Integrally Welded Attachments	IWC-2500-5	Surface	IWB-3512	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval ⁵
C3.30	Pumps Integrally Welded Attachments	IWC-2500-5	Surface	IWB-3512	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval ⁵
C3.40	Valves Integrally Welded Attachments	IWC-2500-5	Surface	IWB-3512	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval ⁵

- NOTES:
- (1) Examination is limited to those integrally welded attachments that meet the following conditions:
 - (a) the attachment is on the outside surface of the pressure retaining component;
 - (b) the attachment provides component support as defined in NF-1110; and
 - (c) the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.
 - (2) The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination.
 - (3) Selected samples of integrally welded attachments shall be examined each inspection interval.
 - (4) In the case of multiple vessels of similar design, function and service, only one integrally welded attachment of only one of the multiple vessels shall be selected for examination.
 - (5) For piping, pumps, and valves, a sample of 10% of the welded attachments associated with the component supports selected for examination under Code Case N-491 shall be examined.
 - (6) Examination is required whenever component support member deformation (e.g., broken, bent, or pulled out parts) is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

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**TABLE 2500-1 (cont'd)
EXAMINATION CATEGORIES**

EXAMINATION CATEGORY D-A, INTEGRAL ATTACHMENTS FOR CLASS 3 VESSELS, PIPING, PUMPS, AND VALVES						
Item No.	Parts Examined¹	Examination Requirements/Fig. No.	Examination Method	Acceptance Standard	Extent of Examination^{2,3}	Frequency of Examination^{3,4}
D1.10	Pressure Vessels Integrally Welded Attachments	IWD-2500-1	Visual, VT-1	IWD-3000	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval
D1.20	Piping Integrally Welded Attachments	IWD-2500-1	Visual, VT-1	IWD-3000	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval
D1.30	Pumps Integrally Welded Attachments	IWD-2500-1	Visual, VT-1	IWD-3000	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval
D1.40	Valves Integrally Welded Attachments	IWD-2500-1	Visual, VT-1	IWD-3000	100% of required areas of each welded attachment	Each identified occurrence and each inspection interval

NOTES:

- (1) Examination is limited to those integrally welded attachments that meet the following conditions:
 - (a) the attachment is on the outside surface of the pressure retaining component;
 - (b) the attachment provides component support as defined in NF-1110; and
 - (c) the attachment weld joins the attachment either directly to the surface of the component or to an integrally cast or forged attachment to the component.
- (2) The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination.
- (3) Selected samples of integrally welded attachments shall be examined each inspection interval. All integrally welded attachments selected for examination shall be subject to corrosion, such as the integrally welded attachments of the Service Water or Emergency Service Water systems. In the case of multiple vessels of similar design, function and service, the integrally welded attachments of only one of the multiple vessels shall be selected for examination. For integrally welded attachments of piping, pumps, and valves, a 10% sample shall be selected for examination. This percentage sample shall be proportional to the total number of nonexempt integrally welded attachments connected to the piping, pumps, and valves, located within each system subject to these examinations.
- (4) Examination is required whenever component support member deformation (e.g., broken, bent, or pulled out parts) is identified during operation, refueling, maintenance, examination, inservice inspection, or testing.

RELIEF REQUEST NUMBER: ISI-07

(Page 1 of 3)

COMPONENT IDENTIFICATION

Code Classes: 1 and 2
References: IWA-5242(a)
Examination Categories: B-P and C-H
Item Numbers: All Item Numbers Listed Under Examination Categories B-P and C-H
Description: Alternate Rules for Insulation Removal During IWB-5000 and IWC-5000 Pressure Tests at Bolted Connections in Systems Borated for the Purpose of Controlling Reactivity
Component Numbers: Bolted Connections in Systems Borated for the Purpose of Controlling Reactivity

CODE REQUIREMENT

ASME Section XI, 1989 Edition, Paragraph IWA-5242(a) states, "For systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for visual examination VT-2."

BASIS FOR RELIEF

Relief is requested from the requirement to remove insulation for visual VT-2 examination of bolted connections during a system pressure test on systems borated for the purpose of controlling reactivity. Union Electric believes that removal of insulation at bolted connections in borated systems solely for a visual VT-2 examination is impractical for the reasons listed below:

- 1) Code Class 1 and 2 systems borated for the purpose of controlling reactivity are extensive and large systems covering many areas and elevations. Scaffolding will be required to access many of the bolted connections. In addition, many of the bolted connections are located in difficult to access areas and in medium to high radiation areas. Insulation removal combined with scaffolding requirements will increase the financial cost, personnel exposure, and generation of radwaste associated with performance of visual VT-2 examinations.
- 2) The visual VT-2 examination of Class 1 systems, primarily the Reactor Coolant System (RCS) piping and components, is performed between plant mode 3 and 2 ascending. As required by IWB-5221, the RCS is at a normal operating pressure of 2235 psig. Between modes 3 and 2 ascending, the temperature is approximately 557 °F. Performance of a visual VT-2 examination, installation of insulation, and disassembly of scaffolding at bolted connections under these operating conditions is a personnel safety hazard. The visual VT-2 examination is a critical path activity and normally has a duration of six to eight hours. Since the majority of Class 1 piping is inside the containment building bio-shield wall, insulation installation and disassembly of scaffolding will add to the outage duration. Critical path cost is currently estimated at \$207,000 per day.

RELIEF REQUEST NUMBER: ISI-07

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Union Electric believes that the established Callaway programs described below in addition to the alternative examination proposed below, provide an acceptable level of safety and quality for bolted connections in systems borated for the purpose of controlling reactivity.

- 1) In response to NRC Generic Letter 88-05, Union Electric has established a program for Engineering to inspect all boric acid leaks discovered in the containment building and to evaluate the impact of those leaks on carbon steel or low alloy steel components. All evidence of leaks, including boric acid crystals or residue, is inspected and evaluated regardless of whether the leak was discovered at power or during an outage. Issues such as the following are considered in the inspection and evaluation: 1) evidence of corrosion or metal degradation, 2) effect the leak may have on the pressure boundary, 3) possibility of boric acid traveling along the inside of insulation on piping, and 4) possibility of dripping or spraying on other components. Based on this evaluation, Engineering initiates appropriate corrective actions to prevent reoccurrence of the leak and to repair, if necessary, any degraded materials or components.
- 2) In addition to the nondestructive examinations required by ASME Section XI, Union Electric has committed to the bolting examination requirements of NRC Bulletin 82-02. In accordance with this Bulletin, at least two nondestructive examination techniques (e.g., ultrasonic, liquid penetrant, magnetic particle, or visual VT-1) are performed on bolted connections of the following components: Steam Generator primary manways, Pressurizer primary manway, Pressurizer safety valves, and a total of 22 Reactor Coolant System isolation valves that are greater than 6" NPS. As a minimum, two nondestructive examination techniques are used whenever the bolted connection of one of the subject components is disassembled for maintenance or other inspection. These additional examinations ensure that degradation mechanisms such as Stress Corrosion Cracking or corrosion do not go undetected in bolted connections critical to reactor safety.
- 3) The only carbon steel components at the Callaway Plant that are in systems borated for the purpose of controlling reactivity are clad with stainless steel. Specifically, these clad components are the Reactor Vessel, Steam Generators (primary side), and Pressurizer. All other piping and components in borated systems that are within inservice inspection boundaries are fabricated of stainless steel. There is substantial information, such as EPRI NP-5679, attesting to the resistance of stainless steels to boric acid corrosion. To ensure that degradation mechanisms in stainless steels are mitigated, Union Electric maintains a program at the Callaway Plant that controls materials (insulation, thread lubricant, boron, etc.) that may come in contact with safety related components, including bolting. This program ensures that impurities are not present in concentrations that would promote development of Stress Corrosion Cracking in stainless steel bolted connections.

RELIEF REQUEST NUMBER: ISI-07

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PROPOSED ALTERNATE EXAMINATION

Bolted connections in systems borated for the purpose of controlling reactivity shall receive a visual VT-2 examination during the system pressure tests of IWB-5000 and IWC-5000 with the insulation installed. If evidence of leakage is detected, either by discovery of active leakage or evidence of boric acid crystals, the insulation shall be removed and the bolted connection shall be re-examined and, if necessary, evaluated in accordance with the corrective measures of Subarticle IWA-5250.

If insulation is removed for planned maintenance, repair, or other inspection at a bolted connection in a system borated for the purpose of controlling reactivity, a visual VT-2 examination shall be performed on the bolted connection prior to disassembly and, if evidence of leakage is discovered, evaluated in accordance with the corrective measures of Subarticle IWA-5250.

RELIEF REQUEST NUMBER: ISI-08

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COMPONENT IDENTIFICATION

Code Classes:	1, 2, and 3
Reference:	IWA-5250(a)(2)
Examination Category:	N/A
Item Number:	N/A
Description:	Alternate Rules for Corrective Measures if Leakage Occurs at a Bolted Connection
Component Numbers:	Class 1, 2, and 3 Pressure-Retaining Bolted Connections

CODE REQUIREMENT

ASME Section XI, 1989 Edition, Subparagraph IWA-5250(a)(2) states, "if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100."

BASIS FOR RELIEF

A leaking environment at a bolted connection may be a significant variable in the degradation mechanism of bolted connections. However, leakage is not the only variable, and in some cases may not be the degradation mechanism. Other variables to be considered are: bolting materials, leaking medium, duration of the leak, and orientation of the leak (not all the bolts may be wetted). These variables are important to consider before disassembling a bolted connection for a visual VT-3 examination. Removal of bolting at a mechanical connection may not be the most prudent decision and may cause undue hardship without a compensating increase in the level of quality or safety. Union Electric proposes an alternative to the requirements of IWA-5250(a)(2) that will provide an equivalent level of quality and safety at Class 1, 2, and 3 bolted connections.

PROPOSED ALTERNATE EXAMINATION

Leakage discovered at a bolted connection by visual VT-2 examination during system pressure test will be evaluated to determine the susceptibility of the bolting to corrosion and potential future failure. The evaluation will, as a minimum, consider the following variables:

- 1) Location of leakage
- 2) History of leakage
- 3) Bolted connection materials
- 4) Visual evidence of corrosion with the connection assembled
- 5) Corrosiveness of the process fluid
- 6) History and studies of similar bolted material in a similar environment
- 7) Other components in the vicinity that may be degraded due to the leakage

RELIEF REQUEST NUMBER: ISI-08

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When evaluation of the variables above indicates the need for further evaluation, the bolt closest to the source of leakage will be removed, receive a visual VT-3 examination, and be evaluated in accordance with IWA-3100(a). If the leakage was identified with the bolted connection in service and evaluation supports continued service, this VT-3 examination may be deferred to the next outage of sufficient duration. When the removed bolt has evidence of rejectable degradation, all remaining bolts shall be removed and subsequently receive a visual VT-3 examination and evaluated in accordance with IWA-3100(a).

RELIEF REQUEST NUMBER: ISI-09

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COMPONENT IDENTIFICATION

Code Class: 2
 Reference: Table IWC-2500-1
 Examination Category: C-H
 Item Numbers: C7.30, C7.40, C7.70, and C7.80
 Description: Alternate Provisions for Pressure Testing Code Class 2 Piping and Valves at Containment Penetrations Where the Balance of the System is Outside the Scope of Section XI.

Component Numbers:	Line Number	Penetration	Description
	BB-103-HCB-1"	P-62	Pressurizer relief tank gas line
	BL-028-HCB-3"	P-25	Reactor water storage tank to RCP standpipes
	BM-053-HBB-3"	P-78	Steam Generator drain
	EC-067-HCB-6"	P-53	Fuel pool cooling return
	EC-072-HCB-6"	P-54	Refueling pool to fuel pool cooling pump suction
	EC-081-HCB-3"	P-55	Refueling pool to fuel pool skimmer pump
	EM-071-BCB-3/4"	P-92	SIS pump test line return to Reactor water storage tank
	GP-003-HBB-1"	P-51	ILRT test connection lines
	GP-005-HBB-1"	P-51	ILRT test connection lines
	GS-025-HBB-6"	P-65	Hydrogen purge subsystem to ESF filters
	GT-007-HBB-36"	V-160	Containment shutdown purge
	GT-004-HBB-36"	V-161	Containment shutdown purge
	GT-029-HBB-18"	V-161	Containment shutdown purge
	GT-034-HBB-18"	V-160	Containment shutdown purge
	GT-033-HBB-18"	V-160	Containment shutdown purge
	GT-030-HBB-18"	V-161	Containment shutdown purge
	HB-015-HCB-3"	P-26	From reactor coolant drain tank heat exchanger
	HB-025-HBB-3/4"	P-44	Reactor coolant drain tank to waste gas compressor
	HD-015-HBB-2"	P-43	Auxiliary steam for reactor vessel head decontamination

RELIEF REQUEST NUMBER: ISI-09

(Page 2 of 3)

Component Numbers (Cont.):	Line Number	Penetration	Description
	KA-244-HCB-1 1/2"	P-30	Compressed air
	KA-259-HCB-1 1/2"	P-30	Compressed air
	KA-051-HBB-5"	P-63	Service air
	KA-261-HBB-1"	P-63	Reactor building service air
	KA-732-HBB-1"	N/A	Personnel hatch penetration test lines
	KA-733-HBB-1"	N/A	Personnel hatch penetration test lines
	KB-001-HCB-2"	P-98	Breathing air
	KC-560-HBB-4"	P-67	Fire protection
	LF-842-HCB-6"	P-32	Containment building floor drain header
	SJ-002-BCB-1"	P-69	Nuclear sampling from pressurizer vapor space
	SJ-003-ECB-1"	P-95	Nuclear sampling from accumulator tanks
	SJ-001-BCB-1"	P-93	Loop 1 hot leg liquid sample to PASS
	SJ-029-BCB-1"	P-93	Loop 1 hot leg liquid sample to PASS
	SJ-021-BCB-1"	P-64	Loop 3 hot leg & pressurizer liquid sample to PASS
	SJ-024-BCB-1"	P-57	PASS to reactor coolant drain tank
	SJ-025-BCB-1"	P-58	PASS to reactor coolant drain tank

CODE REQUIREMENT

ASME Section XI, Table IWC-2500-1, Examination Category C-H, requires the performance of a visual VT-2 examination during a system pressure test on Code Class 2 pressure retaining components. Note 7 of this table states, "The pressure boundary includes only those portions of the system required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required."

RELIEF REQUEST NUMBER: ISI-09

(Page 3 of 3)

BASIS FOR RELIEF

Union Electric Company requests relief from the requirement to perform a pressure test in accordance with ASME Section XI, Table IWC-2500-1, Examination Category C-H on the Code Class 2 lines listed above. Based on the discussion below, these pressure tests are considered redundant and without a compensating increase in the level of quality or safety.

The lines listed above are portions of non-safety related piping systems that penetrate the primary reactor containment. At each containment penetration, the process pipe is classified Code Class 2 and provided with isolation valves that are either locked shut during normal operation, capable of automatic closure, or capable of remote closure to support the containment safety function. The piping and valves are considered part of the primary reactor containment and upgraded to Code Class 2 at the penetration only to support the primary reactor containment safety function. Except for this, the lines listed above provide no safety function.

The primary reactor containment integrity, including all containment penetrations, is periodically verified by performing leakage tests in accordance with a 10 CFR 50, Appendix J. Each of the Code Class 2 lines listed above and their associated isolation valves are tested during an Appendix J, Type A, B or C leakage test at a pressure not less than 48.1 psig. The Type A leakage test is performed three times in a ten year interval and the Type B and C leakage tests are performed at intervals not greater than 24 months. Performance of these Appendix J leak tests will verify the integrity of the subject Code Class 2 lines at each respective penetration. The performance of ASME Section XI, Examination Category C-H pressure tests on these same lines will provide little, if any, additional verification of primary reactor containment integrity. Based on this, the performance of Examination Category C-H pressure tests on these lines is considered by Union Electric to be unnecessary and provides a negligible increase in the level of quality or safety.

PROPOSED ALTERNATE PROVISIONS

Union Electric shall perform 10 CFR 50, Appendix J leakage tests on the primary reactor containment penetration lines listed above, and on their associated valves, in accordance with Callaway Technical Specification 3/4.6.

SECTION 5.0
NRC CORRESPONDENCE

This Section contains all NRC correspondence related to the Second Interval Inservice Inspection Plan at the Callaway Plant. The purpose of this Section is to incorporate NRC correspondence directly into the Inspection Plan so that related requests for information, submittals, decisions and approvals are permanently documented.



JS

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 23, 1995

Mr. Donald F. Schnell
Senior Vice President - Nuclear
Union Electric Company
Post Office Box 149
St. Louis, Missouri 63166

SUBJECT: CALLAWAY - REQUEST FOR ADDITIONAL INFORMATION ON SECOND 10-YEAR
INTERVAL INSERVICE INSPECTION PROGRAM PLAN AND ASSOCIATED REQUEST
FOR RELIEF (TAC NO. M90859)

Dear Mr. Schnell:

By letter dated October 10, 1994, you submitted for NRC review the Callaway Second 10-Year Interval Inservice Inspection Program Plan. The staff, with assistance from its contractor, Idaho National Engineering Laboratory (INEL) has completed its initial review of your submittal. Additional information is required from you in order for the staff to complete its review.

We request you provide your response within 90-days to meet the staff's inservice inspection program plan review schedule. The enclosure summarizes the specific areas for which additional information is needed. In addition, to expedite the review process, please send a copy of your response to the NRC's contractor, INEL, at the following address:

Boyd W. Brown
INEL Research Center
2151 North Boulevard
P.O. Box 1625
Idaho Falls, Idaho 83415-2209

This request for information affects nine or fewer respondents and, therefore, is not subject to the Office of Management and Budget review under P.L. 96-511.

If you have any questions, please feel free to contact me on (301) 415-1396.

Sincerely,

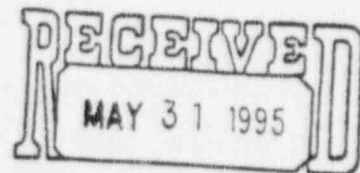
L. Raynard Wharton

L. Raynard Wharton, Project Manager
Project Directorate III-3
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosure: Request for Additional Information

cc w/encl: See next page



A. C. PASSWATER

Mr. D. F. Schnell
Union Electric Company

Callaway Plant
Unit No. 1

cc:

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REQUEST FOR ADDITIONAL INFORMATION
RELATED TO THE
SECOND 10-YEAR INTERVAL SERVICE INSPECTION PROGRAM PLAN
CALLAWAY NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-483

1. Scope/Status of Review

Throughout the service life of a water-cooled nuclear power facility, 10 CFR 50.55a(g)(4) requires that components (including supports) that are classified as American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Class 1, Class 2, and Class 3 meet the requirements, except design and access provisions and preservice examination requirements, set forth in the ASME Code Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. This section of the regulations also requires that inservice examinations of components and system pressure tests conducted during the successive 120-month inspection interval comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of a successive 120-month interval, subject to the limitations and modifications listed therein. The components (including supports) may meet requirements set forth in subsequent editions and addenda of the Code that are incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Nuclear Regulatory Commission (NRC) approval. The licensee, Union Electric Company, has prepared the *Callaway Nuclear Power Plant, Unit 1, Second 10-Year Interval Inservice Inspection Program Plan* to meet the requirements of the 1989 Edition of Section XI of the ASME Code. As required by 10 CFR 50.55(g)(5), if the licensee determines that certain Code examination requirements are impractical and requests relief, the licensee shall submit information to the NRC to support that determination. The staff has reviewed the available information in the *Callaway Nuclear Power Plant, Unit 1, Second 10-Year Interval Inservice Inspection Program Plan*, submitted October 10, 1994.

2. Additional Information Required

Based on the above review, the staff has concluded that the following information and/or clarification is required to complete the review of the Inservice Inspection (ISI) Program.

- A. Provide isometric and/or component drawings showing the Code Class 1 and 2 piping welds, components, and supports that Section XI of the ASME Code requires to be examined during the second 10-year inspection interval. Also provide a listing and schedule of examinations to be performed during the second 10-year inspection interval. The requested items will permit the staff to determine if

the extent of ISI examinations meet the Code requirements of Tables IWB-2500-1, IWC-2500-1, and IWD-2500-1.

- B. Table 3.1, *ASME Section XI Inservice Inspection Summary Table*, of the *Callaway Nuclear Power Plant, Unit 1, Second 10-Year Interval Inservice Inspection Program Plan*, contains a listing of all items subject to inservice inspection. However, it doesn't appear that any heat exchanger inspections are scheduled in Examination Categories B-B, B-D or any other examination category. Provide technical discussion as to why these examinations are not required.
- C. Request for Relief ISI-02 pertains to the volumetric examination of 16 high energy break locations in the reactor coolant pump seal water lines. It is stated that volumetric examination of these 1-1/2 inch NPS Schedule 160 piping welds yield meaningless results. Provide technical discussion describing why an ultrasonic examination of the above mentioned piping would yield meaningless results. In addition, provide technical discussion describing why other types of volumetric examination (i.e. radiography) may not be applicable. Also, explain how a surface examination would provide adequate assurance of piping integrity as inservice degradation normally occurs from the pipe ID.
- D. In Request for Relief ISI-03, ASME Code, Section XI, Table IWF-2500-1, Examination Category F-A, Item No. F1.40 requires a visual examination of 100% of the four reactor vessel support assemblies. Each of these support assemblies consist of the nozzle weld build up, shoe plate, air-cooled box, and steel support structure embedded in the primary shield wall. The majority of the air cooled box and the entire steel support structure are located beneath a steel walk plate and only the top of the air-cooled box is directly accessible. Provide the percentage of examination that is possible without removing the steel walk plate. It is stated that "an additional 20 to 30 percent (examination coverage) of the air-cooled box and a very small percentage of the steel support structure would be made accessible if the steel walk plate and insulation were removed." Provide the specific percentage that can be examined with the walk plate and insulation removed. Has Union Electric considered a remote VT-3 visual examination? What percentage of examination would be possible with a remote examination?
- E. Request for Relief ISI-05 concerns the scheduling requirements of IWB-2420(a) for the Reactor Pressure Vessel nozzle-to-vessel welds, inside radius sections, and nozzle-to-safe end welds. Was 100% of these welds examined during the third period of the first 10-year inspection interval?
- F. As part of the augmented inspection program, vessel inspections are performed per Section 1.4.7, which requires examination per "Code of Federal Regulations, Part 10, [subparagraph] 50.55a(g)(6)(ii)(A), December 31, 1992, 'Augmented Examination of Reactor Vessel'." Provide the staff with the projected schedule and a technical discussion describing how the regulation will be implemented for

these welds at Callaway during the second interval. Include in the discussion a description of the intended approach and any specialized techniques or equipment that will be used to complete the required augmented examinations.

- G. Please verify that there are no additional relief requests, other than those submitted on October 12, 1994. If additional relief requests are required, the licensee should submit them for staff review.

The schedule for timely completion of this review requires that the licensee provide, by the requested date, the above requested information and/or clarifications regarding the Union Electric Company, *Callaway Nuclear Power Plant, Unit 1, Second 10-Year Interval Inservice Inspection Program Plan, Revision 0.*

ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
CALLAWAY NUCLEAR POWER PLANT
DOCKET NO. 50-483

- References:
- 1) Second Ten-Year Interval Inservice Inspection Plan for the Callaway Nuclear Power Plant, Revision 1, Dated August 11, 1995.
 - 2) NRC Letter dated May 23, 1995, Callaway - Request for Additional Information on Second 10-Year Interval Inservice Inspection Program Plan and Associated Request for Relief (TAC No. M90859).

The following paragraphs provide additional information for the Second Ten-Year Interval Inservice Inspection Plan (2nd Interval Inservice Inspection Plan) for the Callaway Nuclear Plant (Reference 1). The NRC staff formally requested this information from Union Electric on May 23, 1995 (Reference 2).

Each paragraph below corresponds directly to the additional information requested in the Section 2 subparagraphs of Reference 2.

- A. The additional information necessary to facilitate review of the 2nd Interval Inservice Inspection Plan is provided in Attachments A, B-1, B-2, B-3, and B-4. Attachment A provides a schedule of inservice inspections planned for the second ten-year interval. This attachment lists the ASME Section XI Examination Category, Item Number, drawing reference, component identification number, schedule (i.e., Period 1, 2, or 3), and examination method for each weld, component, or support selected for inservice inspection at the Callaway Plant. Attachment A also includes a section for inservice inspection of welds at high energy break locations (no break zone welds) and Reactor Coolant Pump flywheels. Attachments B-1, B-2, B-3, and B-4 contain the Inservice Inspection Boundary Drawings, Piping Isometrics, Equipment Detail Drawings, and Component/Equipment Support Drawings, respectively. A listing and description of the attached drawings are contained in the 2nd Interval Inservice Inspection Plan, Sections 2.2, 2.3, 2.4, and 2.5.

The attachments described above provide the information necessary to verify that the extent of inservice inspections scheduled at the Callaway Plant meet the requirements of ASME Section XI, Tables IWB-2500-1, IWC-2500-1, and IWD-2500-1.

- B. The 2nd Interval Inservice Inspection Plan, Table 3.1, correctly omits Examination Category B-B and B-D Code Class 1 heat exchangers. There are no Code Class 1 heat exchangers at the Callaway Plant.

- C. Relief Request ISI-02 pertains to 16 Reactor Coolant Pump (RCP) Seal Water Injection System pipe welds at high energy break locations. These are stainless steel welds joining 1 1/2 NPS schedule 160 pipe. The wall thickness of the pipe is 0.281 inch and the outside diameter is 1.9 inches. The combination of thin wall thickness and small outside diameter make the results obtained with volumetric nondestructive examination methods (i.e., ultrasonic and radiographic) unreliable, and at best, questionable.

A surface examination technique, such as a liquid penetrant, is considered by Union Electric to be more adequate to ensure the structural integrity of the RCP seal injection welds than either a radiographic or ultrasonic examination. This position is based on the following:

1. A volumetric examination on the 1 1/2 NPS seal injection welds goes beyond the current requirements of ASME Section XI Examination Categories B-J, C-F-1, or C-F-2 for Code Class 1 and 2 pipe welds. Code Class 2 pipe welds less than 2 NPS are exempt entirely from nondestructive examination. Only a surface (i.e., liquid penetrant or magnetic particle) examination is required on Code Class 1 pipe welds between 4 NPS and 1 NPS. Code Class 1 Reactor Coolant System (RCS) components operate at nearly the same pressure and at higher temperatures than the RCP Seal Water Injection System at the high energy break locations. It is reasonable to assume that the liquid penetrant examination required to ensure the integrity of small bore RCS pipe welds is equally adequate to ensure the structural integrity of the high energy RCP seal injection welds.
2. Ultrasonic examination of the RCP seal injection welds is questionable due to transducer near field effects, beam redirection, and excessive sound attenuation in stainless steel welds. The 1/2 vee ultrasonic examination technique is questionable due to transducer near field effects. When performing calibrations on 1 1/2 NPS schedule 160 pipe the 1/2 t calibration hole cannot be resolved. Extended beam path techniques are also questionable due to beam redirection and excessive sound attenuation in the weld volume. Recent Appendix VIII performance demonstrations at the EPRI NDE Center reveal that extended beam path techniques performed from one side of the weld are unreliable for detection of the Appendix VIII implanted mechanical and thermal fatigue cracks in stainless steel welds.
3. Radiography is ideal for detection of construction type weld flaws, however, tight service induced (i.e., crack like) flaws are not typically detected. Radiographic examination for crack like indications is almost totally ineffective unless the indication is aligned exactly perpendicular to the radiation source. In addition, with small diameter pipe, a double wall shot technique is required, thus further reducing the probability of detecting a crack like indication.
4. There is no history of inside diameter service induced degradation mechanisms.

such as Intergranular Stress Corrosion Cracking (IGSCC), on small bore RCP seal injection lines in Pressurized Water Reactor plants. A search on the Nuclear Plant Reliability Data System (NPRDS) revealed only one failure of a pressure boundary in an RCP seal injection line. In this instance the crack initiated from a construction flaw at the weld root due to mechanical vibration. A similar failure is unlikely at the Callaway Plant since the subject RCP seal injection welds are high quality full penetration butt welds installed and tested in accordance with ASME Section III.

5. The primary flaw initiator for small bore pipe is typically vibration induced fatigue. In the absence of an internal flaw where a crack may propagate, fatigue cracks typically initiate from the pipe outside diameter since the maximum stress due to cyclic bending is located on the outside surface membrane. Furthermore, fatigue failures normally occur at gross structural discontinuities such as socket welded joints. The subject RCP seal injection welds are all full penetration single vee butt joints.
- D. Code Case N-491, Table -2500-1 requires a 100% visual examination of the Reactor Vessel supports. As stated in Callaway Relief Request ISI-03, only the nozzle weld buildup and shoe plate are completely accessible for visual inspection. ISI-03 requests relief from visual inspection of the support components beneath the walk plate and insulation. The information below is provided to supplement ISI-03. Detail drawings of the Reactor Vessel supports are provided in Attachment C.

With the walk plate and insulation installed only the topmost portion, or approximately 30 percent, of the air cooled box is accessible for visual inspection. As stated in ISI-03, removal of the insulation and walk plate would increase the inspection coverage by 20 to 30 percent or result in visual inspection of approximately 36 to 39 percent of the air cooled box.

Union Electric has neither performed nor attempted a remote visual inspection of those parts of the Reactor Vessel supports below the walk plate. A remote inspection has not been performed or attempted for the following reasons:

1. Callaway Relief Request Q granted relief from the inaccessible portions of the Reactor Vessel supports beneath the walk plate. Relief Request Q was approved by the staff for the first ten-year interval.
2. The only additional parts of the Reactor Vessel support accessible to remote visual inspection are the end sections of two I-beams, the corresponding I-beam end stiffener plates, and the vessel side of the air cooled box. These accessible parts are loaded in compression with no bending or tension loads. Visual inspection of these parts would provide little, if any, indication of support structural integrity.
3. It is Union Electric's position that the additional man-rem exposure and cost expended to remove and re-install the insulation and walk plate to increase direct

visual inspection coverage or to perform a limited remote visual inspection of the Reactor Vessel supports with the insulation and walk plates installed provides no additional assurance of structural integrity or material condition.

Based on the above and on information provided in ISI-03, Union Electric considers the slight increase in visual inspection coverage to be impractical.

- E. Callaway Relief Request ISI-05 requests deferral to the end of the second ten-year interval examination of the Reactor Vessel nozzle-to-vessel welds, nozzle inside radius sections, and nozzle-to-safe end welds. These examinations will not be deferred over a time period exceeding the ten years, plus one year, allowed by ASME Section XI. One hundred percent of these nozzle examinations were performed during the third period of the first ten-year interval and are scheduled again for the third period of the second ten-year interval.
- F. As noted in Reference 2, the Code of Federal Regulations, Part 10, Subparagraph 50.55a(g)(6)(ii)(A) invokes new augmented Reactor Vessel shell weld examinations. These new rules are incorporated in the 2nd Interval Inservice Inspection Plan as documented in Subsection 1.4. Specifically, 100% of the Reactor Vessel shell welds are scheduled for volumetric examination in the third period of the second ten-year interval.

The Reactor Vessel shell weld volumetric examinations will be performed in accordance with ASME Section XI, Article IWB and Regulatory Guide 1.150. These examinations are specified in the 2nd Interval Inservice Inspection Plan, Table 3.1 (Examination Category B-A) and Table 3.2.

- G. There are no additional relief requests, other than those submitted with the 2nd Interval Inservice Inspection Plan on October 12, 1994. As noted in Paragraph 4.4.3 of the 2nd Interval Inservice Inspection Plan, relief requests for incomplete examinations will be submitted as examinations are performed and conditions identified which prevent less than 90% completion.

August 11, 1995

**ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
CALLAWAY NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-483**

ATTACHMENT A

CALLAWAY 2ND INTERVAL INSERVICE INSPECTION SCHEDULE

Callaway 2nd Interval Inservice Inspection Schedule

11-Aug-95

Exam Category	Item Number	Drawing	Component	Period	Exam Method
B-A	PRESSURE RETAINING WELDS IN REACTOR VESSEL				
	B1.11	CIRCUMFERENTIAL SHELL WELDS			VOLUMETRIC
		ISI-RBB01 Sht. 1			
			2-RV-101-171	3	
			2-RV-103-121	3	
	B1.12	LONGITUDINAL SHELL WELDS			VOLUMETRIC
		ISI-RBB01 Sht. 1			
			2-RV-101-122A	3	
			2-RV-101-122B	3	
			2-RV-101-122C	3	
			2-RV-101-124A	3	
			2-RV-101-124B	3	
			2-RV-101-124C	3	
			2-RV-101-142A	3	
			2-RV-101-142B	3	
			2-RV-101-142C	3	
	B1.21	CIRCUMFERENTIAL HEAD WELDS			VOLUMETRIC
		ISI-RBB01 Sht. 1			
			2-CH-103-101	1	
			2-RV-101-141	3	
			2-RV-102-151	3	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
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B1.22		MERIDIONAL HEAD WELDS			VOLUMETRIC
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ISI-RBB01 Sht. 1

2-CH-101-104A	1
2-CH-101-104B	1
2-CH-101-104C	1
2-CH-101-104D	1
2-RV-101-154A	3
2-RV-101-154B	3
2-RV-101-154C	3
2-RV-101-154D	3

B1.30		SHELL TO FLANGE WELD			VOLUMETRIC
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ISI-RBB01 Sht. 1

2-RV-101-121	1 3
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B1.40		HEAD TO FLANGE WELD			SURF. & VOL.
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ISI-RBB01 Sht. 1

2-CH-101-101	1
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B-B PRESSURE RETAINING WELDS IN VESSELS OTHER THAN REACTOR VESSEL

B2.11		PRESSURIZER CIRCUMFERENTIAL SHELL TO HEAD WELDS			VOLUMETRIC
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ISI-TBB03 Sht.1 & 2

2-TBB03-CIRCUM-1-W	2
2-TBB03-CIRCUM-5-W	2

Exam Category	Item Number	Drawing	Component	Period	Exam Method
	B2.12		PRESSURIZER LONGITUDINAL SHELL TO HEAD WELDS		VOLUMETRIC
		ISI-TBB03 Sht.1 & 2			
			2-TBB03-SEAM-1-W	2	
			2-TBB03-SEAM-4-W	2	
	B2.40		STEAM GENERATOR TUBE SHEET TO HEAD WELD		VOLUMETRIC
		ISI-EBB01A Sht. 1			
			2-EBB01A-SEAM-1-W	1	
		ISI-EBB01B Sht. 1			
			2-EBB01B-SEAM-1-W	2	
		ISI-EBB01C Sht. 1			
			2-EBB01C-SEAM-1-W	2	
		ISI-EBB01D Sht. 1			
			2-EBB01D-SEAM-1-W	3	
B-D			FULL PENETRATION OF NOZZLES IN VESSELS		
	B3.100		REACTOR VESSEL NOZZLE INSIDE RADIUS SECTION		VOLUMETRIC
		ISI-RBB01 Sht. 1			
			2-RV-105-121-A-IR	3	
			2-RV-105-121-B-IR	3	
			2-RV-105-121-C-IR	3	
			2-RV-105-121-D-IR	3	
			2-RV-107-121-A-IR	3	
			2-RV-107-121-B-IR	3	
			2-RV-107-121-C-IR	3	
			2-RV-107-121-D-IR	3	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
B3.110		PRESSURIZER NOZZLE TO VESSEL WELDS			VOLUMETRIC
		ISI-TBB03 Sht.1 & 2			
		2-TBB03-10A-W		3	
		2-TBB03-10B-A-W		1	
		2-TBB03-10B-B-W		1	
		2-TBB03-10B-C-W		2	
		2-TBB03-10B-D-W		2	
		2-TBB03-10C-W		3	
B3.120		PRESSURIZER NOZZLE INSIDE RADIUS SECTION			VOLUMETRIC
		ISI-TBB03 Sht.1			
		2-TBB03-10A-IR		3	
		2-TBB03-10B-A-IR		1	
		2-TBB03-10B-B-IR		1	
		2-TBB03-10B-C-IR		2	
		2-TBB03-10B-D-IR		2	
		2-TBB03-10C-IR		3	
B3.140		STEAM GENERATOR (PRIMARY SIDE) INSIDE RADIUS SECTION			VOLUMETRIC
		ISI-EBB01A Sht. 1			
		2-EBB01A-1-A-IR		1	
		2-EBB01A-1-B-IR		1	
		ISI-EBB01B Sht. 1			
		2-EBB01B-1-A-IR		2	
		2-EBB01B-1-B-IR		2	
		ISI-EBB01C Sht. 1			
		2-EBB01C-1-A-IR		2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-EBB01C-1-B-IR	2	
		ISI-EBB01D Sht. 1			
			2-EBB01D-1-A-IR	3	
			2-EBB01D-1-B-IR	3	
B3.90		REACTOR VESSEL NOZZLE TO VESSEL WELDS			VOLUMETRIC
		ISI-RBB01 Sht. 1			
			2-RV-105-121-A	3	
			2-RV-105-121-B	3	
			2-RV-105-121-C	3	
			2-RV-105-121-D	3	
			2-RV-107-121-A	3	
			2-RV-107-121-B	3	
			2-RV-107-121-C	3	
			2-RV-107-121-D	3	
B-E		PRESSURE RETAINING PARTIAL PENETRATION WELDS IN VESSELS			
B4.11		PARTIAL PENETRATION VESSEL NOZZLE WELDS (See note 3)			VISUAL, VT-2
		ISI-RBB01 Sht. 1			
			2-CH-107-101	1	
B4.12		PARTIAL PENETRATION CONTROL ROD DRIVE NOZZLE WELDS (See note 3)			VISUAL, VT-2
		ISI-RBB01 Sht. 1			
			2-CH-112-201	1	
			2-CH-112-202-(2-5)	1	
			2-CH-112-203-(6-9)	1	
			2-CH-112-204-(10-13)	1	
			2-CH-112-205-(14-17)	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-CH-112-206-(18-21)	1	
			2-CH-112-207-(22-29)	1	
			2-CH-112-208-(30-37)	1	
			2-CH-112-209-(38-41)	1	
			2-CH-112-210-(42-49)	1	
			2-CH-112-211-(50-53)	1	
			2-CH-112-212-(54-61)	1	
			2-CH-112-213-(62-65)	1	
			2-CH-112-214-(66-73)	1	
			2-CH-112-215-(74-78)	1	
B4.13			PARTIAL PENETRATION INSTRUMENTATION NOZZLE WELDS (See note 3)		VISUAL, VT-2
			ISI-RBB01 Sht. 1		
			2-RV-201-151-(1-58)W	1	
B4.20			PARTIAL PENETRATION PRESSURIZER HEATER PENETRATION WELDS		VISUAL, VT-2
			ISI-TBB03 Sht.1		
			2-TBB03-HTRS-(1-78)W	1	
B-F			PRESSURE RETAINING DISSIMILAR METAL WELDS		
B5.10			REACTOR VESSEL DISSIMILAR METAL NOZZLE TO SAFE END BUTT WELDS 4 NPS OR LARGER		SURF. & VOL.
			ISI-RBB01 Sht. 1		
			2-RV-301-121-A	3	
			2-RV-301-121-B	3	
			2-RV-301-121-C	3	
			2-RV-301-121-D	3	
			2-RV-302-121-A	3	
			2-RV-302-121-B	3	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-RV-302-121-C	3	
			2-RV-302-121-D	3	
B5.40			PRESSURIZER DISSIMILAR METAL NOZZLE TO SAFE END BUTT WELDS NPS 4 OR LARGER		SURF. & VOL.
			ISI-TBB03 Sht.1		
			2-TBB03-1-W	3	
			2-TBB03-2-W	3	
			2-TBB03-3-A-W	1	
			2-TBB03-3-B-W	1	
			2-TBB03-3-C-W	2	
			2-TBB03-4-W	2	
B5.70			STEAM GENERATOR DISSIMILAR METAL NOZZLE TO ELBOW BUTT WELDS NPS 4 OR LARGER		SURF. & VOL.
			BB-01-01 Sht. 1		
			2-BB-01-F104	3	
			2-BB-01-F105	3	
			BB-02-01 Sht. 1		
			2-BB-01-F204	2	
			2-BB-01-F205	2	
			BB-03-01 Sht. 1		
			2-BB-01-F304	1	
			2-BB-01-F305	1	
			BB-04-01 Sht. 1		
			2-BB-01-F404	2	
			2-BB-01-F405	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
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B-G-1		PRESSURE RETAINING BOLTING GREATER THAN 2 INCHES IN DIAMETER			
	B6.10	REACTOR VESSEL CLOSURE HEAD NUTS			VISUAL, VT-1

ISI-RBB01 Sht. 1

2-CH-NUT-01	1
2-CH-NUT-02-R1	3
2-CH-NUT-03	1
2-CH-NUT-04-R1	3
2-CH-NUT-05-R1	3
2-CH-NUT-06	1
2-CH-NUT-07-R1	3
2-CH-NUT-08	3
2-CH-NUT-09-R1	3
2-CH-NUT-10	1
2-CH-NUT-11	3
2-CH-NUT-12	3
2-CH-NUT-13	1
2-CH-NUT-14	3
2-CH-NUT-15	3
2-CH-NUT-16	1
2-CH-NUT-17	3
2-CH-NUT-18	3
2-CH-NUT-19	1
2-CH-NUT-20	3
2-CH-NUT-21	3
2-CH-NUT-22	1
2-CH-NUT-23	3
2-CH-NUT-24-R1	1
2-CH-NUT-25	1
2-CH-NUT-26	3

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-CH-NUT-27	3	
			2-CH-NUT-28	1	
			2-CH-NUT-29	3	
			2-CH-NUT-30	3	
			2-CH-NUT-31	1	
			2-CH-NUT-32	3	
			2-CH-NUT-33	3	
			2-CH-NUT-34	1	
			2-CH-NUT-35-R1	3	
			2-CH-NUT-36	3	
			2-CH-NUT-37	1	
			2-CH-NUT-38	3	
			2-CH-NUT-39	3	
			2-CH-NUT-40	1	
			2-CH-NUT-41	3	
			2-CH-NUT-42-R1	1	
			2-CH-NUT-43	1	
			2-CH-NUT-44	3	
			2-CH-NUT-45	3	
			2-CH-NUT-46	1	
			2-CH-NUT-47	3	
			2-CH-NUT-48	3	
			2-CH-NUT-49	1	
			2-CH-NUT-50	3	
			2-CH-NUT-51	3	
			2-CH-NUT-52	1	
			2-CH-NUT-53-R1	3	
			2-CH-NUT-54	3	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
	B6.180		BOLTS & STUDS IN PUMPS		VOLUMETRIC
		ISI-PUMPS Sht. 1			
			2-PBB01A-BOLT (1-24)	3	
B6.190			FLANGE SURFACE WHEN CONNECTION DISASSEMBLED IN PUMPS		VISUAL VT-1
		ISI-PUMPS Sht. 1			
			2-PBB01A-FLANGE	1	
B6.200			NUTS, BUSHINGS & WASHERS IN PUMPS		VISUAL VT-1
		ISI-PUMPS Sht. 1			
			2-PBB01A-WASHER (1-24)	3	
B6.30			REACTOR VESSEL CLOSURE STUDS, WHEN REMOVED		SURF. & VOL.
		iSI-RBB01 Sht. 1			
			2-CH-STUD-01	1	
			2-CH-STUD-02-R1	1	
			2-CH-STUD-03	1	
			2-CH-STUD-04-R1	1	
			2-CH-STUD-05-R1	1	
			2-CH-STUD-06	1	
			2-CH-STUD-07-R1	1	
			2-CH-STUD-08	3	
			2-CH-STUD-09-R1	1	
			2-CH-STUD-10	1	
			2-CH-STUD-11	3	
			2-CH-STUD-12	3	
			2-CH-STUD-13	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-CH-STUD-14	3	
			2-CH-STUD-15-R1	1	
			2-CH-STUD-16	1	
			2-CH-STUD-17	3	
			2-CH-STUD-18	3	
			2-CH-STUD-19	1	
			2-CH-STUD-20	3	
			2-CH-STUD-21	3	
			2-CH-STUD-22	1	
			2-CH-STUD-23	3	
			2-CH-STUD-24-R1	1	
			2-CH-STUD-25	1	
			2-CH-STUD-26	3	
			2-CH-STUD-27	3	
			2-CH-STUD-28	1	
			2-CH-STUD-29	3	
			2-CH-STUD-30	3	
			2-CH-STUD-31	1	
			2-CH-STUD-32	3	
			2-CH-STUD-33	3	
			2-CH-STUD-34	1	
			2-CH-STUD-35-R1	1	
			2-CH-STUD-36	3	
			2-CH-STUD-37	1	
			2-CH-STUD-38	3	
			2-CH-STUD-39	3	
			2-CH-STUD-40	1	
			2-CH-STUD-41	3	
			2-CH-STUD-42-R1	3	
			2-CH-STUD-43	1	
			2-CH-STUD-44	3	
			2-CH-STUD-45	3	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-CH-STUD-46	1	
			2-CH-STUD-47	3	
			2-CH-STUD-48	3	
			2-CH-STUD-49	1	
			2-CH-STUD-50	3	
			2-CH-STUD-51	3	
			2-CH-STUD-52	1	
			2-CH-STUD-53-R1	3	
			2-CH-STUD-54	3	
B6.40		THREADS IN VESSEL FLANGE			VOLUMETRIC

ISI-RBB01 Sht. 1

2-RV-LIG-01	3
2-RV-LIG-02	3
2-RV-LIG-03	3
2-RV-LIG-04	3
2-RV-LIG-05	3
2-RV-LIG-06	3
2-RV-LIG-07	3
2-RV-LIG-08	3
2-RV-LIG-09	3
2-RV-LIG-10	3
2-RV-LIG-11	3
2-RV-LIG-12	3
2-RV-LIG-13	3
2-RV-LIG-14	3
2-RV-LIG-15	3
2-RV-LIG-16	3
2-RV-LIG-17	3
2-RV-LIG-18	3
2-RV-LIG-19	3

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-RV-LIG-20	3	
			2-RV-LIG-21	3	
			2-RV-LIG-22	3	
			2-RV-LIG-23	3	
			2-RV-LIG-24	3	
			2-RV-LIG-25	3	
			2-RV-LIG-26	3	
			2-RV-LIG-27	3	
			2-RV-LIG-28	3	
			2-RV-LIG-29	3	
			2-RV-LIG-30	3	
			2-RV-LIG-31	3	
			2-RV-LIG-32	3	
			2-RV-LIG-33	3	
			2-RV-LIG-34	3	
			2-RV-LIG-35	3	
			2-RV-LIG-36	3	
			2-RV-LIG-37	3	
			2-RV-LIG-38	3	
			2-RV-LIG-39	3	
			2-RV-LIG-40	3	
			2-RV-LIG-41	3	
			2-RV-LIG-42	3	
			2-RV-LIG-43	3	
			2-RV-LIG-44	3	
			2-RV-LIG-45	3	
			2-RV-LIG-46	3	
			2-RV-LIG-47	3	
			2-RV-LIG-48	3	
			2-RV-LIG-49	3	
			2-RV-LIG-50	3	
			2-RV-LIG-51	3	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-RV-LIG-52	3	
			2-RV-LIG-53	3	
			2-RV-LIG-54	3	
B6.50			REACTOR VESSEL CLOSURE WASHERS, BUSHINGS		VISUAL, VT-1

ISI-RBB01 Sht. 1

2-CH-WASH-01	1
2-CH-WASH-02	1
2-CH-WASH-03	1
2-CH-WASH-04	1
2-CH-WASH-05	1
2-CH-WASH-06	1
2-CH-WASH-07	1
2-CH-WASH-08	1
2-CH-WASH-09	1
2-CH-WASH-10	1
2-CH-WASH-11	1
2-CH-WASH-12	1
2-CH-WASH-13	1
2-CH-WASH-14	1
2-CH-WASH-15	1
2-CH-WASH-16	1
2-CH-WASH-17	1
2-CH-WASH-18	1
2-CH-WASH-19	1
2-CH-WASH-20	1
2-CH-WASH-21	1
2-CH-WASH-22	1
2-CH-WASH-23	1
2-CH-WASH-24	1
2-CH-WASH-25	1

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-CH-WASH-26	1	
			2-CH-WASH-27	1	
			2-CH-WASH-28	1	
			2-CH-WASH-29	1	
			2-CH-WASH-30	1	
			2-CH-WASH-31	1	
			2-CH-WASH-32	1	
			2-CH-WASH-33	1	
			2-CH-WASH-34	1	
			2-CH-WASH-35	1	
			2-CH-WASH-36	1	
			2-CH-WASH-37	1	
			2-CH-WASH-38	1	
			2-CH-WASH-39	1	
			2-CH-WASH-40	1	
			2-CH-WASH-41	1	
			2-CH-WASH-42	1	
			2-CH-WASH-43	1	
			2-CH-WASH-44	1	
			2-CH-WASH-45	1	
			2-CH-WASH-46	1	
			2-CH-WASH-47	1	
			2-CH-WASH-48	1	
			2-CH-WASH-49	1	
			2-CH-WASH-50	1	
			2-CH-WASH-51	1	
			2-CH-WASH-52	1	
			2-CH-WASH-53	1	
			2-CH-WASH-54	1	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
B-G-2			PRESSURE RETAINING BOLTING, 2 INCHES AND LESS IN DIAMETER		
	B7.20		BOLTS, STUDS, & NUTS IN PRESSURIZER		VISUAL, VT-1
		ISI-TBB03 Sht.1			
			2-TBB03-10D-(1-16)-b	1	
	B7.30		BOLTS, STUDS, & NUTS IN STEAM GENERATOR		VISUAL, VT-1
		ISI-EBB01A Sht. 1			
			2-EBB01A-2-A-(1-16)-b	1	
			2-EBB01A-2-B-(1-16)-b	1	
		ISI-EBB01B Sht. 1			
			2-EBB01B-2-A-(1-16)-b	2	
			2-EBB01B-2-B-(1-16)-b	2	
		ISI-EBB01C Sht. 1			
			2-EBB01C-2-A-(1-16)-b	2	
			2-EBB01C-2-B-(1-16)-b	2	
		ISI-EBB01D Sht. 1			
			2-EBB01D-2-A-(1-16)-b	3	
			2-EBB01D-2-B-(1-16)-b	3	
	B7.50		BOLTS, STUDS, & NUTS IN PIPING		VISUAL, VT-1
		BB-01-08 Sht. 1			
			2-BB-08-FL1-b	1	
		BB-02-02 Sht. 1			
			2-BB-02-8010A-FL-b	2	
			2-BB-02-8010B-FL-b	3	
			2-BB-02-8010C-FL-b	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
		BB-02-11 Sht. 1			
			2-BB-11-FL1-b	3	
		BB-03-09 Sht. 1			
			2-BB-09-FL1-b	3	
		BB-04-07 Sht. 1			
			2-BB-07-FL1-b	2	
		EM-06-03 Sht. 1			
			2-EM-03-FE-924-FL-b	3	
			2-EM-03-FE-925-FL-b	2	
			2-EM-03-FE-926-FL-b	2	
			2-EM-03-FE-927-FL-b	1	
B7.70		BOLTS, STUDS, & NUTS IN VALVES			VISUAL, VT-1
		BB-02-02 Sht. 1			
			2-BB-02-8010A-b	2	
			2-BB-02-8010B-b	3	
			2-BB-02-8010C-b	1	
		EJ-01-04 Sht. 1			
			2-EJ-04-BB-PV8702A-b	3	
			2-EJ-04-HV-8701A-b	3	
		EJ-02-04 Sht. 1			
			2-EJ-04-BB-PV8702B-b	1	
			2-EJ-04-HV-8701B-b	1	
		EJ-02-04 Sht. 3			
			2-EM-03-EJ-8841A-b	3	
			2-EM-03-EJ-8841B-b	1	
		EM-03-05 Sht. 1			
			2-EM-05-BB-8949A-b	1	
			2-EM-05-BB-8949D-b	3	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
		EM-04-03 Sht. 1			
			2-EM-03-BB-8949B-b	2	
			2-EM-03-BB-8949C-b	2	
		EP-01-01 Sht. 1			
			2-EP-01-8818A-b	1	
			2-EP-01-8956A-b	1	
			2-EP-01-BB-8948A-b	1	
		EP-02-02 Sht. 1			
			2-EP-02-8818B-b	2	
			2-EP-02-8956B-b	2	
			2-EP-02-BB-8948B-b	2	
		EP-03-02 Sht. 1			
			2-EP-02-8818C-b	2	
			2-EP-02-8956C-b	2	
			2-EP-02-BB-8948C-b	2	
		EP-04-01 Sht. 1			
			2-EP-01-8818D-b	3	
			2-EP-01-8956D-b	3	
			2-EP-01-BB-8948D-b	3	
B-J		PRESSURE RETAINING WELDS IN PIPING			
	B9.11	CIRCUMFERENTIAL WELDS IN PIPING NPS 4 OR LARGER			SURF. & VOL.
		BB-01-01 Sht. 1			
			2-BB-01-F101	3	
			2-BB-01-F107	3	
			2-BB-01-S102-2	3	
		BB-01-02 Sht. 1			
			2-BB-02-F008	1	
			2-BB-02-F009	1	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-BB-02-FW2	1	
			2-BB-02-S010-B	1	
		BB-01-04 Sht. 1			
			2-BB-04-F001	3	
			2-BB-04-F015	3	
		BB-01-04 Sht. 2			
			2-BB-04-F008	3	
			2-BB-04-F012	3	
			2-BB-04-F022	3	
		BB-02-01 Sht. 1			
			2-BB-01-F201	2	
			2-BB-01-F207	2	
		BB-02-02 Sht. 1			
			2-BB-02-F001	2	
			2-BB-02-F005	2	
			2-BB-02-F006	2	
			2-BB-02-S001-J	2	
			2-BB-02-S006-E	2	
			2-BB-02-S007-D	2	
			2-BB-02-S007-E	2	
			2-BB-02-S007-J	2	
		BB-03-01 Sht. 1			
			2-BB-01-F301	1	
			2-BB-01-F307	1	
			2-BB-01-S305-4	1	
		BB-04-01 Sht. 1			
			2-BB-01-F401	2	
			2-BB-01-F407	2	
			2-BB-01-S402-2	2	
		BB-05-01 Sht. 1			
			2-BB-01-F001	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-BB-01-F002	1	
			2-BB-01-F004	1	
		EJ-01-04 Sht. 1			
			2-EJ-04-F030	3	
			2-EJ-04-F031	3	
			2-EJ-04-F034	2	
		EJ-02-04 Sht. 1			
			2-EJ-04-F023	1	
			2-EJ-04-F024	3	
			2-EJ-04-F026	2	
			2-EJ-04-S014-D	1	
			2-EJ-04-S015-C	1	
		EM-03-05 Sht. 1			
			2-EM-05-F007	1	
			2-EM-05-S005-B	1	
		EM-04-03 Sht. 1			
			2-EJ-04-F017	2	
			2-EM-03-F009	3	
			2-EM-03-F010	2	
			2-EM-03-F016	1	
			2-EM-03-S011-F	2	
			2-EM-03-S015-B	2	
		EP-01-01 Sht. 1			
			2-EP-01-F007	1	
			2-EP-01-F008	3	
			2-EP-01-F010	1	
			2-EP-01-F012	1	
			2-EP-01-S003-E	1	
			2-EP-01-S003-F	1	
		EP-02-02 Sht. 1			
			2-EP-02-F007	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-EP-02-F008	2	
			2-EP-02-F009	2	
			2-EP-02-F010	2	
			2-EP-02-S003-F	2	
			2-EP-02-S003-G	2	
		EP-03-02 Sht. 1			
			2-EP-02-F018	2	
			2-EP-02-F019	1	
			2-EP-02-F020	3	
			2-EP-02-F021	3	
			2-EP-02-S008-D	3	
			2-EP-02-S008-F	3	
		EP-04-01 Sht. 1			
			2-EP-01-F019	1	
			2-EP-01-F020	2	
			2-EP-01-F022	2	
			2-EP-01-S013-B	3	
			2-EP-01-S013-C	3	
			2-EP-01-S013-K	2	
		ISI-RBB01 Sht. 4			
			2-BB-01-F102	3	
			2-BB-01-F103	3	
			2-BB-01-F202	3	
			2-BB-01-F203	3	
			2-BB-01-F302	3	
			2-BB-01-F303	3	
			2-BB-01-F402	3	
			2-BB-01-F403	3	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
B9.21			CIRCUMFERENTIAL WELDS IN PIPING LESS THAN NPS 4		SURFACE
		BB-01-01 Sht. 1			
			2-BB-01-S101-13	3	
		BB-01-02 Sht. 1			
			2-BB-02-F012	1	
			2-BB-02-F019	1	
			2-BB-02-FW25	1	
			2-BB-02-FW3	1	
			2-BB-02-S010-F	1	
			2-BB-02-S010-G	1	
			2-BB-02-S010-H	1	
			2-BB-02-S014-B	1	
			2-BB-02-S014-C	1	
		BB-01-08 Sht. 1			
			2-BB-08-FW040	1	
			2-BB-08-FW041-A-R-1	1	
			2-BB-08-FW053	1	
			2-BB-08-V121-2	1	
		BB-02-01 Sht. 1			
			2-BB-01-S201-15	2	
			2-BB-06-F001	2	
			2-BB-06-F006	2	
		BB-02-11 Sht. 1			
			2-BB-11-FW017	3	
			2-BB-11-V151-2	3	
		BB-03-01 Sht. 1			
			2-BB-01-S301-9	1	
		BB-03-09 Sht. 1			
			2-BB-09-V181-1	3	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-BB-09-V181-2	3	
	BB-04-01 Sht. 1				
			2-BB-01-S401-10	2	
	BB-04-07 Sht. 1				
			2-BB-07-FW001	2	
			2-BB-07-FW030	2	
	BB-06-01 Sht. 1				
			2-HB-24-FW079-A	3	
			2-HB-24-FW080	3	
	BG-01-21 Sht. 1				
			2-BG-21-F011	2	
			2-BG-21-F012	2	
			2-BG-21-F013	2	
			2-BG-21-F014	3	
			2-BG-21-F024	2	
			2-BG-21-F025	2	
			2-BG-21-F026	2	
			2-BG-21-F027	2	
	BG-02-22 Sht. 1				
			2-HB-24-FW051	3	
			2-HB-24-FW052	3	
	BG-03-23 Sht. 1				
			2-BG-23-FW145	1	
			2-BG-23-FW149	1	
			2-BG-23-FW150	1	
	BG-05-24 Sht. 1				
			2-BG-24-FW060	3	
			2-BG-24-FW067	3	
			2-BG-24-FW068	3	
	EM-03-05 Sht. 1				
			2-EM-05-FW005	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-EM-05-FW016	1	
			2-EM-05-FW025	1	
			2-EM-05-FW076	1	
			2-EM-05-FW082	1	
			2-EM-05-FW083	1	
			2-EM-05-FW084	1	
			2-EM-05-FW087	2	
			2-EM-05-FW098	2	
			2-EM-05-FW108	2	
			2-EM-05-FW109	2	
		EM-06-03 Sht. 1			
			2-EM-03-BBV001-1	3	
			2-EM-03-BBV022-1	2	
			2-EM-03-BBV040-1	1	
			2-EM-03-BBV059-1	2	
			2-EM-03-F002	3	
			2-EM-03-FW113	2	
			2-EM-03-FW2	3	
			2-EM-03-FW227	2	
			2-EM-03-FW235	3	
			2-EM-03-FW242	3	
			2-EM-03-FW259	1	
			2-EM-03-FW269	2	
			2-EM-03-FW270	3	
			2-EM-03-FW272	3	
			2-EM-03-FW274	3	
		EP-01-01 Sht. 1			
			2-EP-01-FW049	3	
			2-EP-01-FW060	3	
		EP-02-02 Sht. 1			
			2-EP-02-FW008	2	
			2-EP-02-FW009	2	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
			2-EP-02-V020-2	2	
		EP-03-02 Sht. 1			
			2-EP-02-V030-2	3	
		EP-04-01 Sht. 1			
			2-EP-01-FW046	3	
			2-EP-01-FW047	3	
			2-EP-01-V040-2	3	
B9.31			BRANCH PIPE CONNECTION WELDS NPS 4 OR LARGER		SURF. & VOL.
		BB-01-01 Sht. 1			
			2-BB-01-S101-7	3	
		BB-03-01 Sht. 1			
			2-BB-01-S302-3	1	
		BB-04-01 Sht. 1			
			2-BB-01-S402-3	2	
		EJ-01-04 Sht. 1			
			2-EJ-04-S018-F	3	
B9.32			BRANCH PIPE CONNECTION WELDS LESS THAN NPS 4		SURFACE
		BB-01-04 Sht. 1			
			2-BB-04-S002-L	3	
		BG-02-22 Sht. 1			
			2-BG-22-S001-F	3	
		EM-04-03 Sht. 1			
			2-EM-03-S013-B	2	
		EM-06-03 Sht. 1			
			2-EM-03-S003-F	2	
			2-EM-03-S003-G	3	
			2-EM-03-S003-N	3	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
		EP-01-01 Sht. 1	2-EP-01-S005-F	1	
		EP-02-02 Sht. 1	2-EP-02-S005-B	2	
		EP-03-02 Sht. 1	2-EP-02-S010-B	3	
		EP-04-01 Sht. 1	2-EP-01-S011-J	1	
B9.40		SOCKET WELDS			SURFACE
		BB-02-01 Sht. 1	2-BB-06-FW120	2	
		EM-03-05 Sht. 1	2-EM-05-FW10	1	
		EP-04-01 Sht. 1	2-EP-01-FW045	3	
B-K		INTEGRAL ATTACHMENTS FOR CLASS 1 VESSELS, PIPING, PUMPS & VALVES			
B10.10		INTEGRALLY WELDED ATTACHMENTS TO VESSELS			SURFACE
		ISI-TBB03 Sht.1	2-TBB03-LUG-C-W	2	
B-L-2		PUMP CASINGS			
B12.20		PUMP CASING INTERNAL SURFAC (See note 1)			VISUAL, VT-3
		ISI-PUMPS Sht. 1	2-PBB01A-SURF	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-PBB01B-SURF	1	
			2-PBB01C-SURF	1	
			2-PBB01D-SURF	1	
B-M-2	VALVE BODIES				
	B12.50-1	VALVE BODIES, EXCEEDING NPS 4 - GROUP 1 (See note 2)			VISUAL, VT-3
		BB-02-02 Sht. 1			
			2-BB-02-8010A-SURF	1	
			2-BB-02-8010B-SURF	1	
			2-BB-02-8010C-SURF	1	
	B12.50-2	VALVE BODIES, EXCEEDING NPS 4 - GROUP 2 (See note 2)			VISUAL, VT-3
		EJ-01-04 Sht. 1			
			2-EJ-04-BB-PV-8702A-SURF	1	
		EJ-02-04 Sht. 1			
			2-EJ-04-BB-PV-8702B-SURF	1	
	B12.50-3	VALVE BODIES, EXCEEDING NPS 4 - GROUP 3 (See note 2)			VISUAL, VT-3
		EJ-01-04 Sht. 1			
			2-EJ-04-HV-8701A-SURF	1	
		EJ-02-04 Sht. 1			
			2-EJ-04-HV-8701B-SURF	1	
	B12.50-4	VALVE BODIES, EXCEEDING NPS 4 - GROUP 4 (See note 2)			VISUAL, VT-3
		EM-03-05 Sht. 1			
			2-EM-05-BB-8949A-SURF	1	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
			2-EM-05-BB-8949D-SURF	1	
		EM-04-03 Sht. 1			
			2-EM-03-BB-8949B-SURF	1	
			2-EM-03-BB-8949C-SURF	1	
B12.50-5		VALVE BODIES, EXCEEDING NPS 4 - GROUP 5 (See note 2)			VISUAL, VT-3
		EP-01-01 Sht. 1			
			2-EP-01-8956A-SURF	1	
		EP-02-02 Sht. 1			
			2-EP-02-8956B-SURF	1	
		EP-03-02 Sht. 1			
			2-EP-02-8956C-SURF	1	
		EP-04-01 Sht. 1			
			2-EP-01-8956D-SURF	1	
B12.50-6		VALVE BODIES, EXCEEDING NPS 4 - GROUP 6 (See note 2)			VISUAL, VT-3
		EJ-02-04 Sht. 3			
			2-EM-03-EJ-8841A-SURF	1	
			2-EM-03-EJ-8841B-SURF	1	
		EP-01-01 Sht. 1			
			2-EP-01-8818A-SURF	1	
		EP-02-02 Sht. 1			
			2-EP-02-8818B-SURF	1	
		EP-03-02 Sht. 1			
			2-EP-02-8818C-SURF	1	
		EP-04-01 Sht. 1			
			2-EP-01-8818D-SURF	1	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
	B12.50-7		VALVE BODIES, EXCEEDING NPS 4 - GROUP 7 (See note 2)		VISUAL, VT-3
		EP-01-01 Sht. 1			
			2-EP-01-BB8948A-SURF	1	
		EP-02-02 Sht. 1			
			2-EP-02-BB8948B-SURF	1	
		EP-03-02 Sht. 1			
			2-EP-02-BB8948C-SURF	1	
		EP-04-01 Sht. 1			
			2-EP-01-BB8948D-SURF	1	
B-N-1			INTERIOR OF REACTOR VESSEL		
	B13.10		VESSEL INTERIOR		VISUAL, VT-3
		1447E54			
			2-RV-INTERIOR	1 2 3	
B-N-2			INTEGRALLY WELDED CORE SUPPORT STRUCTURES & INTERIOR ATTACHMENTS TO REACTOR VESSEL		
	B13.60		INTERIOR ATTACHMENTS BEYOND BELTLINE REGION IN REACTOR VESSEL		VISUAL, VT-3
		ISI-RBB01 Sht. 1			
			2-RV-CSL-104-142-A	3	
			2-RV-CSL-104-142-B	3	
			2-RV-CSL-104-142-C	3	
			2-RV-CSL-104-142-D	3	
			2-RV-CSL-104-142-E	3	
			2-RV-CSL-104-142-F	3	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
B-N-3			REMOVABLE CORE SUPPORT STRUCTURES		
	B13.70		CORE SUPPORT STRUCTURE IN REACTOR VESSEL		VISUAL, VT-3
		1447E54			
			2-RV-CORE STRUCT	3	
B-O			PRESSURE RETAINING WELDS IN CONTROL ROD HOUSINGS		
	B14.10		WELDS IN CRD HOUSING		SURF. OR VOL.
		ISI-RBB01 Sht. 1			
			2-CH-214-112-B	3	
			2-CH-214-112-F	3	
			2-CH-215-112-A	3	
			2-CH-215-112-D	3	
C-A			PRESSURE RETAINING WELDS IN PRESSURE VESSELS		
	C1.10		SHELL CIRCUMFERENTIAL WELDS		VOLUMETRIC
		ISI-EBB01B Sht. 1			
			2-EBB01B-SEAM-3-W	1	
			2-EBB01B-SEAM-5-W	2	
			2-EBB01B-SEAM-6-W	1	
		ISI-EEJ01A Sht. 1			
			2-EEJ01A-SEAM-1-W	3	
			2-EEJ01A-SEAM-2-W	3	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
	C1.20		HEAD CIRCUMFERENTIAL WELDS		VOLUMETRIC
		ISI-EBB01B Sht. 1			
			2-EBB01B-SEAM-8-W	3	
	C1.30		TUBESHEET TO SHELL WELDS		VOLUMETRIC
		ISI-EBB01B Sht. 1			
			2-EBB01B-SEAM-2-W	1	
C-B			PRESSURE RETAINING NOZZLE WELDS IN VESSELS		
	C2.21		NOZZLE TO SHELL (OR HEAD) WELD WITHOUT REINFORCING PLATE IN VESSEL > 1/2 INCH NOMINAL THICKNESS		SURF. & VOL.
		ISI-EBB01B Sht. 1			
			2-EBB01B-11-W	1	
			2-EBB01B-16-W	3	
	C2.22		NOZZLE INSIDE RADIUS SECTION		VOLUMETRIC
		ISI-EBB01B Sht. 1			
			2-EBB01B-11-IR	1	
			2-EBB01B-16-IR	3	
	C2.33		NOZZLE TO SHELL (OR HEAD) WELDS WHEN INSIDE OF VESSEL IS INACCESSIBLE, FOR VESSELS > 1/2 INCH NOMINAL THICKNESS WITH REINFORCING PLATES		SURFACE
		ISI-EEJ01A Sht. 1			
			2-EEJ01A-NA-1	3	
			2-EEJ01A-NB-1	3	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
C-C		INTEGRAL ATTACHMENTS FOR CLASS 2 VESSELS, PIPING, PUMPS AND VALVES			
	C3.10		INTEGRALLY WELDED ATTACHMENTS TO PRESSURE VESSELS		SURFACE
		ISI-EEJ01A Sht. 1			
			2-EEJ01A-SKIRT-W	3	
	C3.20		INTEGRALLY WELDED ATTACHMENTS TO PIPING		SURFACE
		AE-04-05 Sht. 1			
			2-AE-05-R028	3	
		EJ-02-02 Sht. 2			
			2-EJ-02-C022	2	
		EJ-02-02 Sht. 3			
			2-EJ-02-C018	2	
			2-EJ-03-A003	1	
		EJ-02-02 Sht. 4			
			2-EJ-02-C020	2	
			2-EJ-02-R032	1	
		EJ-02-04 Sht. 1			
			2-EJ-02-R016	2	
		EM-05-01 Sht. 2			
			2-EM-01-A003	3	
			2-EM-01-A004	3	
			2-EM-01-H010	3	
	C3.30		INTEGRALLY WELDED ATTACHMENTS TO PUMPS		SURFACE
		ISI-PUMPS Sht. 1			
			2-PBG05A-SUP-4	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-PEJ01A-SUP-1	1	
			2-PEN01A-SUP-1	3	
C-D			PRESSURE RETAINING BOLTING GREATER THAN 2 INCHES IN DIAMETER		
	C4.40		BOLTS AND STUDS IN VALVES		VOLUMETRIC
			AB-01-01 Sht. 1		
			2-AB-01-HV-14-b	3	
C-F-1			PRESSURE RETAINING WELDS IN AUSTENITIC STAINLESS STEEL OR HIGH ALLOY PIPING		
	C5.11		CIRCUMFERENTIAL WELDS IN AUSTENITIC STAINLESS STEEL OR HIGH ALLOY PIPING GREATER THAN OR EQUAL TO 3/8 INCH NOMINAL WALL THICKNESS FOR PIPING GREATER THAN NPS 4		SURF. & VOL.
			AE-02-04 Sht. 1		
			2-AE-04-C525735-FW02	3	
			BG-06-02 Sht. 1		
			2-BG-02-S011-A	3	
			2-BG-02-S015-B	3	
			2-BG-02-S036-A	3	
			2-BG-02-S037-A	3	
			EJ-01-01 Sht. 1		
			2-EJ-01-FW75	3	
			2-EJ-01-S004-F	3	
			EJ-01-01 Sht. 2		
			2-E.1-01-S010-A	1	
			2-EJ-01-S014-A	1	
			2-EJ-01-S021-J	1	
			EJ-01-01 Sht. 3		
			2-EJ-01-F027	1	
			2-EJ-01-S015-H	1	
			2-EJ-01-S017-B	1	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-EJ-01-S018-C	1	
			2-EJ-01-S023-E	1	
		EJ-01-01 Sht. 4			
			2-EJ-01-F045	1	
			2-EJ-01-S035-B	1	
			2-EJ-04-S026-C	1	
			2-EJ-04-S026-F	1	
		EJ-01-01 Sht. 5			
			2-EJ-01-F034	3	
			2-EJ-01-S025-B	3	
		EJ-02-02 Sht. 1			
			2-EJ-02-F054	2	
			2-EJ-02-S008-B	2	
		EJ-02-02 Sht. 2			
			2-EJ-02-F014	2	
			2-EJ-02-F021	2	
		EJ-02-02 Sht. 3			
			2-EJ-02-S016-M	2	
			2-EJ-02-S017-C	2	
			2-EJ-02-S020-K	2	
			2-EJ-02-S022-B	2	
			2-EJ-03-S003-F	2	
		EJ-02-02 Sht. 4			
			2-EJ-02-F027	2	
			2-EJ-02-F029	2	
			2-EJ-02-S027-C	2	
		EJ-02-02 Sht. 5			
			2-EJ-02-F050	3	
		EJ-02-04 Sht. 1			
			2-EJ-02-FW96	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
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EJ-02-04 Sht. 2

2-EJ-02-F041 3

EJ-02-04 Sht. 3

2-EJ-04-F008 1

2-EJ-04-F016 1

2-EJ-04-S010-C 1

EM-01-01 Sht. 1

2-EM-01-S027-D 3

2-EM-01-S027-G 3

2-EM-01-S040-D 3

2-EM-01-S041-E 3

EM-05-01 Sht. 1

2-EM-01-S035-C 1

2-EM-01-S039-C 1

EM-05-01 Sht. 2

2-EM-01-S022-K 2

2-EM-01-S029-E 2

EN-01-01 Sht. 1

2-BN-01-F044 2

2-EN-01-F007 2

EN-01-01 Sht. 2

2-EN-01-S013-B 1

EN-02-02 Sht. 1

2-EN-02-S003-A 2

2-EN-02-S005-B 2

EN-02-02 Sht. 2

2-EN-02-F012 3

2-EN-02-S008-A 3

2-EN-02-S009-C 3

Exam Category	Item Number	Drawing	Component	Period	Exam Method
C5.21		CIRCUMFERENTIAL WELDS IN AUSTENITIC STAINLESS STEEL OR HIGH ALLOY PIPING GREATER THAN OR EQUAL TO 1/5 INCH NOMINAL WALL THICKNESS FOR PIPING GREATER THAN OR EQUAL TO NPS 2 AND LESS THAN OR EQUAL TO NPS 4			SURF. & VOL.
		BG-06-02 Sht. 2			
			2-BG-02-F063	1	
			2-BG-02-F076	1	
			2-BG-02-S040-A	1	
			2-BG-02-S040-E	1	
		BG-06-10 Sht. 1			
			2-BG-10-FW212	3	
		EM-06-02 Sht. 1			
			2-EM-02-A556572A-FW02	3	
			2-EM-02-S008-D	3	
			2-EM-02-S014-C	3	
			2-EM-02-S015-B	3	
		EM-06-02 Sht. 2			
			2-EM-02-S012-G	2	
			2-EM-02-S012-L	2	
			2-EM-02-S013-D	2	
			2-EM-02-S013-H	2	
			2-EM-02-S013-M	2	
			2-EM-02-S013-N	2	
C5.30		SOCKET WELDS			SURFACE
		BG-06-02 Sht. 2			
			2-BG-09-FW464	1	
		BG-06-10 Sht. 1			
			2-BG-10-FW152	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
	C5.41		CIRCUMFERENTIAL WELDS IN PIPE BRANCH CONNECTIONS OF BRANCH PIPING GREATER THAN OR EQUAL TO NPS 2		SURFACE
		BG-06-02 Sht. 2			
			2-BG-02-A-34-112-SW14	1	
C-F-2			PRESSURE RETAINING WELDS IN CARBON OR LOW ALLOY STEEL PIPING		
	C5.51		CIRCUMFERENTIAL WELDS IN CARBON OR LOW ALLOY STEEL PIPING GREATER THAN OR EQUAL TO 3/8 INCH NOMINAL WALL THICKNESS FOR PIPING GREATER THAN NPS 4		SURF. & VOL.
		AB-01-01 Sht. 1			
			2-AB-01-F006	2	
			2-AB-01-F011	1	
			2-AB-01-S006-G	1	
		AB-02-01 Sht. 1			
			2-AB-01-F020	2	
			2-AB-01-F026	2	
			2-AB-01-F031	2	
			2-AB-01-F099	2	
			2-AB-01-S018-S	2	
		AB-03-01 Sht. 1			
			2-AB-01-F050	3	
			2-AB-01-F055	3	
			2-AB-01-F101	3	
			2-AB-01-S032-L	3	
		AB-04-01 Sht. 1			
			2-AB-01-F074	1	
			2-AB-01-F095	1	
		AE-01-04 Sht. 1			
			2-AE-04-F005	1	
			2-AE-04-F015	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
		AE-02-04 Sht. 1			
			2-AE-04-F019	2	
			2-AE-04-F024	2	
			2-AE-04-S016-B	3	
		AE-03-05 Sht. 1			
			2-AE-05-F024	3	
		AE-04-05 Sht. 1			
			2-AE-05-F008	3	
			2-AE-05-F009	3	
			2-AE-05-F011	3	
		GN-01-03 Sht. 1			
			2-EF-03-C528892-FW01	1	
		GN-02-04 Sht. 1			
			2-EF-04-C528895-FW01	1	
			2-GN-02-C528899-FW01	3	
		GN-02-05 Sht. 1			
			2-EF-05-C528896-FW01	1	
			2-GN-02-C528900-FW01	3	
C5.81			CIRCUMFERENTIAL WELDS IN CARBON OR LOW ALLOY STEEL PIPE BRANCH CONNECTIONS OF BRANCH PIPING GREATER THAN OR EQUAL TO NPS 2		SURFACE
		GN-01-03 Sht. 1			
			2-EF-03-S018-D	1	
C-G			PRESSURE RETAINING WELDS IN PUMPS AND VALVES		
C6.10			PUMP CASING WELDS		SURFACE
		ISI-PUMPS Sht. 1			
			2-PBG05A-F-1	2	
			2-PBG05A-F-2	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-PEJ01A-F-2	1	
			2-PEM01A-F-1	3	
D-A		INTEGRAL ATTACHMENTS FOR CLASS 3 VESSELS, PIPING, PUMPS & VALVES			
	D1.10	INTEGRALLY WELDED ATTACHMENTS TO PRESSURE VESSELS			VISUAL, VT-1
		EF-01-01 Sht. 1			
			2-FEF02A-SUP-1	2	
		EG-01-01 Sht. 1			
			2-EEG01A-SUP-1	1	
		EG-01-02 Sht. 1			
			2-EEC01A-SUP-1	3	
		EG-05-06 Sht. 1			
			2-EBG01-SUP-1	1	
		ISI-EEJ01A Sht. 1			
			2-EEJ01A-SUP-1	3	
		KJ-01-01 Sht. 1			
			2-EKJ03A-SUP-1	2	
			2-EKJ04A-SUP-1	3	
			2-EKJ06A-SUP-1	1	
	D1.20	INTEGRALLY WELDED ATTACHMENTS TO PIPING			VISUAL, VT-1
		AL-02-03 Sht. 1			
			2-AL-03-C005	2	
		EF-01-01 Sht. 2			
			2-EF-01-C002	1	
			2-EF-02-A010	3	
		EF-01-02 Sht. 1			
			2-EF-02-C007	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
		EF-01-02 Sht. 2			
			2-EF-06-A015	3	
		EF-01-03 Sht. 2			
			2-EF-01-C004	1	
		EG-01-02 Sht. 1			
			2-EG-02-A005	1	
		EG-03-07 Sht. 1			
			2-EG-07-C002	3	
			2-EG-07-C021	3	
			2-EG-07-R002	2	
		EG-04-01 Sht. 1			
			2-EG-01-R030	1	
		EG-04-01 Sht. 2			
			2-EG-04-A001	2	
		EG-06-09 Sht. 2			
			2-EG-15-A002	1	
		GN-01-01 Sht. 2			
			2-GN-01-C017	2	
		GN-01-01 Sht. 3			
			2-M-620-003-10	3	
			2-M-620-003-14	3	
		GN-02-02 Sht. 1			
			2-GN-02-C010	3	
		GN-02-02 Sht. 2			
			2-GN-02-C009	2	
D1.30		INTEGRALLY WELDED ATTACHMENTS TO PUMPS			VISUAL, VT-1
		EF-01-01 Sht. 1			
			2-PEF01A-SUP-3	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
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F-A SUPPORTS

F1.10 CLASS 1 PIPING SUPPORTS VISUAL, VT-3

BB-01-01 Sht. 1

2-BB-01-SUP-1C 3

BB-01-02 Sht. 1

2-BB-02-H007 1

2-BB-02-R011 1

2-BB-02-R015 1

2-BB-02-R022 1

2-BB-02-R032 1

BB-01-04 Sht. 1

2-BB-04-H007 3

2-BB-04-R015 3

2-BB-04-R022 3

BB-01-04 Sht. 2

2-BB-04-C011 2

2-BB-04-H009 3

2-BB-04-H011 2

2-BB-04-R024 3

2-BB-04-R032 2

BB-01-08 Sht. 1

2-BB-08-H001 1

BB-02-01 Sht. 1

2-BB-01-SUP-2D 2

BB-02-02 Sht. 1

2-BB-02-H001 3

2-BB-02-R027 2

2-BB-02-R028 3

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-BB-02-R029	1	
	BB-02-11	Sht. 1			
			2-BB-11-H001	3	
	BB-03-01	Sht. 1			
			2-BB-01-SUP-3C	1	
	BB-03-09	Sht. 1			
			2-BB-09-R001	3	
	BB-04-01	Sht. 1			
			2-BB-01-SUP-4D	2	
	BB-04-07	Sht. 1			
			2-BB-07-H001	2	
	BB-05-01	Sht. 1			
			2-BB-01-H001	1	
			2-BB-01-H002	1	
			2-BB-01-R001	1	
	BB-06-01	Sht. 1			
			2-HB-24-R009	3	
			2-HB-24-R015	3	
	BG-01-21	Sht. 1			
			2-BG-21-H008	2	
	BG-02-22	Sht. 1			
			2-BG-22-H007	3	
			2-BG-22-H010	3	
			2-BG-22-R012	3	
			2-BG-22-R013	3	
			2-BG-22-R017	3	
	BG-03-23	Sht. 1			
			2-BG-23-H004	1	
			2-BG-23-R004	1	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
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BG-05-24 Sht. 1

			2-BG-24-H001	3	
			2-BG-24-R003	3	

EJ-01-04 Sht. 1

			2-EJ-04-H008	3	
			2-EJ-04-R018	3	

EJ-02-04 Sht. 1

			2-EJ-04-C020	1	
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EM-03-05 Sht. 1

			2-EM-05-C008	1	
			2-EM-05-C010	1	
			2-EM-05-R011	1	

EM-04-03 Sht. 1

			2-EM-03-C014	2	
			2-EM-03-H003	2	
			2-EM-03-R008	2	

EM-06-03 Sht. 1

			2-EM-03-A005	2	
			2-EM-03-C007	3	
			2-EM-03-C009	3	
			2-EM-03-C026	2	
			2-EM-03-C033	2	
			2-EM-03-C037	1	
			2-EM-03-H006	3	
			2-EM-03-R003	2	
			2-EM-03-R011	3	
			2-EM-03-R014	3	
			2-EM-03-R015	2	
			2-EM-03-R017	2	
			2-EM-03-R024	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
		EP-01-01 Sht. 1			
			2-EP-01-H009	1	
			2-EP-01-H011	2	
			2-EP-01-R011	2	
			2-EP-01-R016	2	
		EP-02-02 Sht. 1			
			2-EP-02-H006	2	
			2-EP-02-R012	2	
		EP-03-02 Sht. 1			
			2-EP-02-C004	3	
			2-EP-02-H011	3	
		EP-04-01 Sht. 1			
			2-EP-01-C004	3	
			2-EP-01-H004	2	
			2-EP-01-H006	3	
			2-EP-01-R008	2	
			2-EP-01-R019	2	
F1.20		CLASS 2 PIPING SUPPORTS			VISUAL, VT-3
		AB-01-01 Sht. 1			
			2-AB-01-R009	1	
		AB-02-01 Sht. 1			
			2-AB-01-H010	2	
			2-AB-01-R032	2	
		AB-03-01 Sht. 1			
			2-AB-01-C011	3	
			2-AB-01-R031	3	
		AB-04-01 Sht. 1			
			2-AB-01-H012	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
		AE-01-04 Sht. 1			
			2-AE-04-C002	1	
		AE-02-04 Sht. 1			
			2-AE-04-C001	3	
			2-AE-04-R011	2	
		AE-03-05 Sht. 1			
			2-AE-05-C001	1	
			2-AE-05-R017	1	
		AE-04-05 Sht. 1			
			2-AE-05-R028	3	
		BG-06-02 Sht. 1			
			2-BG-02-A002	1	
			2-BG-02-R012	1	
			2-BG-02-R015	1	
		BG-06-02 Sht. 2			
			2-BG-02-H003	3	
			2-BG-02-H011	3	
		BG-06-10 Sht. 1			
			2-BG-10-C528	1	
		EJ-01-01 Sht. 1			
			2-EJ-01-C002	3	
			2-EJ-01-H018	3	
		EJ-01-01 Sht. 2			
			2-EJ-01-C014	1	
			2-EJ-01-R030	1	
		EJ-01-01 Sht. 3			
			2-EJ-01-R023	1	
		EJ-01-01 Sht. 4			
			2-EJ-04-R004	2	

Exam. Category	item Number	Drawing	Component	Period	Exam Method
		EJ-02-02 Sht. 1			
			2-EJ-02-H019	2	
		EJ-02-02 Sht. 2			
			2-EJ-02-C022	2	
		EJ-02-02 Sht. 3			
			2-EJ-02-C018	2	
			2-EJ-03-A003	1	
		EJ-02-02 Sht. 4			
			2-EJ-02-C020	2	
			2-EJ-02-H021	3	
			2-EJ-02-R032	1	
		EJ-02-04 Sht. 1			
			2-EJ-02-R016	2	
		EJ-02-04 Sht. 2			
			2-EJ-04-R010	3	
		EJ-02-04 Sht. 3			
			2-EJ-04-C024	3	
		EM-01-01 Sht. 1			
			2-EM-01-C043	3	
			2-EM-01-R030	3	
		EM-02-01 Sht. 1			
			2-EM-01-R008	1	
		EM-05-01 Sht. 1			
			2-EM-01-A002	1	
			2-EM-01-H004	1	
		EM-05-01 Sht. 2			
			2-EM-01-A003	3	
			2-EM-01-A004	3	
			2-EM-01-C019	1	
			2-EM-01-H010	3	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
		EM-06-02 Sht. 1			
			2-EM-02-C023	3	
			2-EM-02-C030	3	
			2-EM-02-H009	1	
			2-EM-02-R001	3	
		EM-06-02 Sht. 2			
			2-EM-02-C013	2	
			2-EM-02-R004	2	
		EN-01-01 Sht. 1			
			2-EN-01-H005	2	
			2-EN-01-R010	2	
		EN-01-01 Sht. 2			
			2-EN-01-H003	2	
		EN-02-02 Sht. 1			
			2-EN-02-R005	1	
		EN-02-02 Sht. 2			
			2-EN-02-C004	2	
			2-EN-02-R004	2	
		GN-01-03 Sht. 1			
			2-EF-03-C034	1	
		GN-02-05 Sht. 1			
			2-EF-05-H004	3	
F1.30		CLASS 3 PIPING SUPPORTS			VISUAL, VT-3
		AL-01-02 Sht. 1			
			2-AL-02-C005	1	
		AL-02-03 Sht. 1			
			2-AL-03-C005	2	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
		AL-03-04 Sht. 1			
			2-AL-04-C002	3	
			2-AL-04-C006	3	
			2-AL-04-H007	2	
		EF-01-01 Sht. 1			
			U-EF11-C001	1	
		EF-01-01 Sht. 2			
			2-EF-01-C002	1	
			2-EF-02-A010	3	
		EF-01-02 Sht. 1			
			2-EF-02-C003	1	
			2-EF-02-C007	1	
		EF-01-02 Sht. 2			
			2-EF-02-A007	3	
			2-EF-02-C013	2	
			2-EF-06-A015	3	
		EF-01-03 Sht. 2			
			2-EF-01-C004	1	
			2-EF-01-C012	1	
			2-EF-01-H003	1	
			2-EF-03-R020	3	
		EF-01-07 Sht. 1			
			2-EF-07-C007	1	
		EF-01-08 Sht. 1			
			2-EF-07-R001	2	
			2-EF-08-C002	2	
		EF-02-01 Sht. 1			
			U-EF11-H002	2	
		EF-02-01 Sht. 2			
			2-EF-01-C005	3	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
		EF-02-01 Sht. 3			
			2-EF-01-R010	3	
			2-EF-05-C010	1	
		EF-02-04 Sht. 1			
			2-EF-04-C005	3	
			2-EF-04-R005	3	
		EF-02-05 Sht. 1			
			2-EF-05-H010	3	
			2-EF-05-R025	3	
		EF-02-05 Sht. 2			
			2-EF-05-C014	1	
		EF-02-06 Sht. 1			
			2-EF-04-C015	1	
			2-EF-06-A014	1	
			2-EF-06-C004	1	
		EF-02-08 Sht. 1			
			2-EF-08-C017	1	
		EF-02-08 Sht. 2			
			2-EF-08-C011	1	
		EG-01-02 Sht. 1			
			2-EG-02-A005	1	
		EG-02-03 Sht. 1			
			2-EG-03-H013	2	
			2-EG-03-R018	2	
		EG-02-03 Sht. 2			
			2-EG-03-H012	3	
			2-EG-03-R006	3	
		EG-02-05 Sht. 1			
			2-EG-18-R005	2	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
		EG-03-07 Sht. 1			
			2-EG-07-C002	3	
			2-EG-07-C021	3	
			2-EG-07-R002	2	
		EG-04-01 Sht. 1			
			2-EG-01-R030	1	
			2-EG-04-C012	3	
			2-EG-04-R004	3	
		EG-04-01 Sht. 2			
			2-EG-04-A001	2	
			2-EG-04-R007	2	
			2-EG-04-R008	2	
			2-EG-04-R009	2	
		EG-05-06 Sht. 1			
			2-EG-06-C023	2	
			2-EG-06-C027	2	
			2-EG-06-R009	2	
		EG-05-06 Sht. 2			
			2-EG-06-C021	2	
			2-EG-06-H010	3	
			2-EG-06-R008	1	
		EG-06-09 Sht. 1			
			2-EG-10-A001	3	
			2-EG-10-H001	3	
		EG-06-09 Sht. 2			
			2-EG-09-C001	1	
			2-EG-15-A002	1	
		GN-01-01 Sht. 2			
			2-GN-01-C017	2	
		GN-01-01 Sht. 3			
			2-M-620-003-10	3	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
			2-M-620-003-14	3	
		GN-02-02 Sht. 1			
			2-GN-02-C010	3	
		GN-02-02 Sht. 2			
			2-GN-02-C009	2	
			2-GN-02-R003	2	
F1.40		SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, AND 3)			VISUAL, VT-3
		11908662			
			2-EKJ04A-SUP-1	3	
			2-EKJ04A-SUP-2	3	
		5736			
			2-EEJ01A-SKIRT-W	3	
			2-EEJ01A-SUP-1	3	
			2-EEJ01A-SUP-2	3	
			2-EEJ01A-SUP-3	3	
			2-EEJ01A-SUP-4	3	
			2-EEJ01A-SUP-5	3	
		BB-00-01 Sht. 1			
			2-BB-01-R005	3	
		C-2S1904			
			2-PEJ01A-SUP-1	2	
			2-PEJ01A-SUP-2	2	
			2-PEJ01A-SUP-3	2	
			2-PEJ01A-SUP-4	2	
			2-PEN01A-SUP-1	3	
			2-PEN01A-SUP-2	3	
			2-PEN01A-SUP-3	3	
		C-2S1908			
			2-PEJ01A-SUP-5	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-PEJ01A-SUP-6	2	
			2-PEJ01A-SUP-7	2	
			2-PEJ01A-SUP-8	2	
	M-018-00091				
			2-EKJ03A-SUP-1	2	
			2-EKJ03A-SUP-2	2	
	M-018-00724				
			2-EKJ06A-SUP-1	1	
			2-EKJ06A-SUP-2	1	
	M-021-00045				
			2-PAL01A-SUP-1	2	
	M-021-005				
			2-PAL02-SUP-1	3	
	M-071-00001				
			2-EEC01A-SUP-1	3	
			2-EEC01A-SUP-2	2	
			2-EEC01A-SUP-3	2	
	M-072-0001				
			2-EEG01A-SUP-1	2	
			2-EEG01A-SUP-2	2	
			2-EEG01A-SUP-3	2	
			2-EEG01A-SUP-4	2	
	M-082-012				
			2-PEG01A-SUP-1	2	
	M-089-U0012				
			2-PEF01A-SUP-1	1	
			2-PEF01A-SUP-2	1	
			2-PEF01A-SUP-3	1	
			U-EF11-R008	1	
			U-EF11-R009	1	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
		M-154-U0018			
			2-FEF02A-SUP-1	2	
			2-FEF02A-SUP-2	2	
	OP-1459F01				
			2-RBB01-SUP-1	1	
			2-RBB01-SUP-2	1	
			2-RBB01-SUP-3	1	
			2-RBB01-SUP-4	1	
	OP-1459F02				
			2-EBB01B-SUP-1	1	
			2-EBB01B-SUP-2	1	
			2-EBB01B-SUP-3	1	
			2-EBB01B-SUP-4	1	
			2-PBB01A-SUP-4	3	
			2-PBB01A-SUP-5	3	
			2-PBB01A-SUP-6	3	
	OP-1459F04				
			2-EBB01B-SUP-5	1	
			2-EBB01B-SUP-6	1	
			2-EBB01B-SUP-7	1	
	OP-1459F07				
			2-PBB01A-SUP-1	3	
			2-PBB01A-SUP-2	3	
			2-PBB01A-SUP-3	3	
	OP-1459F08				
			2-BB-00-R602-B	1	
			2-BB-00-R602-C	1	
			2-EBB01B-SUP-8	1	
	OP-1459F10				
			2-TBB03-LUG-A-W	3	
			2-TBB03-LUG-B-W	3	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
			2-TBB03-LUG-C-W	3	
			2-TBB03-LUG-D-W	3	
			2-TBB03-SKIRT-W	3	
		OP-300-B49739-S001			
			2-PBG05A-SUP-1	2	
			2-PBG05A-SUP-2	2	
			2-PBG05A-SUP-3	2	
			2-PBG05A-SUP-4	2	
			2-PBG05A-SUP-5	2	
		OP-300-J49728			
			2-PEM01A-SUP-1	3	
		OP-D-75-569			
			2-EBG01-SUP-1	1	
			2-EBG01-SUP-2	1	

Notes:

1. Only the first pump disassembled for maintenance, repair, or other inspection requires Section XI internal surface examination.
2. Only the first valve in each group disassembled for maintenance, repair, or other inspection requires Section XI internal surface examination.
3. Twenty-five percent of the partial penetration welds listed require Visual, VT-2 examination.

Callaway 2nd Interval High Energy Weld (NBZ) Inspections

11-Aug-95

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
C-F-1	PRESSURE RETAINING WELDS IN AUSTENITIC STAINLESS STEEL OR HIGH ALLOY PIPING				
	NBZ EXAMS - 1	CIRCUMFERENTIAL, LONGITUDINAL AND BRANCH WELDS IN PIPING TWO INCHES NPS AND GREATER			VOLUMETRIC
	AE-01-04 Sht. 1				
			2-AE-04-C525734-FW01	1	
			2-AE-04-C525734-FW02	1	
			2-AE-04-S022-C	1	
			2-AE-04-S022-D	1	
	AE-02-04 Sht. 1				
			2-AE-04-C525735-FW01	3	
			2-AE-04-C525735-FW02	3	
			2-AE-04-S023-C	3	
			2-AE-04-S023-D	3	
	AE-03-05 Sht. 1				
			2-AE-05-C525736-FW01	3	
			2-AE-05-C525736-FW02	3	
			2-AE-05-S024-C	3	
			2-AE-05-S024-D	3	
	AE-04-05 Sht. 1				
			2-AE-05-C525737-FW01	3	
			2-AE-05-C525737-FW02	3	
			2-AE-05-S023-C	3	
			2-AE-05-S023-D	3	
	BB-01-08 Sht. 1				
			2-BB-08-F002	1	
			2-BB-08-FW080	1	
			2-BB-08-FW081	1	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-BB-08-FW082	1	
			2-BB-08-FW083	1	
			2-BB-08-FW084	1	
			2-BB-08-FW085	1	
			2-BB-08-FW086	1	
			2-BB-08-FW087	1	
			2-BB-08-FW088	1	
			2-BB-08-FW089	1	
			2-BB-08-V118-1	1	
			2-BB-08-V118-2	1	
		BB-02-11 Sht. 1			
			2-BB-11-F002	2	
			2-BB-11-FW10	2	
			2-BB-11-FW117	2	
			2-BB-11-FW118	2	
			2-BB-11-FW119	2	
			2-BB-11-FW120	2	
			2-BB-11-FW121	2	
			2-BB-11-V148-1	2	
			2-BB-11-V148-2	2	
		BB-03-09 Sht. 1			
			2-BB-09-F002	3	
			2-BB-09-FW098	3	
			2-BB-09-FW099	3	
			2-BB-09-FW100	3	
			2-BB-09-FW101	3	
			2-BB-09-FW102	3	
			2-BB-09-FW109	3	
			2-BB-09-FW110	3	
			2-BB-09-FW111	3	
			2-BB-09-FW190	3	
			2-BB-09-FW191	3	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
			2-BB-09-V178-1	3	
			2-BB-09-V178-2	3	
		BB-04-07 Sht. 1			
			2-BB-07-F002-R3	2	
			2-BB-07-FW044	2	
			2-BB-07-FW045	2	
			2-BB-07-FW058	2	
			2-BB-07-FW059	2	
			2-BB-07-FW060	2	
			2-BB-07-FW061	2	
			2-BB-07-FW122	2	
			2-BB-07-FW130	2	
			2-BB-07-FW131	2	
			2-BB-07-V208-1	2	
			2-BB-07-V208-2	2	
		BG-01-01 Sht. 1			
			2-BG-01-F022	3	
			2-BG-01-F023	3	
			2-BG-01-F024	3	
			2-BG-01-F025	3	
			2-BG-01-F026	3	
			2-BG-01-FW175	3	
			2-BG-01-FW176	3	
			2-BG-01-FW178	3	
			2-BG-23-F002	3	
			2-BG-23-F003	3	
			2-BG-23-F004	3	
			2-BG-23-F005	3	
		BG-02-22 Sht. 2			
			2-BG-03-F001	1	
			2-BG-03-F002	1	
			2-BG-03-F003	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-BG-03-FW5	1	
			2-BG-03-S001-A	1	
			2-BG-03-S001-B	1	
			2-BG-03-S001-C	1	
			2-BG-03-S002-A	1	
			2-BG-22-F019	2	
			2-BG-22-F020-A	2	
			2-BG-22-F021	2	
			2-BG-22-F022	2	
			2-BG-22-F023	2	
			2-BG-22-FW-2	2	
			2-BG-22-FW-4	2	
			2-BG-22-FW5	2	
			2-BG-22-S018-A	2	
			2-BG-22-S018-B	2	
			2-BG-22-S018-C	2	
			2-BG-22-S019-A	2	
			2-BG-22-S019-B	2	
			2-BG-22-S019-C	2	
			2-BG-22-S019-D	2	
		BG-04-09 Sht. 1			
			2-BB-07-F001	2	
			2-BB-08-F001	1	
			2-BB-09-F001	3	
			2-BB-11-F001	1	
			2-BG-09-FW-6	1	
			2-BG-09-FW226	1	
			2-BG-09-FW229	1	
			2-BG-09-FW230	1	
			2-BG-09-FW267	2	
			2-BG-09-FW270	2	
			2-BG-09-FW271	2	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-BG-09-FW308	3	
			2-BG-09-FW311	3	
			2-BG-09-FW312	3	
			2-BG-09-FW383	1	
			2-BG-09-FW388	1	
			2-BG-09-FW389	1	
			2-BG-09-FW390	1	
			2-BG-09-FW391	1	
			2-BG-09-FW392	1	
			2-BG-09-FW393	1	
			2-BG-09-FW395	1	
			2-BG-09-FW396	1	
			2-BG-09-FW398	2	
			2-BG-09-FW403	2	
			2-BG-09-FW404	2	
			2-BG-09-FW405	2	
			2-BG-09-FW406	2	
			2-BG-09-FW407	2	
			2-BG-09-FW408	2	
			2-BG-09-FW410	2	
			2-BG-09-FW411	2	
			2-BG-09-FW413	3	
			2-BG-09-FW418	3	
			2-BG-09-FW419	3	
			2-BG-09-FW420	3	
			2-BG-09-FW421	3	
			2-BG-09-FW422	3	
			2-BG-09-FW423	3	
			2-BG-09-FW425	3	
			2-BG-09-FW426	3	
			2-BG-09-FW428	3	
			2-BG-09-FW433	3	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-BG-09-FW434	3	
			2-BG-09-FW435	3	
			2-BG-09-FW436	1	
			2-BG-09-FW437	1	
			2-BG-09-FW438	1	
			2-BG-09-FW439	1	
			2-BG-09-FW440	1	
			2-BG-09-FW441	1	
			2-BG-09-FW442	1	
			2-BG-09-FW521	1	
NBZ EXAMS - 2			CIRCUMFERENTIAL WELDS IN PIPING ONE AND ONE-HALF INCHES NPS		SURFACE
		BG-04-09 Sht. 1			
			2-BG-09-FW384	1	
			2-BG-09-FW385	1	
			2-BG-09-FW386	1	
			2-BG-09-FW387	1	
			2-BG-09-FW399	2	
			2-BG-09-FW400	2	
			2-BG-09-FW401	2	
			2-BG-09-FW402	2	
			2-BG-09-FW414	3	
			2-BG-09-FW415	3	
			2-BG-09-FW416	3	
			2-BG-09-FW417	3	
			2-BG-09-FW429	3	
			2-BG-09-FW430	3	
			2-BG-09-FW431	3	
			2-BG-09-FW432	3	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
	NBZ EXAMS - 3		SOCKET WELDS IN PIPING ONE AND ONE-HALF INCHES NPS AND GREATER		SURFACE
		BB-01-08 Sht. 1			
			2-BB-08-FW076	1	
			2-BB-08-FW077	1	
			2-BB-08-FW078	1	
			2-BB-08-FW079	1	
		BB-02-11 Sht. 1			
			2-BB-11-FW115	2	
			2-BB-11-FW116	2	
		BB-03-09 Sht. 1			
			2-BB-09-FW112-A	3	
			2-BB-09-FW113	3	
			2-BB-09-FW33	3	
			2-BB-09-FW34	3	
			2-BB-09-FW37	3	
			2-BB-09-FW38	3	
		BB-04-07 Sht. 1			
			2-BB-07-FW057	2	
			2-BB-07-FW121	2	
			2-BB-07-FW134	2	
C-F-2			PRESSURE RETAINING WELDS IN CARBON OR LOW ALLOY STEEL PIPING		
	NBZ EXAMS - 1		CIRCUMFERENTIAL, LONGITUDINAL AND BRANCH WELDS IN PIPING TWO INCHES NPS AND GREATER		VOLUMETRIC
		AB-01-01 Sht. 1			
			2-AB-01-F007	1	
			2-AB-01-F008	1	
			2-AB-01-F009	1	
			2-AB-01-F010	2	
			2-AB-01-F011	1	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-AB-01-F012	1	
			2-AB-01-F013	1	
			2-AB-01-F014	1	
			2-AB-01-F097	1	
			2-AB-01-S006-G	1	
			2-AB-01-S006-H	1	
			2-AB-01-S006-J	1	
			2-AB-01-S006-K	1	
			2-AB-01-S006-L	1	
			2-AB-01-S006-M	1	
			2-AB-01-S006-S	1	
			2-AB-01-S006-V	1	
			2-AB-01-S008-B	1	
			2-AB-01-S008-C	1	
			2-AB-01-S009-C	1	
			2-AB-01-S009-D	1	
			2-AB-01-TORSIONAL RESTRAINT-1	1	
		AB-02-01 Sht. 1			
			2-AB-01-F026	2	
			2-AB-01-F027	2	
			2-AB-01-F028	2	
			2-AB-01-F029	2	
			2-AB-01-F030	2	
			2-AB-01-F031	2	
			2-AB-01-F032	2	
			2-AB-01-F033	2	
			2-AB-01-F035	2	
			2-AB-01-F036	2	
			2-AB-01-F037	2	
			2-AB-01-F038	2	
			2-AB-01-F039	2	
			2-AB-01-F108	2	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-AB-01-FW1-B	2	
			2-AB-01-FW11	2	
			2-AB-01-S018-G	2	
			2-AB-01-S018-H	2	
			2-AB-01-S018-J	2	
			2-AB-01-S018-K	2	
			2-AB-01-S018-L	2	
			2-AB-01-S018-N	2	
			2-AB-01-S018-S	2	
			2-AB-01-S018-W	2	
			2-AB-01-S020-B	2	
			2-AB-01-S020-C	2	
			2-AB-01-S021-C	2	
			2-AB-01-S021-D	2	
			2-AB-01-S023-C	2	
			2-AB-01-S023-D	2	
			2-AB-01-TORSIONAL RESTRAINT-2	2	
		AB-03-01 Sht. 1			
			2-AB-01-F050	3	
			2-AB-01-F051	3	
			2-AB-01-F052	3	
			2-AB-01-F053	2	
			2-AB-01-F054	3	
			2-AB-01-F055	3	
			2-AB-01-F056	3	
			2-AB-01-F057	3	
			2-AB-01-F059	3	
			2-AB-01-F060	3	
			2-AB-01-F061	3	
			2-AB-01-F062	3	
			2-AB-01-F063	3	
			2-AB-01-F101	3	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
			2-AB-01-FW12	3	
			2-AB-01-FW2-B	3	
			2-AB-01-S032-G	3	
			2-AB-01-S032-H	3	
			2-AB-01-S032-J	3	
			2-AB-01-S032-K	3	
			2-AB-01-S032-L	3	
			2-AB-01-S032-M	3	
			2-AB-01-S032-N	3	
			2-AB-01-S032-S	3	
			2-AB-01-S032-W	3	
			2-AB-01-S032-Z	3	
			2-AB-01-S034-C	3	
			2-AB-01-S034-D	3	
			2-AB-01-S035-B	3	
			2-AB-01-S035-C	3	
			2-AB-01-S037-C	3	
			2-AB-01-S037-E	3	
			2-AB-01-TORSIONAL RESTRAINT-3	3	
		AB-04-01 Sht. 1			
			2-AB-01-F074	1	
			2-AB-01-F075	2	
			2-AB-01-F076	2	
			2-AB-01-F077	2	
			2-AB-01-F078	1	
			2-AB-01-F079	1	
			2-AB-01-F080	1	
			2-AB-01-F081	1	
			2-AB-01-F095	1	
			2-AB-01-FW9	2	
			2-AB-01-S046-G	1	
			2-AB-01-S046-H	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-AB-01-S046-J	1	
			2-AB-01-S046-K	1	
			2-AB-01-S046-L	1	
			2-AB-01-S046-M	2	
			2-AB-01-S046-S	2	
			2-AB-01-S046-V	2	
			2-AB-01-S048-C	1	
			2-AB-01-S048-D	1	
			2-AB-01-S049-C	1	
			2-AB-01-S049-D	1	
			2-AB-01-TORSIONAL RESTRAINT-4	2	
		AE-01-04 Sht. 1			
			2-AE-04-F001	2	
			2-AE-04-F004	1	
			2-AE-04-F005	1	
			2-AE-04-F006	1	
			2-AE-04-F007	1	
			2-AE-04-F008	1	
			2-AE-04-F009	1	
			2-AE-04-F031	1	
			2-AE-04-F039	1	
			2-AE-04-F042	1	
			2-AE-04-FW1	1	
			2-AE-04-FW5	1	
			2-AE-04-FW9	1	
			2-AE-04-S004-A	1	
			2-AE-04-S025-A	1	
			2-AE-04-S025-B	1	
			2-AE-04-S025-C	1	
		AE-02-04 Sht. 1			
			2-AE-04-F016	2	
			2-AE-04-F019	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-AE-04-F020	2	
			2-AE-04-F021	2	
			2-AE-04-F022	2	
			2-AE-04-F023	2	
			2-AE-04-F024	2	
			2-AE-04-F033	2	
			2-AE-04-F040	2	
			2-AE-04-F043	2	
			2-AE-04-FW2	2	
			2-AE-04-FW6	2	
			2-AE-04-S014-A	2	
			2-AE-04-S026-A	2	
			2-AE-04-S026-B	2	
			2-AE-04-S026-C	2	
		AE-03-05 Sht. 1			
			2-AE-05-F016	2	
			2-AE-05-F019	3	
			2-AE-05-F020	3	
			2-AE-05-F021	3	
			2-AE-05-F022	3	
			2-AE-05-F023	3	
			2-AE-05-F024	3	
			2-AE-05-F033	3	
			2-AE-05-F037	3	
			2-AE-05-F043	3	
			2-AE-05-FW1	3	
			2-AE-05-FW3	3	
			2-AE-05-FW4	3	
			2-AE-05-S014-A	3	
			2-AE-05-S025-B	3	
		AE-04-05 Sht. 1			
			2-AE-05-F001	2	

Exam Category	Item Number	Drawing	Component	Period	Exam Method
			2-AE-05-F004	3	
			2-AE-05-F005	3	
			2-AE-05-F006	3	
			2-AE-05-F007	3	
			2-AE-05-F008	3	
			2-AE-05-F009	3	
			2-AE-05-F031	1	
			2-AE-05-F038	1	
			2-AE-05-F041	3	
			2-AE-05-FW2	3	
			2-AE-05-FW5	1	
			2-AE-05-S004-A	1	
			2-AE-05-S026-A	1	
		BM-01-01 Sht. 1			
			2-BM-01-F001	1	
			2-BM-01-F003	2	
			2-BM-01-F004	3	
			2-BM-01-F006	2	
			2-BM-01-F007	1	
			2-BM-01-F008	1	
			2-BM-01-F009	1	
			2-BM-01-F010	1	
			2-BM-01-F011	1	
			2-BM-01-F017	1	
			2-BM-01-F018	1	
			2-BM-01-F019	3	
			2-BM-01-F020	3	
			2-BM-01-F021	3	
			2-BM-01-F027	1	
			2-BM-01-F028	1	
			2-BM-01-F029	1	
			2-BM-01-F030	1	

Exam Category	Item Number	Drawing	Component	Period	Exam Method	
			2-BM-01-S003-D	1		
		BM-01-02 Sht. 1				
			2-BM-02-F001	3		
			2-BM-02-F003	2		
			2-BM-02-F004	2		
			2-BM-02-F006	2		
			2-BM-02-F007	3		
			2-BM-02-F008	3		
			2-BM-02-F009	3		
			2-BM-02-F010	3		
			2-BM-02-F011	3		
			2-BM-02-F018	2		
			2-BM-02-F019	2		
			2-BM-02-F020	2		
			2-BM-02-F021	2		
			2-BM-02-F022	2		
			2-BM-02-F030	3		
			2-BM-02-F031	2		
			2-BM-02-F032	2		
			2-BM-02-FW-2	3		
		FC-01-01 Sht. 1				
			2-FC-01-F020	2		
			2-FC-01-F021	1		
			2-FC-01-F022	1		
			2-FC-01-F023	1		
			2-FC-01-F024	1		
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			2-FC-01-F026	3		
			2-FC-01-F027	3		
			2-FC-01-F028	3		
			2-FC-01-F029	2		
			2-FC-01-F030	2		

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
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			2-FC-01-S018-B	1	
			2-FC-01-S018-C	1	
			2-FC-01-S021-B	3	
			2-FC-01-S021-C	3	
			2-FC-01-S022-C	2	
			2-FC-01-S022-E	2	

NBZ EXAMS - 3 SOCKET WELDS IN PIPING ONE AND ONE-HALF INCHES NPS AND GREATER SURFACE

AB-01-01 Sht. 1

			2-AB-01-FW022	1	
			2-AB-01-FW023	1	
			2-AB-01-FW024	1	
			2-AB-01-FW025	1	
			2-AB-01-FW026	1	
			2-AB-01-FW027	1	
			2-AB-01-FW265	1	
			2-AB-01-FW266	1	
			2-AB-01-FW267	1	
			2-AB-01-FW268	1	
			2-AB-01-FW269	1	
			2-AB-01-FW270	1	
			2-AB-01-FW271	1	
			2-AB-01-FW272	1	
			2-AB-01-FW273	1	
			2-AB-01-FW274	1	
			2-AB-01-FW275	1	
			2-AB-01-FW276	1	
			2-AB-01-FW277	1	
			2-AB-01-FW278	1	
			2-AB-01-FW279	1	
			2-AB-01-FW280	1	

<u>Exam Category</u>	<u>Item Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam Method</u>
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AB-02-01 Sht. 1

2-AB-01-FW038	2
2-AB-01-FW039	2
2-AB-01-FW040	2
2-AB-01-FW041	2
2-AB-01-FW042	2
2-AB-01-FW043	2
2-AB-01-FW281	2
2-AB-01-FW289	2
2-AB-01-FW290	2
2-AB-01-FW291	2
2-AB-01-FW292	2
2-AB-01-FW293	2
2-AB-01-FW294	2
2-AB-01-FW295	2
2-AB-01-FW296	2
2-AB-01-FW297	2
2-AB-01-FW298	2
2-AB-01-FW299	2
2-AB-01-FW300	2
2-AB-01-FW301	2
2-AB-01-FW302	2
2-AB-01-FW303	2

AB-03-01 Sht. 1

2-AB-01-FW054	3
2-AB-01-FW055	3
2-AB-01-FW056	3
2-AB-01-FW057	3
2-AB-01-FW058	3
2-AB-01-FW059	3
2-AB-01-FW304	3
2-AB-01-FW305	3

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-AB-01-FW306	3	
			2-AB-01-FW307	3	
			2-AB-01-FW308	3	
			2-AB-01-FW309	3	
			2-AB-01-FW310	3	
			2-AB-01-FW311	3	
			2-AB-01-FW312	3	
			2-AB-01-FW313	3	
			2-AB-01-FW314	3	
			2-AB-01-FW315	3	
			2-AB-01-FW316	3	
			2-AB-01-FW317	3	
			2-AB-01-FW318	3	
			2-AB-01-FW319	3	
		AB-04-01 Sht. 1			
			2-AB-01-FW006	3	
			2-AB-01-FW007	3	
			2-AB-01-FW008	3	
			2-AB-01-FW009	2	
			2-AB-01-FW010	2	
			2-AB-01-FW011	2	
			2-AB-01-FW1	2	
			2-AB-01-FW2	2	
			2-AB-01-FW249	2	
			2-AB-01-FW250	3	
			2-AB-01-FW251	3	
			2-AB-01-FW252	3	
			2-AB-01-FW253	3	
			2-AB-01-FW254	3	
			2-AB-01-FW255	3	
			2-AB-01-FW256	3	
			2-AB-01-FW257	3	

<u>Exam</u> <u>Category</u>	<u>Item</u> <u>Number</u>	<u>Drawing</u>	<u>Component</u>	<u>Period</u>	<u>Exam</u> <u>Method</u>
			2-AB-01-FW258	2	
			2-AB-01-FW259	2	
			2-AB-01-FW260	2	
			2-AB-01-FW261	2	
			2-AB-01-FW262	2	
			2-AB-01-FW263	2	
			2-AB-01-FW264	2	

Regulatory Guide 1.14 Flywheel Inspections

11-Aug-95

Component	Period	Exam Method
REG GUIDE 1.14		
RCP FLYWHEEL AT EXPOSED SURFACES		SURFACE
2-PBB01A-FLYWHEEL-R1	3	
2-PBB01B-FLYWHEEL-R1	3	
2-PBB01C-FLYWHEEL-R1	3	
2-PBB01D-FLYWHEEL	3	
RCP FLYWHEEL IN AREAS OF HIGHER STRESS CONCENTRATION AT THE BORE AND KEYWAY (See Note 1)		VOLUMETRIC
2-PBB01A-FLYWHEEL-R1	1 2 3	
2-PBB01B-FLYWHEEL-R1	1 2 3	
2-PBB01C-FLYWHEEL-R1	1 2 3	
2-PBB01D-FLYWHEEL	1 2 3	

Notes:

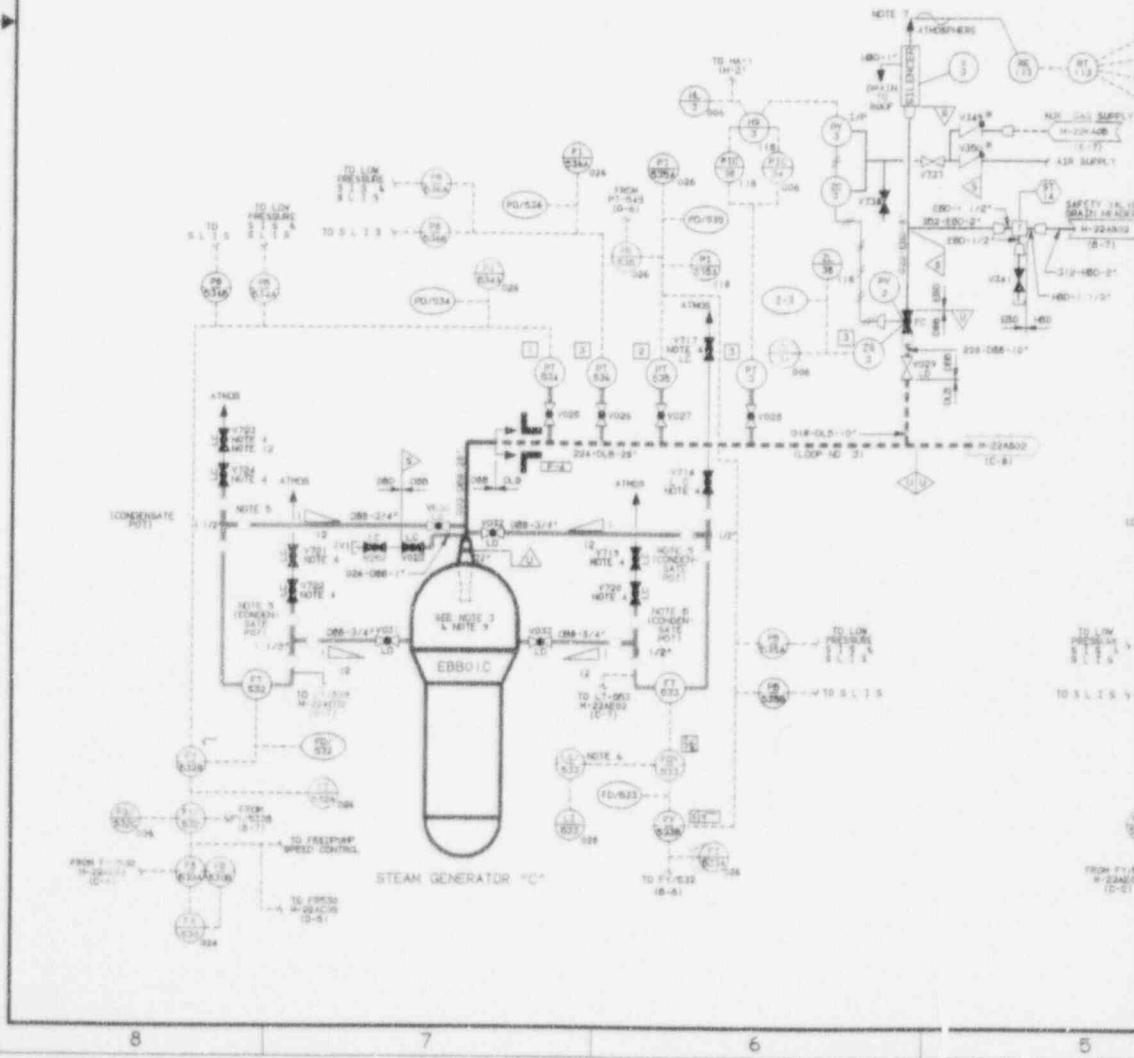
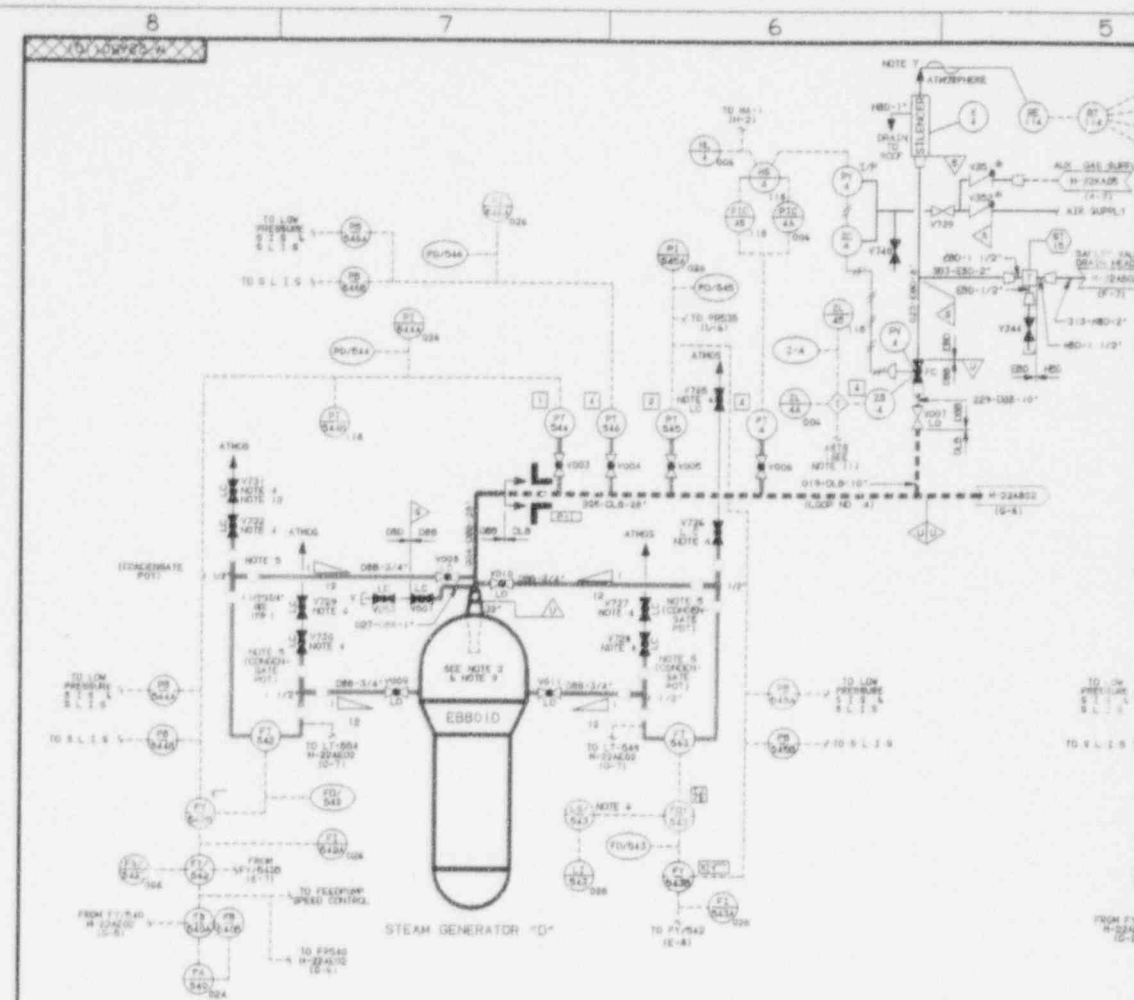
1. A volumetric examination of the entire volume of the flywheel will be performed in the third period.

August 11, 1995

ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
CALLAWAY NUCLEAR POWER PLANT, UNIT 1
DOCKET No. 50-483

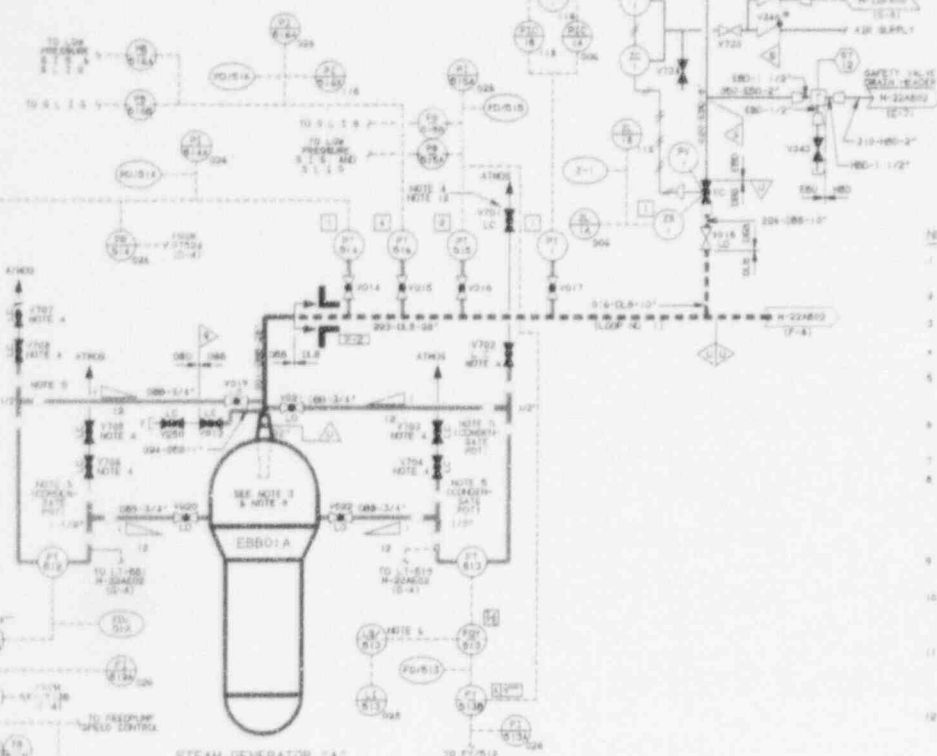
ATTACHMENT B-1

INSERVICE INSPECTION BOUNDARY DRAWINGS



TO DIGITAL RADIATION MONITORING PANEL
TO RECORDER ON PANEL 5010

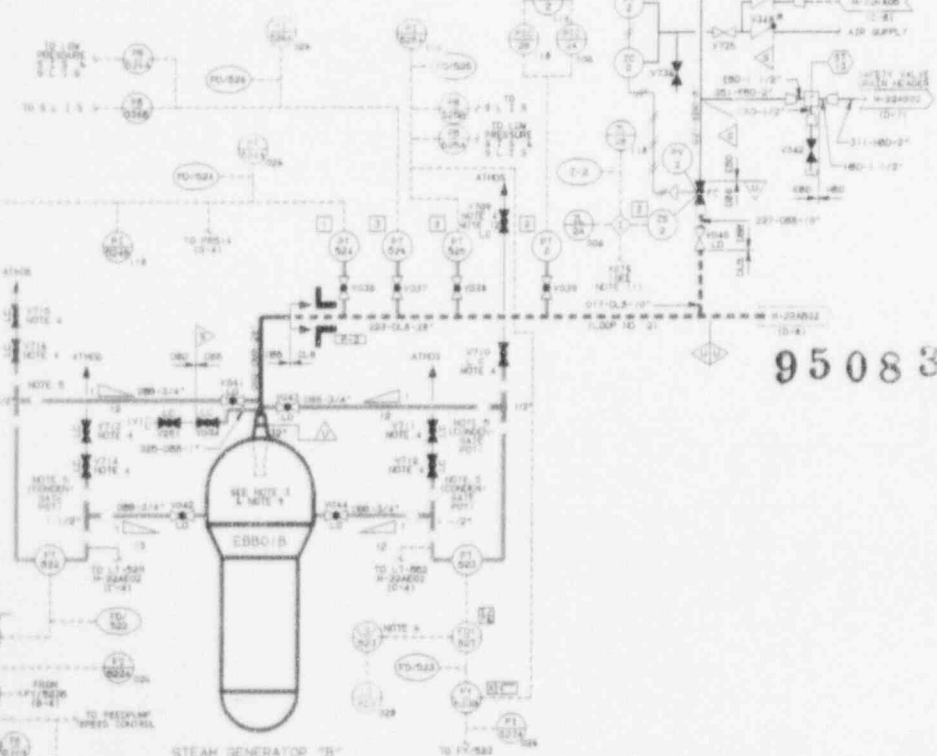
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2 04-25-65
3 01-14-66
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100 05-11-66



- NOTES
1. ALL INSTRUMENTS NUMBERED 500 AND ABOVE ON M-22AB01 ARE PROVIDED WITH REDS EQUIPMENT UNLESS OTHERWISE DESIGNATED AS (S).
 2. REFERENCE TO THE INSTRUMENTATION PROCESS & CONTROL BLOCK DIAGRAM, INSTRUMENTS AND BLOCKS.
 3. MAIN STEAM PUMP RESTRICTOR IS INSTALLED WITH STEAM GENERATOR OUTLET NOZZLE.
 4. DESIGN TWO VALVES ARE INSTALLED TYPE VALVES IN COORDINATE WITH SPECIFICATIONS 4.1.1.1.
 5. DO NOT INSTALL CONDENSATE HOT WELL DWS 14020A AND 5024 FOR REFERENCE SEE M-22AB02 AND VALVE SECTION 2.2. TABLE 22 AND 24 FOR SECTION DETAILS.
 6. INSTRUMENTATION PROVIDED BY INSTRUMENTATION DIVISION FOR INDICATION OF WATER LEVEL IN STEAM GENERATOR SURFACE OF LAMP.
 7. RADIATION DETECTOR VIEW PIPING FROM VIEW TAP PIPE.
 8. WELD IN SAME SECTION III CLASS 2 PIPING SYSTEMS WITHIN THE BOUNDARIES INDICATED BY THE (S) SYMBOL MAY BE SUBJECT TO UNLIMITED EXAMINATION DURING THE INSPECTION PROGRAM. THE SPECIFIED WELDS WITHIN THESE BOUNDARIES AND THEIR INSPECTION REQUIREMENTS ARE INDICATED IN THE INS-101 WORK PLAN PROVIDED UNDER SPECIFICATION 4.1.1.1.
 9. WELDS OF THE STEAM GENERATOR ARE SUBJECT TO INSPECTION DURING THE INSPECTION PROGRAM AND CONTINUE DURING LAMP.
 10. (S) SYMBOLS ARE PROVIDED FOR CLARITY TO INDICATE THAT SAME SECTION III CLASS 2 PIPING SYSTEMS WHICH ARE SUBJECT TO THE INSPECTION PROGRAM ARE CONTINUE DURING LAMP.
 11. TEST LABELING SHUTDOWN TRANSFER SIGNAL IS INITIATED BY SP-1188 BY SP-1187 FOR SEPARATION GROUP A AND SP-1187 FOR SEPARATION GROUP B. THESE TRANSFER CONTROL TO THE AUXILIARY SHUTDOWN PANEL WILL ISOLATE THE MAIN CONTROL BOARD CONTROLS AND INDICATIONS.
 12. VALUES REFERENCED THIS NOTE MAY BE DELETED IN ACCORDANCE WITH THE INSPECTION PROGRAM IMPLEMENTATION OF THIS NOTE REGARDING THE INDICATION OF INSPECTION CONFIGURATION TO BE GIVEN TO SECTION CONTROL VIA SP-1187.

REV DATE
1 10-27-64
2 04-25-65
3 01-14-66
4 07-28-66
5 05-11-66
6 05-11-66
7 05-11-66
8 05-11-66
9 05-11-66
10 05-11-66
11 05-11-66
12 05-11-66
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99 05-11-66
100 05-11-66

TO DIGITAL RADIATION MONITORING PANEL
TO RECORDER ON PANEL 5010



**ANSTEC
APERTURE
CARD**

Also Available on
Aperture Card

9508300247 - 01

ISI EXAMINATION BOUNDARIES

BOUNDARY	DESCRIPTION
(---)	GROUP A NON-EXEMPT
(---)	GROUP A EXEMPT
(---)	GROUP B NON-EXEMPT
(---)	GROUP B EXEMPT
(---)	GROUP C NON-EXEMPT
(---)	GROUP C EXEMPT

NOTE: DASHED BOUNDARY LINE DENOTES GROUP B AND GROUP C BOUNDARIES AUGMENTED IS1

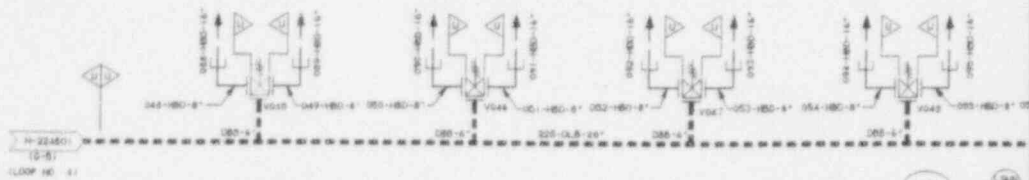
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22AB01(Q)A

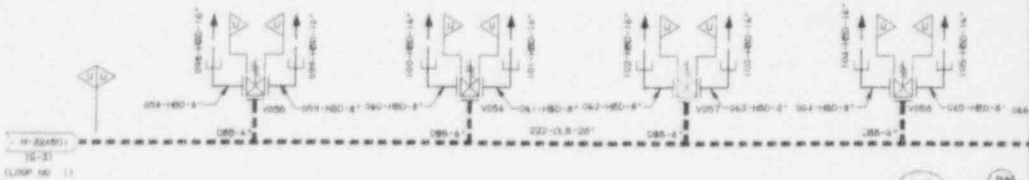
ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07

DATE	NOV 64	SCALE	AS SHOWN
BY	N/A	TITLE	PIPING & INSTRUMENTATION DIAGRAM MAIN STEAM SYSTEM
CHK	N/A	NO.	
APP	N/A	DATE	
DES	N/A	PLANT	CALLAWAY PLANT
ENG	N/A	SCALE	
INSURANCE COMPANY		M-22AB01(Q)A	
ST. LOUIS, MO			

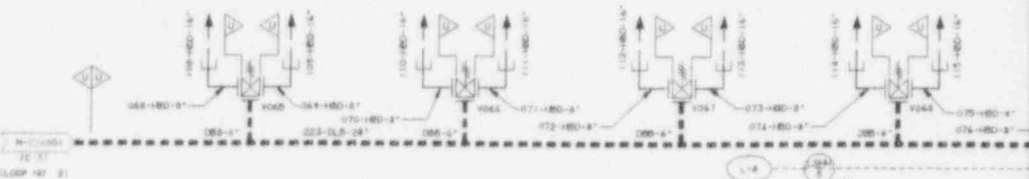
SPRING LOADED SAFETY VALVES



SPRING LOADED SAFETY VALVES



SPRING LOADED SAFETY VALVES



SPRING LOADED SAFETY VALVES

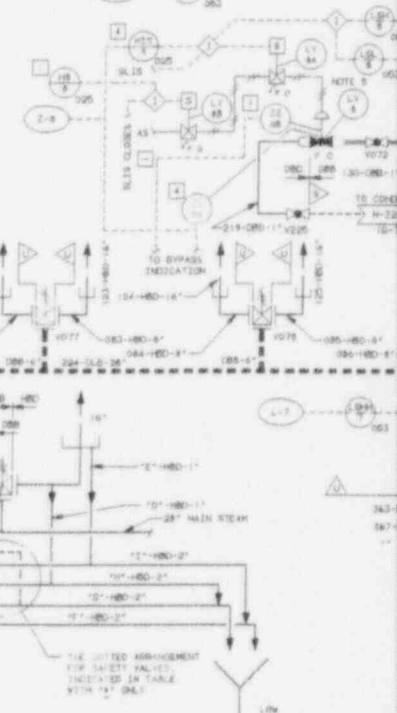
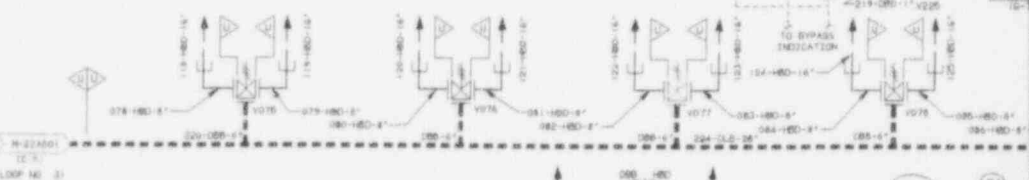
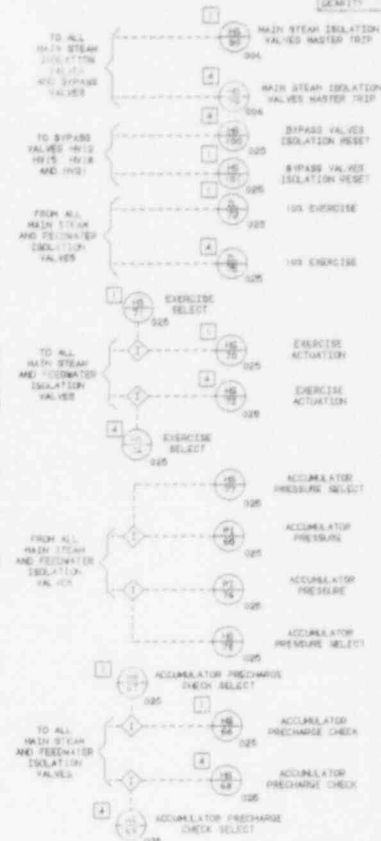
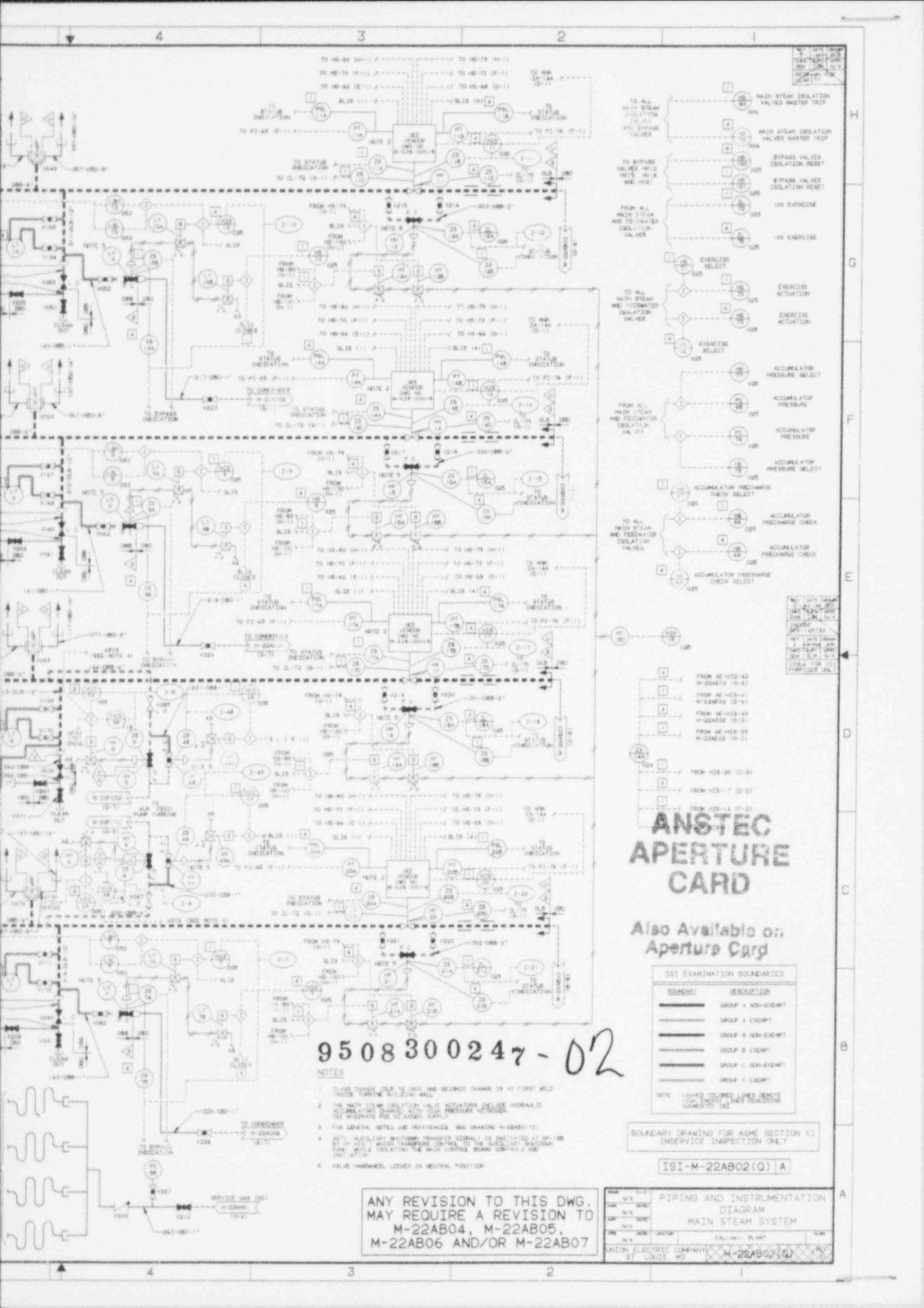


TABLE FOR LINE NUMBERS

DESCRIPTION	SAFETY VALVE NUMBERS																			
	V040	V046	V047	V048	V049	V050	V056	V067	V068	V069	V068	V066	V067	V068	V069	V076	V077	V078	V079	
"A"	483	485	492	490	503	486	461	466	471	476	429	434	438	444	449	450	407	410	417	420
"B"	484	489	494	499	504	497	467	467	472	477	430	436	440	446	450	407	408	413	418	422
"C"	485	490	495	500	505	498	463	468	473	478	431	436	441	446	451	404	409	414	419	424
"D"	486	491	496	501	506	499	464	469	474	479	432	437	442	447	452	405	410	415	420	425
"E"	487	492	497	502	507	500	465	470	475	480	433	438	443	448	453	406	411	416	421	426
"F"	488	493	498	503	508	501	466	471	476	481	434	439	444	449	454	407	412	417	422	427
"G"	489	494	499	504	509	502	467	472	477	482	435	440	445	450	455	408	413	418	423	428
"H"	490	495	500	505	510	503	468	473	478	483	436	441	446	451	456	409	414	419	424	429
"I"	491	496	501	506	511	504	469	474	479	484	437	442	447	452	457	410	415	420	425	430
"J"	492	497	502	507	512	505	470	475	480	485	438	443	448	453	458	411	416	421	426	431
"K"	493	498	503	508	513	506	471	476	481	486	439	444	449	454	459	412	417	422	427	432
"L"	494	499	504	509	514	507	472	477	482	487	440	445	450	455	460	413	418	423	428	433
"M"	495	500	505	510	515	508	473	478	483	488	441	446	451	456	461	414	419	424	429	434
"N"	496	501	506	511	516	509	474	479	484	489	442	447	452	457	462	415	420	425	430	435
"O"	497	502	507	512	517	510	475	480	485	490	443	448	453	458	463	416	421	426	431	436
"P"	498	503	508	513	518	511	476	481	486	491	444	449	454	459	464	417	422	427	432	437
"Q"	499	504	509	514	519	512	477	482	487	492	445	450	455	460	465	418	423	428	433	438
"R"	500	505	510	515	520	513	478	483	488	493	446	451	456	461	466	419	424	429	434	439
"S"	501	506	511	516	521	514	479	484	489	494	447	452	457	462	467	420	425	430	435	440
"T"	502	507	512	517	522	515	480	485	490	495	448	453	458	463	468	421	426	431	436	441
"U"	503	508	513	518	523	516	481	486	491	496	449	454	459	464	469	422	427	432	437	442
"V"	504	509	514	519	524	517	482	487	492	497	450	455	460	465	470	423	428	433	438	443
"W"	505	510	515	520	525	518	483	488	493	498	451	456	461	466	471	424	429	434	439	444
"X"	506	511	516	521	526	519	484	489	494	499	452	457	462	467	472	425	430	435	440	445
"Y"	507	512	517	522	527	520	485	490	495	500	453	458	463	468	473	426	431	436	441	446
"Z"	508	513	518	523	528	521	486	491	496	501	454	459	464	469	474	427	432	437	442	447

TYPICAL FOR EACH SAFETY VALVE ARRANGEMENT

FOR REVISION SLABETS OF STEAM GENERATOR



ANSTEC APERTURE CARD

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ISI EXAMINATION BOUNDARIES

BOUNDARY	DESCRIPTION
—————	GROUP A NON-EVENT
—————	GROUP A EVENT
—————	GROUP B NON-EVENT
—————	GROUP B EVENT
—————	GROUP C NON-EVENT
—————	GROUP C EVENT

NOTE: SHARED COLORED LINES DENOTE COMMON LOGIC THAT REQUIRES AGRUMENT TO ISI

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

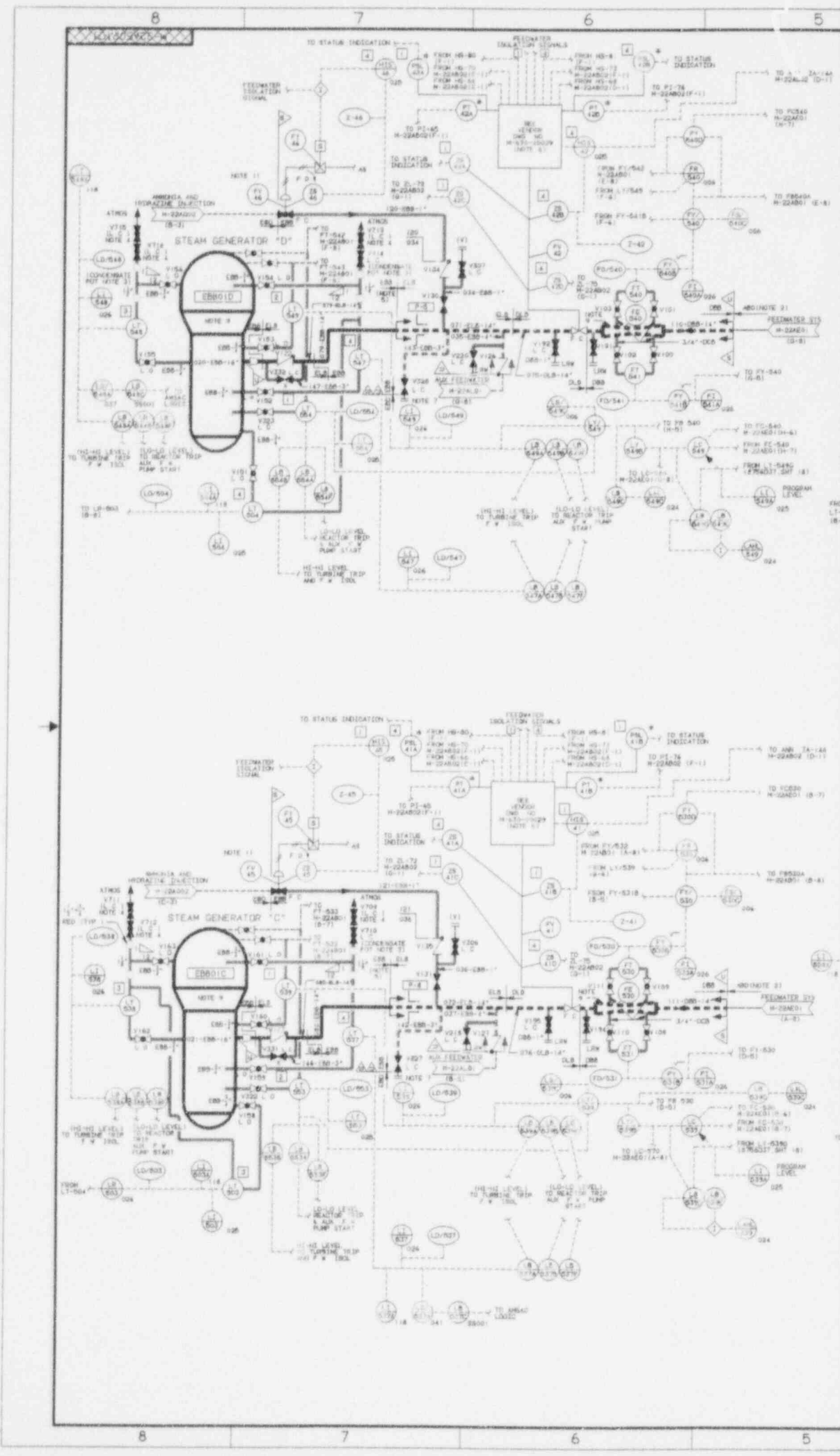
ISI-M-22AB02(Q) A

9508300247-02

- NOTES
1. CLASS CHANGE DUE TO UNIT AND BEARING CHANGE IN AT POINT WELD INSIDE TURBINE BEARING WALL
 2. THE MAIN STEAM ISOLATION VALVE ISOLATION INCLUDES HYDRAULIC ISOLATION AND CHANGE WITH HIGH PRESSURE HEADROOM (SEE M-22AB04 FOR M-22AB04 SUPPLY)
 3. FOR GENERAL NOTES AND REFERENCES, SEE DRAWING M-22AB01
 4. APT-1000 (BOTTOM) TRANSFER SIGNAL IS INDICATED AT 01/100 (SEE M-22AB04) WHICH TRANSFERS CONTROL TO THE MAIN STEAM ISOLATION VALVE AND ISOLATING THE MAIN CONTROL BOARD CONTROL AND ISOLATION
 5. VALVE HANDLE, LOCKED IN NEUTRAL POSITION

ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07

DATE	BY	PIPING AND INSTRUMENTATION DIAGRAM
DATE	BY	MAIN STEAM SYSTEM
DATE	BY	CALL NO. 01-001
DATE	BY	SCALE
ENGINEERING COMPANY	ST. LOUIS, MO	M-22AB02(Q)



8

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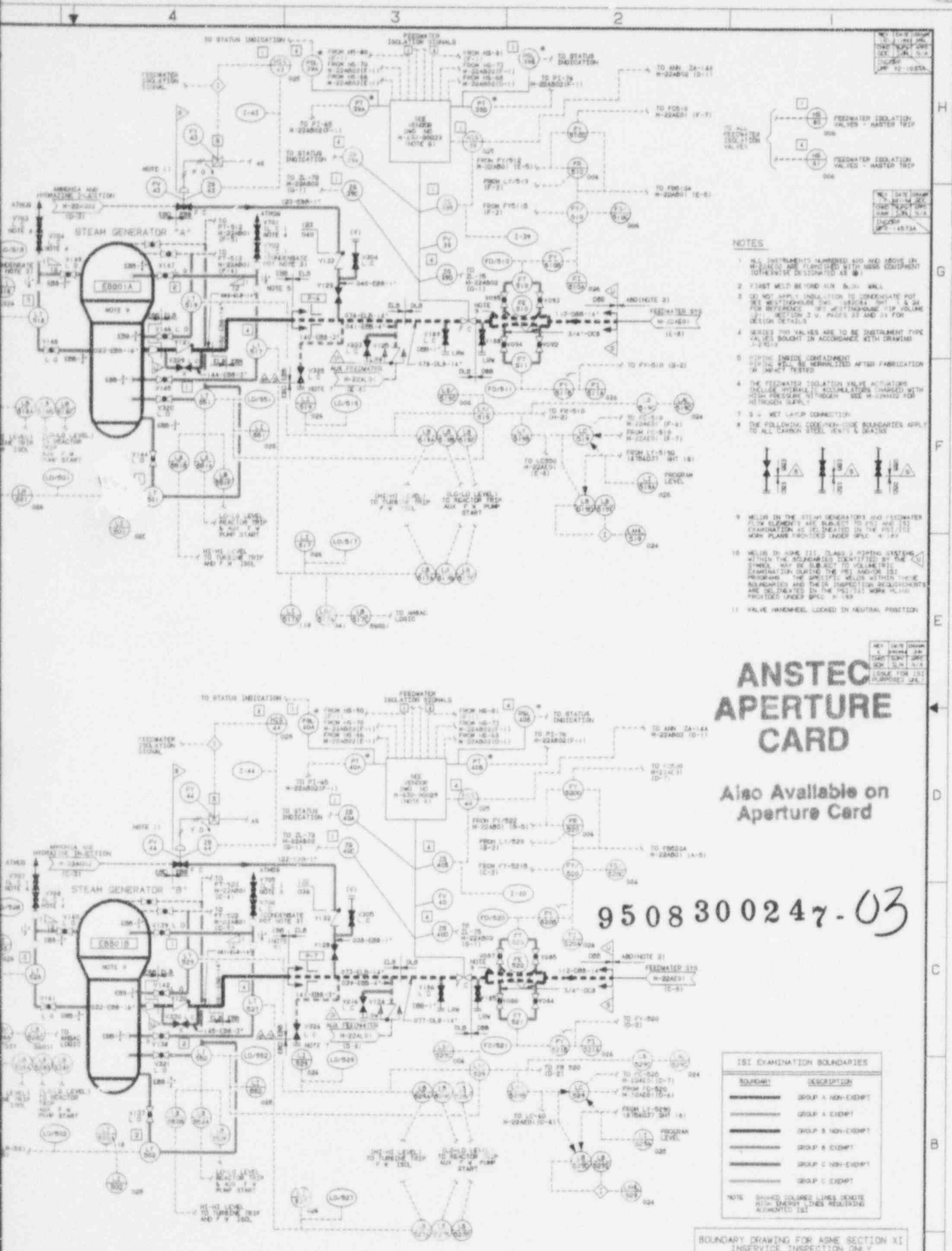
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5



- NOTES**
1. ALL INSTRUMENTS NUMBERED 400 AND ABOVE IN THIS DRAWING ARE EQUIPPED WITH WIRE EQUIPMENT TO PERMIT DISINTEGRATION AS SHOWN.
 2. FIRST MUST BE ON AIR & IN SILENT MODE.
 3. DO NOT APPLY ISOLATION TO UNDESIRED POTENTIAL FEEDWATER SOURCE. SEE M-22AB04 FOR FEEDWATER ISOLATION SIGNALS AND ISOLATION VALVE DETAILS.
 4. SERIES VALVES ARE TO BE INSTANT TYPE VALVE MOUNTED IN ACCORDANCE WITH DRAWING M-22AB01.
 5. DURING INSPECTION CONTAINMENT TESTING, ALL VALVES MUST BE NORMALIZED AFTER FABRICATION OR WELDING TESTS.
 6. THE FEEDWATER ISOLATION VALVE ACTUATORS INCLUDE MANUAL ACCUMULATORS CHARGED WITH HELIX GAS. SEE M-22AB01 FOR HELIX GAS SUPPLY.
 7. S & W MET LAPOR CONNECTION.
 8. THE FOLLOWING CODE/PAINT COORDINATES APPLY TO ALL CARBON STEEL WELDS & BRAYS:
 - PROGRAM LEVEL
 - WELD
 - BRAY
 9. WELDS IN THE STEAM GENERATORS AND FEEDWATER PIPE ELEMENTS ARE SUBJECT TO VISUAL INSPECTION AS SPECIFIED IN THE PIPING ISOLATION PLANS PROVIDED UNDER SPEC. M-22AB01.
 10. WELDS IN AREA III CLASS 2 PIPING SYSTEMS WITHIN THE BOUNDARIES IDENTIFIED BY THE SYMBOLS MAY BE SUBJECT TO VISUAL INSPECTION DURING THE ISI AND/OR ISI PROGRAMS. THE SPECIFIC WELDS WITHIN THESE BOUNDARIES AND THE INSPECTION REQUIREMENTS ARE AS SPECIFIED IN THE PIPING ISOLATION PLANS PROVIDED UNDER SPEC. M-22AB01.
 11. VALVE HANDWHEEL LOCKED IN NEUTRAL POSITION.

ANSTEC APERTURE CARD

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9508300247-03

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
—————	GROUP A NON-EXEMPT
—————	GROUP A EXEMPT
—————	GROUP B NON-EXEMPT
—————	GROUP B EXEMPT
—————	GROUP C NON-EXEMPT
—————	GROUP C EXEMPT

NOTE: SHOWN COLORED LINES DENOTE WITH EXEMPT LINES REQUIRING ALLOWED ISI.

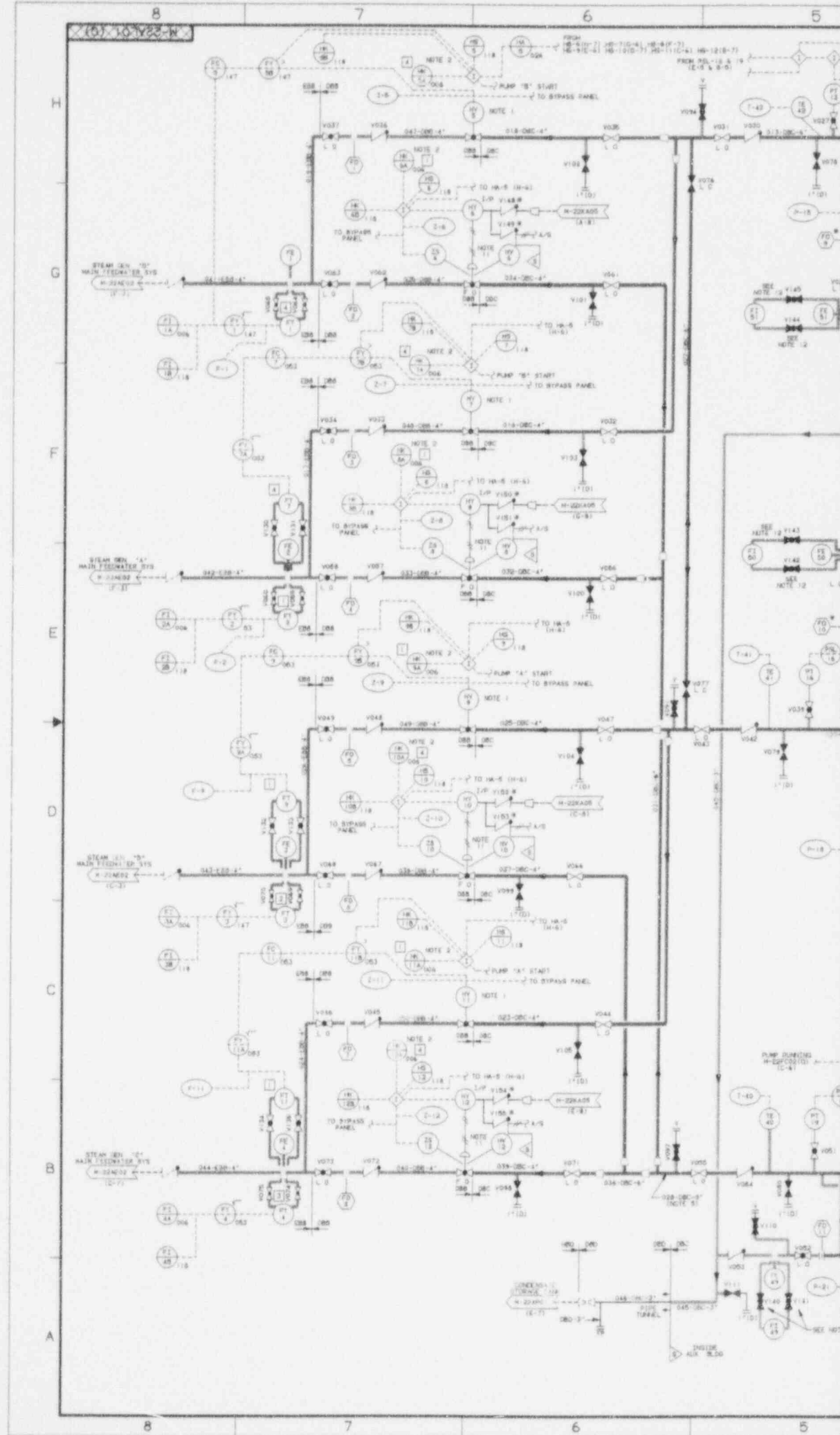
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

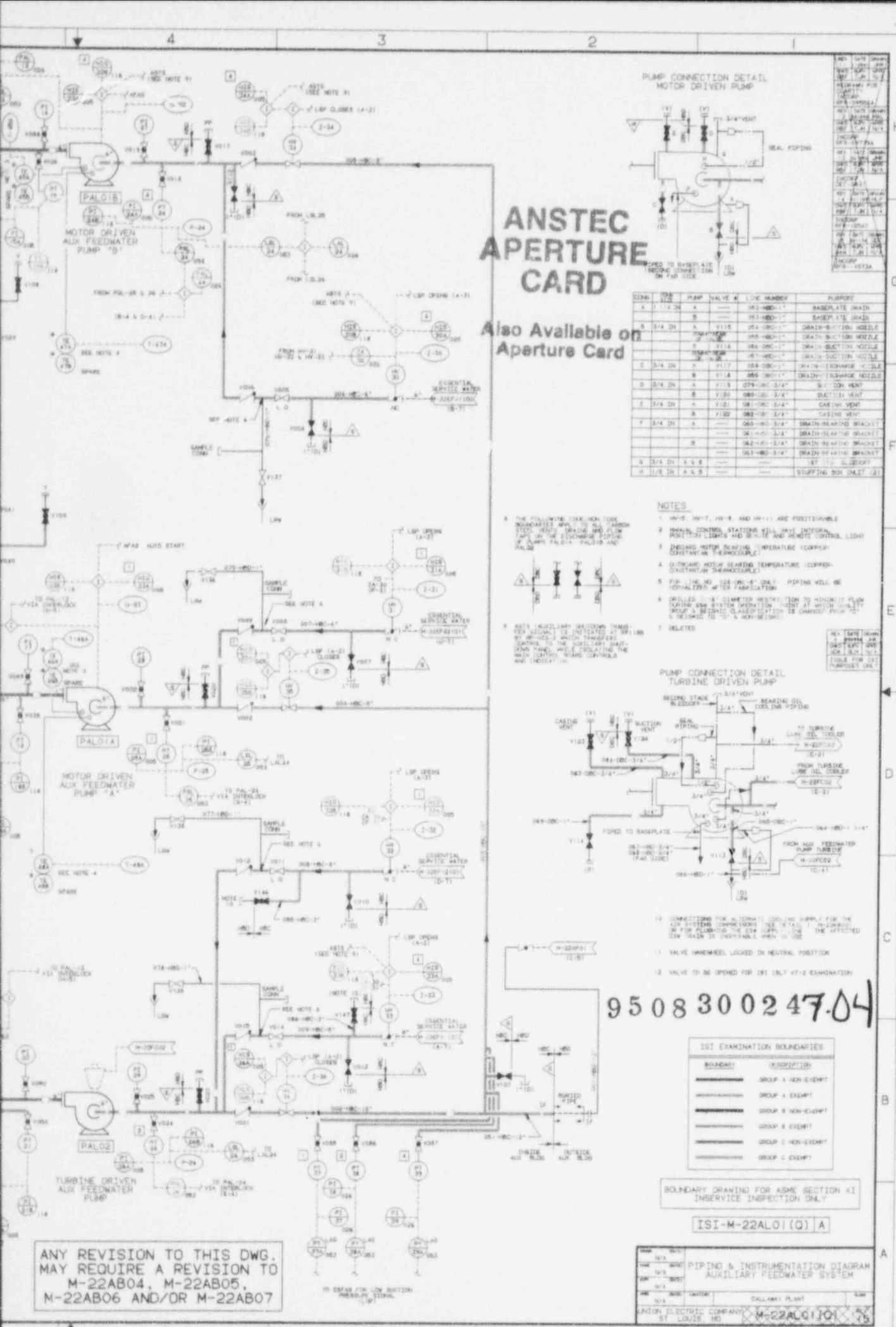
ISI-M-22AE02(Q) A

ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07

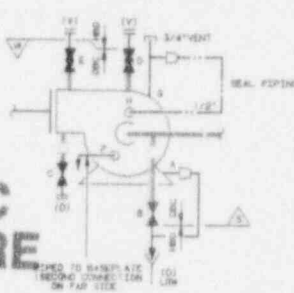
REV	DATE	DESCRIPTION
1	10/1/68	PIPING AND INSTRUMENTATION DIAGRAM FEEDWATER SYSTEM
2	10/1/68	CALLAWAY PLANT
3	10/1/68	CALLAWAY PLANT

SPINON ELECTRIC COMPANY ST. LOUIS, MO





PUMP CONNECTION DETAIL MOTOR DRIVEN PUMP



REV	DATE	BY	DESCRIPTION
001	10/11/83	JMB	REVISED FOR P&ID
002	11/13/83	JMB	REVISED FOR P&ID
003	12/15/83	JMB	REVISED FOR P&ID
004	01/10/84	JMB	REVISED FOR P&ID
005	02/05/84	JMB	REVISED FOR P&ID
006	03/05/84	JMB	REVISED FOR P&ID
007	04/05/84	JMB	REVISED FOR P&ID
008	05/05/84	JMB	REVISED FOR P&ID
009	06/05/84	JMB	REVISED FOR P&ID
010	07/05/84	JMB	REVISED FOR P&ID
011	08/05/84	JMB	REVISED FOR P&ID
012	09/05/84	JMB	REVISED FOR P&ID
013	10/05/84	JMB	REVISED FOR P&ID
014	11/05/84	JMB	REVISED FOR P&ID
015	12/05/84	JMB	REVISED FOR P&ID
016	01/05/85	JMB	REVISED FOR P&ID
017	02/05/85	JMB	REVISED FOR P&ID
018	03/05/85	JMB	REVISED FOR P&ID
019	04/05/85	JMB	REVISED FOR P&ID
020	05/05/85	JMB	REVISED FOR P&ID

ANSTEC APERTURE CARD

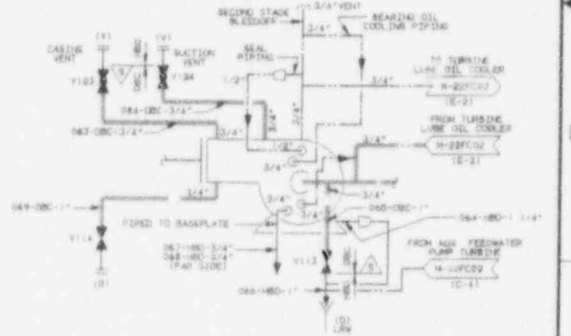
Also Available on Aperture Card

COOR	SIZE	PUMP	VALVE #	LINIC NUMBER	PURPOSE
A	1/4 IN	A	---	065-080-1/2"	BASEPLATE DRAIN
A	3/4 IN	A	---	065-080-1/2"	BASEPLATE DRAIN
C	3/4 IN	A	V116	064-080-3/4"	DRAIN-EXHAUST NOZZLE
C	3/4 IN	B	V116	064-080-1/2"	DRAIN-EXHAUST NOZZLE
D	3/4 IN	A	V118	065-080-1/2"	DRAIN-EXHAUST NOZZLE
D	3/4 IN	B	V118	065-080-1/2"	DRAIN-EXHAUST NOZZLE
E	3/4 IN	A	V119	079-080-3/4"	CASING VENT
E	3/4 IN	B	V120	080-080-3/4"	CASING VENT
F	3/4 IN	A	V121	081-080-3/4"	CASING VENT
F	3/4 IN	B	V121	081-080-3/4"	CASING VENT
G	3/4 IN	A	V122	082-080-3/4"	CASING VENT
G	3/4 IN	B	V122	082-080-3/4"	CASING VENT
H	1 1/2 IN	A & B	---	---	STUFFING BOX GASKET (2)

NOTES

- THE FOLLOWING CONNECTION CODE INDICATES APPLICABLE TO MAIN PIPING, STEAM, WATER, DRAINAGE AND LOW TAPPS ON THE DISCHARGE PIPING OF PUMPS PAL01A, PAL01B AND PAL02.
- INITIAL CONTROL STATIONS WILL HAVE INTERNAL POSITION LIGHTS AND REMOTE AND REMOTE CONTROL LIGHTS.
- INDICATE MOTOR BEARING TEMPERATURE (CORRECTED) CONSTANT IN THERMOCOUPLE.
- OUTLINE MOTOR BEARING TEMPERATURE (CORRECTED) CONSTANT IN THERMOCOUPLE.
- FOR LINE NO. 022-080-3/4" ONLY, PIPING WILL BE IDENTIFIED AFTER FABRICATION.
- DRILLED 3/8" DIAMETER RESTRICTION TO MINIMUM FLOW RATE IN SYSTEM OPERATION. POINT AT WHICH QUALITY GROUP A BEARING CLASSIFICATION IS CHANGED FROM "B" TO "C" IS TO BE IDENTIFIED.
- DELETED.

PUMP CONNECTION DETAIL TURBINE DRIVEN PUMP



- CONNECTIONS FOR ALTERNATE LOW SUPPLY FOR THE AIR SYSTEMS COMPARE WITH SEE DETAIL T-202/023 FOR FLOWING THE LOW SUPPLY. THE AFFECTED LOW SUPPLY IS UNAVAILABLE IN USE.
- VALVE HANDBOOK LOCKED IN NEUTRAL POSITION.
- VALVE TO BE OPENED FOR ISI ONLY AT EXAMINATION.

9508300247.04

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
---	GROUP A NON-EXEMPT
---	GROUP A EXEMPT
---	GROUP B NON-EXEMPT
---	GROUP B EXEMPT
---	GROUP C NON-EXEMPT
---	GROUP C EXEMPT

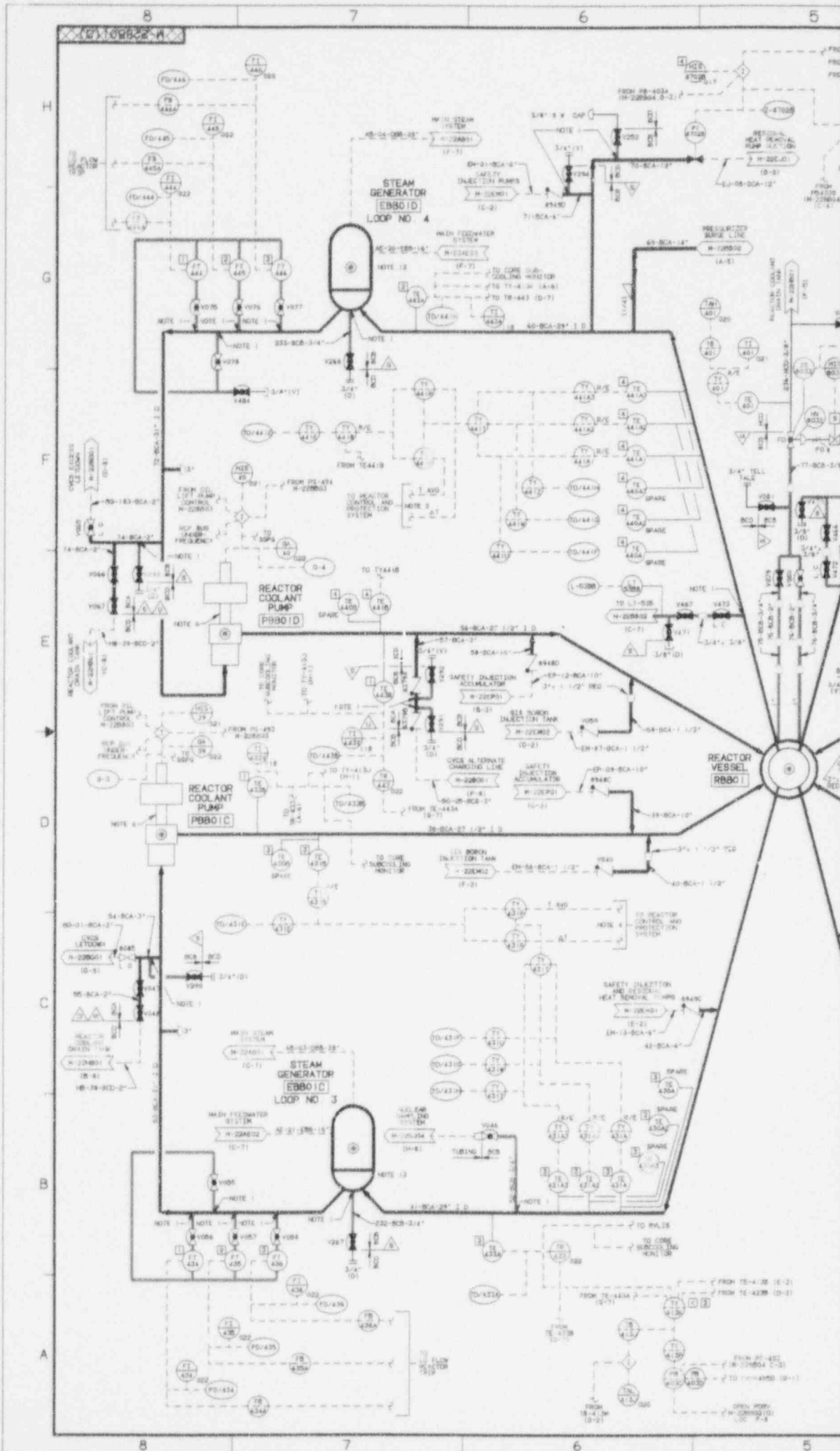
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

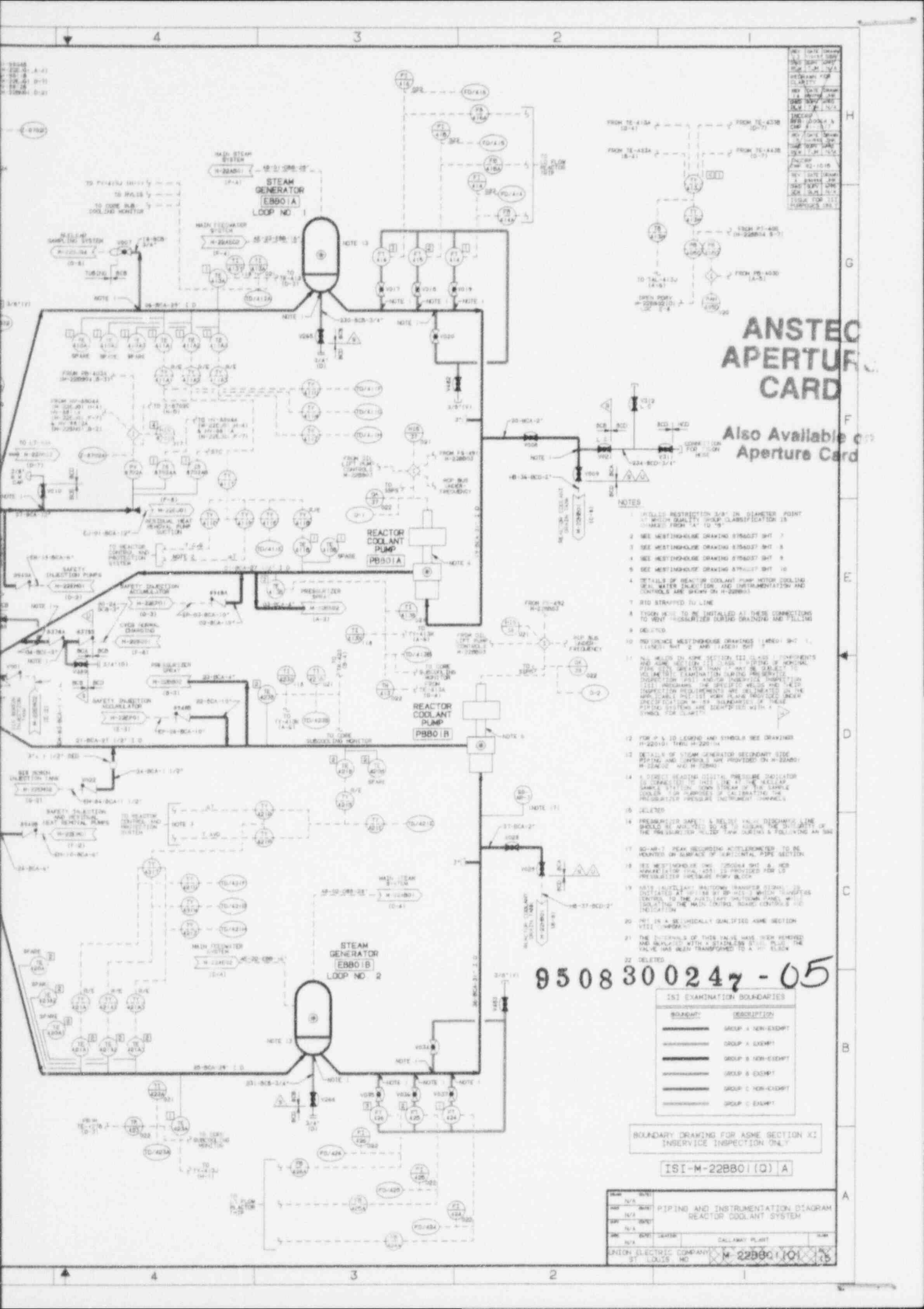
ISI-M-22AL01(Q) A

ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07

REV	DATE	BY	DESCRIPTION	APP
001	10/11/83	JMB	PIPING & INSTRUMENTATION DIAGRAM AUXILIARY FEEDWATER SYSTEM	JMB
002	11/13/83	JMB		JMB
003	12/15/83	JMB		JMB
004	01/10/84	JMB		JMB
005	02/05/84	JMB		JMB
006	03/05/84	JMB		JMB
007	04/05/84	JMB		JMB
008	05/05/84	JMB		JMB
009	06/05/84	JMB		JMB
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017	02/05/85	JMB		JMB
018	03/05/85	JMB		JMB
019	04/05/85	JMB		JMB
020	05/05/85	JMB		JMB

ANSTEC ELECTRIC COMPANY
ST. LOUIS, MO





ANSTEC APERTURE CARD

Also Available as Aperture Card

- NOTES
1. UNLESS RESTRICTION 3/8" IN DIAMETER POINT AT WHICH QUALITY CHECK CLASSIFICATION IS CHANGED FROM "A" TO "B"
 2. SEE WESTINGHOUSE DRAWING STRAIGHT SHIT 8
 3. SEE WESTINGHOUSE DRAWING STRAIGHT SHIT 8
 4. SEE WESTINGHOUSE DRAWING STRAIGHT SHIT 10
 5. SEE WESTINGHOUSE DRAWING STRAIGHT SHIT 10
 6. DETAILS OF REACTOR COOLANT PUMP MOTOR COOLING WATER INJECTION AND INSTRUMENTATION AND CONTROLS ARE SHOWN ON H-228801
 7. RIG STRAPPED TO LINE
 8. TYPED WIRE TO BE INSTALLED AT THESE CONNECTIONS TO VENT PRESSURIZER DURING DRAINING AND FILLING
 9. DELETED
 10. REFERENCE WESTINGHOUSE DRAWING LINEED SHIT 1, LINEED SHIT 2 AND TRADED SHIT 7
 11. ALL WELDS ON PIPE SECTION III CLASS 1 COMPONENTS AND GASKET WELDS ON III CLASS 2 WELDS SHALL BE WELDED TO THE SPECIFICATION THAT MAY BE SUBJECT TO ALL THE REQUIREMENTS OF THE WESTINGHOUSE INSPECTION AND TESTING MANUAL AND THE QUALITY CHECK AND INSPECTION REQUIREMENTS AND SHALL BE IDENTIFIED BY THE APPLICABLE WESTINGHOUSE SYMBOLS AND THE INSPECTION SYMBOLS ARE IDENTIFIED WITH A SYMBOL FOR CLARITY
 12. FOR P & L LEGEND AND SYMBOLS SEE DRAWINGS H-228011 THRU H-228017
 13. DETAILS OF STEAM GENERATOR SECONDARY SIDE PIPING AND CONTROLS ARE PROVIDED ON H-228801 H-228802 AND H-228803
 14. A TYPICAL READING POINT PRESSURE INDICATOR IS TO BE INSTALLED TO INDICATE THE REACTOR COOLANT SYSTEM PRESSURE AT THE SAMPLE POINT. THE SAMPLE POINT SHALL BE IDENTIFIED BY THE APPLICABLE WESTINGHOUSE SYMBOLS AND THE INSPECTION SYMBOLS ARE IDENTIFIED WITH A SYMBOL FOR CLARITY
 15. DELETED
 16. PRESSURIZER SAFETY & RELIEF VALVE DISCHARGE LINE SHALL BE INSTALLED TO BE IN THE SURFACE OF THE PRESSURIZER HELD TANK DURING AND FOLLOWING AN SSB
 17. SO-H-7 PEAK RECORDING ATTACHED TO BE MOUNTED ON SURFACE OF HORIZONTAL PIPE SECTION
 18. SEE WESTINGHOUSE AND CONTROL SHIT 8 AND H-228801 FOR VALVE AND INSTRUMENTATION FOR IS
 19. THIS AUXILIARY PIPING TRANSFER SIGNAL IS INITIATED BY THE JUSTICE OF THE PEACE PANEL AND IS TO BE INSTALLED TO THE MAIN CONTROL BOARD CONTROLS FOR INDICATION
 20. THIS IS A QUALIFIED ASME SECTION XI
 21. THE DETAILS OF THIS VALVE HAVE BEEN PROVIDED AND ANALYZED WITH A STAINLESS STEEL. THE VALVE HAS BEEN TRANSFERRED TO A "B" CLASS
 22. DELETED

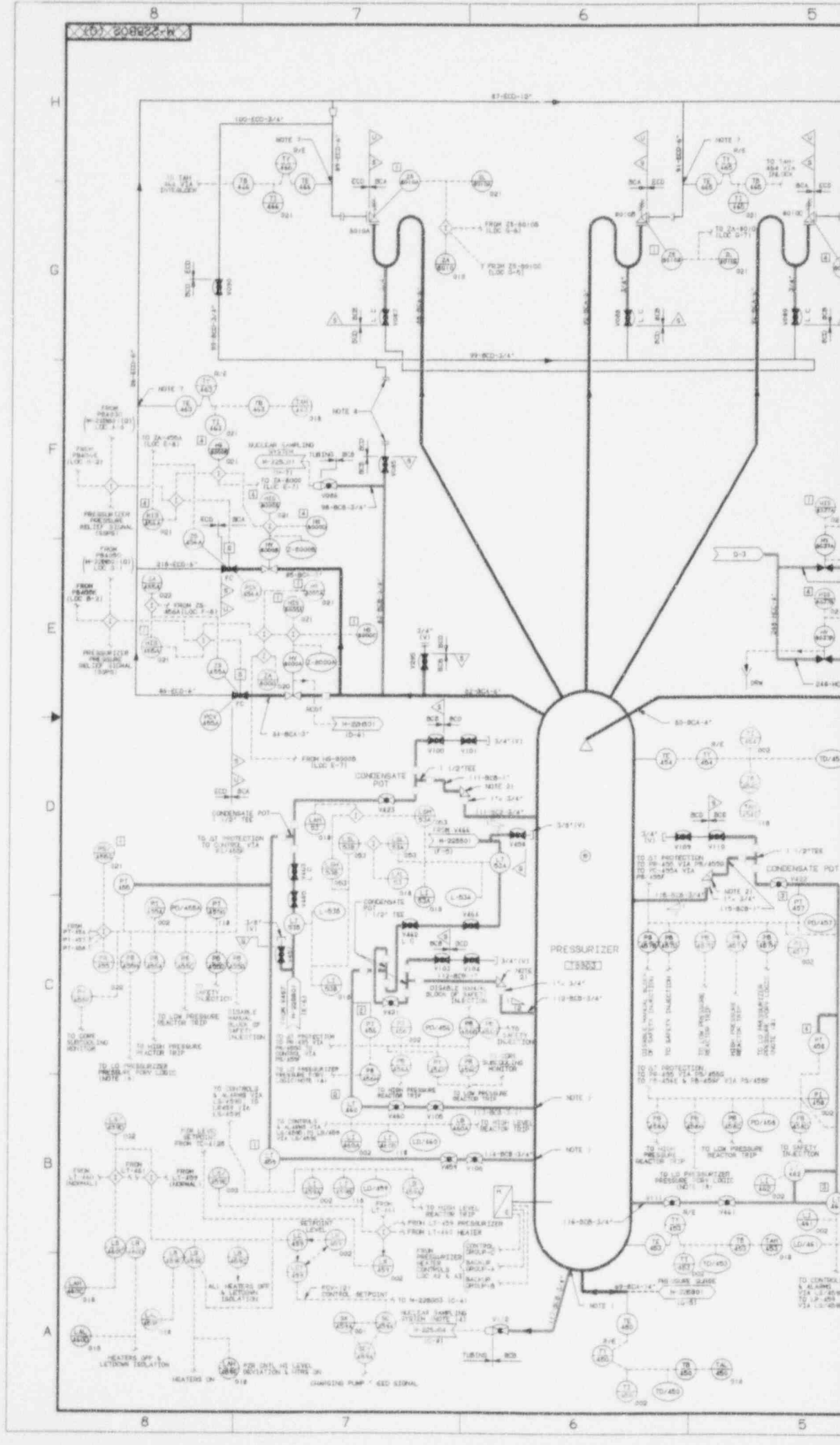
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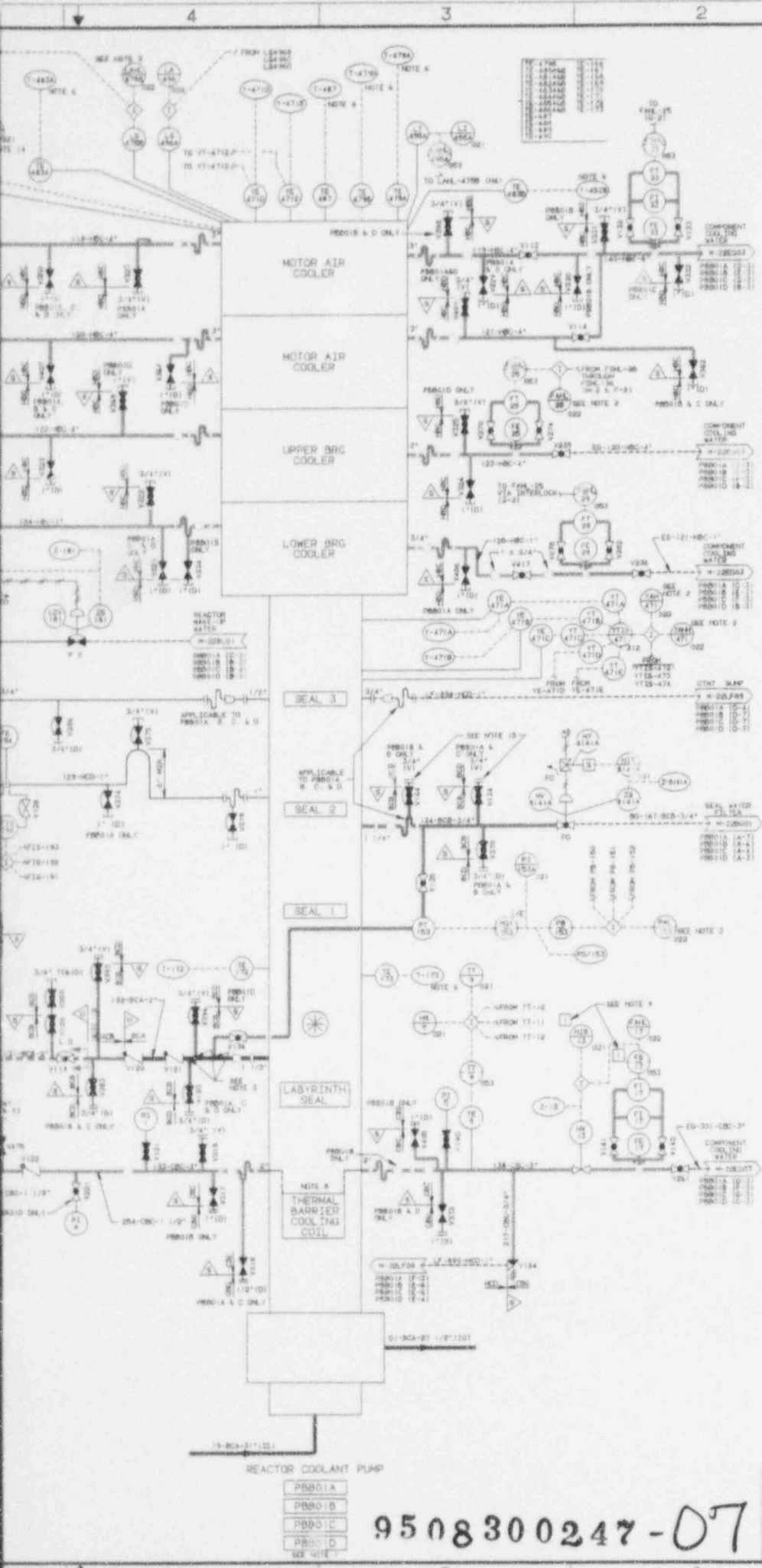
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
—————	GROUP A NON-EXEMPT
—————	GROUP A EXEMPT
—————	GROUP B NON-EXEMPT
—————	GROUP B EXEMPT
—————	GROUP C NON-EXEMPT
—————	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-228801(Q)A

DATE	REV	DESCRIPTION	BY
10/1/68	1	PIPING AND INSTRUMENTATION DIAGRAM REACTOR COOLANT SYSTEM	...
10/1/68	2
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10/1/68	99
10/1/68	100





NOTES

- 1 REACTOR COOLANT PUMP PIPING AND INSTRUMENTATION GROUP IS TYPICAL OF ALL PUMP (A) GROUPS. THERMAL BARRIER COIL PIPING AND INSTRUMENTATION CORRESPONDING TO OTHER PUMPS ARE OTHER IN NOTES
- 2 SINGLE ALARM POINT FOR ALL FOUR (A) PUMPS
- 3 INJECTION ORIFICE 3/8" DIAMETER POINT AT WHICH QUALITY GROUP CLASSIFICATION IS CHANGED FROM "A" TO "B"
- 4 DELETED
- 5 REFERENCE WESTINGHOUSE DRAWING, 1148002 5001
- 6 THESE ARE INPUTS TO THE NEWS COMPUTER
- 7 VALUES HV-2011A, B, C, & D ARE ALL ASSOCIATED WITH CHARGE & POWER SUPPLY
- 8 THERMAL BARRIER COILING COOL HAS INTERNAL PRESSURE DESIGN RATING OF 150 PSIA
- 9 VALVES HV-10, 14, 15, 16, 19 AND HV-17, 18, 19, 20, 21 ARE ALL ASSOCIATED WITH CHARGE & POWER SUPPLY AND CONTROL
- 10 TYPICAL 1" BAP SWITCHING TO MULTI-POINT ORIFICE IS FROM NEWS COMPUTER
- 11 ALL WELDS IN ASME SECTION III CLASS 1 COMPONENTS AND ASME SECTION III CLASS 2 PORTING OF CENTRAL PUMP ARE GREATER THAN ONE INCH. MAY BE SUBJECT TO WELDING PROCEDURE SURVEILLANCE OR PRESERVICE INSPECTION (PSI) AND/OR THE INSERVICE INSPECTION (ISI) PROGRAMS. THE REQUIREMENTS OF THESE PROGRAMS AND INSPECTION REQUIREMENTS ARE DEFINED IN THE APPROPRIATE ISI (ISI) WORK PLANS PROVIDED UNDER SPECIFICATION M-22803 BOUNDARIES OF THESE PIPING SYSTEMS ARE IDENTIFIED WITH A ∇ SYMBOL FOR CLARITY
- 12 WELDS IN ASME SECTION III CLASS 2 HIGH ENERGY PIPING EQUIPMENT PROTECTION AREA OF CENTRAL PUMP ARE GREATER THAN ONE INCH. MAY BE SUBJECT TO WELDING PROCEDURE SURVEILLANCE OR PRESERVICE INSPECTION (PSI) AND/OR THE INSERVICE INSPECTION (ISI) PROGRAMS. THE REQUIREMENTS OF THESE PROGRAMS AND INSPECTION REQUIREMENTS ARE DEFINED IN THE APPROPRIATE ISI (ISI) WORK PLANS PROVIDED UNDER SPECIFICATION M-22803 BOUNDARIES OF THESE PIPING SYSTEMS ARE IDENTIFIED WITH A ∇ SYMBOL FOR CLARITY
- 13 ∇ SYMBOLS ARE PROVIDED FOR CLARITY TO INDICATE ASME SECTION III CLASS 2 PIPING SYSTEMS WHICH ARE SUBJECT TO THE PSII (ISI) PROGRAMS AND CONTINUE IN TO OTHER P & ID'S
- 14 LIGHT INDICATING ANOMALOUS OIL PRESSURE IS AN INTEGRAL PART OF ISI
- 15 THE VENT ASSOCIATED WITH C REACTOR COOLANT PUMP IS NOT A FLAMEABLE VENT FOR C REACTOR COOLANT PUMP. M-22803-1 IS CORRECT

ANSTEC APERTURE CARD

Also Available on Aperture Card

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
-----	GROUP A NON-EQUIPT
-----	GROUP A EQUIPT
-----	GROUP B NON-EQUIPT
-----	GROUP B EQUIPT
-----	GROUP C NON-EQUIPT
-----	GROUP C EQUIPT

NOTE: DASHED LINES INDICATE WELDS SUBJECT TO OTHER INSPECTION ALTERNATIVE (ISI)

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22803(Q) A

DATE	REV	DESCRIPTION
11/18/80	1	ISSUE FOR P&ID
11/18/80	2	ISSUE FOR P&ID
11/18/80	3	ISSUE FOR P&ID
11/18/80	4	ISSUE FOR P&ID
11/18/80	5	ISSUE FOR P&ID
11/18/80	6	ISSUE FOR P&ID
11/18/80	7	ISSUE FOR P&ID
11/18/80	8	ISSUE FOR P&ID
11/18/80	9	ISSUE FOR P&ID
11/18/80	10	ISSUE FOR P&ID

PIPING AND INSTRUMENTATION DIAGRAM
REACTOR COOLANT SYSTEM

UNION ELECTRIC COMPANY
ST. LOUIS, MO

CALLOWAY ISLAND
M-22803(Q)1

9508300247-07

- PBD01A
- PBD01B
- PBD01C
- PBD01D
- SEE NOTE 1

RY CORE SUBCOOLING MONITOR

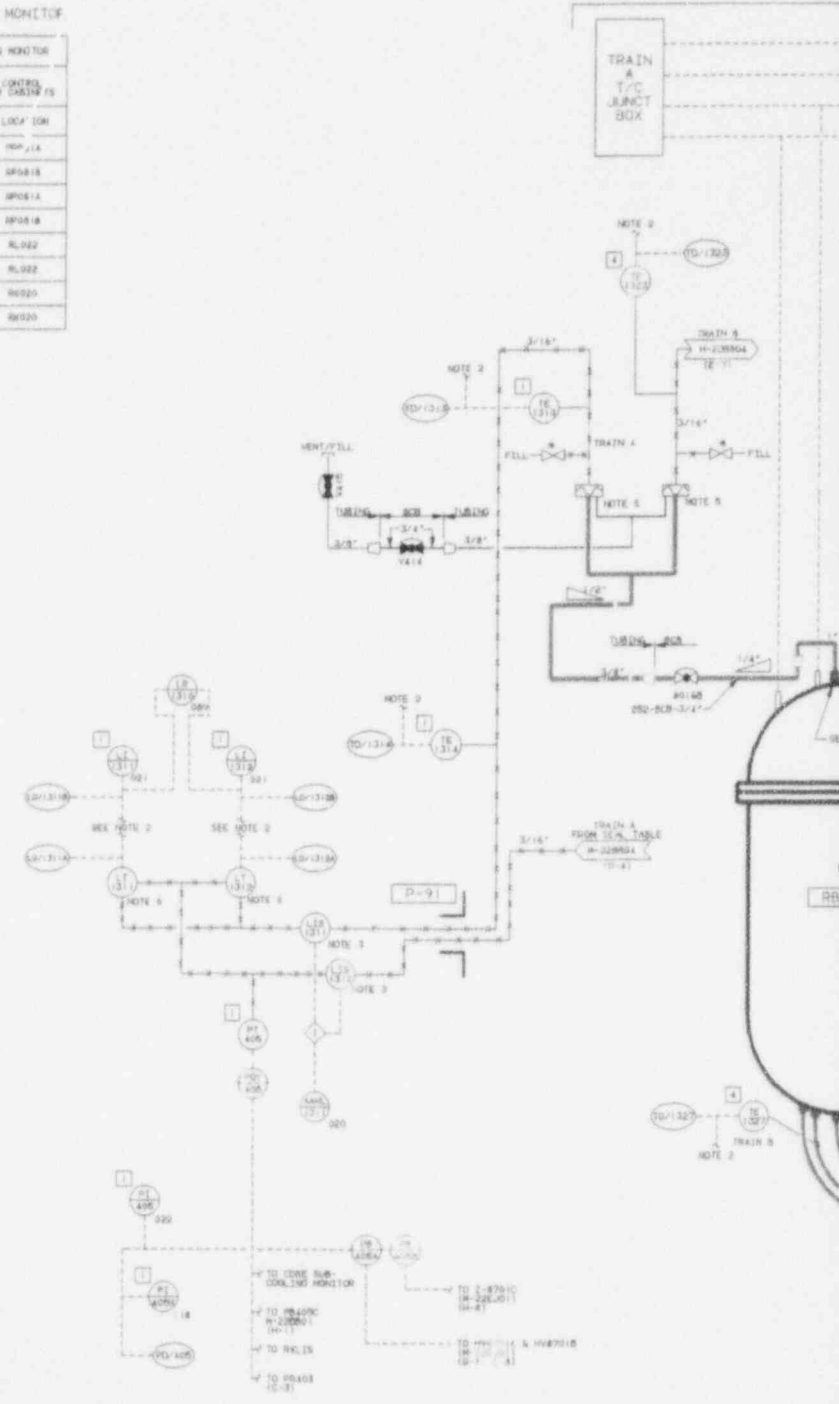
TRAIN	SEP	SEP	T/C JUNCT BOX NO	T/C NUMBER							TYPE	
A	1	0804A		38	30	33	5	45	41	SPD	75	
				45	30	44	47	49	(NOTE 12)	SPD	76	
				42	29	15	35	13	44	7	SPD	77
				31	27	32	29	4	1	SPD	78	
B	4	0804B		27	5	17	13	36	11	SPD	75	
				34	23	19	50	25	22	18	SPD	76
				43	19	11	24	10	21	SPD	77	
				(NOTE 11)	(NOTE 11)	1	28	3	5	SPD	78	

RY CORE SUBCOOLING MONITOR
(NOTE 8)

THERMOCOUPLE/CORE COOLING MONITOR

DISPLAY INSTRUMENTS FOR CONTROL BOARD SECTION AND/OR OTHER SECTION IS

INSTRUMENT TAG NO	LOCATION
WI-1390A	W-11A
WI-1390B	W-11B
TI-1390A	W-11A
TI-1390B	W-11B
TI-1390A	R-122
TI-1390B	R-122
TAL-1390A	R-122
TAL-1390B	R-122



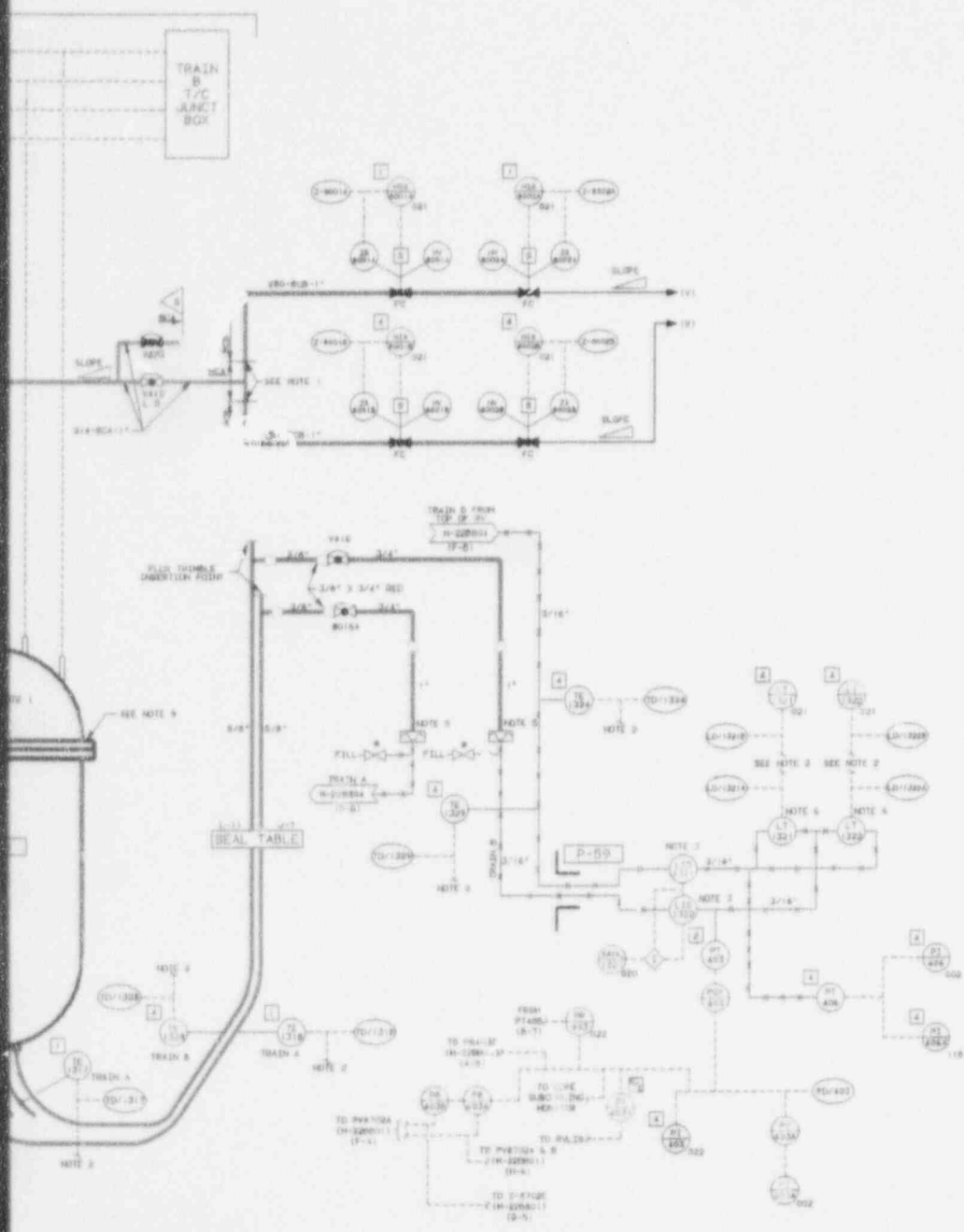
- NOTES**
- 1 REFER TO NOTE 1 ON M-22BB04-101
 - 2 SEE WESTINGHOUSE PROCESS BLOCK DIAGRAMS (9 DWG NO 233000 (4 SHEETS) AND WESTINGHOUSE INSTALLATION SCHEMATIC
 - 3 L15-1211, L219, L201 AND L200 ARE HYDRAULIC ISOLATORS WITH A MALFUNCTION INDICATION
 - 4 DELETED
 - 5 HYDRAULIC SENSORS
 - 6 LEVEL TRANSDUCER ELEVATED ABOVE HYDRAULIC ISOLATOR AND HEAR CONTAINMENT PENETRATION
 - 7 DELETED
 - 8 FOR THERMOCOUPLE/CORE COOLING MONITOR SEE WESTINGHOUSE DRAWING SHEETS (3 SHEETS)
 - 9 ONLY 1/2 OF THE 3/4" STUDS ARE REQUIRED TO BE TIGHTENED TO O-RING SEATING AND COMPLIANCE WITH THE 1/30" TOLERANCE CONCENTRATION FACTOR
 - 10 BOLT/NUT HAS BEEN INSPECTED IN PLACE
 - 11 THERMOCOUPLE TUBS AND TUBS HAVE BEEN REMOVED FROM SERVICE AND CAPPED WITH A 1/4" TUBING CAP (100" DWG 02-1224)
 - 12 THERMOCOUPLE TUBS HAS AN OPEN CIRCUIT INSIDE THE REACTOR VESSEL AND IS CONSIDERED UNRELIABLE (100" CAP 02-1028)

REV	DATE	DESCRIPTION
1	11/15/88	ISSUED FOR CONSTRUCTION
2	11/15/88	REVISIONS TO THE DRAWING
3	11/15/88	REVISIONS TO THE DRAWING
4	11/15/88	REVISIONS TO THE DRAWING
5	11/15/88	REVISIONS TO THE DRAWING
6	11/15/88	REVISIONS TO THE DRAWING
7	11/15/88	REVISIONS TO THE DRAWING
8	11/15/88	REVISIONS TO THE DRAWING
9	11/15/88	REVISIONS TO THE DRAWING
10	11/15/88	REVISIONS TO THE DRAWING
11	11/15/88	REVISIONS TO THE DRAWING
12	11/15/88	REVISIONS TO THE DRAWING

TRAIN B
T/C
JUNCT
BOX

ANSTEC APERTURE CARD

Also Available on Aperture Card



ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
—————	GROUP A NON-EXEMPT
—————	GROUP A EXEMPT
—————	GROUP B NON-EXEMPT
—————	GROUP B EXEMPT
—————	GROUP C NON-EXEMPT
—————	GROUP C EXEMPT

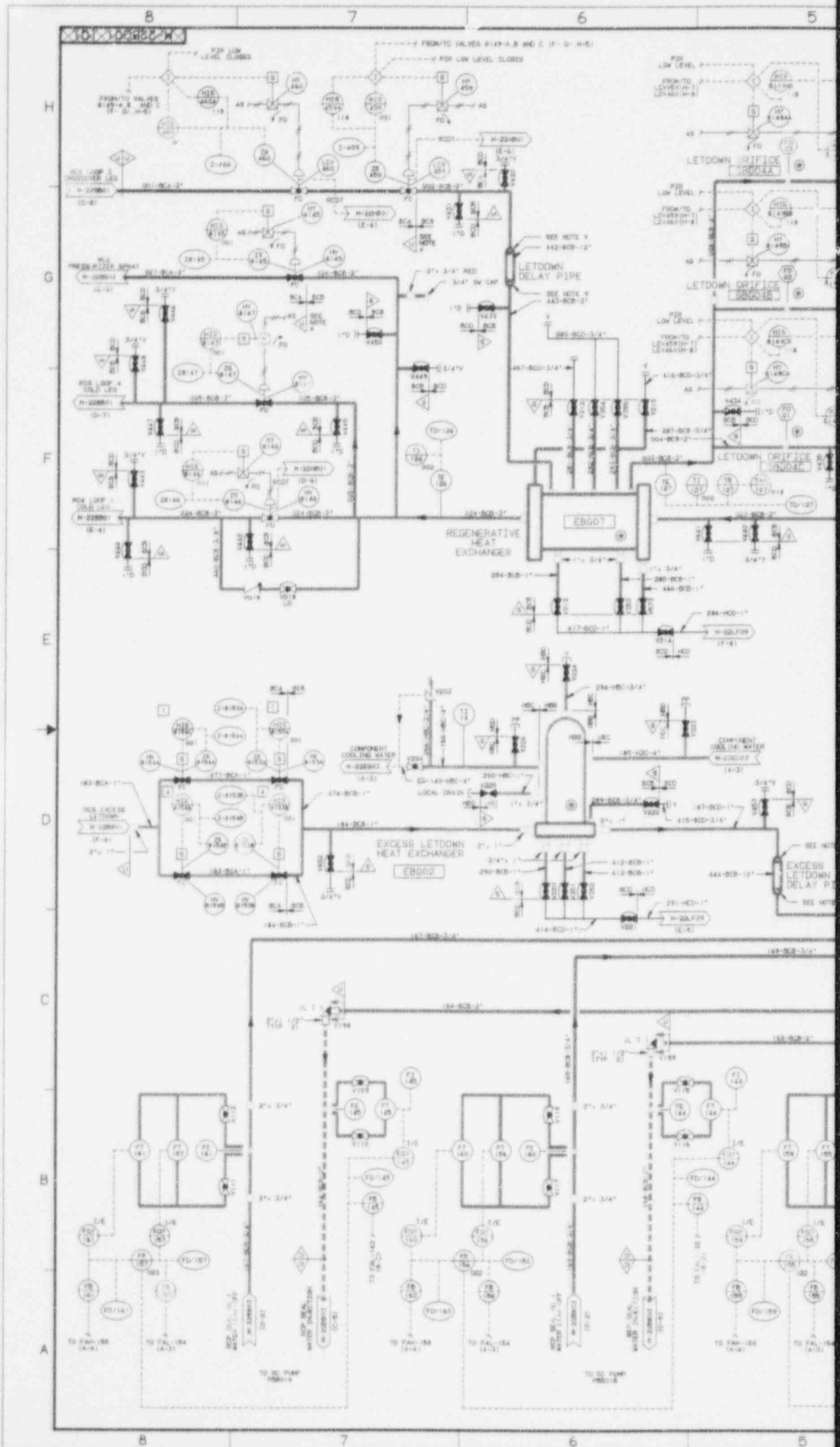
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

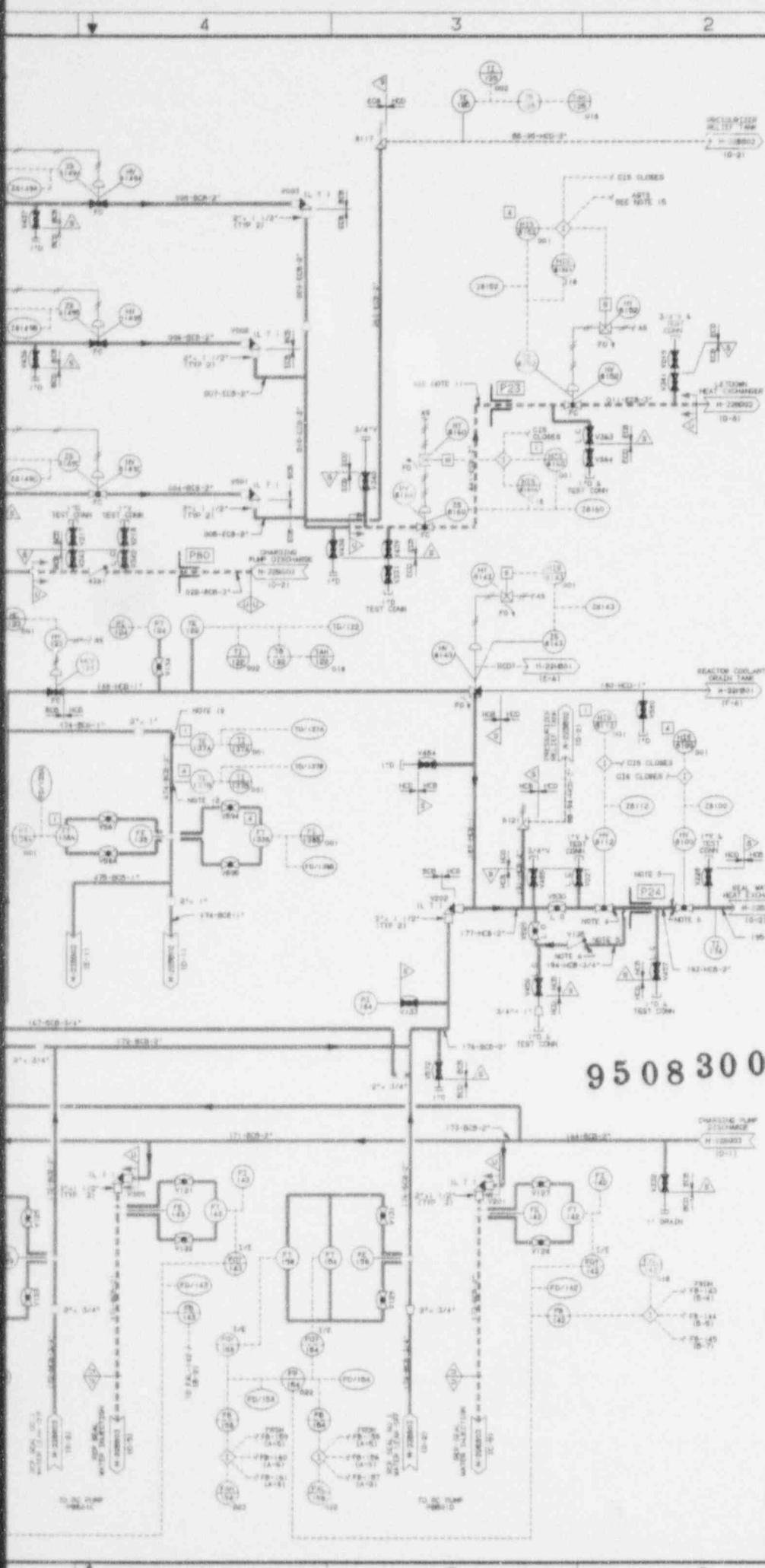
ISI-M-22BB04(Q) A

NO.	DATE	DESCRIPTION
1	11/15/88	ISSUED FOR CONSTRUCTION
2	11/15/88	REVISIONS TO THE DRAWING
3	11/15/88	REVISIONS TO THE DRAWING
4	11/15/88	REVISIONS TO THE DRAWING
5	11/15/88	REVISIONS TO THE DRAWING
6	11/15/88	REVISIONS TO THE DRAWING
7	11/15/88	REVISIONS TO THE DRAWING
8	11/15/88	REVISIONS TO THE DRAWING
9	11/15/88	REVISIONS TO THE DRAWING
10	11/15/88	REVISIONS TO THE DRAWING
11	11/15/88	REVISIONS TO THE DRAWING
12	11/15/88	REVISIONS TO THE DRAWING

UNION ELECTRIC COMPANY
ST. LOUIS, MO

9508300247 - 02





ANSTEC APERTURE CARD

Also Available on Aperture Card

- THE FOLLOWING STANDARD INSTRUMENTATION EQUIPMENT IS SUPPLIED TO A HYDRO-PNEUMATIC SYSTEM TO PROVIDE CLASSIFICATION AND INSTRUMENTATION FOR THE REACTOR AND REACTOR HEAT EXCHANGER SYSTEMS. THE REACTOR AND REACTOR HEAT EXCHANGER SYSTEMS ARE PROVIDED WITH INSTRUMENTATION AS DETAILLED BY SERVICE AND THE REACTOR HEAT EXCHANGER SYSTEMS ARE PROVIDED WITH INSTRUMENTATION AS DETAILLED BY SERVICE. THE INSTRUMENTATION EQUIPMENT IS PROVIDED TO THE INSTRUMENTATION EQUIPMENT AS DETAILLED BY SERVICE. THE INSTRUMENTATION EQUIPMENT IS PROVIDED TO THE INSTRUMENTATION EQUIPMENT AS DETAILLED BY SERVICE.
- NOTES OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS ARE IDENTIFIED BY A RADIOACTIVE SYMBOL TO MEET THE ELEMENTAL REQUIREMENTS.
- THIS DRAWING IS BASED ON HYDRO-PNEUMATIC DRAWINGS (SHEET 2) SHEETS 1-10.
- IF REQUIREMENTS ARE APPLICABLE, THE 1/2\"/>

9508300247-09

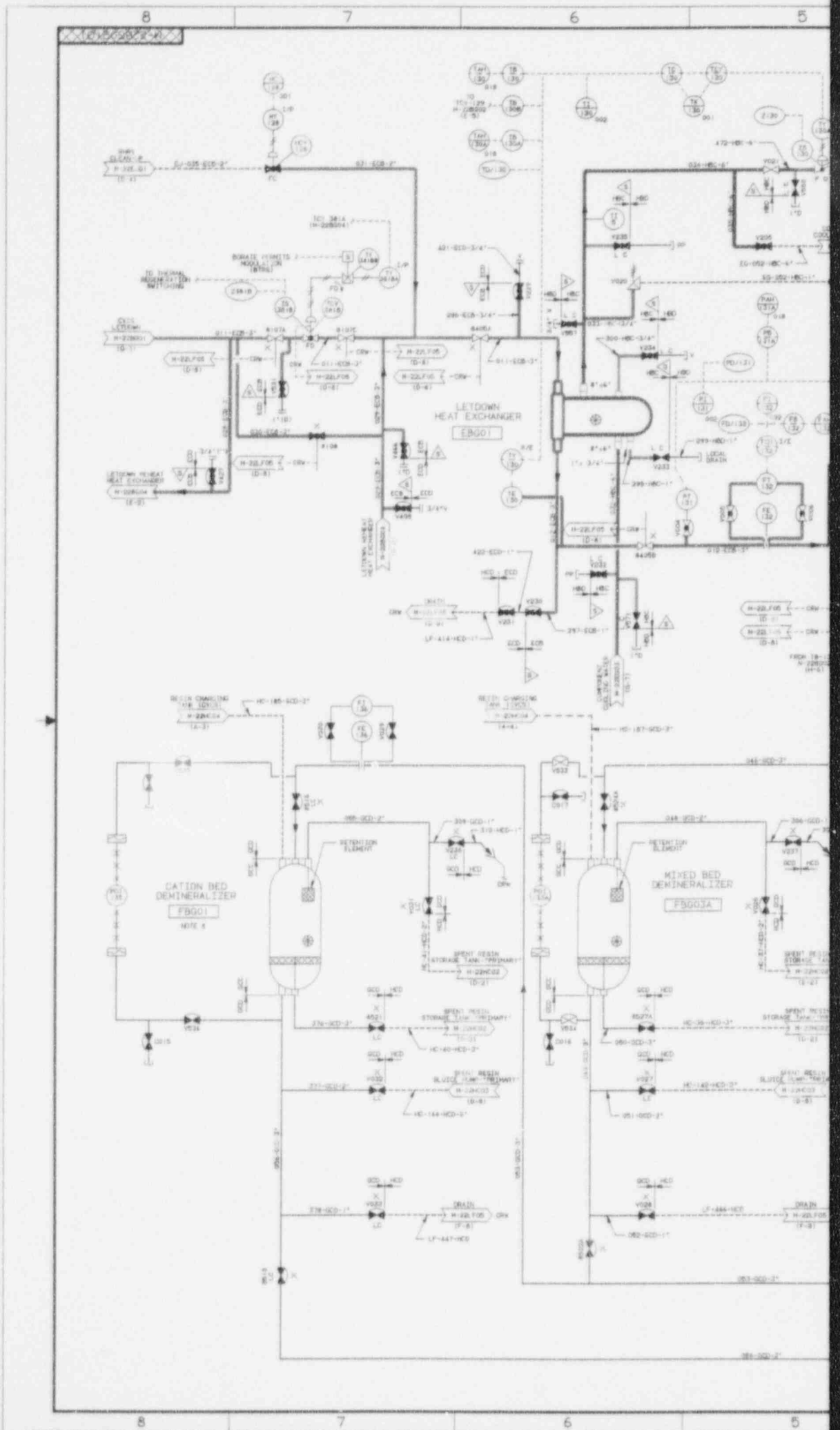
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
-----	GROUP A NON-EXEMPT
-----	GROUP A EXEMPT
-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

NOTE: SHOWN TO MEET THIS DRAWING REQUIREMENTS FOR INSERVICE INSPECTION ONLY.

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

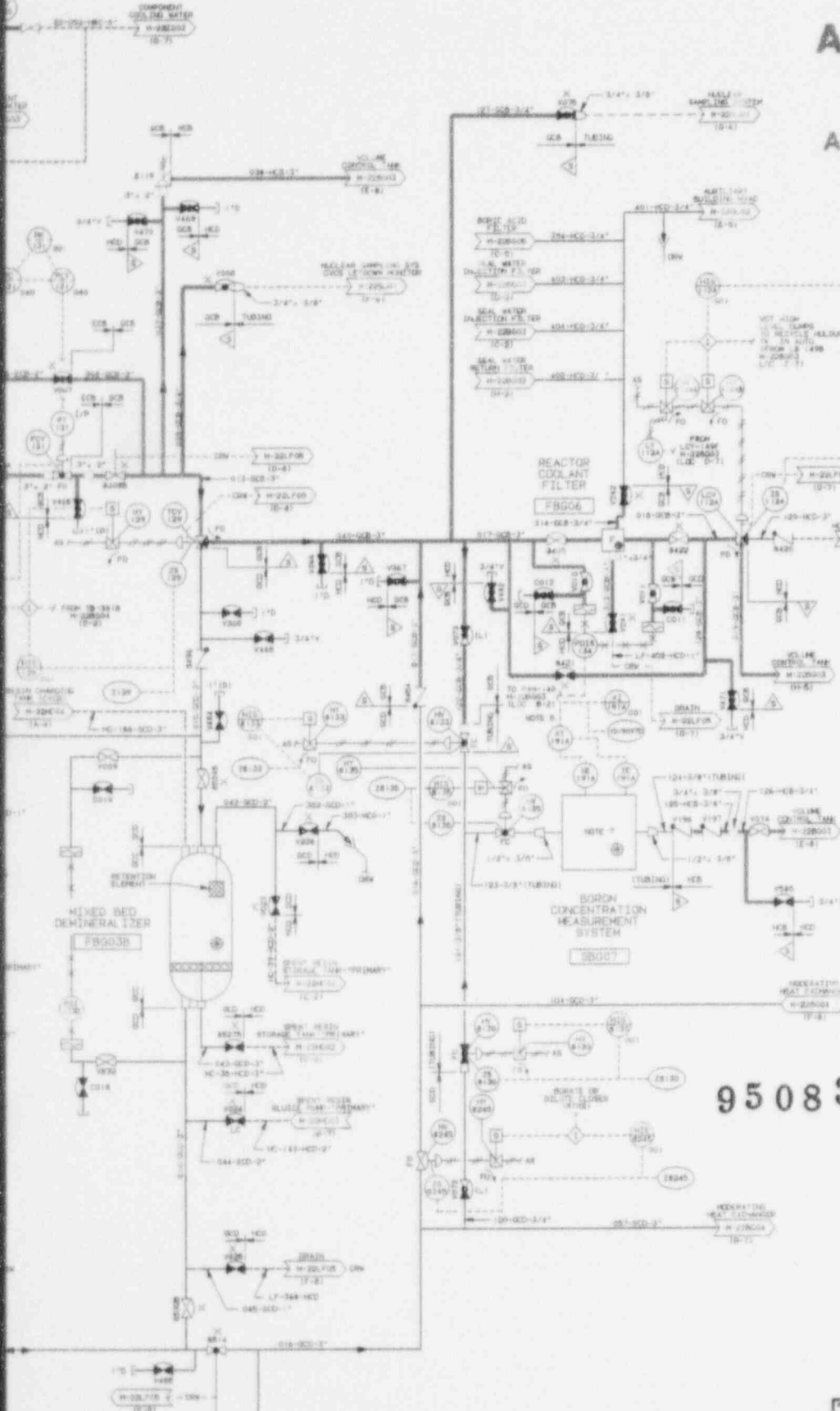
ISI-M-22BG01(Q) A

REV	DATE	BY	CHKD	DESCRIPTION
1	10-21
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11	10-21
12	10-21
13	10-21
14	10-21
15	10-21
16	10-21



ANSTEC APERTURE CARD

Also Available on Aperture Card



- NOTES**
- THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT TO BE SUPPLIED BY A PROVED QUALITY GROUP SHOULD BE IDENTIFIED AND PROTECTED. PROTECTION CODE SHALL BE REQUIRED BASED ON ITS SAFETY RELATED IMPORTANCE AS DETERMINED BY SERVICE AND FUNCTIONAL REQUIREMENTS AND THE CONSEQUENCE OF THEIR FAILING. EQUIPMENT CLASSIFICATION SHALL BE FOR INTERMEDIATE PURPOSES. THE CONSEQUENCE OF THEIR FAILING, ACTION OF THE COMPONENT IS THE LOWEST CLASSIFICATION AS INDICATED FOR THE ASSOCIATED TYPING.
 - RENDERING OF THIS SYSTEM THAT CONTAIN RADI-ACTIVE FLUIDS AND ARE IDENTIFIED BY QUALITY GROUP CLASSIFICATION SHALL MEET THE ASSOCIATED REQUIREMENTS.
 - THIS DRAWING BASED ON WESTINGHOUSE DRAWING 11-0000-01-01-01.
 - REFER TO NOTE 2 AND 3 ON H-20001.
 - PRECEDENCE HEADLINE: METRIC FLUID COMPENSATED FOR COMPENSATION AND 1/2" BORE READ-OUT IN BORE IDENTIFICATION.
 - DELETE.
 - SEE WESTINGHOUSE DRAWING 44-0001-01-01-01.
 - THIS IS NOT AVAILABLE FOR USE DUE TO A FAILED RETENTION ELEMENT. ACTION RESULT IS IN 0100 DESIGN FB003B.

9508300247-10

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
-----	GROUP A EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C EXEMPT
-----	GROUP D EXEMPT
-----	GROUP E EXEMPT

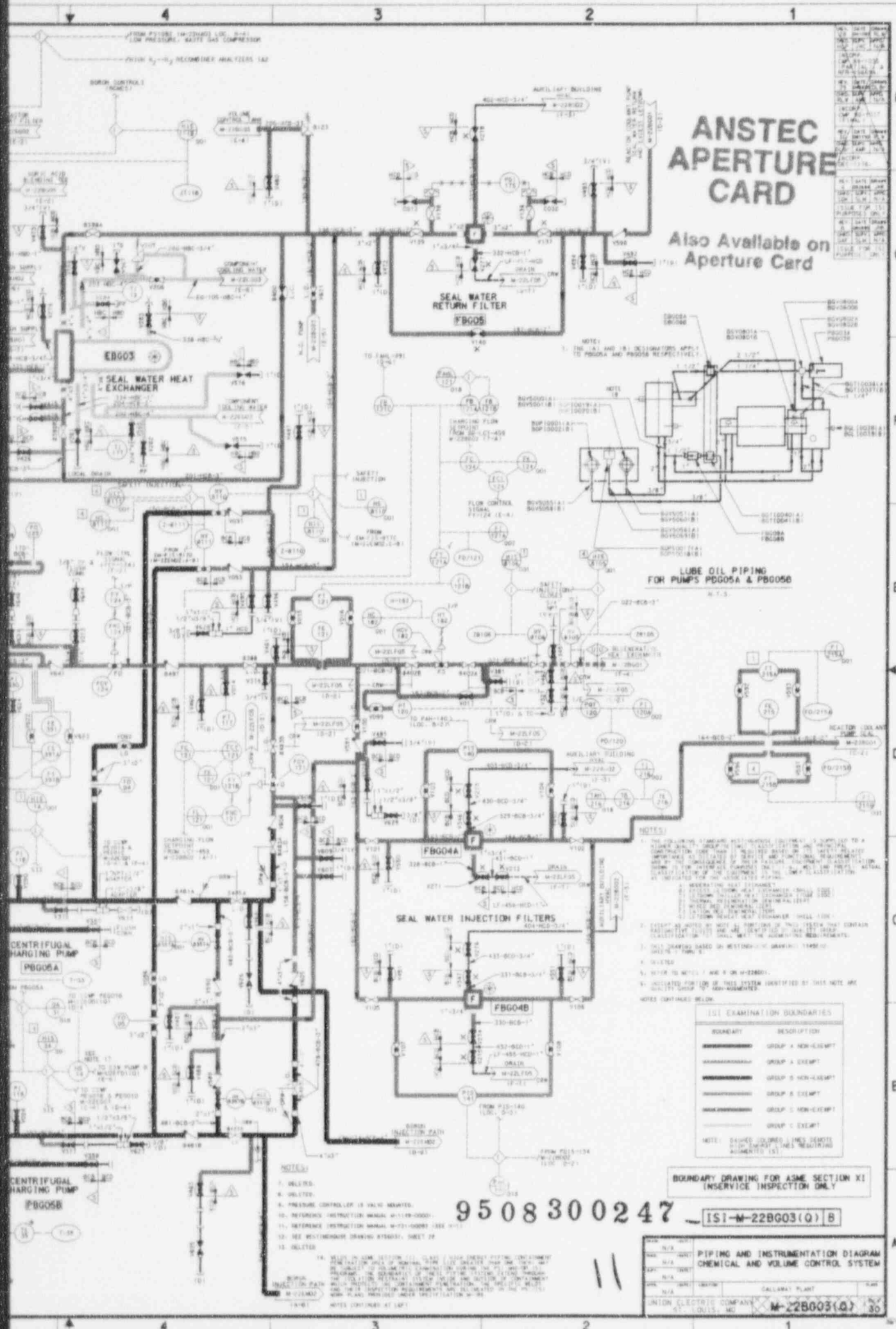
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22BG02(Q) A

NO.	REV.	DATE	DESCRIPTION	BY
001	N/A		PIPING AND INSTRUMENTATION DIAGRAM	
002	N/A		CHEMICAL AND VOLUME CONTROL SYSTEM	
003	N/A			
004	N/A			
005	N/A			
006	N/A		CALLAWAY PLANT	
UNION ELECTRIC COMPANY				
ST. LOUIS, MO.			M-22BG02(Q) A	

ANSTEC APERTURE CARD

Also Available on Aperture Card



LUBE OIL PIPING FOR PUMPS PG005A & PG005B

NOTES:
 1. THE PIPING AND INSTRUMENTATION SHOWN IS SUBJECT TO A CHANGE IN THE DESIGN OF THE SYSTEM AND THE PIPING AND INSTRUMENTATION SHOWN IS SUBJECT TO THE DESIGN AND CONSTRUCTION REQUIREMENTS OF THE DESIGNER AND THE USER.
 2. THE PIPING AND INSTRUMENTATION SHOWN IS SUBJECT TO THE DESIGN AND CONSTRUCTION REQUIREMENTS OF THE DESIGNER AND THE USER.
 3. THE PIPING AND INSTRUMENTATION SHOWN IS SUBJECT TO THE DESIGN AND CONSTRUCTION REQUIREMENTS OF THE DESIGNER AND THE USER.
 4. THE PIPING AND INSTRUMENTATION SHOWN IS SUBJECT TO THE DESIGN AND CONSTRUCTION REQUIREMENTS OF THE DESIGNER AND THE USER.
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LIST EXAMINATION BOUNDARIES

BOUNDARY	DESCRIPTION
—————	GROUP A - NON-CRITICAL
—————	GROUP B - CRITICAL
—————	GROUP C - NON-CRITICAL
—————	GROUP D - CRITICAL
—————	GROUP E - NON-CRITICAL
—————	GROUP F - CRITICAL

NOTE: GROUPS C, D, E, F ARE IDENTIFIED BY THIS NOTE AND GROUPS A, B ARE IDENTIFIED BY THE DRAWING.

BOUNDARY DRAWING FOR ASME SECTION XI (INSERVICE INSPECTION ONLY)

9508300247

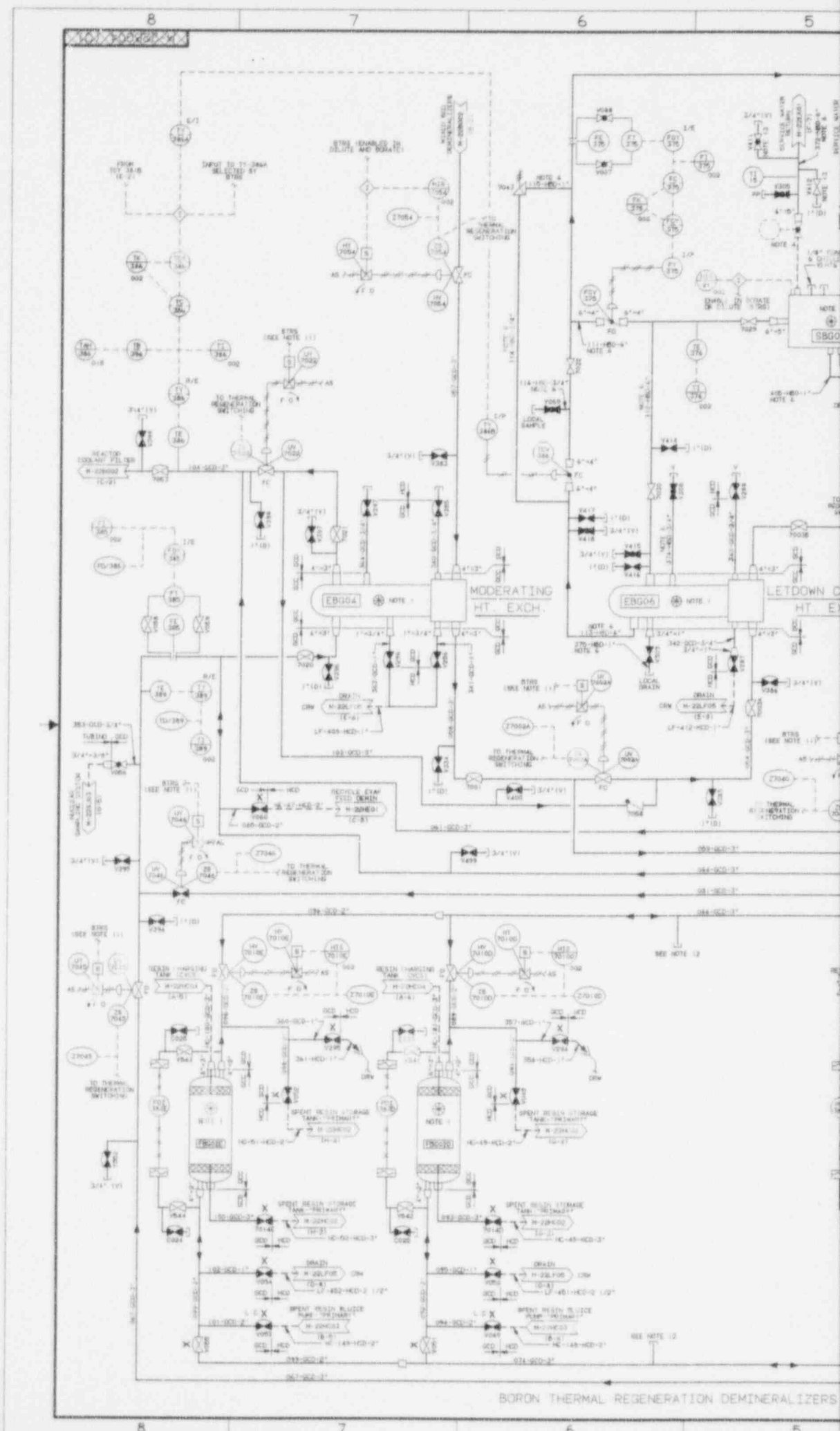
ISI-M-228003(0) B

PIPING AND INSTRUMENTATION DIAGRAM
 CHEMICAL AND VOLUME CONTROL SYSTEM

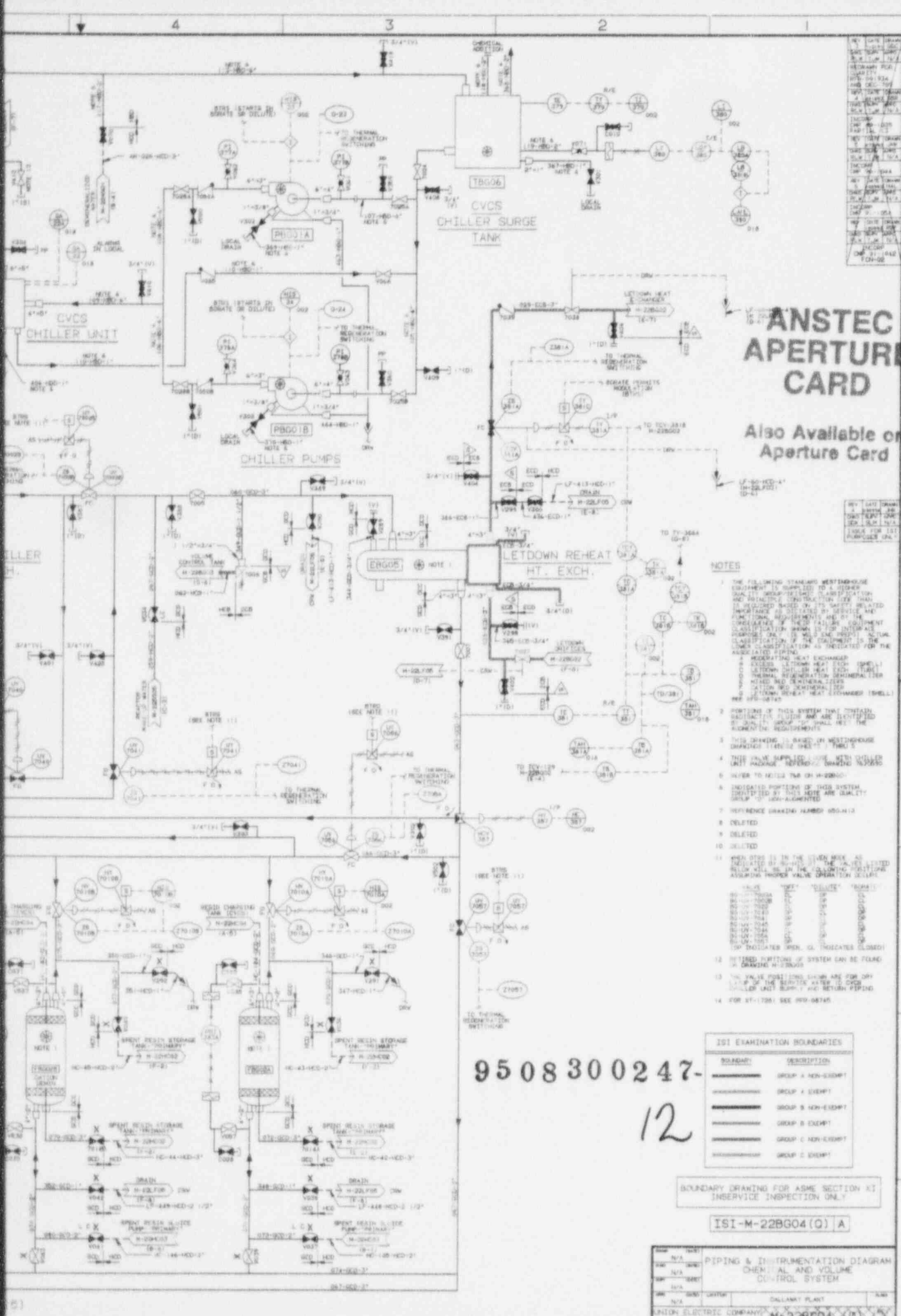
UNION ELECTRIC COMPANY
 ST. LOUIS, MO

M-228003(0) 30

NOTES:
 1. DELETED.
 2. DELETED.
 3. DELETED.
 4. PRESSURE CONTROLLER IS VALVE MOUNTED.
 5. REFERENCE INSTRUCTION MANUAL M-228000-0001.
 6. REFERENCE INSTRUCTION MANUAL M-228000-0002.
 7. REFERENCE INSTRUCTION MANUAL M-228000-0003.
 8. SEE BEST AVAILABLE DRAWING M-228000-0004.
 9. DELETED.
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BORON THERMAL REGENERATION DEMINERALIZERS



ANSTEC APERTURE CARD

Also Available on Aperture Card

- NOTES**
- THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A DISPERSED AND BENTON NEUTRONIC SYSTEMS (DBNS) UNIT AS DESCRIBED IN THE SAFETY RELATED INFORMATION AS INDICATED BY THE HEAT EXCHANGER CLASSIFICATION BRANCH IS THE COMPLETION OF THE DESIGN AND CONSTRUCTION OF THIS UNIT. THE CLASSIFICATION BRANCH IS THE COMPLETION OF THE DESIGN AND CONSTRUCTION OF THIS UNIT.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "B" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "C" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "D" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "E" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "F" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "G" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "H" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "I" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "J" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "K" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "L" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "M" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "N" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "O" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "P" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "Q" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "R" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "S" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "T" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "U" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "V" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "W" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "X" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "Y" NON-ALIGNED.
 - INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE QUALITY GROUP "Z" NON-ALIGNED.

95 08 30 02 47-

12

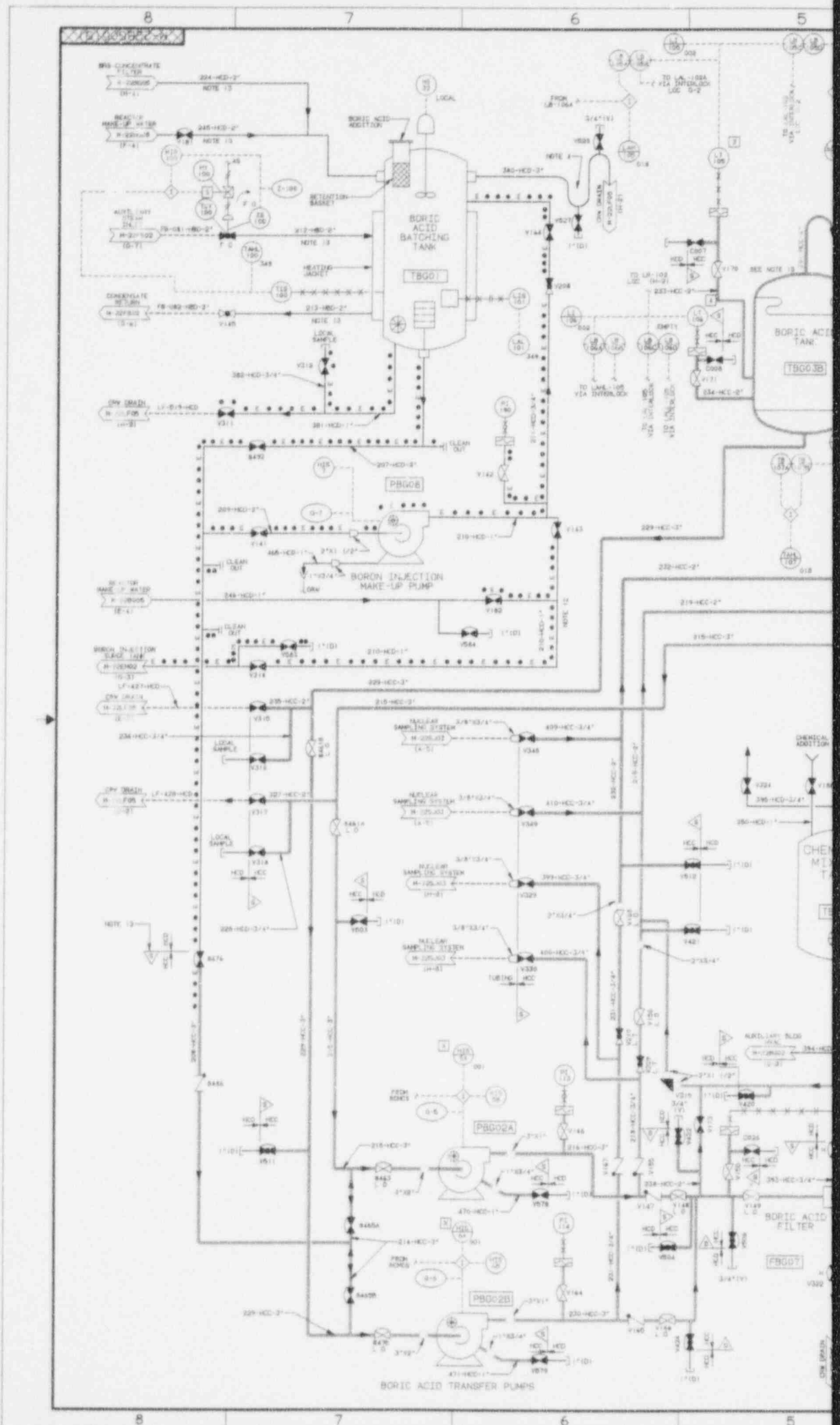
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
---	GROUP A NON-EXEMPT
----	GROUP A EXEMPT
-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

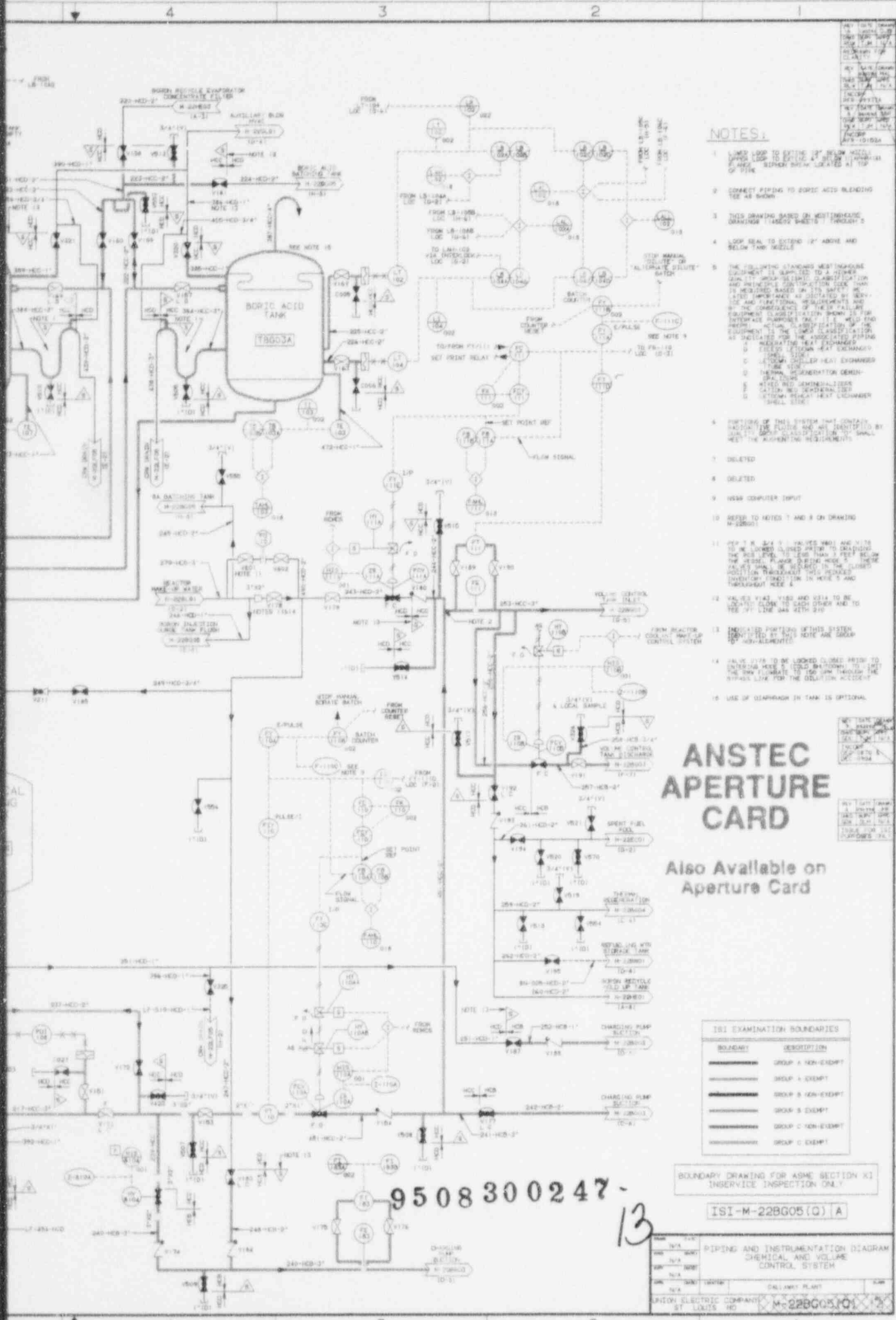
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22BG04 (O) A

NO.	REV.	DATE	DESCRIPTION
1			ISSUED FOR CONSTRUCTION
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WESTINGHOUSE ELECTRIC COMPANY
ST. LOUIS, MO.





NOTES:

1. LOOP SEAL TO EXTEND 12" BELOW WELLS AND LOOP TO EXTEND 48" BELOW WELLS FROM WELLS LOCATED AT TOP OF TANK
2. CORRECT PIPING TO BORIC ACID-BLENDING TEE AS SHOWN
3. THIS DRAWING BASED ON WESTINGHOUSE DRAWINGS (LAND SHEETS) T-20000-2
4. LOOP SEAL TO EXTEND 12" ABOVE AND BELOW TANK WELLS
5. THE FOLLOWING STANDARD WESTINGHOUSE EQUIPMENT IS SUPPLIED TO A POWER QUALITY AND IS CAPABLE OF WITHSTANDING THE PRESSURE AND TEMPERATURES TO WHICH IT IS EXPOSED BASED ON ITS SAFETY AND IMPORTANCE AS DICTATED BY DESIGN AND OPERATIONAL REQUIREMENTS AND BY THE COMPLETION OF THIS P&ID. EQUIPMENT CLASSIFICATION SHOWN IS FOR INFORMATION PURPOSES ONLY. THE FOLLOWING ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE CLASS ASSIGNED TO IT AS DICTATED FOR THE ASSOCIATED CORPUS: A. MAGNETIC HEAT EXCHANGER B. TUBED SECTION HEAT EXCHANGER C. THERMAL HEAT EXCHANGER D. THERMAL HEAT EXCHANGER E. STEAM HEAT EXCHANGER F. STEAM HEAT EXCHANGER G. STEAM HEAT EXCHANGER H. STEAM HEAT EXCHANGER I. STEAM HEAT EXCHANGER
6. PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS ARE IDENTIFIED BY CHECKED GROUP CLASSIFICATION. THEY SHALL MEET THE APPLICABLE REQUIREMENTS.
7. DELETED
8. DELETED
9. FROM COMPUTER INPUT
10. REFER TO NOTES 1 AND 4 ON DRAWING M-22805-1
11. PER T-8, 3/4" S. VALUES W801 AND W178 TO BE LOCKED CLOSED PRIOR TO DRAINING THE W801 WELLS TO 2500 PA. 3 FEET BELOW THE WELLS. PLANNING DURING W801 WELLS DRAINING, BE RELIABLE IN THE CLOSED POSITION THROUGHOUT THIS PERIOD. IMMEDIATE CONNECTION IN W801 IS AND THROUGHOUT W801.
12. VALVES W147, W150 AND W174 TO BE LOCKED CLOSED TO EACH OTHER AND TO TEE OFF LINE 244 WITH 210.
13. INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE ARE GROUP 10-NON-ALLOYED.
14. VALVE W178 TO BE LOCKED CLOSED PRIOR TO ENTERING W801 TO 2500 PA. TO PREVENT THE ONLY WELLS TO TOP WELLS THROUGH THE WELLS LINE FOR THE DRAINAGE ACCIDENT.
15. USE OF COMPASSION IN TANK IS OPTIONAL.

ANSTEC APERTURE CARD

Also Available on Aperture Card

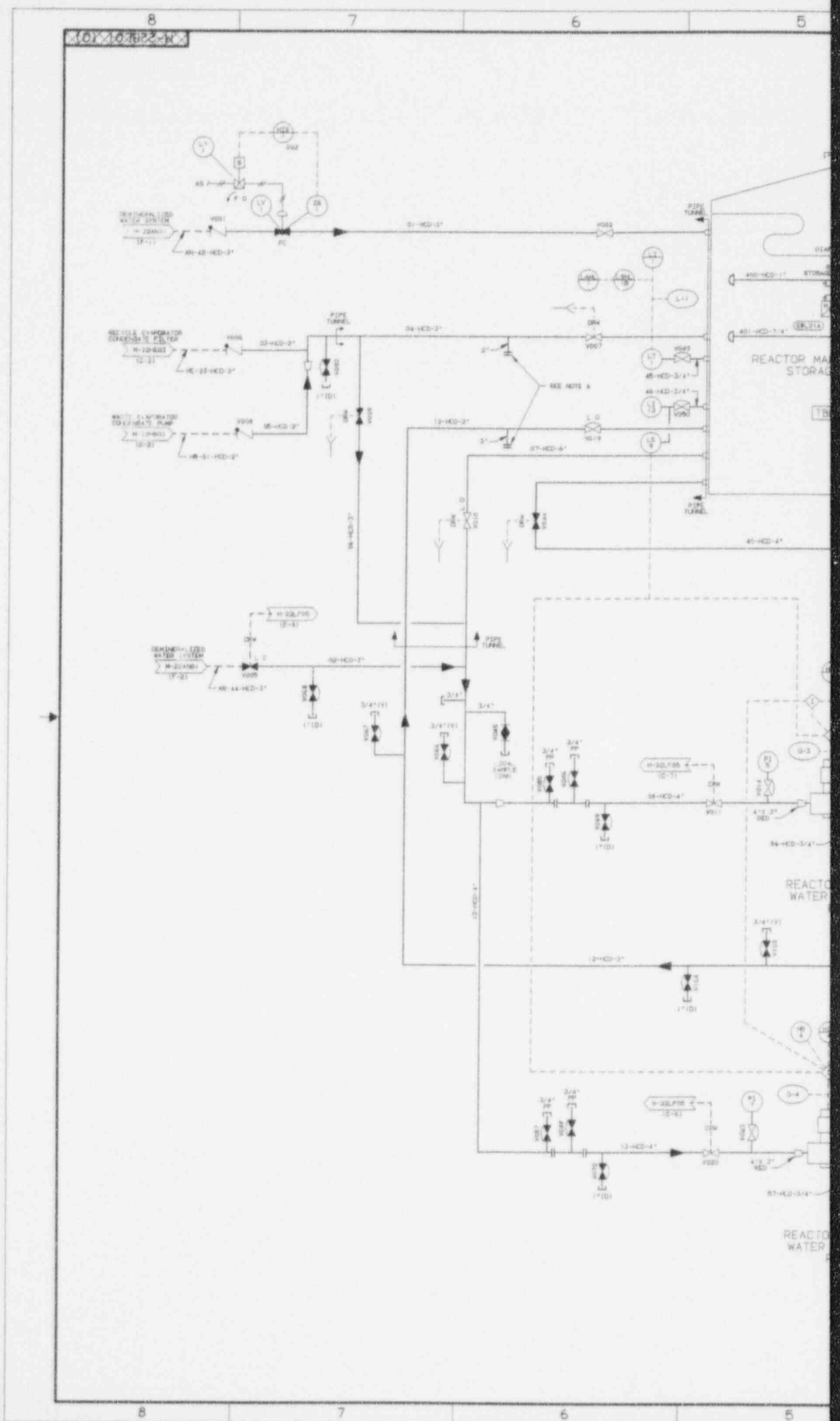
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
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---	GROUP A - EXEMPT
---	GROUP B - NON-EXEMPT
---	GROUP B - EXEMPT
---	GROUP C - NON-EXEMPT
---	GROUP C - EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

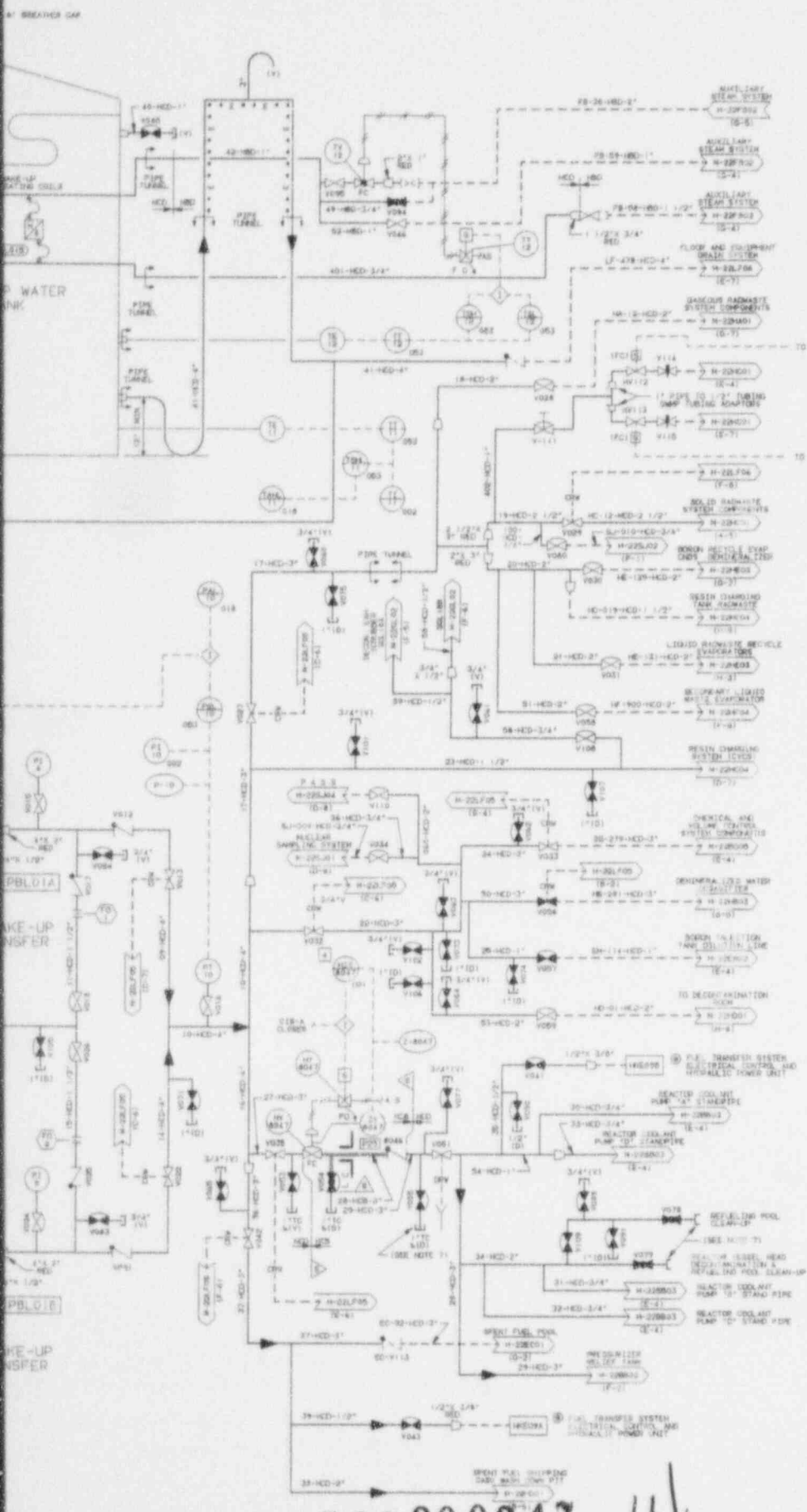
ISI-M-22805(Q) A

9508300247-13

PROJ. NO.	PIPING AND INSTRUMENTATION DIAGRAM
REV. NO.	CHEMICAL AND VOLUME CONTROL SYSTEM
DATE	
BY	
CHECKED BY	
APPROVED BY	
DESIGNED BY	
DRAWN BY	
SCALE	
CUSTOMER	
PLANT	
COMPANY	
ST. LOUIS, MO.	
NO.	M-22805(Q) A



REV	DATE	BY	DESCRIPTION
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ANSTEC APERTURE CARD

Also Available on Aperture Card

- NOTES
- 1 THE PORTIONS OF THE REACTOR MAKE-UP WATER SYSTEM WHICH ARE LISTED INCLUDE THE FITTING AND VALVES INDICATED WITH ATTACHMENT 1000-1000 1000.
 - 2 SELECTED
 - 3 AN ABOVE GRADE STRUCTURE IS PROVIDED TO HOUSE FITTINGS AND VALVES ADJACENT TO THE REACTOR MAKE-UP WATER STORAGE TANK.
 - 4 FOR PIPING LEGEND & SYMBOLS SEE DRAWING H-22B01 1/2" H-22B01.
 - 5 SELECTED
 - 6 START-UP FLUSHING CONNECTIONS
 - 7 THESE LOCATIONS ARE ACCEPTABLE FOR TEMPORARY HOSE CONNECTIONS TO BRUSH WATER FOR HEAD OCCUPANCY WATER AND REFILLING POOL CLEANUP MATERIAL AND RATHER THAN HOSE CONNECTIONS MUST BE COMPATIBLE WITH THE PIPE CLASS.

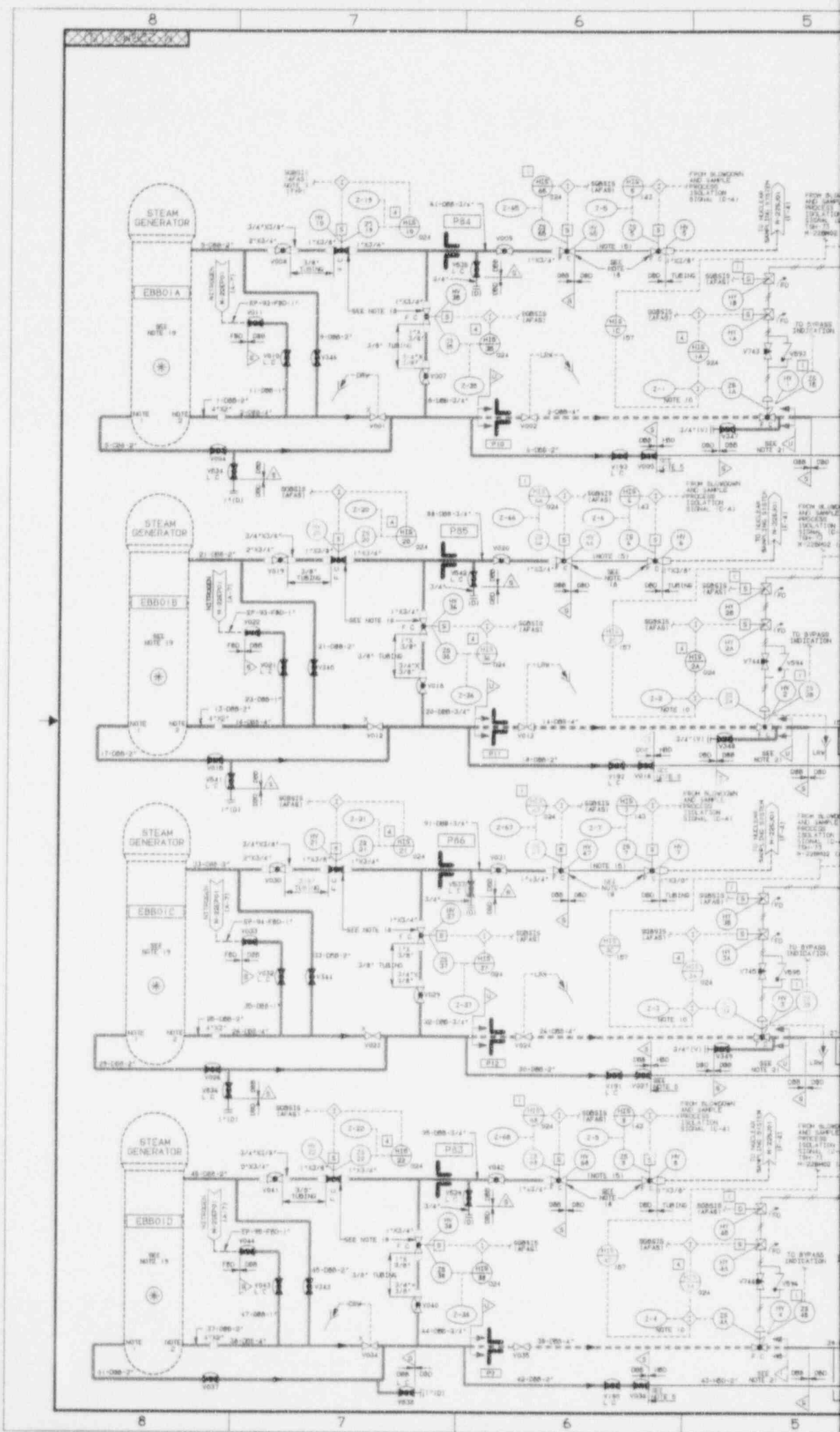
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
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-----	GROUP B EVENT
-----	GROUP C NON-EVENT
-----	GROUP D EVENT
-----	GROUP E NON-EVENT
-----	GROUP F EVENT

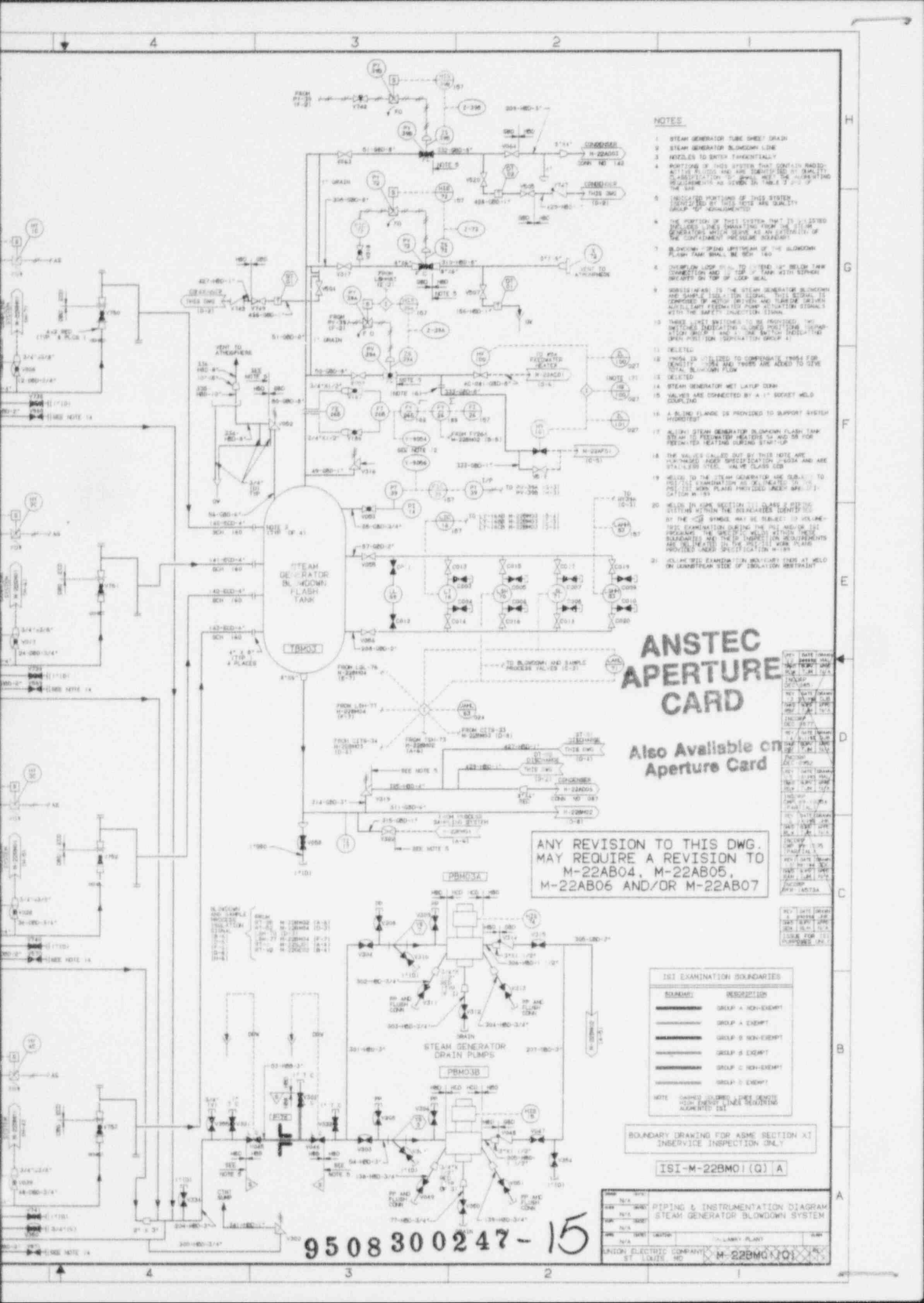
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22B01(Q)A

PIPING AND INSTRUMENTATION DIAGRAM
 REACTOR MAKE-UP WATER SYSTEM
 GALLAGHER PLANT
 ANSTEC ELECTRIC COMPANY
 ST. LOUIS, MO.

9508300247-14





NOTES

- 1 STEAM GENERATOR TUBE SHEET DRAIN
- 2 STEAM GENERATOR BLOWDOWN LINE
- 3 NEEDLES TO ENTER TANGENTIALLY
- 4 PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS ARE IDENTIFIED BY QUALITY CLASSIFICATION SYMBOLS AND THE APPROPRIATE GROUP OF REQUIREMENTS
- 5 INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS SYMBOL ARE QUALITY GROUP "D" REQUIREMENTS
- 6 THE PORTION OF THIS SYSTEM THAT IS LISTED INCLUDES THE SHANNING FROM THE STEAM GENERATOR FLASH TANK AS AN INSTRUMENTATION OF THE CONTAINMENT PRESSURE BOUNDARY
- 7 BLOWDOWN DRAIN SYSTEM OF THE BLOWDOWN FLASH TANK SHALL BE SEC. 140
- 8 DRAIN LOOP SHALL BE 1/2" BELOW TANK CONNECTION AND TOP OF TANK WITH SIFTER INDICATES ON TOP OF LOOP SEAL
- 9 SIMILAR TO THE STEAM GENERATOR BLOWDOWN AND SAMPLE ISOLATION SIGNAL THIS SIGNAL IS COMPOSED BY HIGH SWITH AND TUBE SHEET DRAIN ALTERNATE FROM HIGH PUMP ALTERNATION SIGNALS WITH THE SAFETY INJECTION SIGNAL
- 10 THREE SWITH ELEMENTS TO BE PROVIDED TWO SWITCHES INDICATING CLOSED POSITION (SEPARATION SWITH) AND ONE SWITH INDICATING OPEN POSITION (SEPARATION GROUP 4)
- 11 SELECTED
- 12 THIS IS UTILIZED TO COMPENSATE THERM FOR DENSITY, PRESSURE AND TEMPERATURE TOTAL BLOWDOWN FLOW
- 13 SELECTED
- 14 STEAM GENERATOR WET LAYOUT CORN
- 15 VALVES ARE CONNECTED BY A 1" SOCKET WELD COUPLING
- 16 A SLING FLANGE IS PROVIDED TO SUPPORT SYSTEM HORIZONTAL
- 17 ALIGN STEAM GENERATOR BLOWDOWN FLASH TANK STEAM GENERATOR HEATING TO AND 50 MM PERMINUTE HEATING DURING START-UP
- 18 THE VALVES CALLED OUT BY THIS NOTE ARE ALTERNATE ASER SPECIFICATION 2-632A AND ARE INSTALLED WITH VALVE CLASS 200
- 19 HELD TO THE STEAM GENERATOR USE QUALITY TO HOLD EXAMINATION OR TO HEAT TO HOLD TO HOLD PLAN PROVIDED UNDER SPECIFICATION M-22AB01
- 20 HELD IN ONE SECTION (CLASS 2) WITHIN SYSTEMS WITHIN THE BOUNDARIES IDENTIFIED BY THE ISI SYMBOL MAY BE SUBJECT TO VISUAL EXAMINATION DURING THE PRE-INSPECTION PROGRAM. THE SPECIFIC HOLD WITHIN BOUNDARIES AND THEIR INSPECTION REQUIREMENTS ARE INDICATED IN THE HOLD PLAN PROVIDED UNDER SPECIFICATION M-22AB01
- 21 VISUAL EXAMINATION INDICATED AT WELD ON DRAINPIPE SIDE OF ISOLATION BOUNDARY

ANSTEC APERTURE CARD

Also Available on Aperture Card

ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07

ISI EXAMINATION BOUNDARIES

BOUNDARY	DESCRIPTION
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-----	GROUP A EXEMPT
-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
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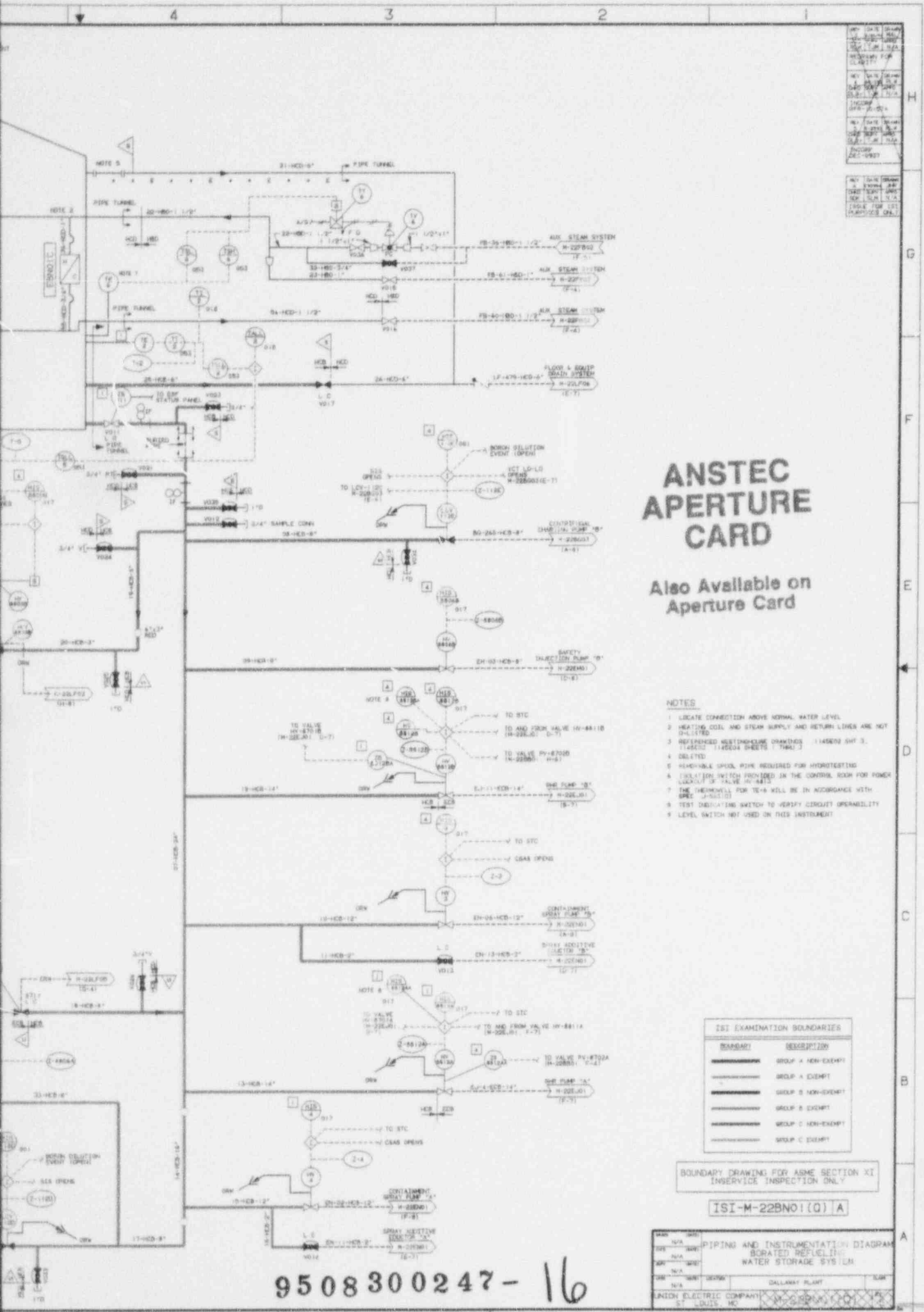
NOTE: DASHED LINES AND THIS SYMBOL WITH ENERGY LINE INDICATE ALTERNATE ISI

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION (S.I.)

ISI-M-22BMO1 (Q) A

REV	DATE	BY	DESCRIPTION
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9	11/10/73
10	11/10/73

9508300247-15



ANY DATE CHANGE
 MUST BE APPROVED
 BY THE DESIGNER
 AND THE USER
 AND MUST BE
 RECORDED IN THE
 PROJECT LOG.
 ANY DATE CHANGE
 MUST BE APPROVED
 BY THE DESIGNER
 AND THE USER
 AND MUST BE
 RECORDED IN THE
 PROJECT LOG.

ANSTEC APERTURE CARD

Also Available on Aperture Card

NOTES

1. LOCATE CONNECTION ABOVE NORMAL WATER LEVEL.
2. HEATING COIL AND STEAM SUPPLY AND RETURN LINES ARE NOT ISOLATED.
3. REFERENCED INSTRUMENT DRAWINGS: 1145020 SW 3, 1145024 SHEETS 1 THRU 3.
4. DRAFTER.
5. REACHABLE OPER. PINS REQUIRED FOR HYDROTESTING.
6. ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVE IN 4415.
7. THE THERMOWELL FOR TE-4 WILL BE IN ACCORDANCE WITH SPEC. J-502103.
8. TEST DRAINING SWITCH TO VERIFY CIRCUIT OPERABILITY.
9. LEVEL SWITCH NOT USED ON THIS INSTRUMENT.

ISI EXAMINATION BOUNDARIES

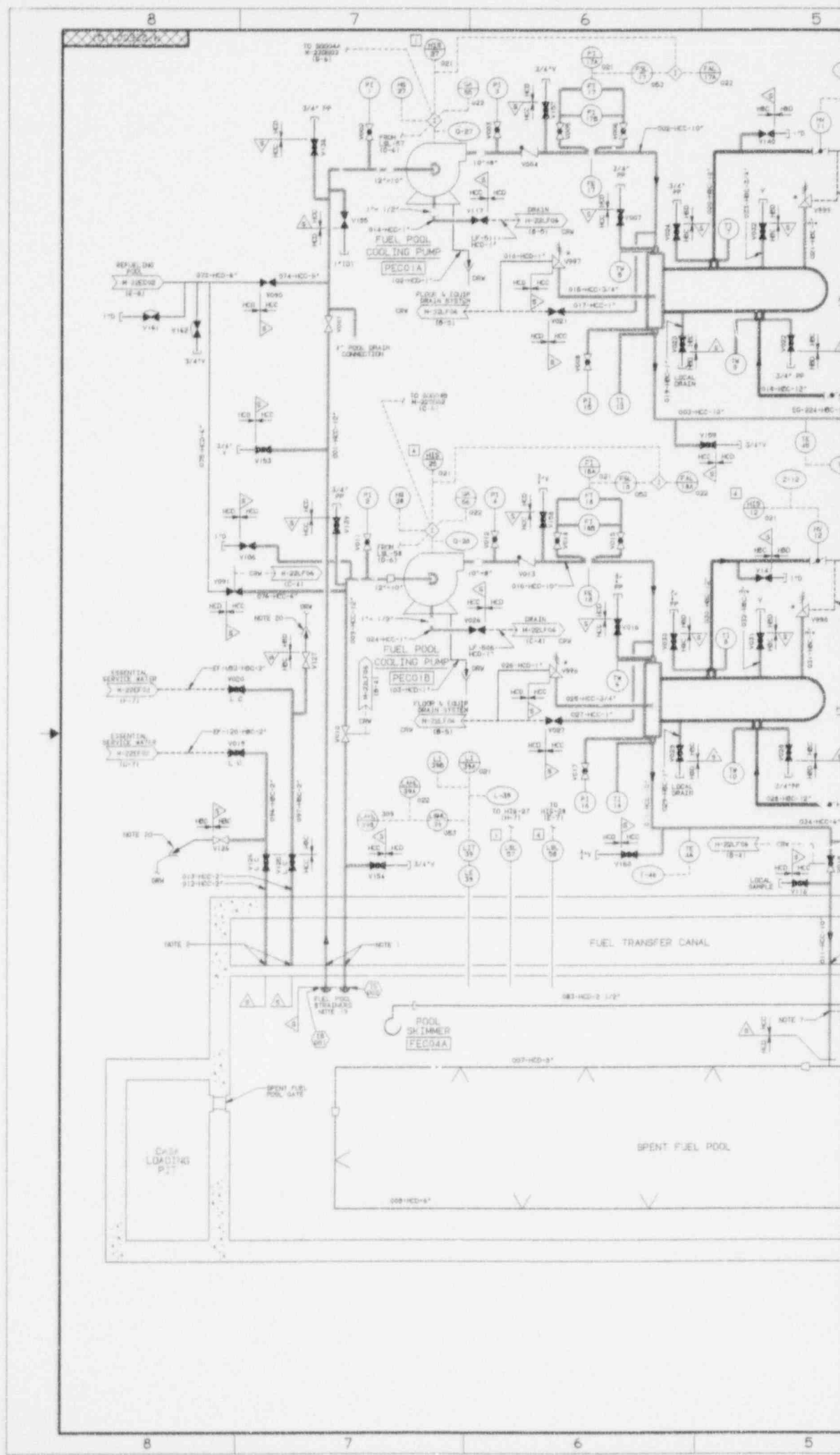
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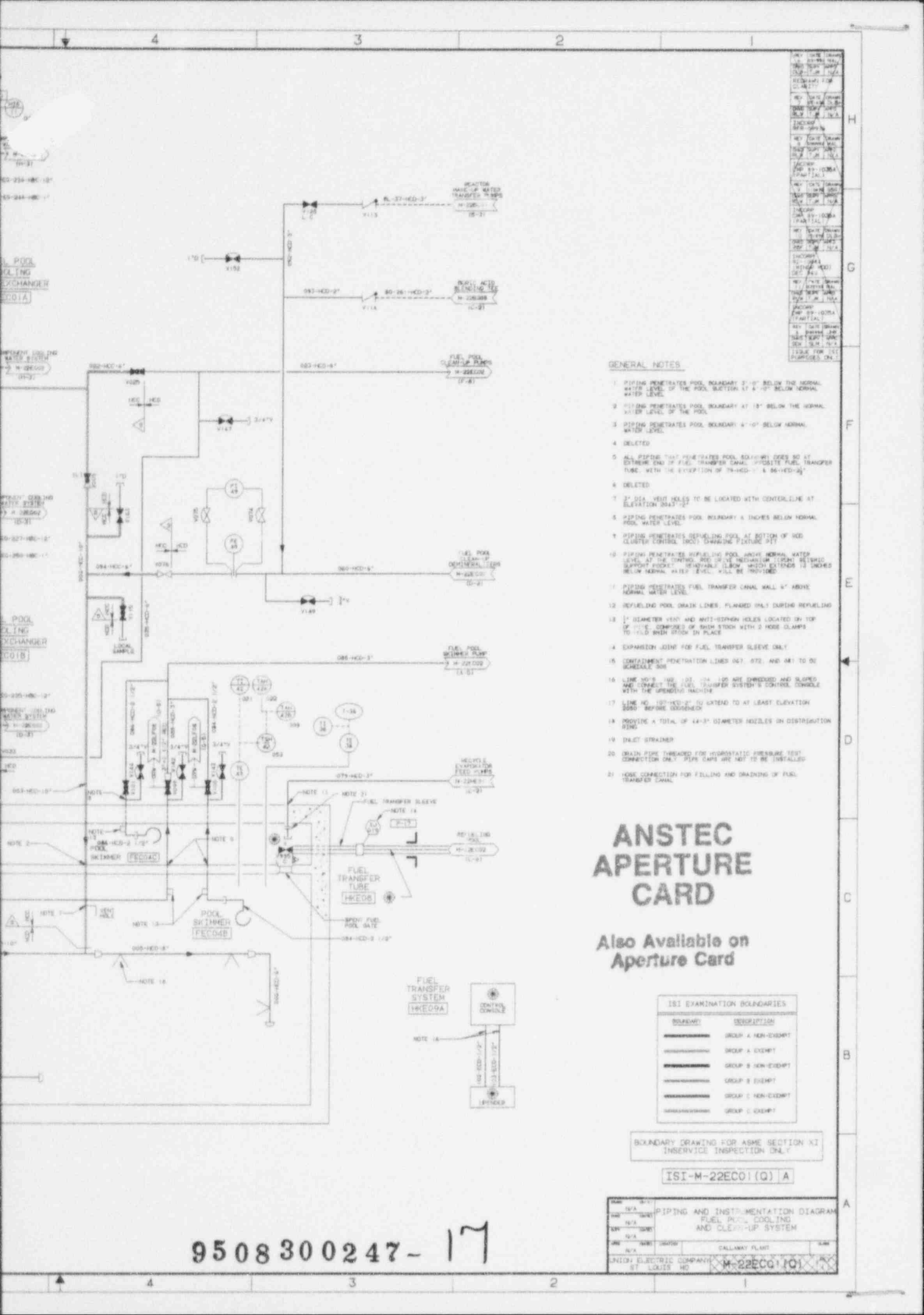
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22BN01(10) A

DATE	DESCRIPTION	BY	CHKD
N/A	PIPING AND INSTRUMENTATION DIAGRAM		
N/A	BOICATED REFLECTOR		
N/A	WATER STORAGE SYSTEM		
N/A	DALLAWAY PLANT		
N/A	GENCO ELECTRIC COMPANY		
ST	LOUIS, MO		

9508300247-16





KEY TO THE SYMBOLS USED IN THIS DRAWING:

1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

2. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE SPECIFIED.

3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

4. ALL DIMENSIONS ARE TO OUTSIDE UNLESS OTHERWISE SPECIFIED.

5. ALL DIMENSIONS ARE TO INSIDE UNLESS OTHERWISE SPECIFIED.

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30. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE SPECIFIED.

31. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

32. ALL DIMENSIONS ARE TO OUTSIDE UNLESS OTHERWISE SPECIFIED.

33. ALL DIMENSIONS ARE TO INSIDE UNLESS OTHERWISE SPECIFIED.

34. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE SPECIFIED.

35. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

36. ALL DIMENSIONS ARE TO OUTSIDE UNLESS OTHERWISE SPECIFIED.

37. ALL DIMENSIONS ARE TO INSIDE UNLESS OTHERWISE SPECIFIED.

38. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE SPECIFIED.

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71. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

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75. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

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79. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

80. ALL DIMENSIONS ARE TO OUTSIDE UNLESS OTHERWISE SPECIFIED.

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82. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE SPECIFIED.

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99. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

100. ALL DIMENSIONS ARE TO OUTSIDE UNLESS OTHERWISE SPECIFIED.

GENERAL NOTES

1. PIPING PENETRATES POOL BOUNDARY 2'-0" BELOW THE NORMAL WATER LEVEL OF THE POOL.
2. PIPING PENETRATES POOL BOUNDARY AT 15" BELOW THE NORMAL WATER LEVEL OF THE POOL.
3. PIPING PENETRATES POOL BOUNDARY 6'-0" BELOW NORMAL WATER LEVEL.
4. DELETED
5. ALL PIPING THAT PENETRATES POOL BOUNDARY DOES SO AT EXTREME END OF FUEL TRANSFER CANAL. POSITIVE FUEL TRANSFER TUBE, WITH THE EXCEPTION OF 78-HCD-1 & 86-HCD-2
6. DELETED
7. 2" DIA. VENT HOLES TO BE LOCATED WITH CENTERLINE AT ELEVATION 3043'-2"
8. PIPING PENETRATES POOL BOUNDARY 4 INCHES BELOW NORMAL POOL WATER LEVEL.
9. PIPING PENETRATES REFUELING POOL AT BOTTOM OF RED CLUSTER CONTROL (NOT DRAWING PICTURE #1)
10. PIPING PENETRATES REFUELING POOL ABOVE NORMAL WATER LEVEL AT THE CONTROL AND 30" OF INSULATION TO THE SUPPORT POCKET. REMOVABLE (LUBA) WHICH EXTENDS INCHES BELOW NORMAL WATER LEVEL. WILL BE PROVIDED
11. PIPING PENETRATES FUEL TRANSFER CANAL WALL 6" ABOVE NORMAL WATER LEVEL.
12. REFUELING POOL DRAIN LINES, FLANGED ONLY DURING REFUELING
13. 1" DIAMETER VENT AND ANTI-SIPHON HOLES LOCATED 30" TOP OF 1'-0" COMPRISED OF 3/8" STOOD WITH 2 HOSE CLAMPS TO HOLD BRUSH STOOD IN PLACE
14. EXPANSION JOINT FOR FUEL TRANSFER SLEEVE ONLY
15. CONTAINMENT PENETRATION LINES 047, 072, AND 081 TO BE SCHEDULE 30S
16. LINE NO'S 78, 101, 102, 103 ARE SLOPED AND SLOPED AND CONNECT THE FUEL TRANSFER SYSTEM TO THE SLOPED WITH THE OPENING INCHES
17. LINE NO. 107-HCD-2 TO EXTEND TO AT LEAST ELEVATION 3050 BEFORE DISCHARGE
18. PROVIDE A TOTAL OF 44-3" DIAMETER NOZZLES IN DISTRIBUTION RING
19. INLET STRAINER
20. DRAIN PIPE THREADED FOR HYDROSTATIC PRESSURE TEST. CONNECTION ONLY PIPE CAPS ARE NOT TO BE INSTALLED
21. HOSE CONNECTION FOR FILLING AND DRAINING OF FUEL TRANSFER CANAL

ANSTEC APERTURE CARD

Also Available on Aperture Card

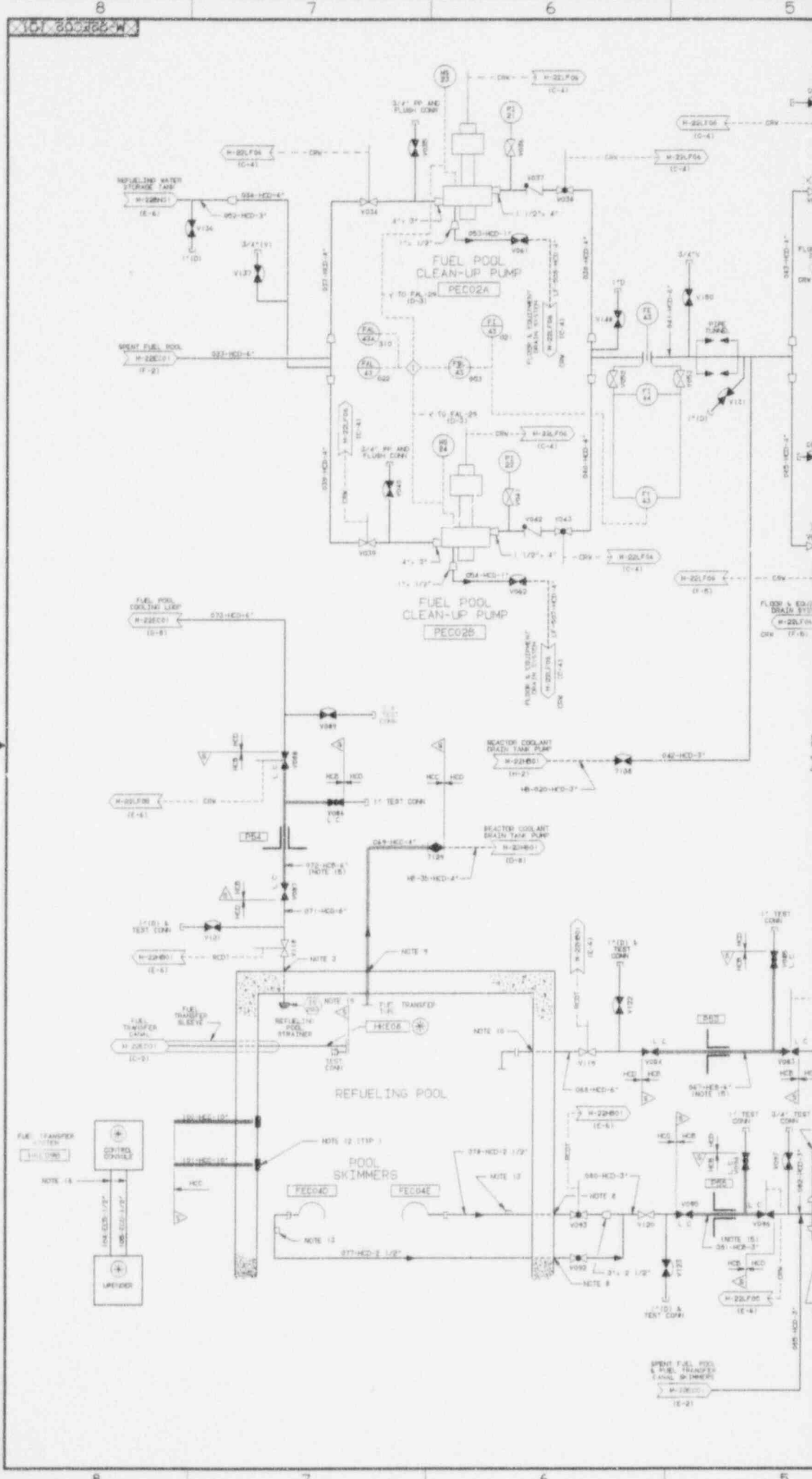
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
=====	GROUP A - NON-CRITICAL
=====	GROUP A - CRITICAL
=====	GROUP B - NON-CRITICAL
=====	GROUP B - CRITICAL
=====	GROUP C - NON-CRITICAL
=====	GROUP C - CRITICAL

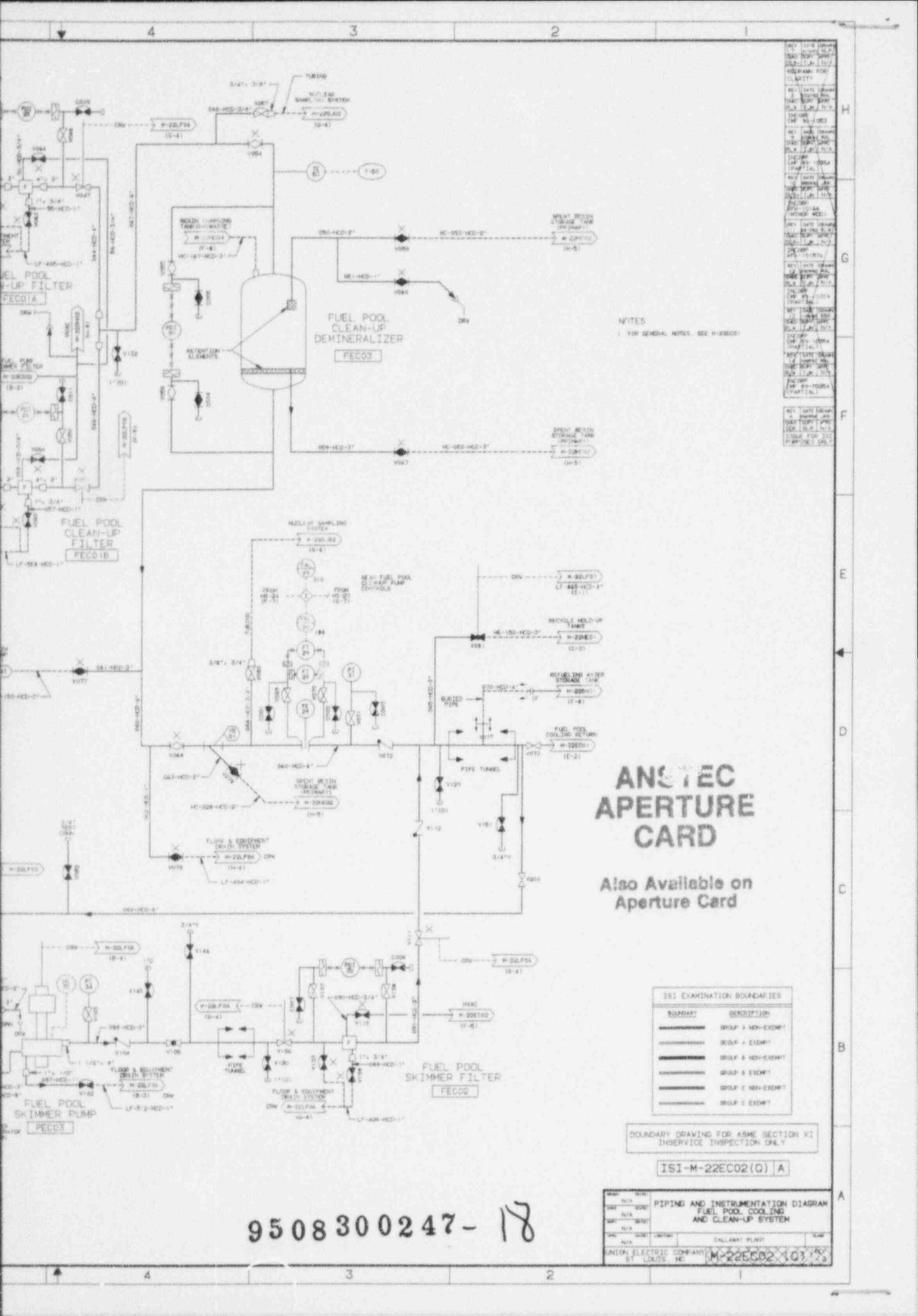
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22ECO1(Q) A

REV	DATE	DESCRIPTION	BY	CHK
1	11/18/83	ISSUED FOR CONSTRUCTION	J. J. ...	J. J. ...
2	12/15/83	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
3	01/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
4	02/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
5	03/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
6	04/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
7	05/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
8	06/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
9	07/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
10	08/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
11	09/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
12	10/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
13	11/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
14	12/15/84	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
15	01/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
16	02/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
17	03/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
18	04/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
19	05/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
20	06/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
21	07/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
22	08/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
23	09/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
24	10/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
25	11/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
26	12/15/85	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
27	01/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
28	02/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
29	03/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
30	04/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
31	05/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
32	06/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
33	07/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
34	08/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
35	09/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
36	10/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
37	11/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
38	12/15/86	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
39	01/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
40	02/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
41	03/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
42	04/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
43	05/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
44	06/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
45	07/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
46	08/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
47	09/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
48	10/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
49	11/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...
50	12/15/87	REVISED TO REFLECT CHANGES TO THE DRAWING	J. J. ...	J. J. ...

9508300247-17





NOTES
 1. FOR GENERAL NOTES, SEE H-22E01

ANSI EC APERTURE CARD

Also Available on Aperture Card

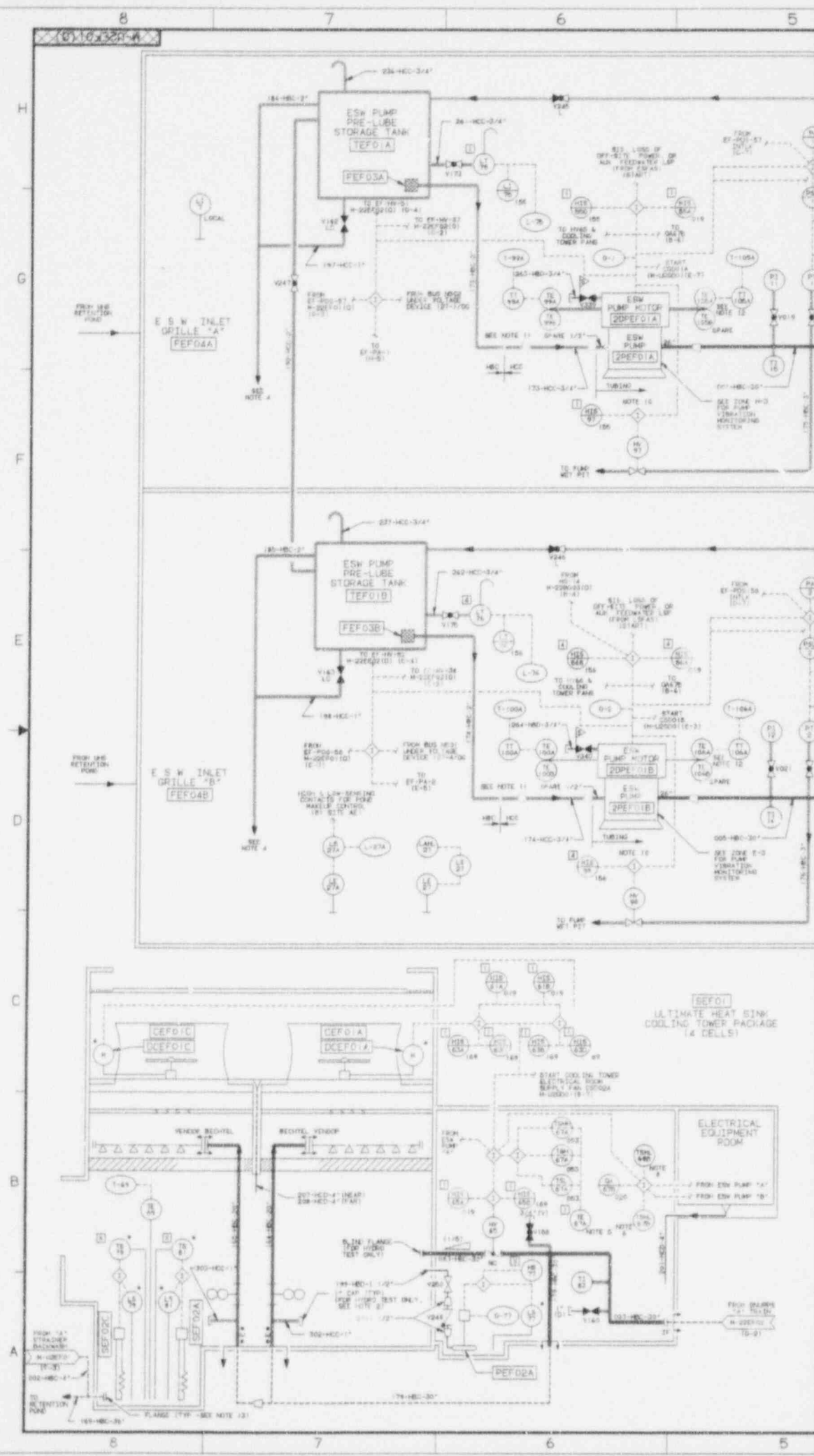
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
-----	GROUP A NON-EXEMPT
-----	GROUP A EXEMPT
-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22E02(Q) A

DATE	NO.	PIPING AND INSTRUMENTATION DIAGRAM
REV.	NO.	FUEL POOL COOLING AND CLEAN-UP SYSTEM
APP.	NO.	
CHK.	NO.	
DES.	NO.	CALLAWAY PLANT
UNIT	NO.	M-22E02-103

9508300247-18



(SEFO) ULTIMATE HEAT SINK COOLING TOWER PACKAGE (4 CELLS)

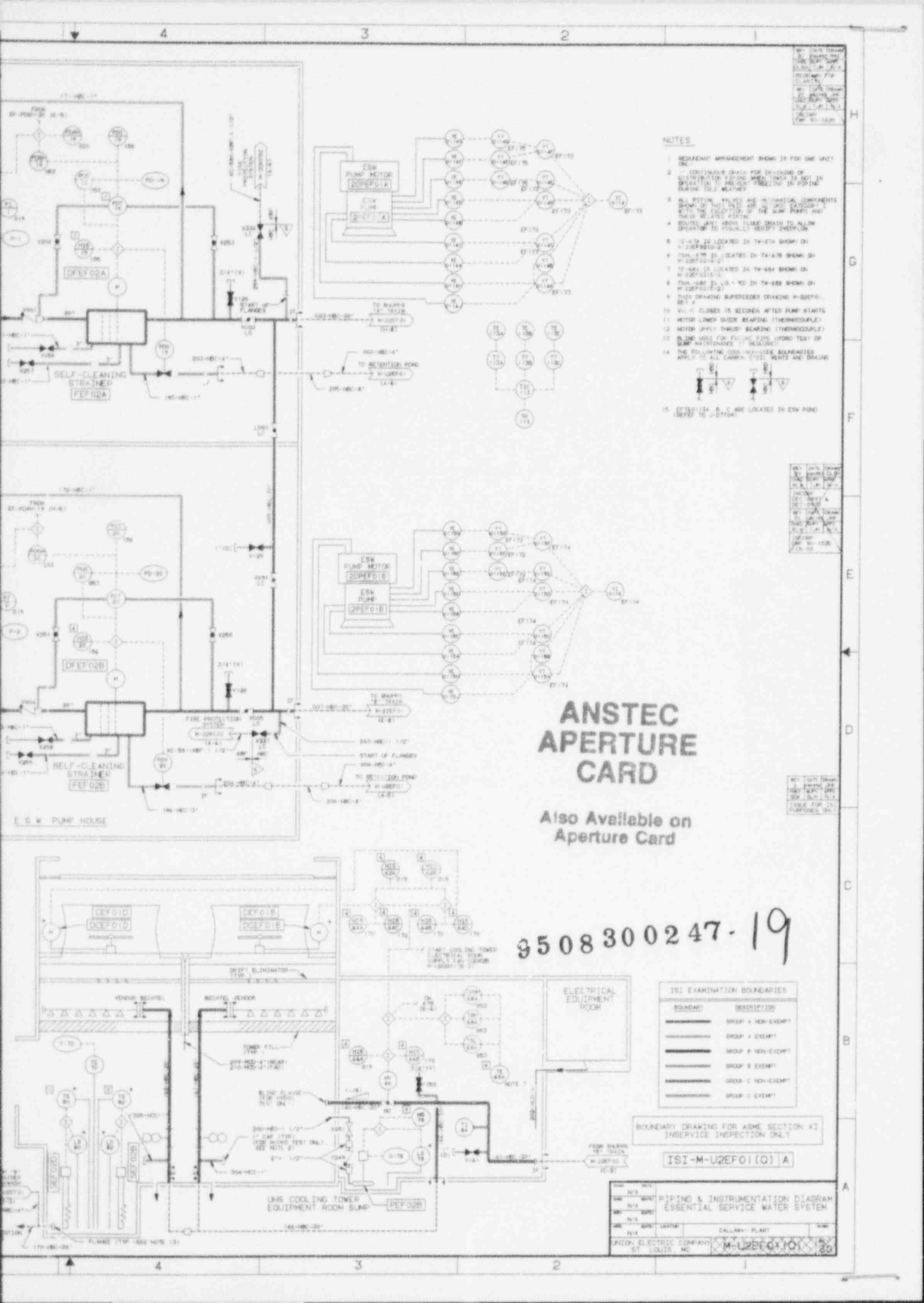
ELECTRICAL EQUIPMENT ROOM

FROM 12" STRAINER BACKFLOW

FROM ESW PUMP "A"
 FROM ESW PUMP "B"

FROM ESW PUMP "A"
 FROM ESW PUMP "B"

FROM ESW PUMP "A"
 FROM ESW PUMP "B"



- NOTES**
1. REDUNDANT ARRANGEMENT SHOWN IS FOR ONE UNIT ONLY.
 2. CONTINUOUS DRAIN FOR EXHAUSTION OF DISTRIBUTION PIPING WHEN UNDER IS NOT IN OPERATION TO PREVENT FREEZING IN PIPING DURING COLD WEATHER.
 3. ALL PIPING, VALVES AND INSTRUMENTAL COMPONENTS SHOWN ON THIS DRAWING ARE TO BE INSTALLED WITH THE EXCEPTION OF THE SHOWN PIPING AND TANK RELATED PIPING.
 4. SHOWN AIR ABOVE PUMP DEANS TO ALLOW OPERATOR TO VISUALLY VERIFY OVERFLOW.
 5. TE-65A IS LOCATED IN TW-67A SHOW; ON M-2DFEF01D-2.
 6. TE-65B IS LOCATED IN TW-67B SHOW; ON M-2DFEF01D-2.
 7. TE-65C IS LOCATED IN TW-67A SHOW; ON M-2DFEF01D-2.
 8. TE-65D IS LOCATED IN TW-67B SHOW; ON M-2DFEF01D-2.
 9. THIS DRAWING SUPERSEDES DRAWING M-2DFEF01, REV. A.
 10. VLT-1 CLOSED 15 SECONDS AFTER PUMP STARTS.
 11. MOTOR LOWER GUIDE BEARING (THERMOCOUPLE).
 12. MOTOR UPPER THRUST BEARING (THERMOCOUPLE).
 13. BLEND USED FOR PULSING PUMP (HARD TEST) OR PUMP MAINTENANCE (1" REDUCER).
 14. THE FOLLOWING COOLING TOWER EQUIPMENT APPLICABLE TO ALL CARRIER STEEL VENTS AND DRAINS:
 - (A) VENT
 - (B) VENT
 - (C) VENT
 15. EFW0113A, B, C ARE LOCATED IN ESW POND REFER TO J-0113A.

ANSTEC APERTURE CARD

Also Available on Aperture Card

3508300247-19

(SI) EXAMINATION BOUNDARIES

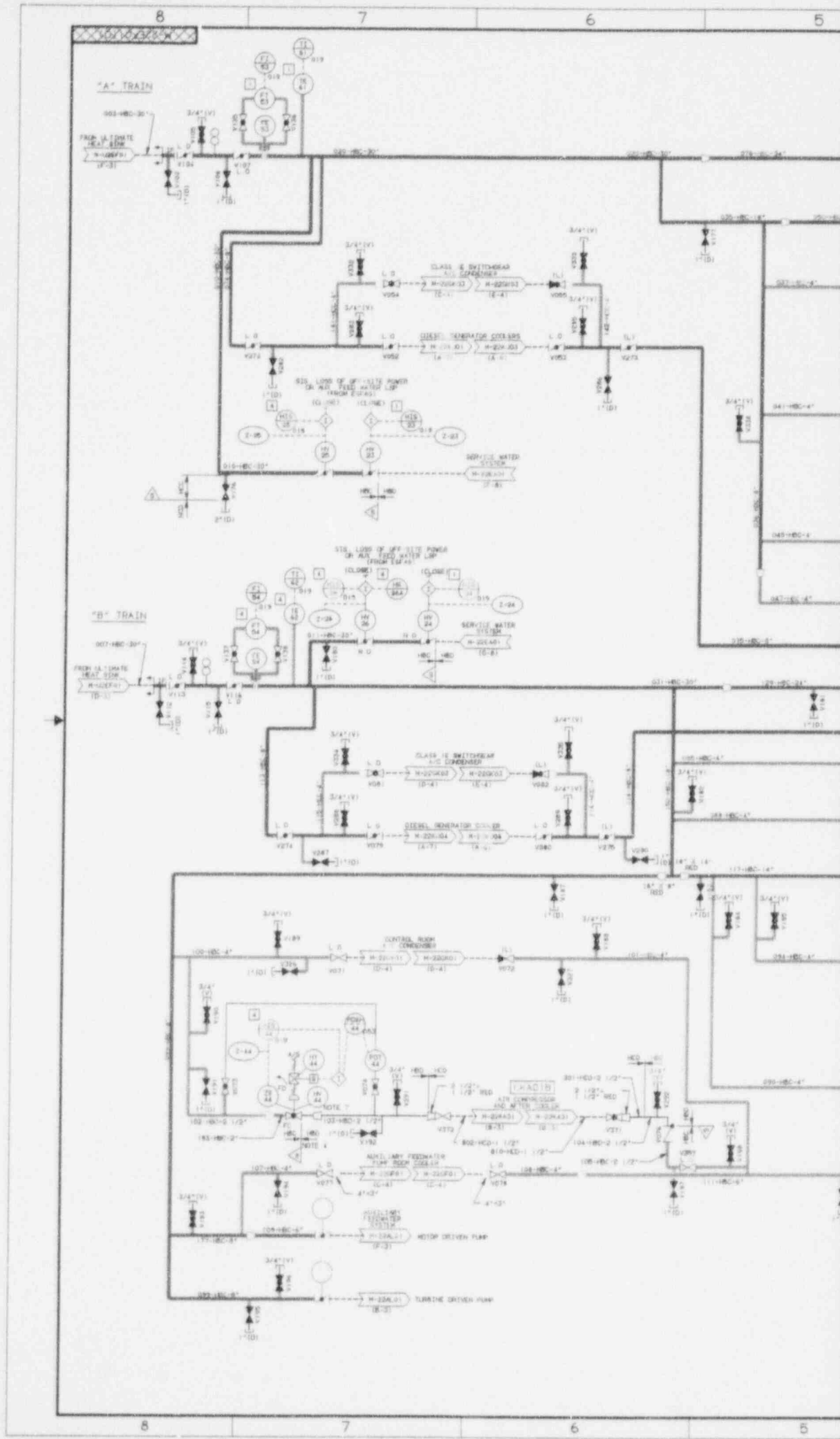
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-----	GROUP S EXEMPT
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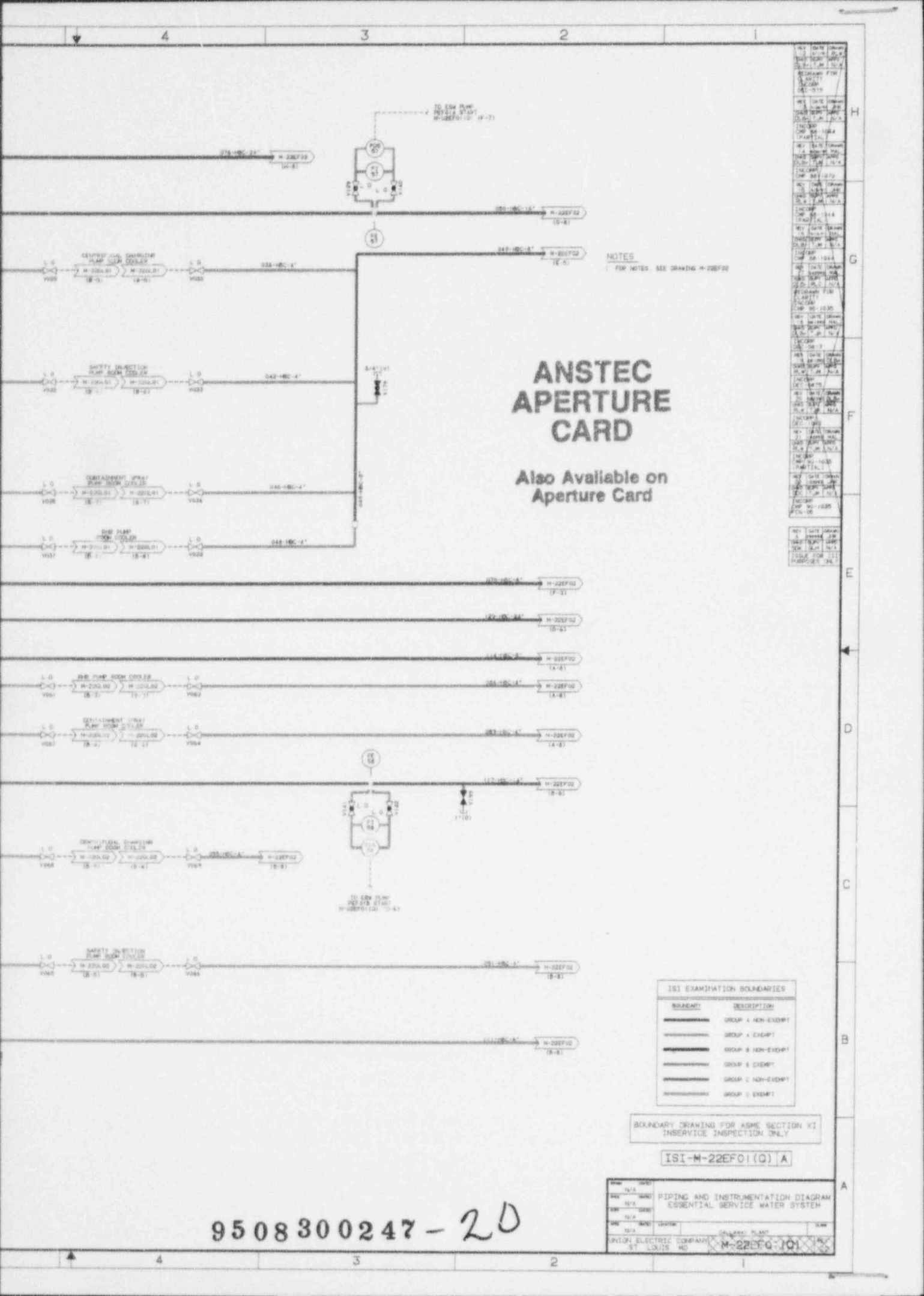
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-U2EF01(0)A

NO.	DATE	DESCRIPTION	BY
M-2	01/10/80	PIPING & INSTRUMENTATION DIAGRAM ESSENTIAL SERVICE WATER SYSTEM	...
M-1	01/10/80	...	...
M-3	01/10/80	...	...
M-4	01/10/80	...	...
M-5	01/10/80	...	...
M-6	01/10/80	...	...
M-7	01/10/80	...	...
M-8	01/10/80	...	...
M-9	01/10/80	...	...
M-10	01/10/80	...	...

CALLAWAY PLANT
 PRINZ ELECTRIC COMPANY
 ST. LOUIS, MO
 M-U2EF01(0)A
 30





ANSTEC APERTURE CARD

Also Available on Aperture Card

NOTES
1. FOR NOTES, SEE DRAWING H-22EFO2

REV	DATE	BY	CHKD	DESCRIPTION
1	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
2	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
3	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
4	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
5	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
6	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
7	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
8	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
9	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
10	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
11	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
12	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
13	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
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15	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
16	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
17	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
18	08-11-84	J.M.	J.M.	ISSUE FOR CONSTRUCTION
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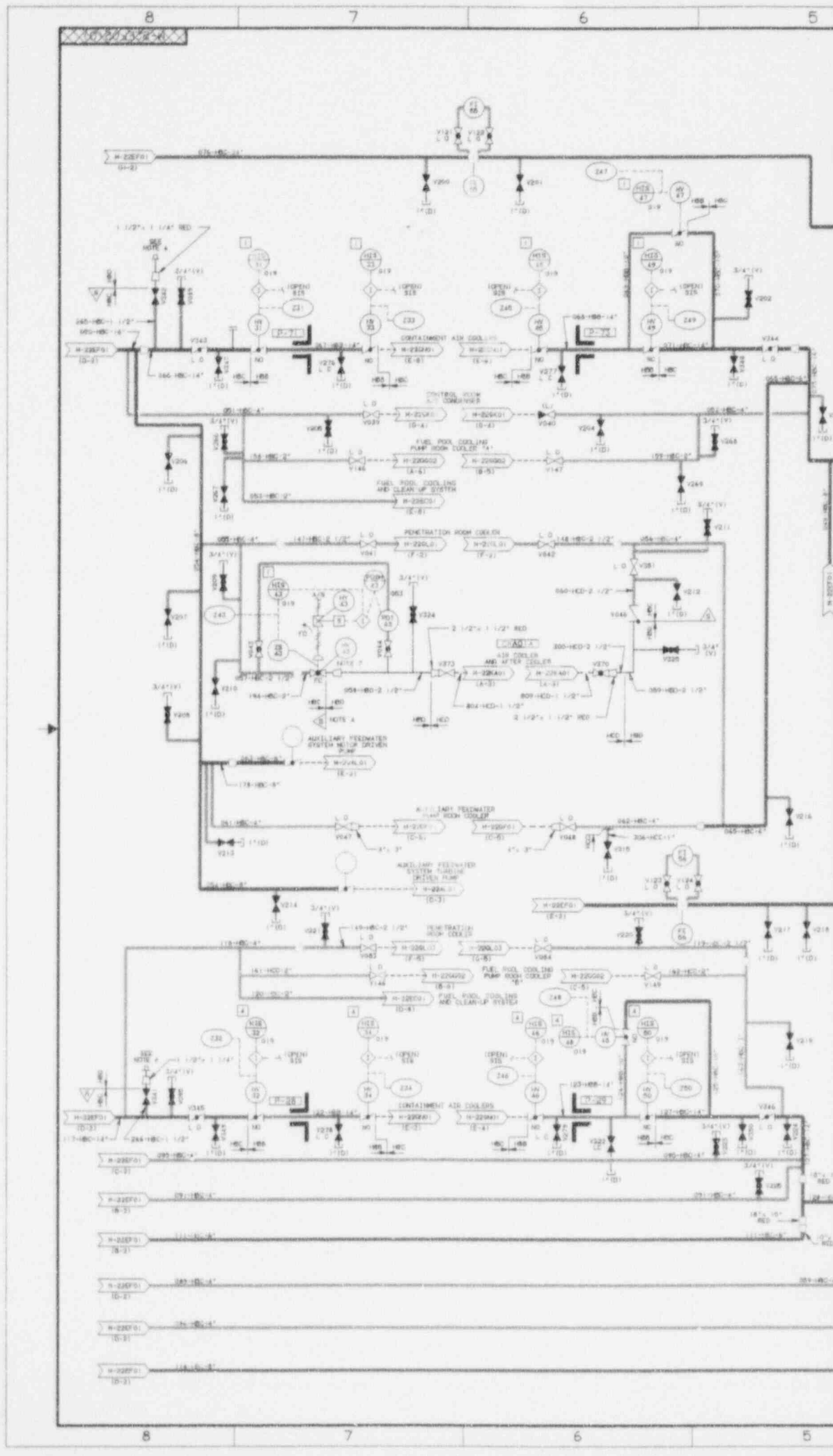
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SYMBOL	DESCRIPTION
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-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22EFO1(0) A

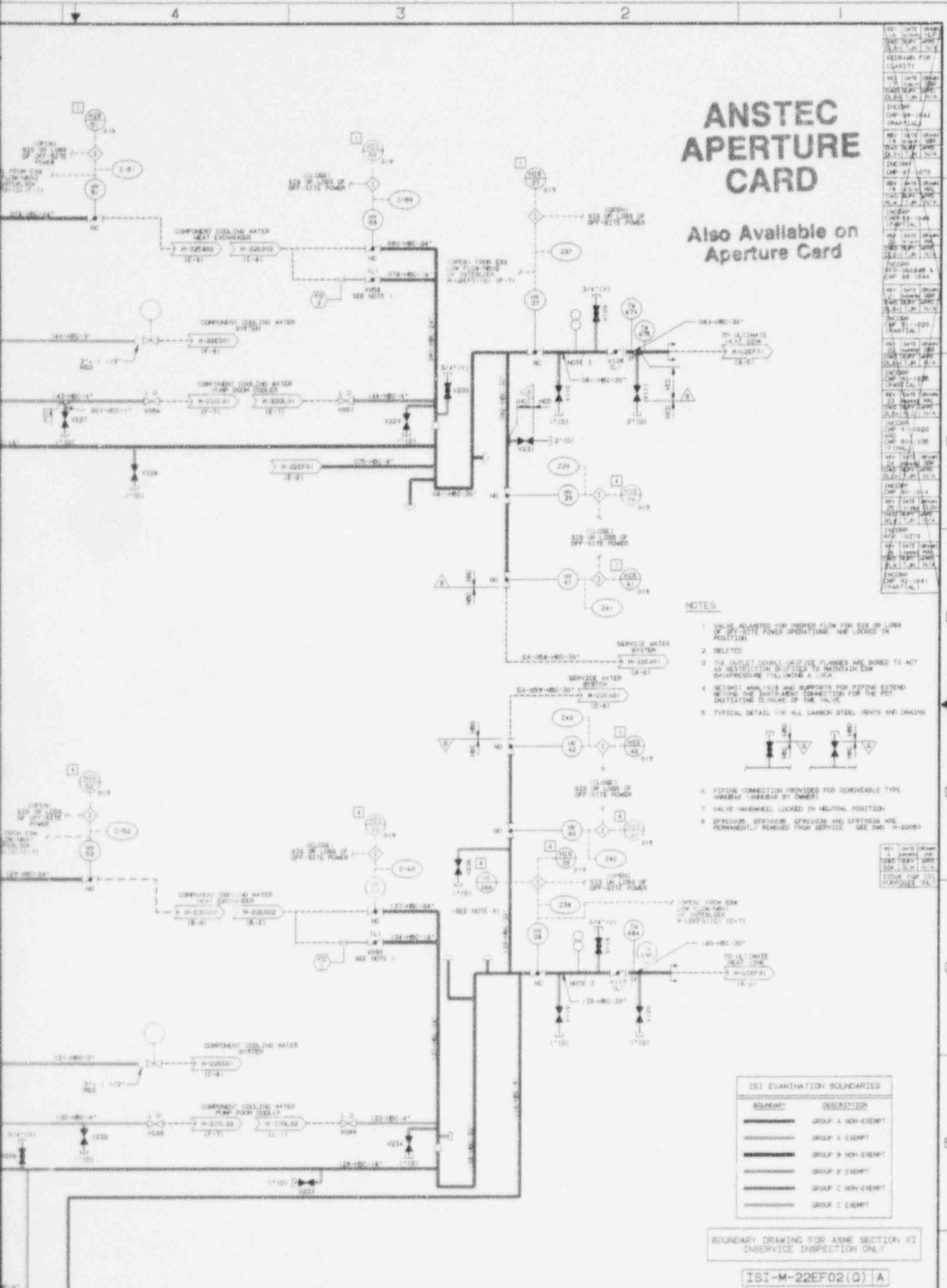
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REV	01	DATE	08-11-84	BY	J.M.
REV	02	DATE	08-11-84	BY	J.M.
REV	03	DATE	08-11-84	BY	J.M.
REV	04	DATE	08-11-84	BY	J.M.
REV	05	DATE	08-11-84	BY	J.M.
REV	06	DATE	08-11-84	BY	J.M.
REV	07	DATE	08-11-84	BY	J.M.
REV	08	DATE	08-11-84	BY	J.M.
REV	09	DATE	08-11-84	BY	J.M.
REV	10	DATE	08-11-84	BY	J.M.
REV	11	DATE	08-11-84	BY	J.M.
REV	12	DATE	08-11-84	BY	J.M.
REV	13	DATE	08-11-84	BY	J.M.
REV	14	DATE	08-11-84	BY	J.M.
REV	15	DATE	08-11-84	BY	J.M.
REV	16	DATE	08-11-84	BY	J.M.
REV	17	DATE	08-11-84	BY	J.M.
REV	18	DATE	08-11-84	BY	J.M.
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REV	20	DATE	08-11-84	BY	J.M.

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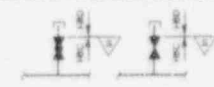
ANSTEC APERTURE CARD

Also Available on Aperture Card



NOTES

1. VALVE ADJUSTED FOR PROPER FLOW WITH ESW ON LINE (OFF-SITE POWER OPERATIONS) AND LOCKED IN POSITION
2. DELETED
3. THE OUTPUT VALVE (OUTSIDE FLANGES ARE BORED TO ACT AS RESTRICTION) IS SUPPLIED TO MAINTAIN ESW SHAPREASURE FOLLOWING A LOCK
4. REMOVAL ANALYSIS AND SUPPORTS FOR PIPING EXTEND BEYOND THE INSTANTANEOUS CONNECTION FOR THE PDI INDICATING DIRECTION OF THE VALVE
5. TYPICAL DETAIL FOR ALL GALVANNEE STEEL, WELDS AND DRAINS



6. PIPING CONNECTION PROVIDED FOR REMOVABLE TYPE WHEEL LOCKER BY OWNER
7. VALVE WHEEL LOCKED IN NEUTRAL POSITION
8. EFFLUENT SYSTEMS, EFFLUENTS AND EFFLUENTS ARE PERMANENTLY REMOVED FROM SERVICE. SEE DMS H-2005

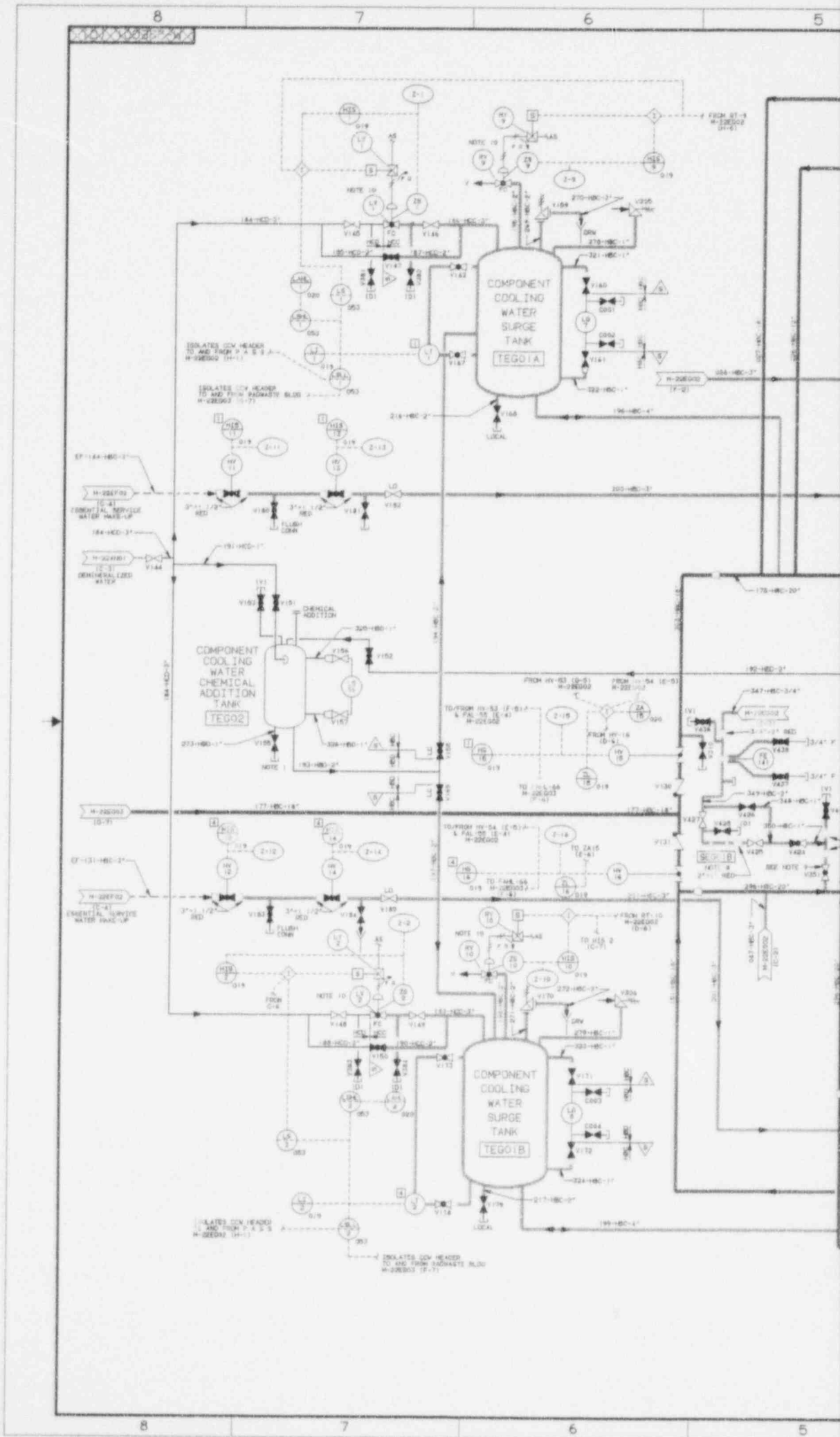
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BOUNDARY	DESCRIPTION
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-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

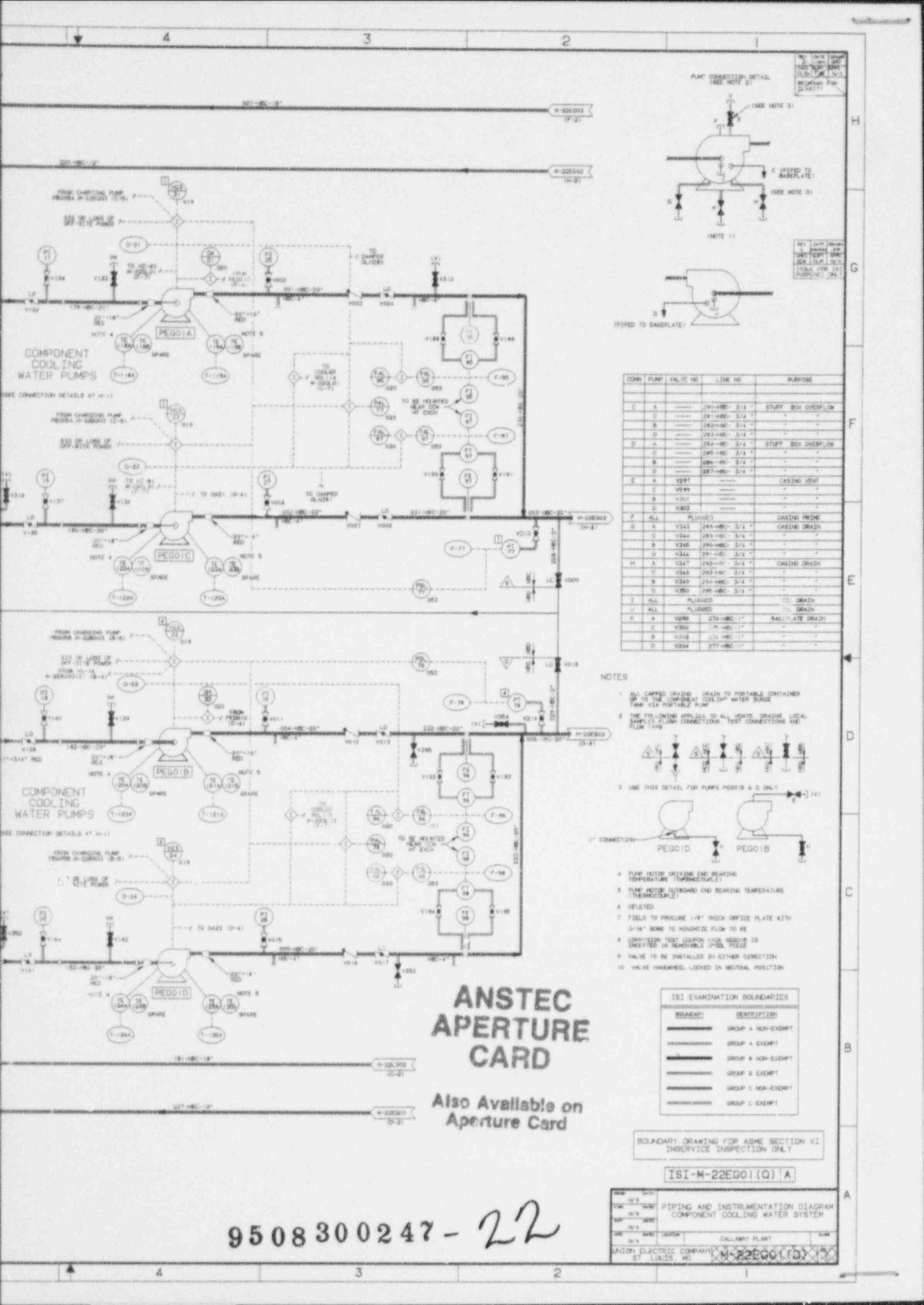
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22EF02 (0) A

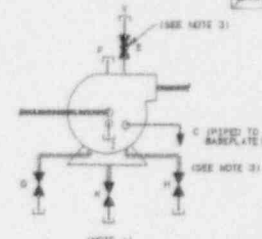
9508300247-21

DATE	REV	DESCRIPTION	BY
04/15/82	001	PIPING AND INSTRUMENTATION DIAGRAM ESSENTIAL SERVICE WATER SYSTEM	...
04/15/82	002	...	...
04/15/82	003	...	...
04/15/82	004	...	...
04/15/82	005	...	...
UNION ELECTRIC COMPANY		CALLAWAY PLANT	...
ST. LOUIS, MO		ISI-M-22EF02 (0)	...





PLAC CONNECTION DETAIL
SEE NOTE 2)



NOTE 1
NOTE 2

DRY PUMP	VALVE NO	LINE NO	PURPOSE
C	A	290-HBC-3/4"	STUFF BOX OVERFLOW
C	B	291-HBC-3/4"	"
C	D	292-HBC-3/4"	"
C	E	293-HBC-3/4"	"
D	A	284-HBC-3/4"	STUFF BOX OVERFLOW
D	B	285-HBC-3/4"	"
D	C	286-HBC-3/4"	"
D	D	287-HBC-3/4"	"
E	A	V297	CASINO VENT
E	B	V299	"
E	C	V301	"
E	D	V303	"
F	ALL	PLUGGED	CASINO PIPING
G	A	V341 294-HBC-3/4"	CASINO DRAIN
G	B	V342 295-HBC-3/4"	"
G	C	V343 296-HBC-3/4"	"
G	D	V344 297-HBC-3/4"	"
H	A	V347 292-HBC-3/4"	CASINO DRAIN
H	B	V348 293-HBC-3/4"	"
H	C	V349 294-HBC-3/4"	"
H	D	V350 295-HBC-3/4"	"
I	ALL	PLUGGED	TO DRAIN
J	ALL	PLUGGED	TO DRAIN
K	A	V399 274-HBC-1"	BASEPLATE DRAIN
K	B	V398 275-HBC-1"	"
K	C	V397 276-HBC-1"	"
K	D	V396 277-HBC-1"	"

NOTES

- ALL CAPPED DRAIN DRAIN TO PORTABLE CONTAINER OR TO THE COMPONENT COOLING WATER DRAIN TRAP VIA PORTABLE PLUMB
- THE FOLLOWING APPLIES TO ALL VENTS DRAINING LOCAL SAMPLE FLUID CONNECTIONS TEST CONNECTIONS AND FLUID PANS
- USE THIS DETAIL FOR PUMPS PEGOOD & D ONLY
- PUMP MOTOR DRIVING END BEARING TEMPERATURE (THERMOCOUPLE)
- PUMP MOTOR OUTBOARD END BEARING TEMPERATURE (THERMOCOUPLE)
- RELEASER
- FIELD TO PROVIDE 1/8" THICK BRASS PLATE WITH 3/16" BORE TO MINIMIZE FLUID TO BE
- COMPRESSION TEST COUPON FOR PEGOOD IS INSTALLED IN REMOVABLE SPINDLE PIECE
- VALVE TO BE INSTALLED IN EITHER DIRECTION
- VALVE HANDLE LOCKED IN NEUTRAL POSITION

ANSTEC APERTURE CARD

Also Available on Aperture Card

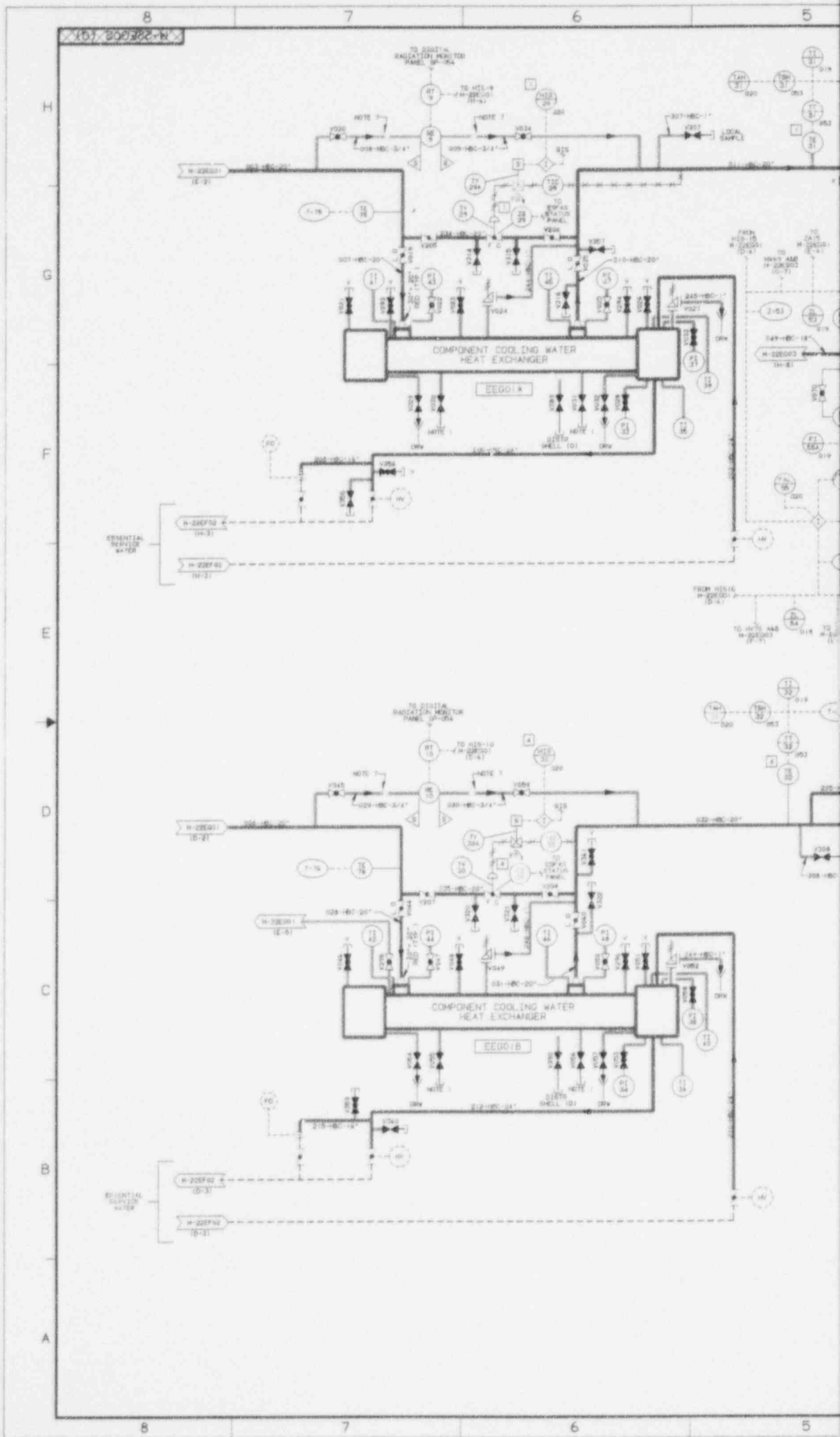
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BOUNDARY	DESCRIPTION
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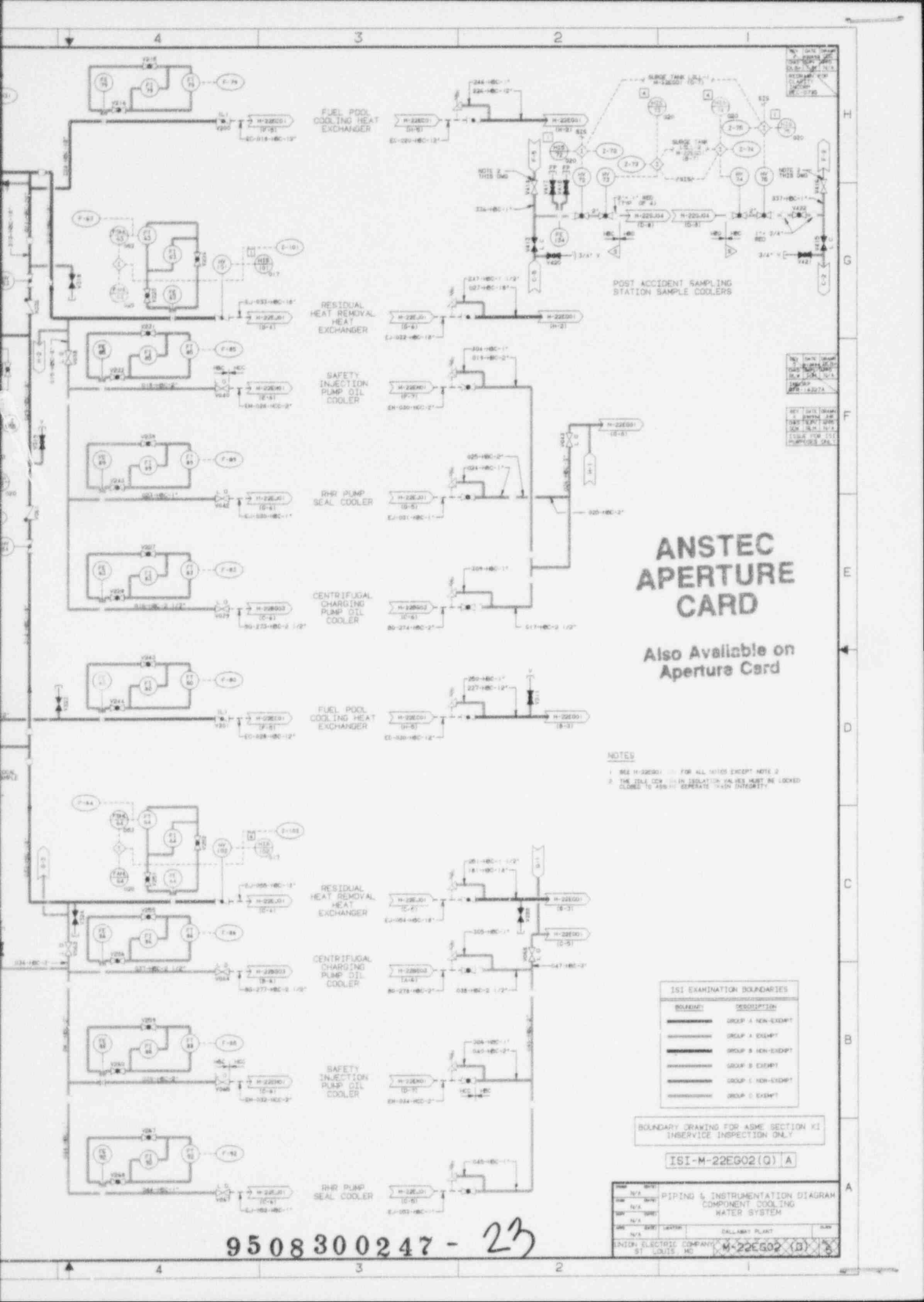
BOUNDARY DRAWING FOR ASME SECTION XI
INSERVICE INSPECTION ONLY

ISI-M-22EG01 (Q) A

9508300247-22

REV	DATE	DESCRIPTION	BY
1	10/15/80	PIPING AND INSTRUMENTATION DIAGRAM COMPONENT COOLING WATER SYSTEM	...
2	11/15/80	CALLAWAY PLANT	...
3	12/15/80	UNION ELECTRIC COMPANY ST. LOUIS, MO	...





ANSTEC APERTURE CARD

Also Available on Aperture Card

- NOTES
- SEE H-22EG01 FOR ALL NOTES EXCEPT NOTE 2
 - THE ISOLATION VALVES MUST BE LOCKED CLOSED TO ASSURE OPERATE TRASH INTEGRITY.

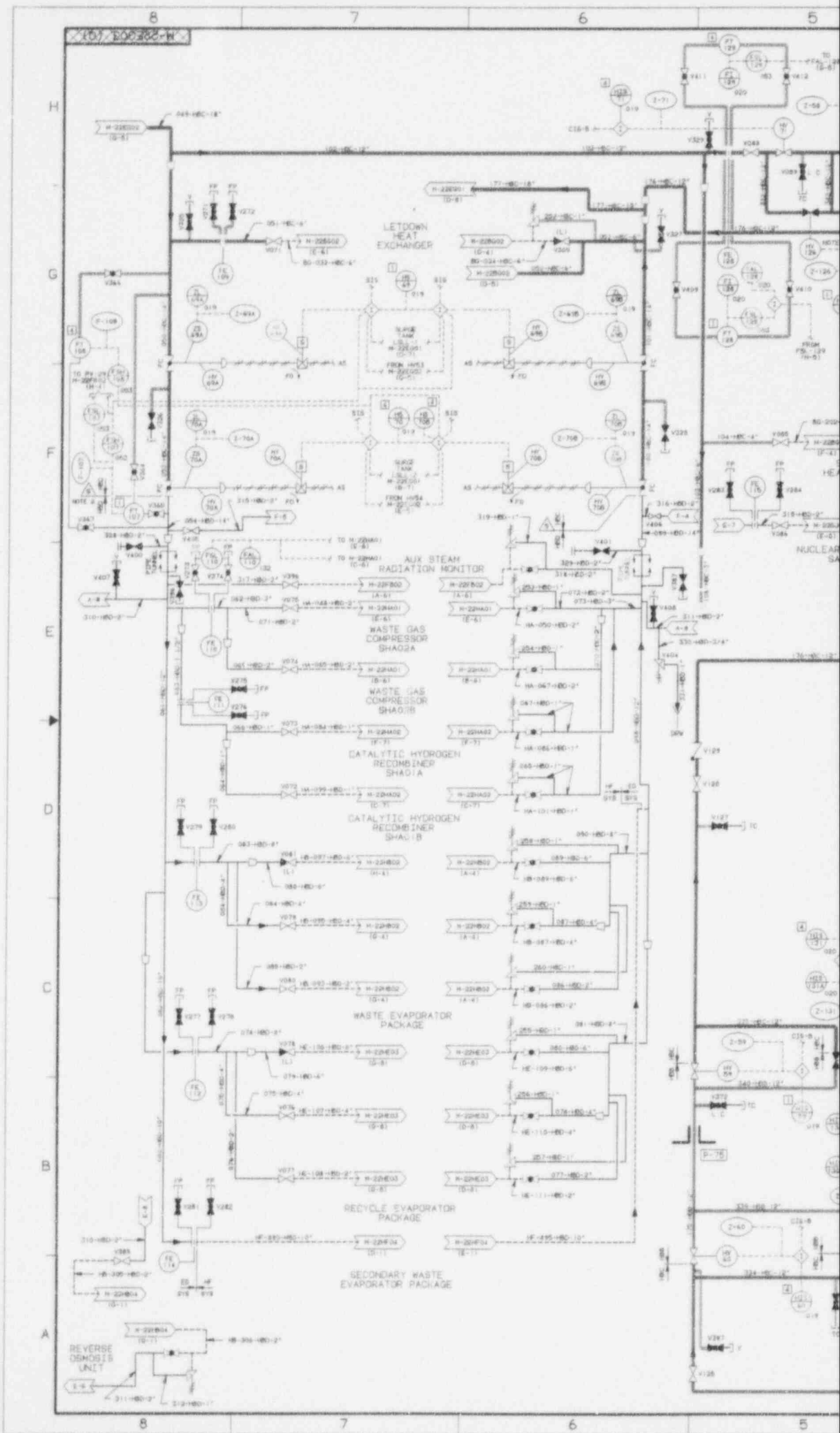
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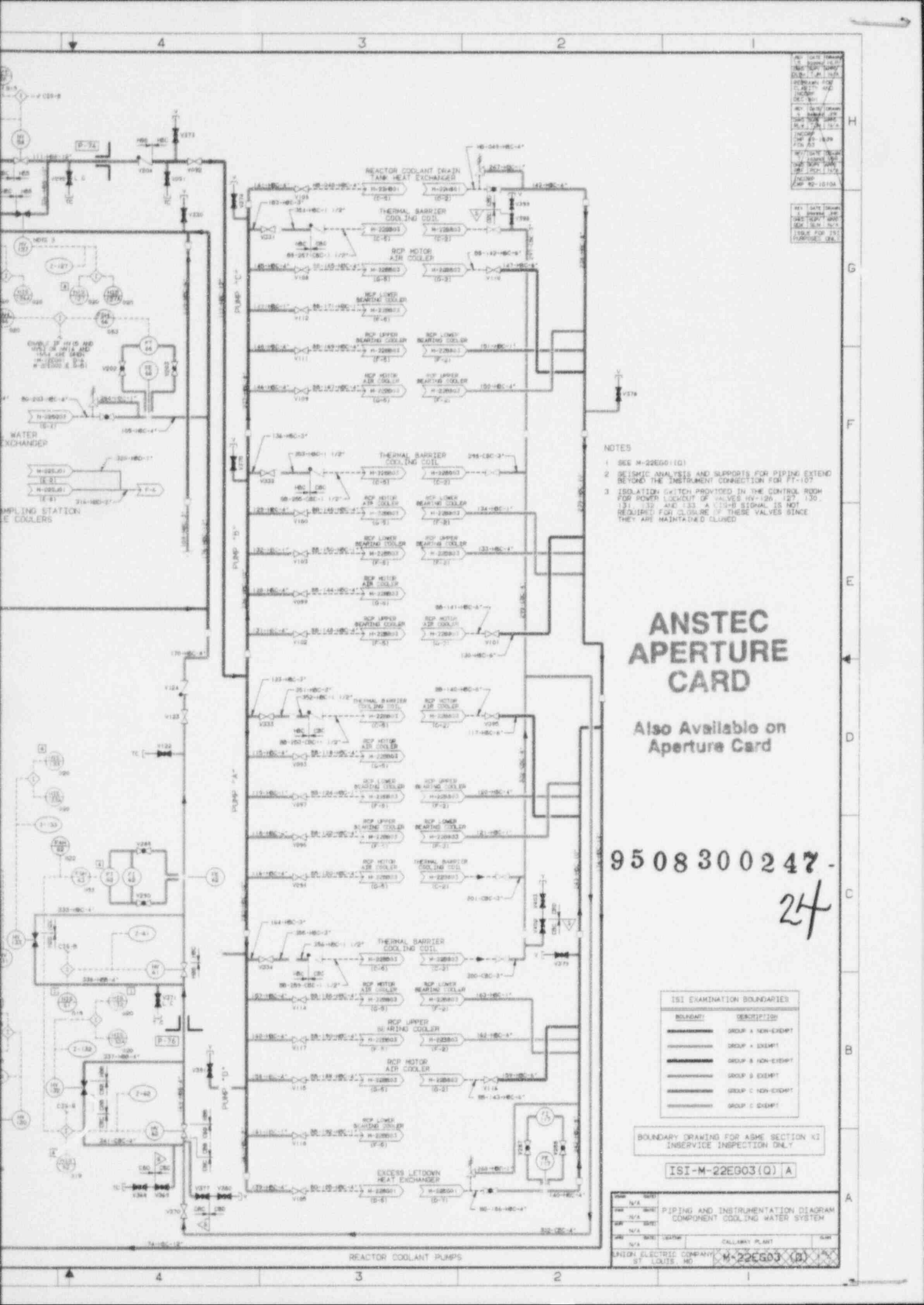
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22EG02(Q) A

NO.	DATE	DESCRIPTION	BY
1	11/15/88	PIPING & INSTRUMENTATION DIAGRAM COMPONENT COOLING WATER SYSTEM	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...

9508300247-23





REV DATE DRAWN BY CHECKED BY
 01 01 1974 H. J. BROWN J. W. BROWN
 02 01 1974 H. J. BROWN J. W. BROWN
 03 01 1974 H. J. BROWN J. W. BROWN
 04 01 1974 H. J. BROWN J. W. BROWN
 05 01 1974 H. J. BROWN J. W. BROWN
 06 01 1974 H. J. BROWN J. W. BROWN
 07 01 1974 H. J. BROWN J. W. BROWN
 08 01 1974 H. J. BROWN J. W. BROWN
 09 01 1974 H. J. BROWN J. W. BROWN
 10 01 1974 H. J. BROWN J. W. BROWN
 11 01 1974 H. J. BROWN J. W. BROWN
 12 01 1974 H. J. BROWN J. W. BROWN
 13 01 1974 H. J. BROWN J. W. BROWN
 14 01 1974 H. J. BROWN J. W. BROWN
 15 01 1974 H. J. BROWN J. W. BROWN
 16 01 1974 H. J. BROWN J. W. BROWN
 17 01 1974 H. J. BROWN J. W. BROWN
 18 01 1974 H. J. BROWN J. W. BROWN
 19 01 1974 H. J. BROWN J. W. BROWN
 20 01 1974 H. J. BROWN J. W. BROWN

- NOTES
- SEE M-22EG01(Q)
 - SEISMIC ANALYSIS AND SUPPORTS FOR PIPING EXTEND BEYOND THE INSTRUMENT CONNECTION FOR FT-107
 - ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVES HV-126, 127, 130, 131, 132 AND 133. A VISUAL SIGNAL IS NOT REQUIRED FOR CLOSURE OF THESE VALVES SINCE THEY ARE MAINTAINED CLOSED.

ANSTEC APERTURE CARD

Also Available on Aperture Card

95 08 30 02 47 - 24

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
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-----	GROUP C - NON-EXEMPT
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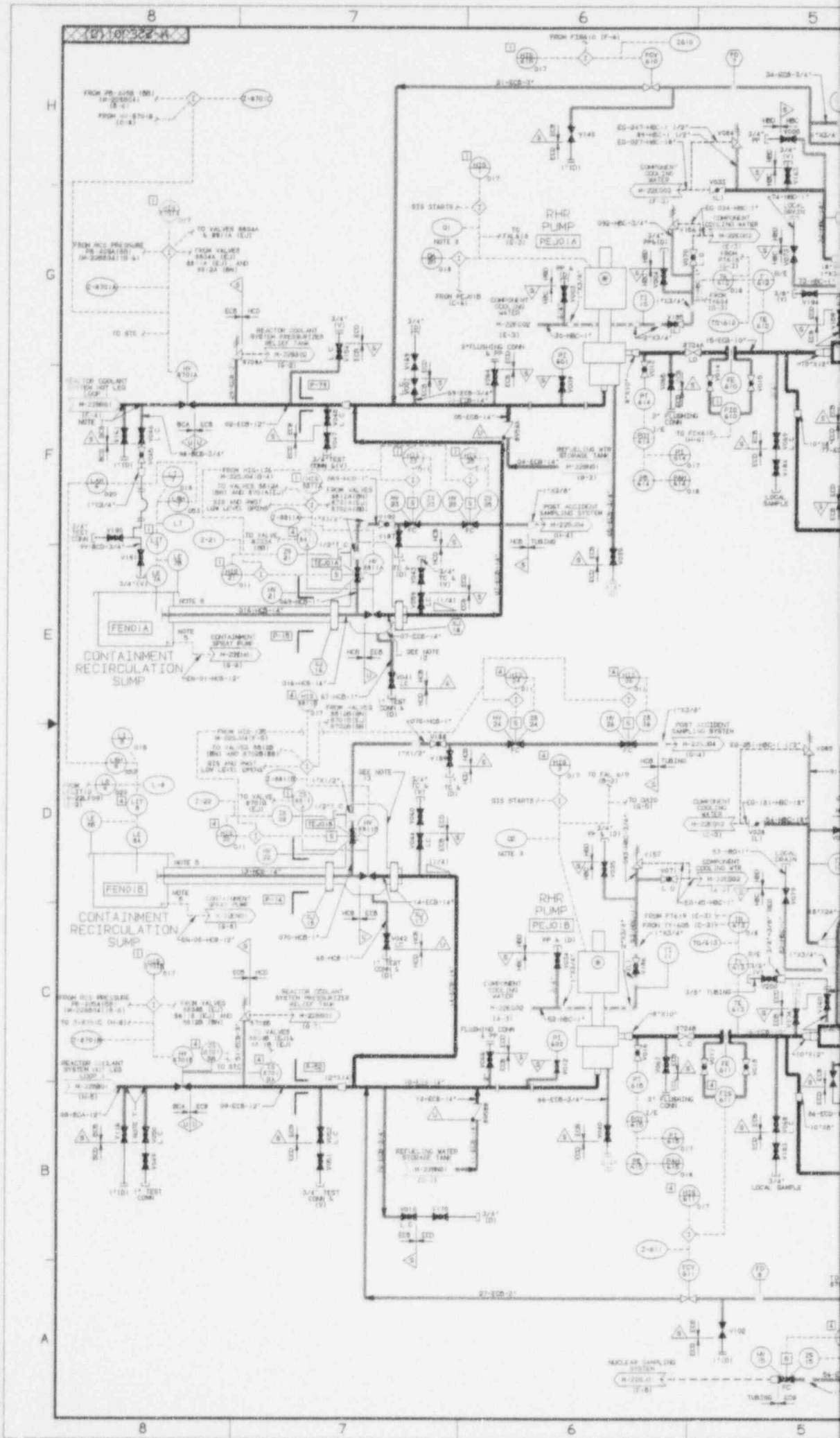
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

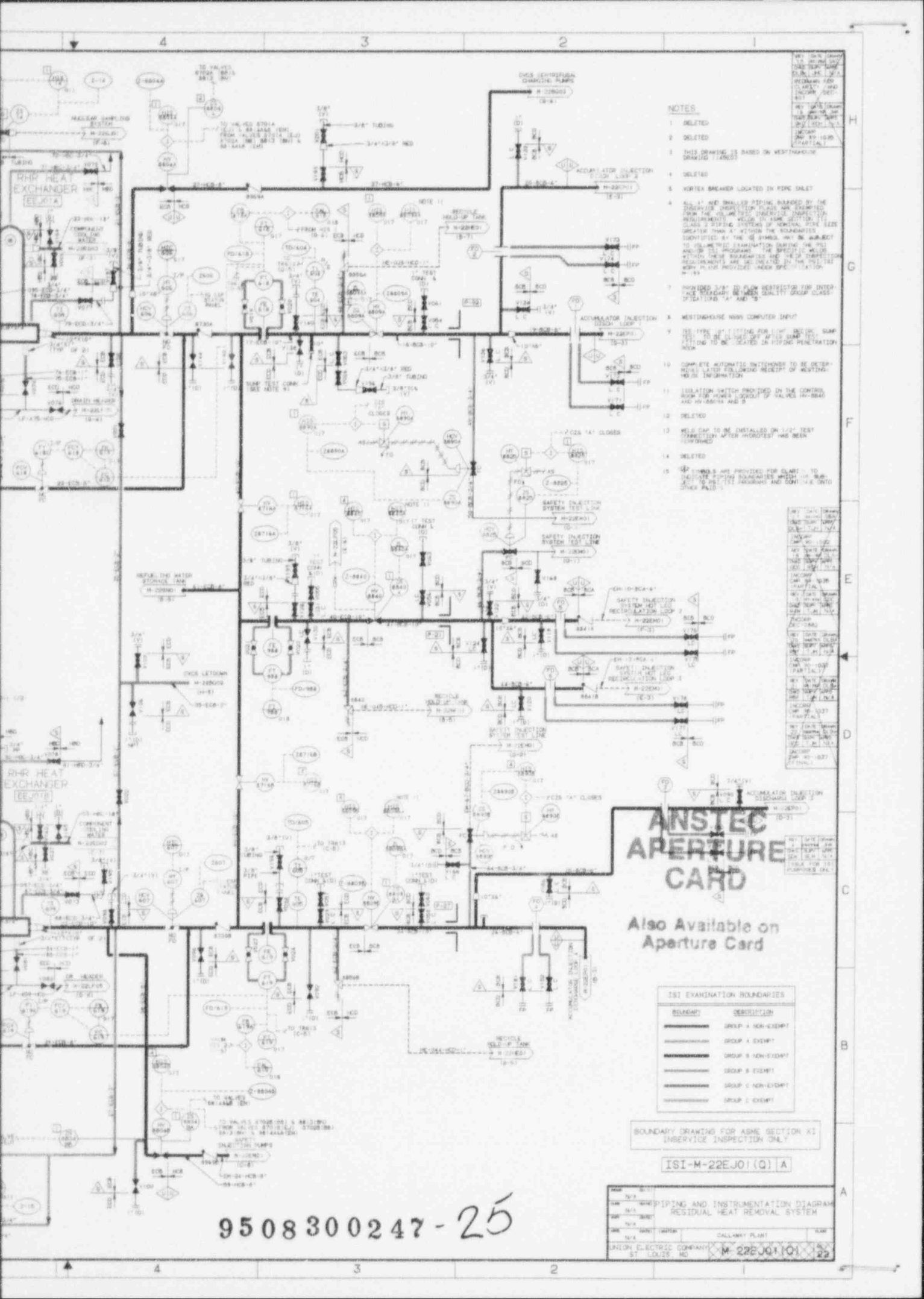
ISI-M-22EG03(Q) A

DATE	REV	BY	CHKD	DESCRIPTION
01/01/74	1	H. J. BROWN	J. W. BROWN	PIPING AND INSTRUMENTATION DIAGRAM COMPONENT COOLING WATER SYSTEM
01/01/74	2	H. J. BROWN	J. W. BROWN	CALLAWAY PLANT
01/01/74	3	H. J. BROWN	J. W. BROWN	UNION ELECTRIC COMPANY ST. LOUIS, MO

M-22EG03 (B)

REACTOR COOLANT PUMPS





- NOTES**
- 1 DELETED
 - 2 DELETED
 - 3 THIS DRAWING IS BASED ON WESTINGHOUSE DRAWING 712603
 - 4 DELETED
 - 5 VORTER BREAKER LOCATED IN RYPC SALET
 - 6 ALL 1" AND SMALLER PIPING SHOWN BY THE DRAWING INSPECTION PLACES ARE PROVIDED FROM THE FOLLOWING INSPECTION INSPECTION REQUIREMENTS: ALL 1" AND SMALLER PIPING, CLASS 2 WELDING SYSTEMS OF NOMINAL PIPE SIZE GREATER THAN 4" WHICH THE REQUIREMENTS IDENTIFIED BY THE 68 SIMPLIFIED ARE SUBJECT TO DIMENSIONAL EXAMINATION DURING THE PRELIMINARY INSPECTION. THE SPECIFIC INSPECTION REQUIREMENTS ARE SET FORTH IN THE INSPECTION WORK PLAN PROVIDED UNDER SPECIFICATION W-111
 - 7 PROVIDED 3/4" ID FLOW RESTRICTOR FOR INTER-FACE BETWEEN RESIDUAL HEAT GROUP CLASSIFICATION 1, 2, AND 3
 - 8 WESTINGHOUSE NON-COMPUTER INPUT
 - 9 IS TYPE OF TESTING FOR 1" OR SMALLER PIPING TO BE DONE BY AT THE END OF THE TESTING TO BE DONE IN THE PENETRATION TEST
 - 10 COMPLETE AUTOMATIC SWITCHOVER TO BE DETERMINED LATER FOR LOWEST RECEIPT OF WESTINGHOUSE INFORMATION
 - 11 ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR POWER LOCKOUT OF VALVES (M-2200) AND (M-2201)
 - 12 DELETED
 - 13 WELD CAP TO BE INSTALLED ON 1/2" TEST CONNECTION AFTER HYDROTEST HAS BEEN COMPLETED
 - 14 DELETED
 - 15 2" PIPING ARE PROVIDED FOR CLASS 1 TO FACILITATE TESTING REQUIREMENTS. SEE DRAWING 712603 FOR DIMENSIONS AND COMPLETE INFO OTHER PAGES.

ANSTEC APERTURE CARD

Also Available on Aperture Card

ISI EXAMINATION BOUNDARIES

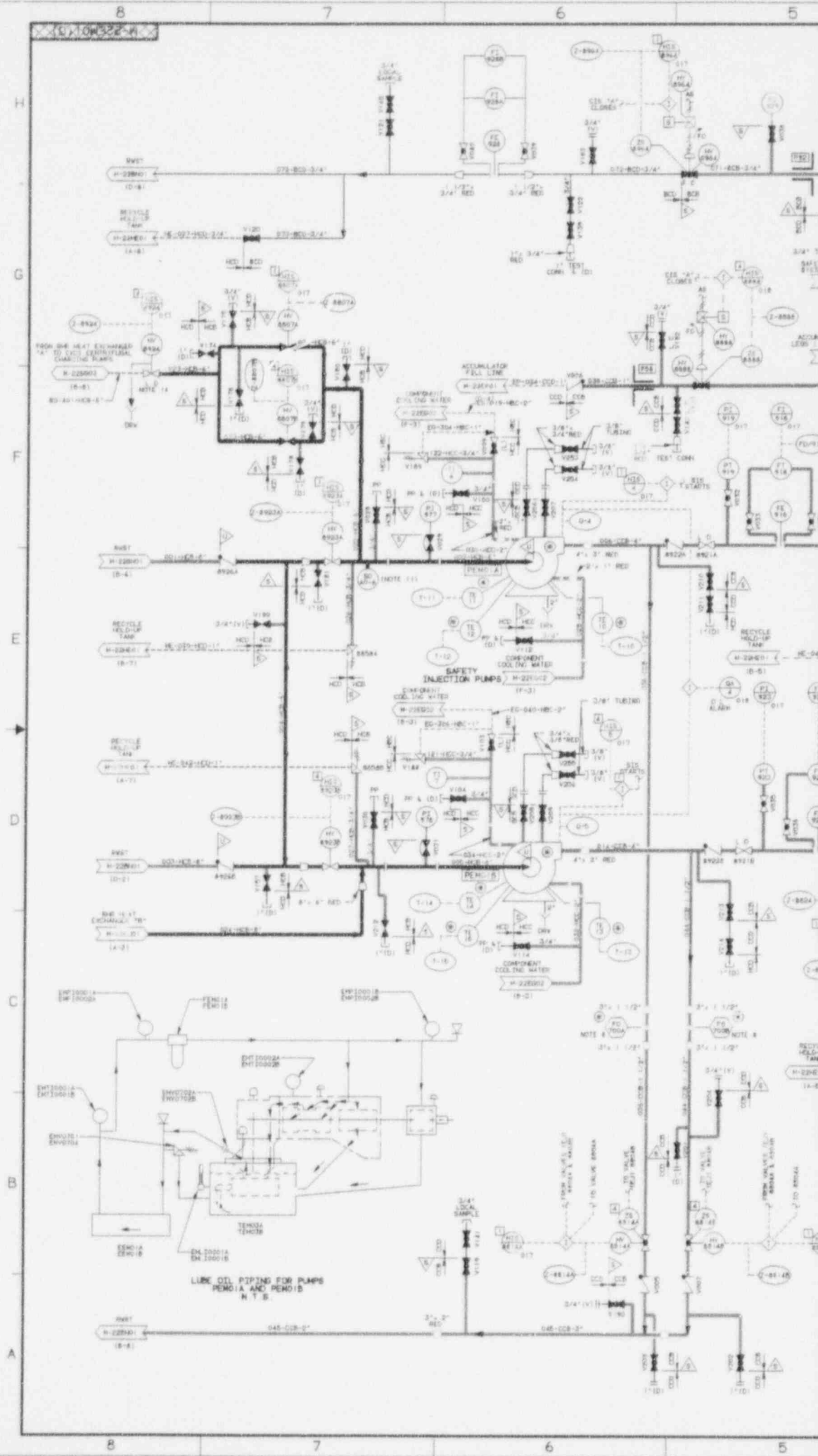
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-----	GROUP 3 NON-EXEMPT
-----	GROUP 3 EXEMPT
-----	GROUP 2 NON-EXEMPT
-----	GROUP 2 EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22EJ01(Q) A

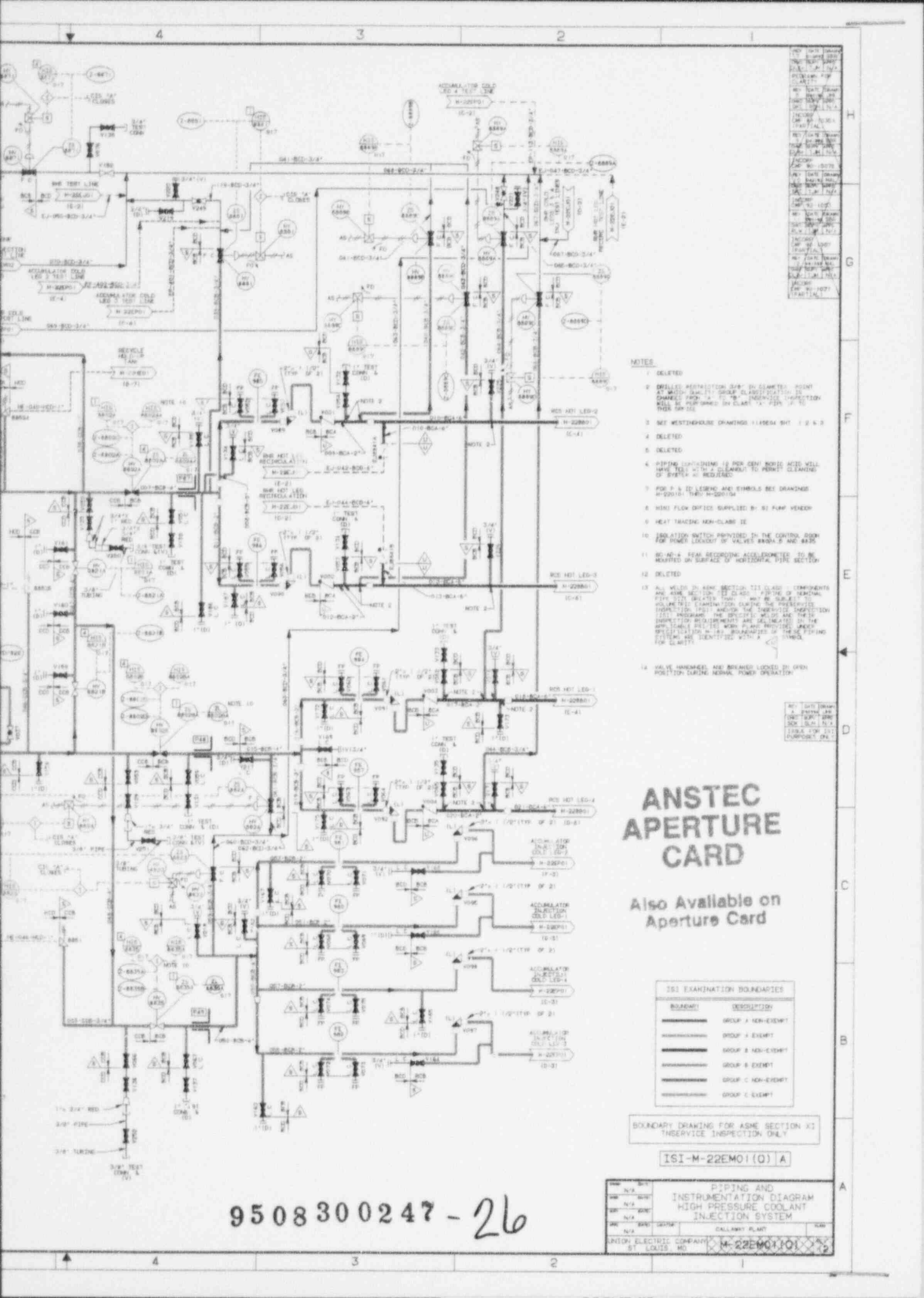
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9508300247-25



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LUBE OIL PIPING FOR PUMPS
PENCIA AND PENCIB
N.T.S.



REV	DATE	DESCRIPTION
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100	11/13/81	REVISED FOR CONSTRUCTION

NOTES

- DELETED
- DRILLED PROTECTION CAP ON EXISTING HOOD AT MAIN SHIELDING GROUP CLAMP STATION TO CHANGE FROM 2" TO 3" INSULATION THICKNESS WILL BE PERFORMED ON CLAMP 2" FROM 2" TO THIS SP-22
- SEE WASTEWATER DRAWING 114504 SHIT 1 & 2
- DELETED
- DELETED
- PIPING UNFINISHED IS FOR GENI NOTE ACES WILL HAVE TO BE WITH A CLEANUP TO PERMIT CLEANING OF SYSTEM AS REQUIRED
- FOR P & ID LEGEND AND SYMBOLS SEE DRAWING M-22201-100 M-22201-100
- MINI FLOW DEVICES SUPPLIED BY SI FLOW VENDOR
- HEAT TRACING NON-CLASS II
- ISOLATION SWITCH PROVIDED IN THE CONTROL ROOM FOR BINED LIQUID BY VALVES BWSA-D AND BWS-C
- NO-A-A FEED RECORDING ACCESSORIES TO BE MOUNTED ON SURFACE OF HORIZONTAL PIPE SECTION
- DELETED
- ALL WELDS IN ASME SECTION III CLASS 2 COMPONENTS AND ASME SECTION III CLASS 2 PARTS OF REMAINING PIPE SHALL BE CLASSIFIED AS 2-B SUBJECT TO VISUAL INSPECTION DURING THE PRESENCE INSPECTION (PI) AND/OR THE SUPERVISOR INSPECTION (SI) PROGRAMS THE SPECIFIC WELDS AND THEIR INSPECTION REQUIREMENTS ARE DESCRIBED IN THE APPLICABLE P&ID WORK PLANS AND PROVIDED UNDER SYSTEMS SECTION M-22201-100 M-22201-100 FOR CLARITY
- VALVE HANDLES AND KEYS ARE TO BE OPEN POSITION DURING NORMAL POWER OPERATION

ANSTEC APERTURE CARD

Also Available on Aperture Card

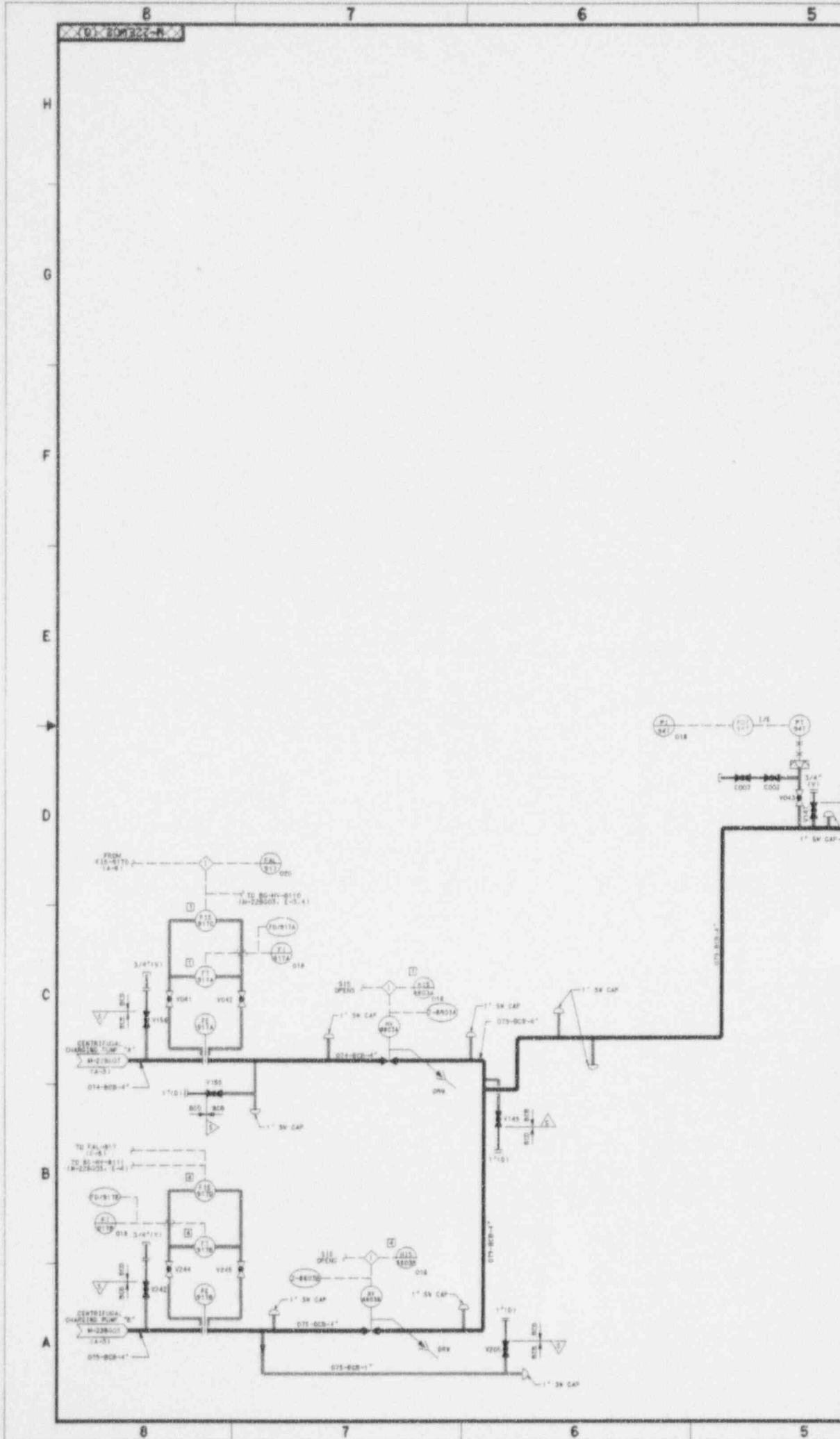
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BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

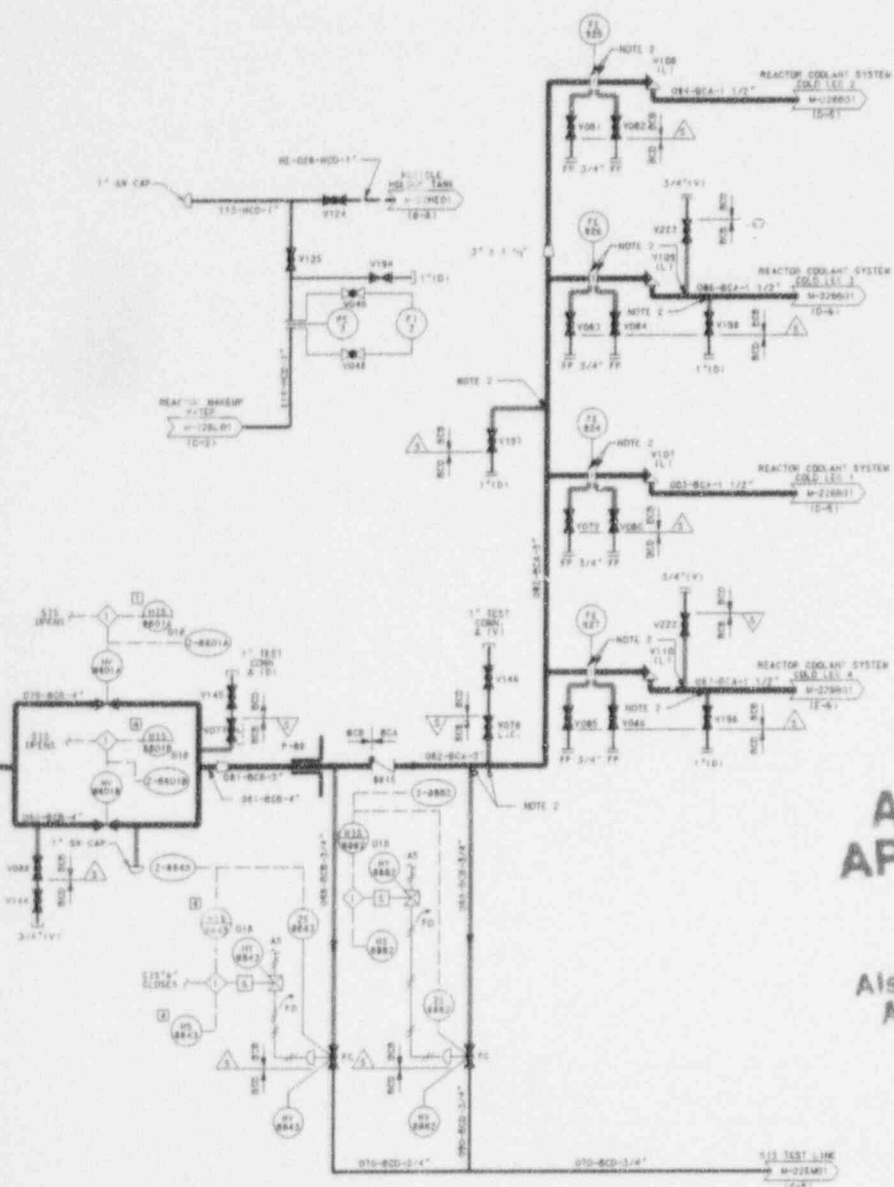
ISI-M-22201(0) A

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03	10/15/64	WJG	REVISIONS FOR ASME SECTION XI
04	11/15/64	WJG	REVISIONS FOR ASME SECTION XI
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29	12/15/66	WJG	REVISIONS FOR ASME SECTION XI
30	01/15/67	WJG	REVISIONS FOR ASME SECTION XI



- NOTES:**
- FOR GENERAL NOTES & REFERENCES SEE DWG. M-22E001.
 - DELETED
 - SEE DWG. M-22E001, M-22E002, M-22E003 & M-22E004 FOR EQUIPMENT TAG NUMBERS THAT HAVE BEEN PERMANENTLY REMOVED FROM SERVICE.

ANSTEC APERTURE CARD

Also Available on Aperture Card

ISI EXAMINATION BOUNDARIES

BOUNDARY	DESCRIPTION
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-----	GROUP A EXEMPT
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-----	GROUP B EXEMPT
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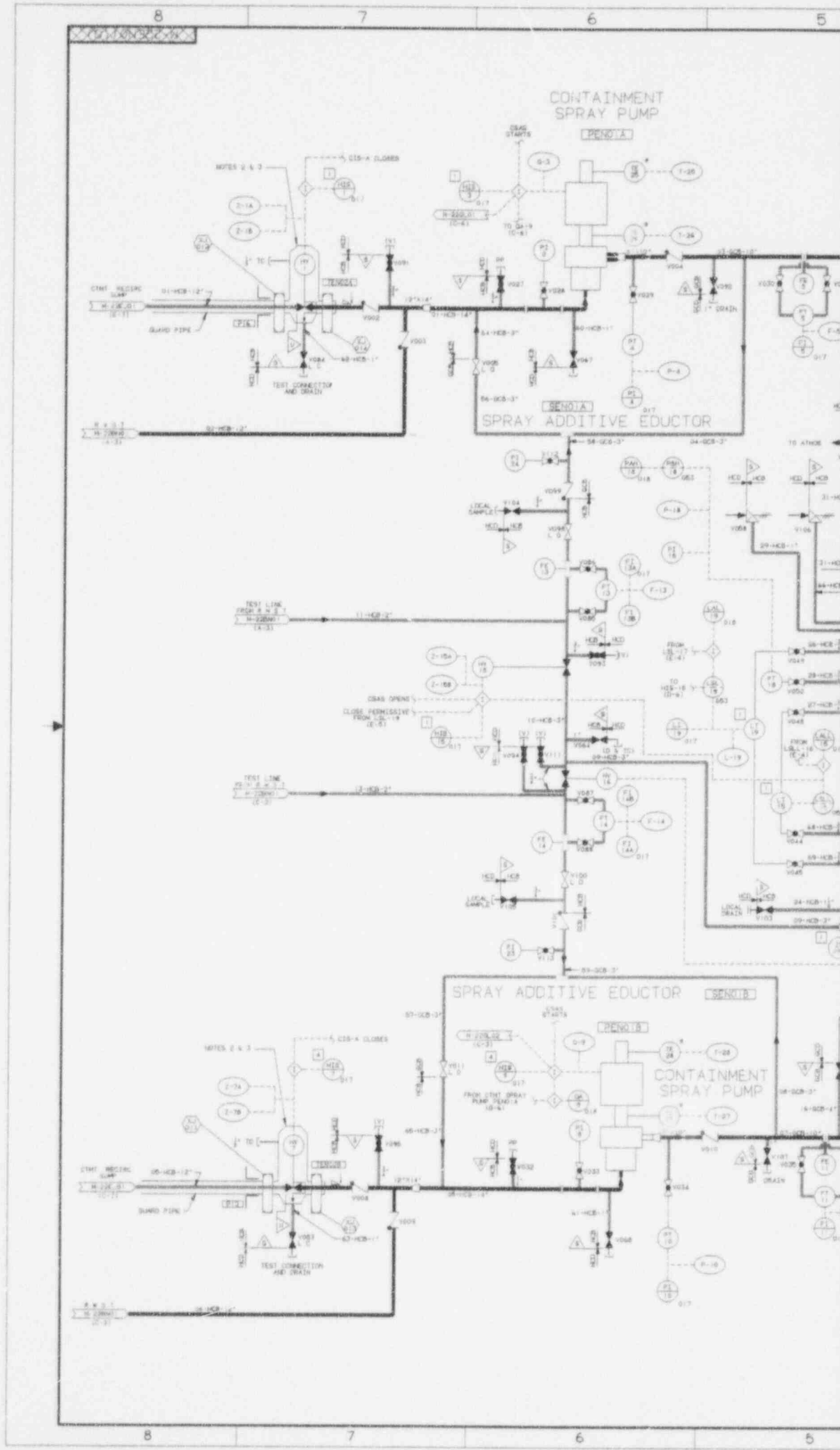
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

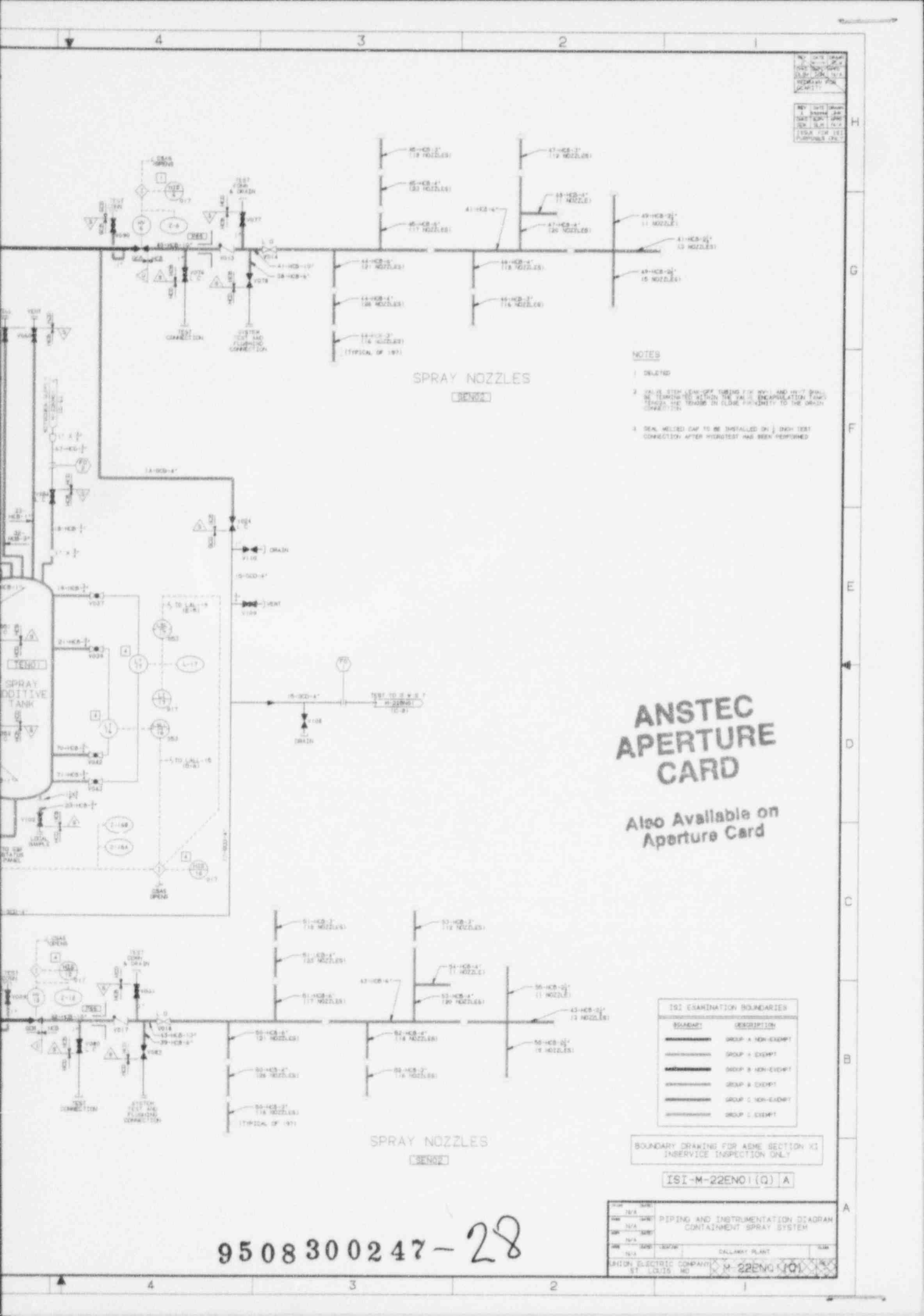
ISI-M-22E002(0) B

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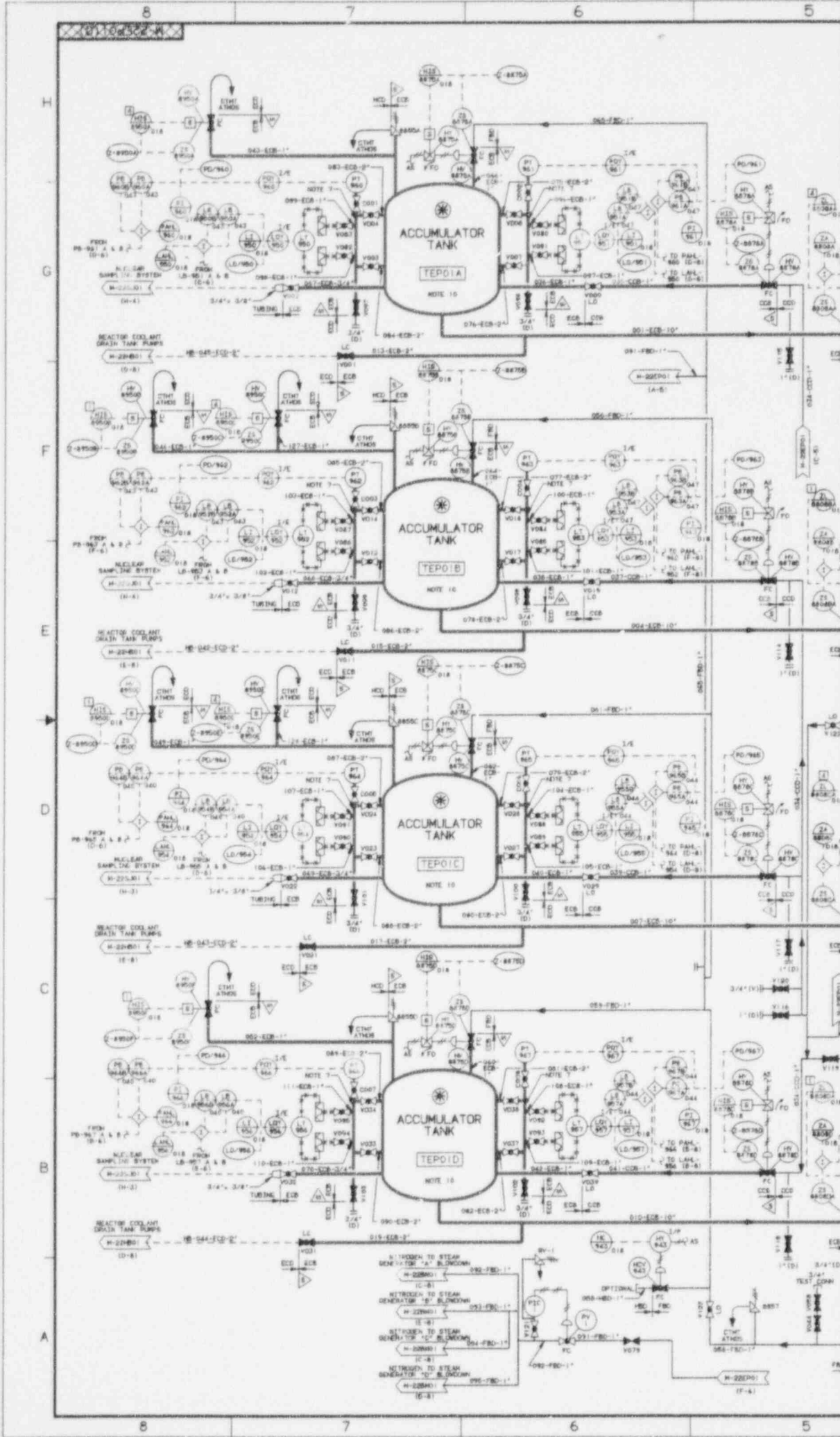
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ANSTEC APERTURE CARD

Also Available on Aperture Card

NOTES

1. ALL WELDS IN ANSTEC SECTION X1 CLASS 2 COMPONENTS ARE GREATER THAN 1/8" (2.54 MM) IN THICKNESS. PIPE SIZE GREATER THAN 1" MAY BE SUBJECT TO VOLUMETRIC EXAMINATION DURING INSERVICE INSPECTION (ISI) AND/OR INSERVICE EXAMINATION (ISE) PROGRAMS. THE SPECIFIC WELDS ARE THEIR INSPECTION REQUIREMENTS ARE DETERMINED BY THE APPLICABLE P-101 NEW PLANS PROVIDED UNDER SPECIFICATION M-185. BOLDED OF THESE FINDING SYSTEMS ARE IDENTIFIED WITH A SYMBOL FOR CLARITY.
2. 1/2" DIA. 3/4" ID FLOW RESTRICTOR FOR INTERFACE BOUNDARY BETWEEN QUALITY GROUP CLASSIFICATION "A" AND "B". INSERVICE INSPECTION REQUIREMENTS NOT APPLICABLE TO THE QUALITY GROUP CLASSIFICATION "B".
3. THIS DRAWING IS BASED ON WESTINGHOUSE DRAWING 114064.
4. DELETED.
5. DELETED.
6. THE MOTOR CONTROL CIRCUIT BREAKER SHALL BE LOCKED FOR VALVES M-22AB04, M-22AB05, M-22AB06 AND M-22AB07 OPERATING IN THE PUMP DISCONNECTED POSITION.
7. THE 2" DIAMETER ACCUMULATOR STANDEPIM LOCATED BETWEEN THE DRIVE AND LOOP TANK TAPS SHALL HAVE TOWNSHIP TAP, LOCATE 4 INCHES ABOVE AND BELOW THE NORMAL WATER LEVEL OF THE ACCUMULATOR TANK.
8. WELDS IN ANSTEC SECTION X1 CLASS 2 PIPING SYSTEMS OF NOMINAL SIZE 1/2" OR GREATER SHALL BE WITHIN THE BOUNDARY IDENTIFIED BY THE "X" SYMBOL. MAY BE SUBJECT TO VOLUMETRIC EXAMINATION DURING THE ISI AND/OR ISE PROGRAMS. THE SPECIFIC WELDS WITHIN THEIR BOUNDARIES AND THEIR INSPECTION REQUIREMENTS ARE DETERMINED IN THE P-101 NEW PLANS PROVIDED UNDER SPECIFICATION M-185.
9. "X" SYMBOLS ARE PROVIDED FOR CLARITY TO INDICATE THAT PIPING BOUNDARIES WHICH ARE SUBJECT TO P-101 PROGRAMS. CENTRAL INTO DISE 2 & 30'S.
10. WELDS OF THE ACCUMULATOR TANKS WERE SUBJECT TO P-101 EXAMINATION DURING THE ISE INSERVICE INSPECTION INTERVAL AND IDENTIFIED IN THE P-101 NEW PLANS PROVIDED UNDER SPECIFICATION M-185 IN ACCORDANCE WITH ANSTEC SECTION X1. IN ADDITION THESE WELDS ARE EXEMPT FROM EXAMINATION DURING THE SECOND INSERVICE INSPECTION INTERVAL.
11. VALVE V-046 IS BOLLARD UNDER SPECIFICATION M-22AB04 AND IS VALVE CLASS C/D. SEE DWG M-22AB04-00001.
12. PRESSURE CONTROLLER IS VALVE MOUNTED.

ANY REVISION TO THIS DWG. MAY REQUIRE A REVISION TO M-22AB04, M-22AB05, M-22AB06 AND/OR M-22AB07

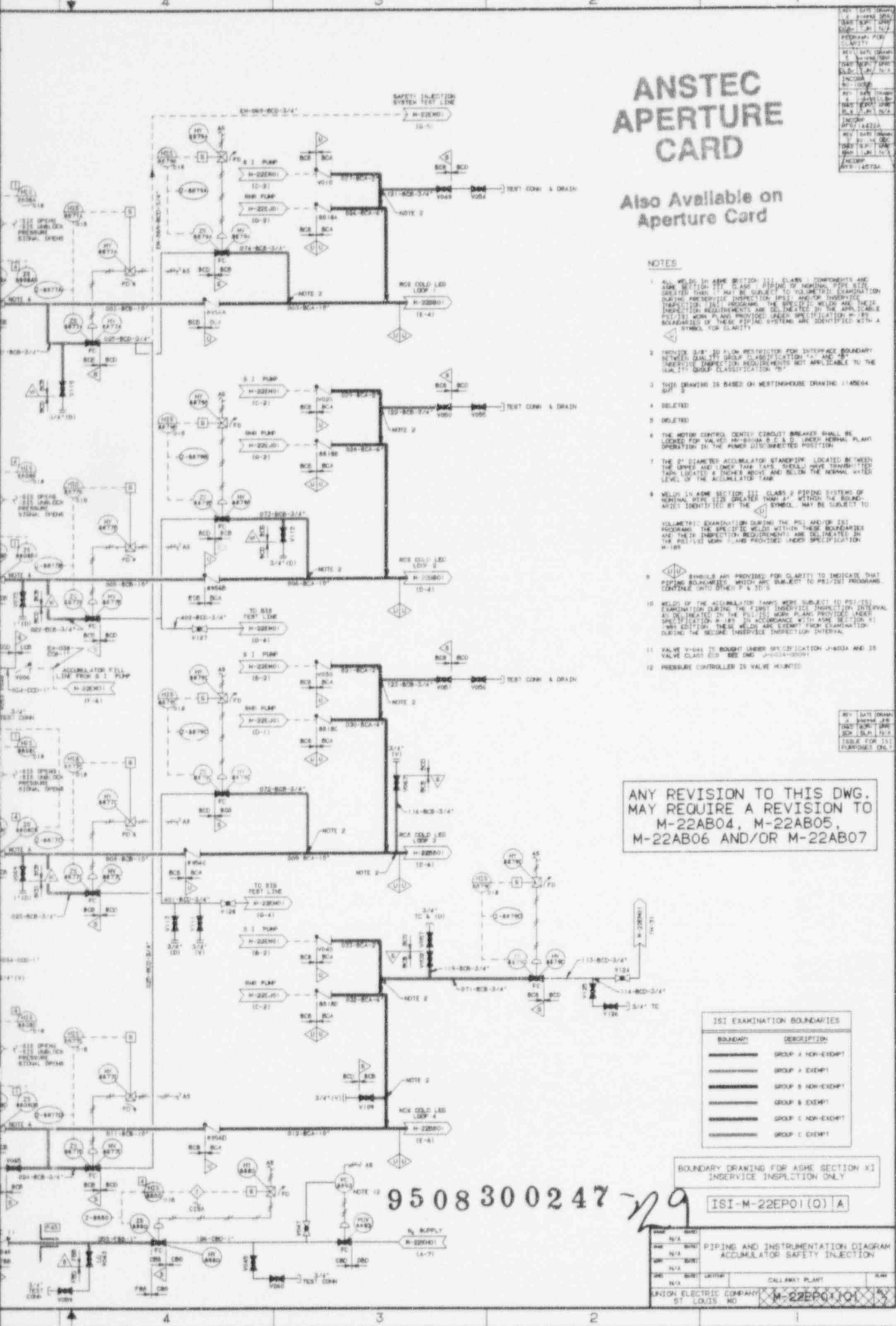
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BOUNDARY	DESCRIPTION
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—————	GROUP B NON-EXEMPT
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—————	GROUP C NON-EXEMPT
—————	GROUP C EXEMPT

BOUNDARY DRAWING FOR ANSTEC SECTION X1 INSERVICE INSPECTION ONLY

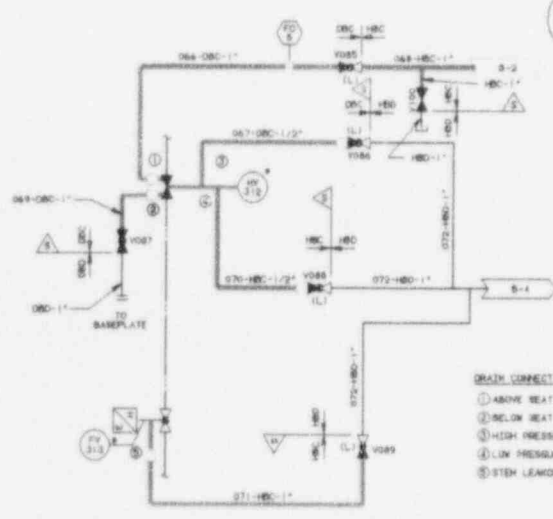
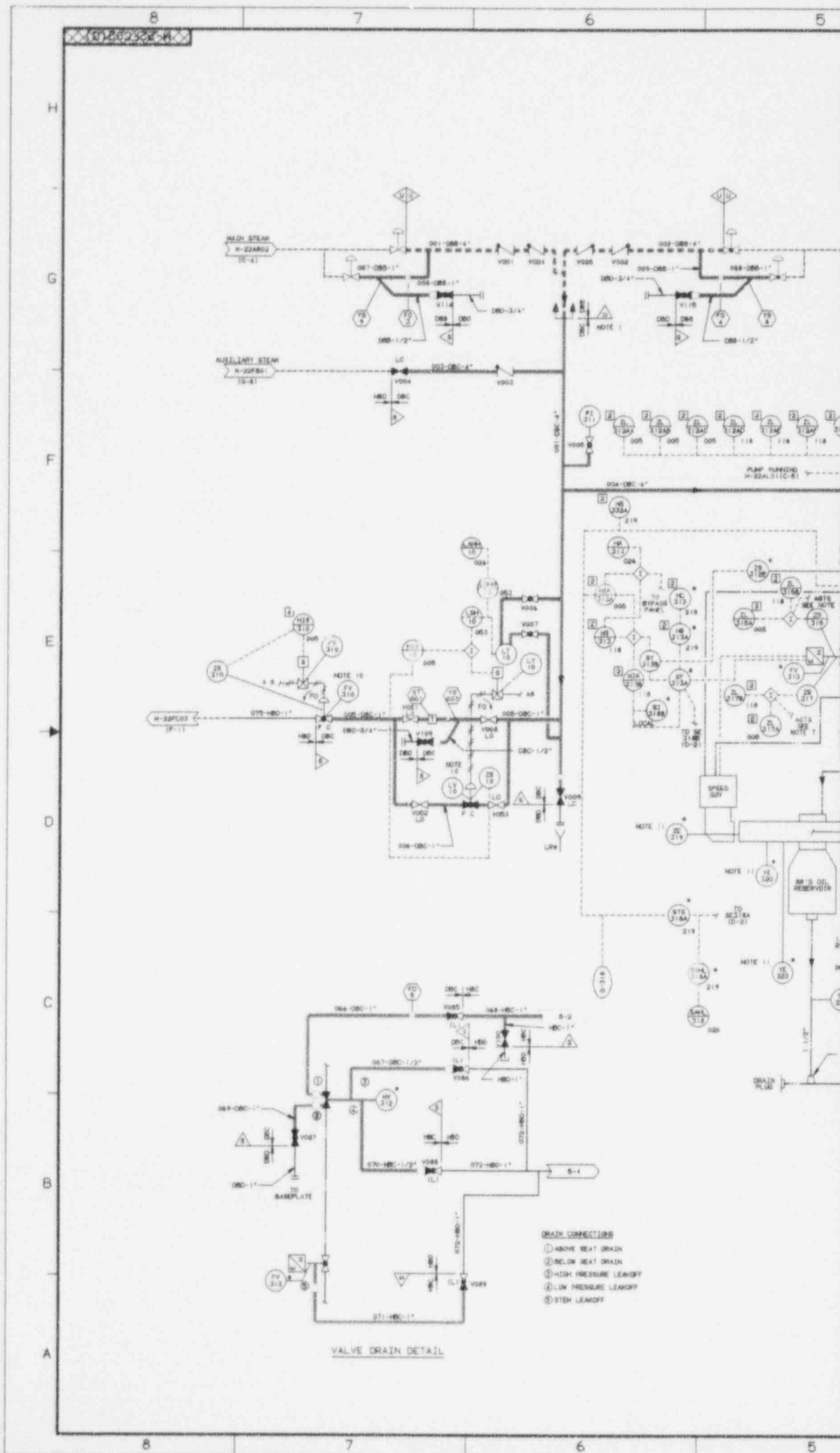
ISI-M-22EPO1(O)A

DATE	BY	DESCRIPTION
N/A	N/A	PIPING AND INSTRUMENTATION DIAGRAM ACCUMULATOR SAFETY INJECTION
N/A	N/A	CALL AWAY PLANT
N/A	N/A	M-22EPO1(O)A
NUCON ELECTRIC COMPANY ST. LOUIS, MO		

9508300247-29



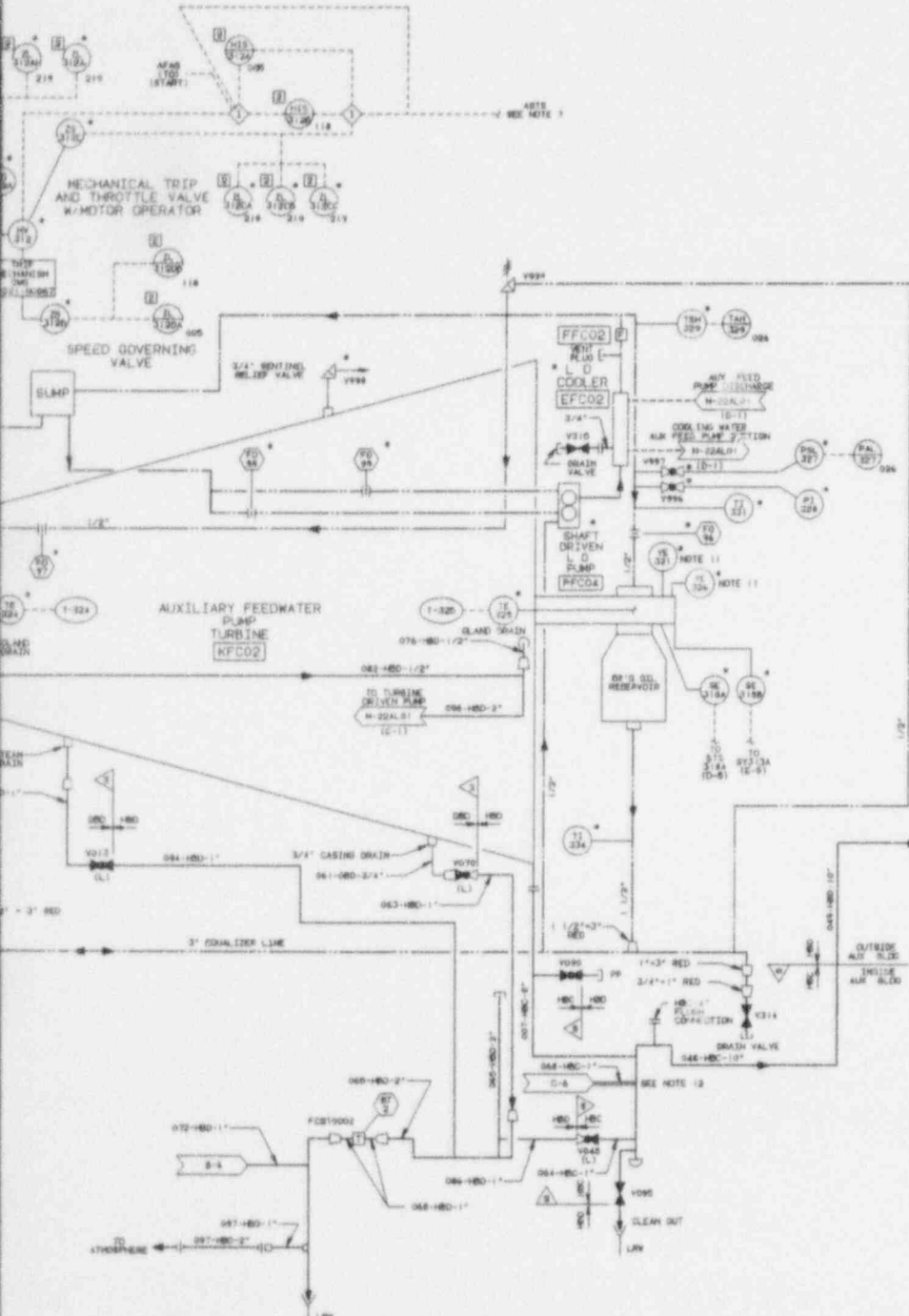
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 REV 100 DATE DWHG 02-01-89



- DRAIN CONNECTIONS**
- ① ABOVE HEAT DRAIN
 - ② BELOW HEAT DRAIN
 - ③ HIGH PRESSURE LEAKOFF
 - ④ LOW PRESSURE LEAKOFF
 - ⑤ STEAM LEAKOFF

VALVE DRAIN DETAIL

MECH STEAM
SI-22FC02
(E-4)

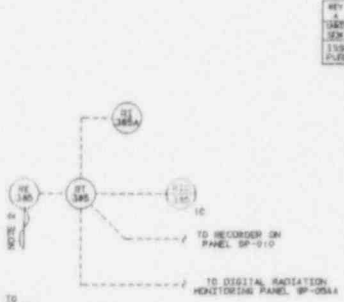


NOTES

- 1 PIPE CLASS CHANGE IS MADE AT FIRST WELD DOWNSTREAM OF ISOLATION RESTRAINT SYSTEM
- 2 RADIATION DETECTOR VIEWS PLUMB FROM TURBINE EXHAUST
- 3 WELDS IN ASME SECTION III, CLASS 3 PIPING SYSTEMS WITHIN THE BOUNDARIES IDENTIFIED BY THE 3E SYMBOL MAY BE SUBJECT TO THE VISUAL INSPECTION (VISI) REQUIREMENTS OF THE ASME CODE. THE VISI REQUIREMENTS ARE DELINEATED IN THE INSPECTION MANUAL. WELDS WITHIN THESE BOUNDARIES AND THEIR INSPECTION REQUIREMENTS ARE DELINEATED IN THE INSPECTION MANUAL. WELDS OUTSIDE THESE BOUNDARIES ARE SUBJECT TO THE VISI REQUIREMENTS OF THE ASME CODE.
- 4 3E SYMBOLS ARE PROVIDED FOR CLARITY TO INDICATE THAT ASME SECTION III, CLASS 3 PIPING SYSTEMS WHICH ARE SUBJECT TO THE VISI REQUIREMENTS CONTINUE ON TO OTHER P & I SHEETS
- 5 DELETED
- 6 DELETED
- 7 ASSESSMENT ONLY SHUTDOWN TRIP SIGNAL IS INITIATED BY SP-10 BY SP-10-1 WHICH TRANSFERS CONTROL TO THE AUXILIARY SHUTDOWN PANEL, WHILE ISOLATING THE MAIN CONTROL BOARD LOCALS AND INDICATION
- 8 THE TURBINE DRIVE, THE OVERSPEED GOVERNER, THE TRIP AND THROTTLE VALVE AND THE TURBINE GOVERNER VALVE WERE PURCHASED TO AND CONSTRUCTED PER NEMA STANDARDS
- 9 THE LUBE OIL COOLING WATER SYSTEM FOR THE TURBINE DRIVE WAS SPECIFIED AS A CLASS 3 COMPONENT
- 10 VALVE HANDWHEEL LOCKED IN NEUTRAL POSITION
- 11 VIBRATION ELEMENTS ARE NOT USED FOR VIBRATION MEASUREMENTS THEY MAY BE REPLACED WITH FLOWS - SIZE 1/2" NPT SEE SP-10-000-000
- 12 ALTHOUGH THE TURBINE EXHAUST LINES WERE INSTALLED IN ACCORDANCE WITH QUALITY GROUP 5 CRITERIA, THEY ARE NOT SUBJECT TO QUALITY GROUP 5 INSPECTION REQUIREMENTS SEE ISL PROGRAM PLAN FOR DETAILS

ANSTEC APERTURE CARD

Also Available on Aperture Card



ISI EXAMINATION BOUNDARIES

BOUNDARY	DESCRIPTION
-----	GROUP A HIGH-ENERGY
-----	GROUP A EXEMPT
-----	GROUP B HIGH-ENERGY
-----	GROUP B EXEMPT
-----	GROUP C HIGH-ENERGY
-----	GROUP C EXEMPT

NOTE DASHED COLORED LINES DENOTE HIGH ENERGY LINES REQUIRING ALBERGED ISI

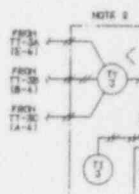
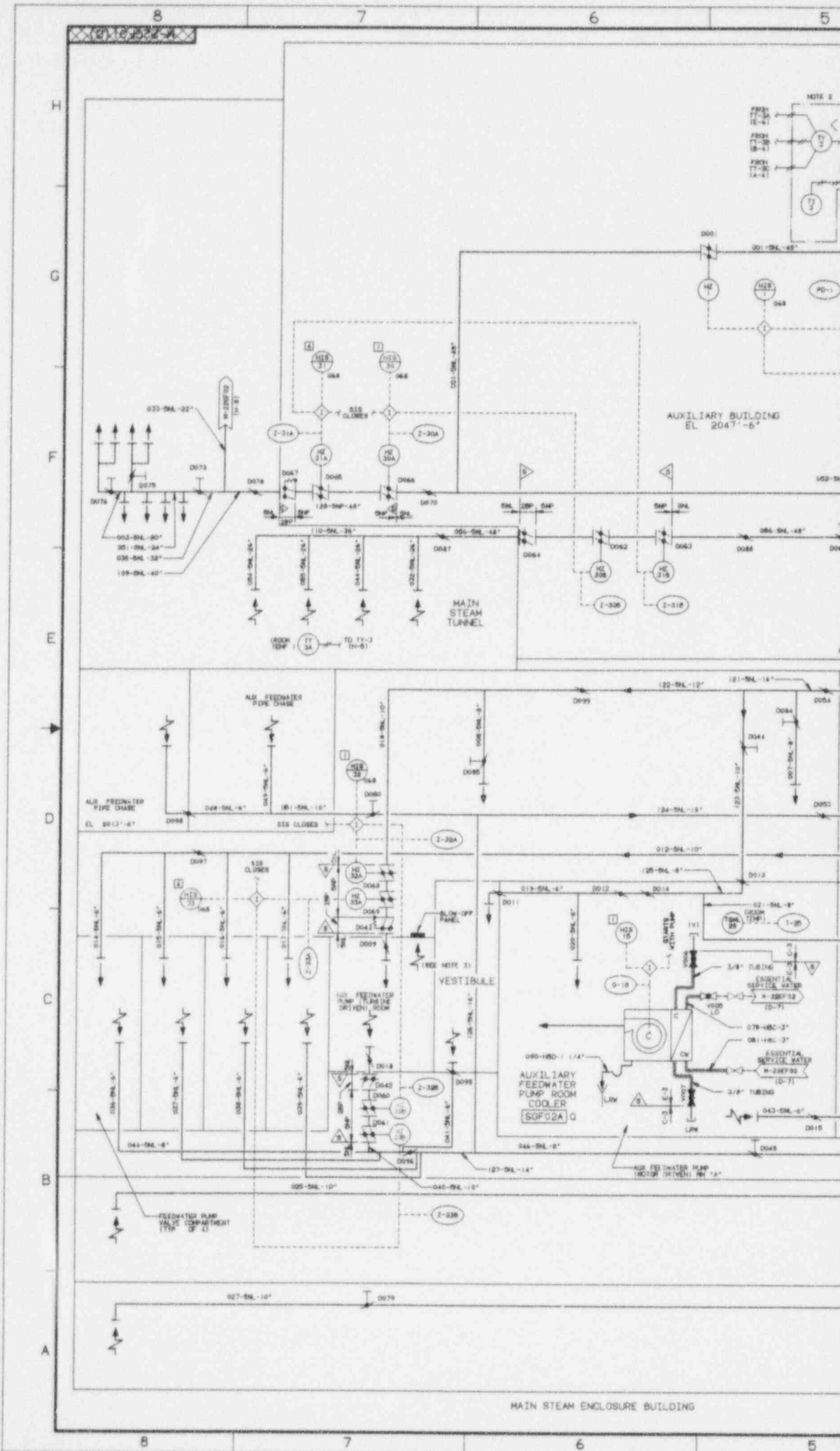
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22FC02(Q) A

9508300247-30

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19	11/15/74	ISSUE FOR THE PROJECT ONLY
20	11/15/74	ISSUE FOR THE PROJECT ONLY

CALLAWAY PLANT
UNION ELECTRIC COMPANY
ST. LOUIS, MO



AUXILIARY BUILDING
EL. 2047'-6"

MAIN STEAM TUNNEL

AUX FEEDWATER
PIPE CHASE

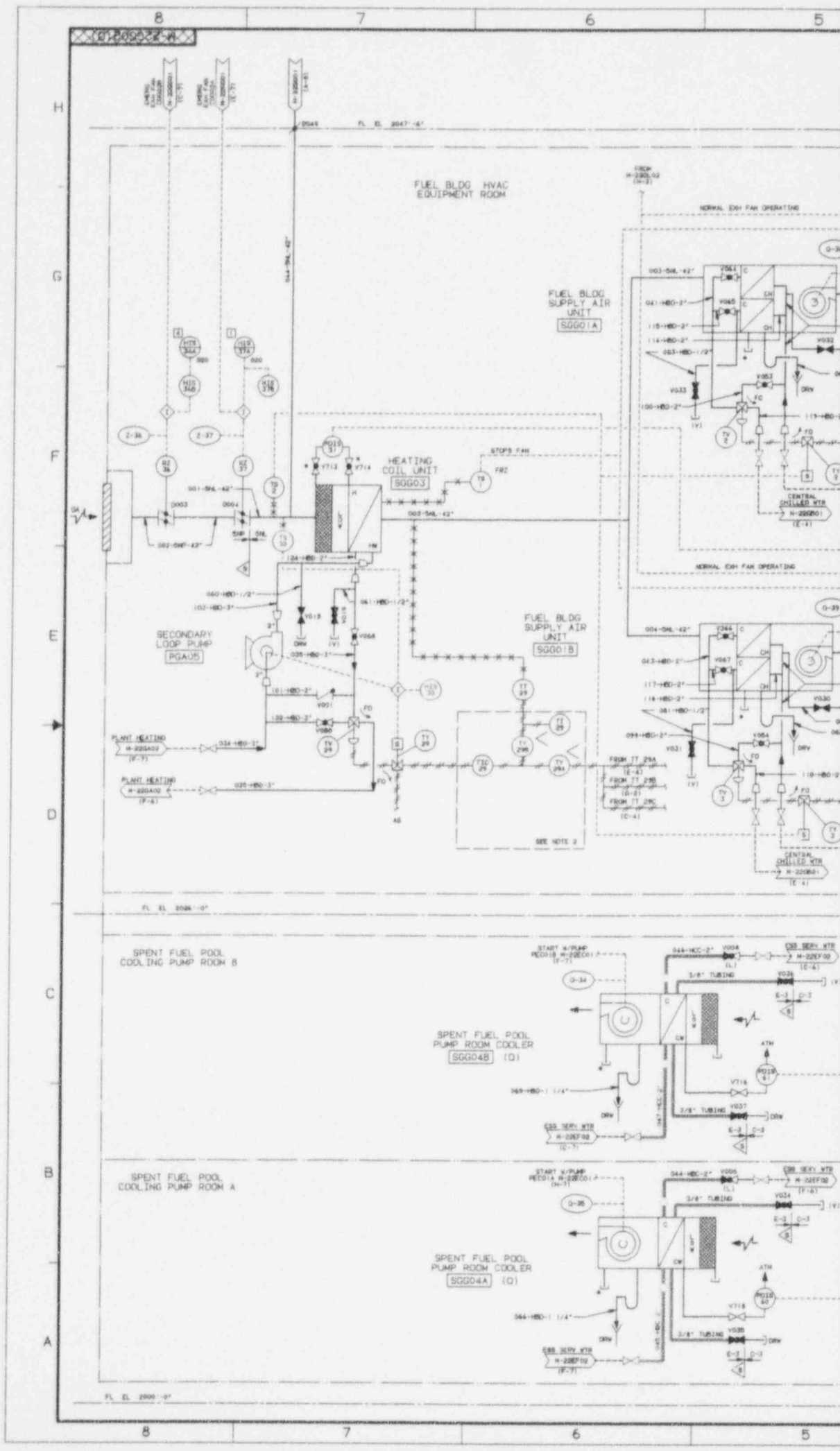
AUX FEEDWATER
PIPE CHASE
EL. 2013'-6"

VESTIBULE

AUXILIARY FEEDWATER
PUMP ROOM
COOLER
SOP02A

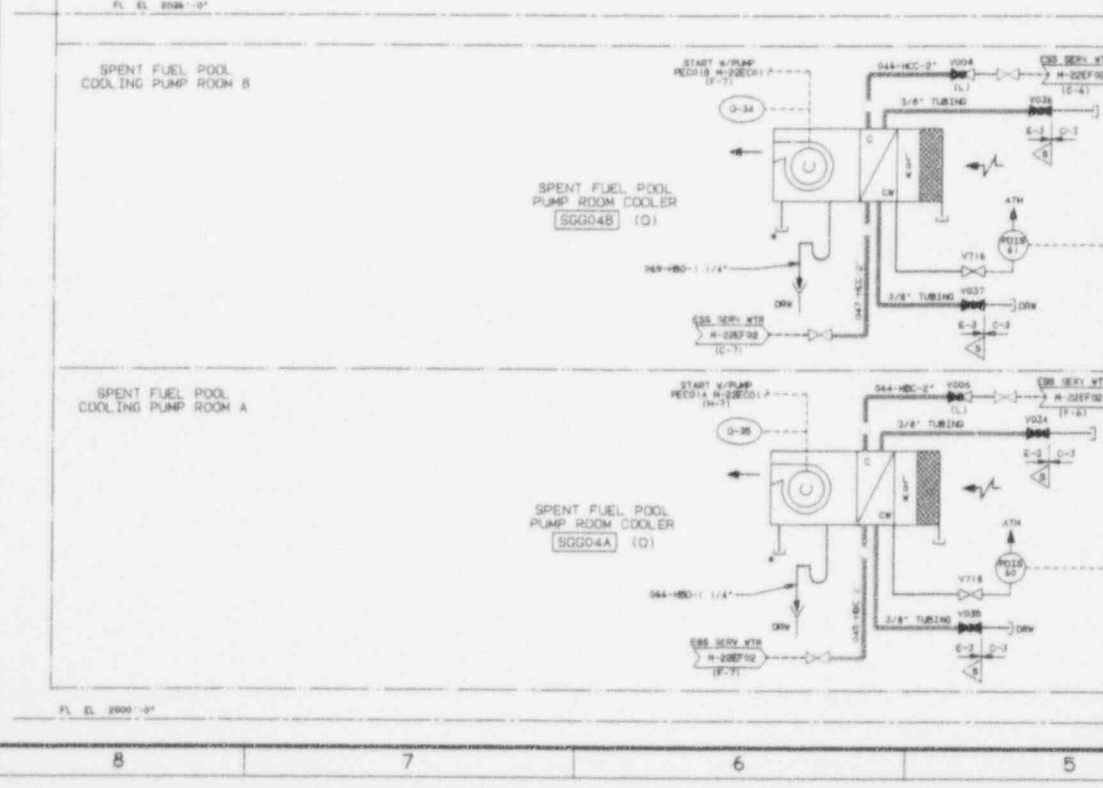
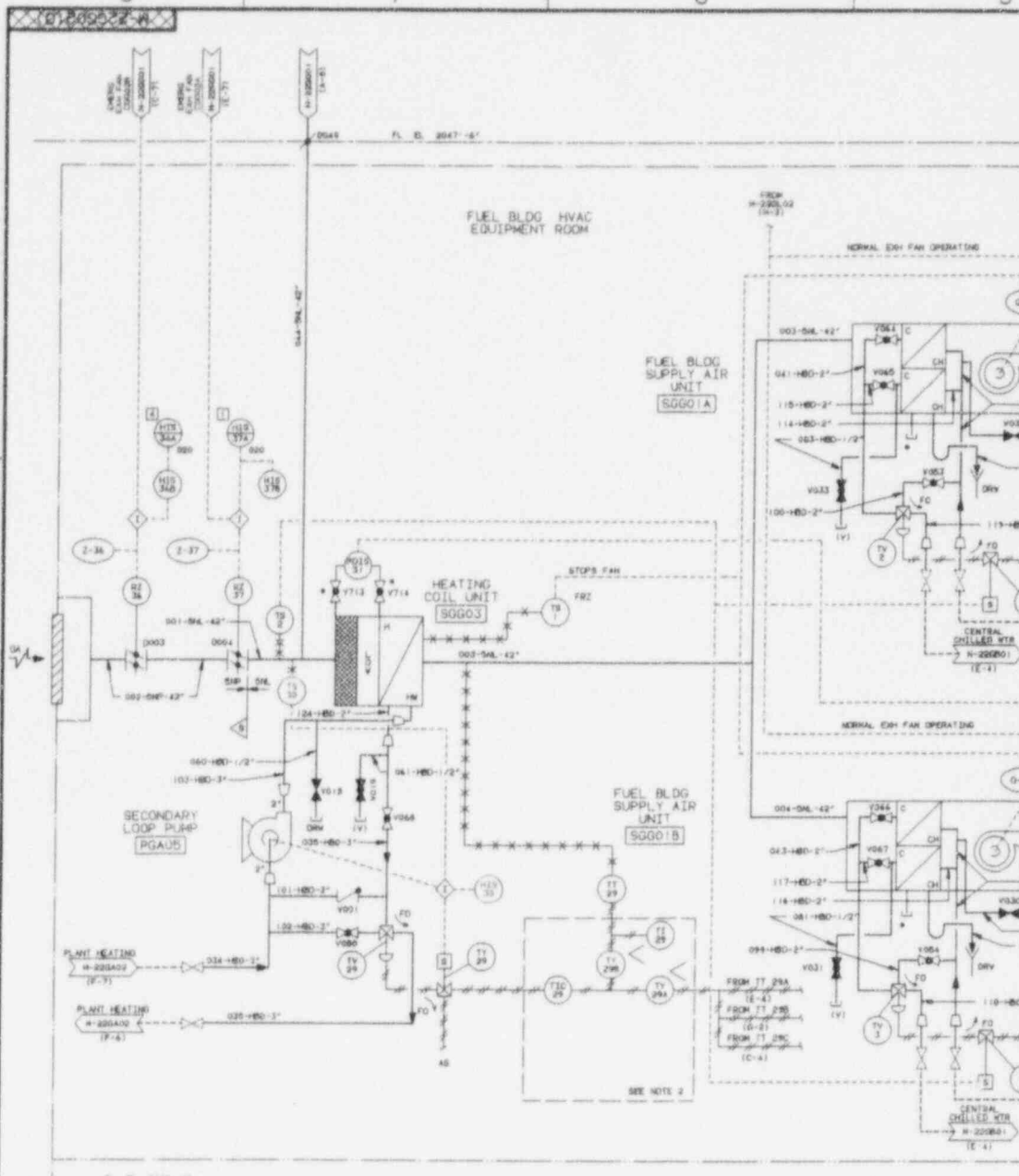
FEEDWATER PUMP
VALVE COMPARTMENT
1111

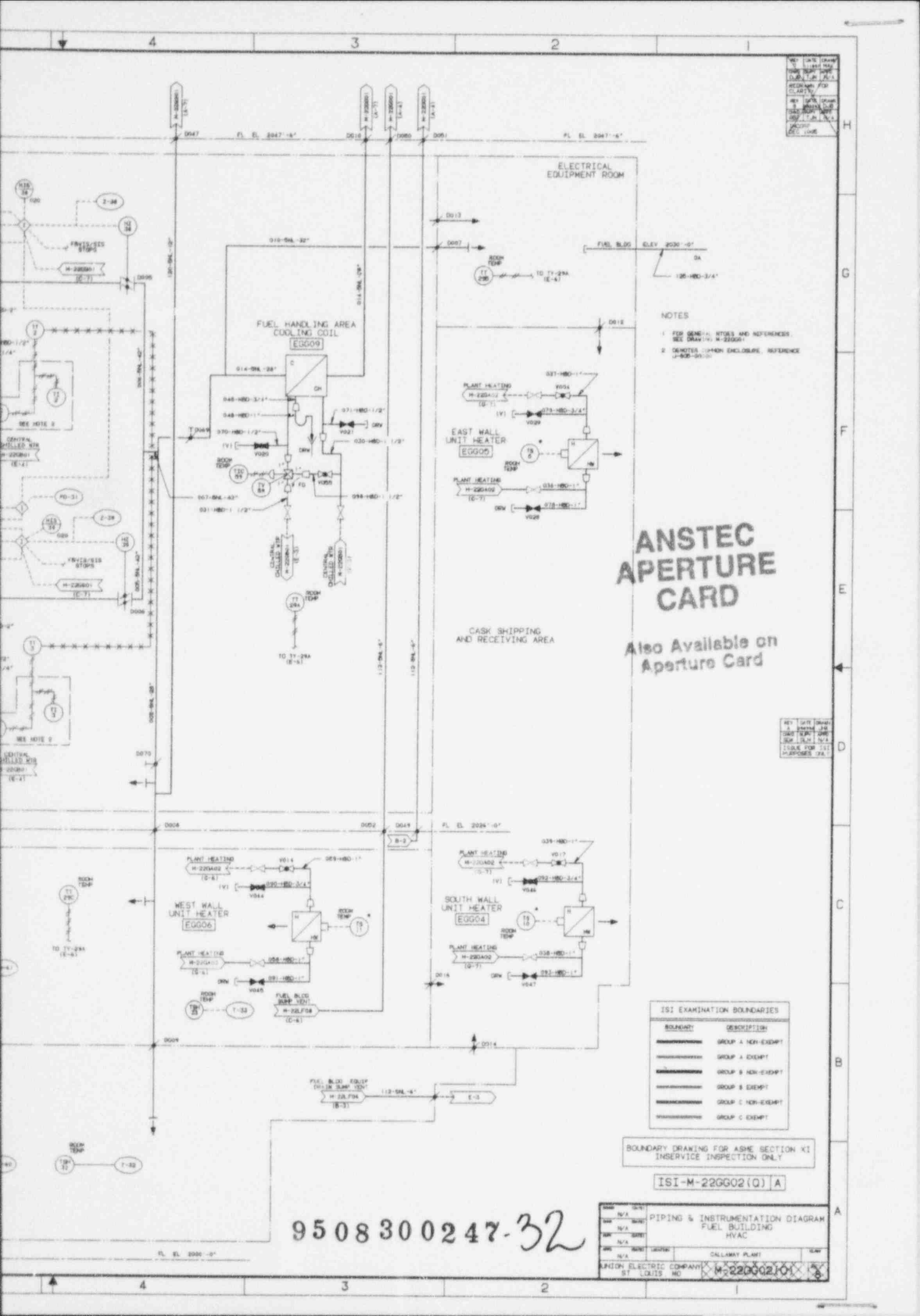
MAIN STEAM ENCLOSURE BUILDING



H
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D
C
B
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8 7 6 5





REV DATE DRAWN BY
 1 11/15/83 J. H. HARRIS
 2 08/11/84 J. H. HARRIS
 3 08/11/84 J. H. HARRIS
 4 08/11/84 J. H. HARRIS
 5 08/11/84 J. H. HARRIS
 6 08/11/84 J. H. HARRIS
 7 08/11/84 J. H. HARRIS
 8 08/11/84 J. H. HARRIS
 9 08/11/84 J. H. HARRIS
 10 08/11/84 J. H. HARRIS

NOTES

- 1 FOR GENERAL NOTES AND REFERENCES SEE DRAWING M-220001
- 2 DENOTES 1/4" IN ENCLAVE, REFERENCE J-900-01-01

ANSTEC APERTURE CARD

Also Available on Aperture Card

REV DATE DRAWN BY
 1 11/15/83 J. H. HARRIS
 2 08/11/84 J. H. HARRIS
 3 08/11/84 J. H. HARRIS
 4 08/11/84 J. H. HARRIS
 5 08/11/84 J. H. HARRIS
 6 08/11/84 J. H. HARRIS
 7 08/11/84 J. H. HARRIS
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 10 08/11/84 J. H. HARRIS

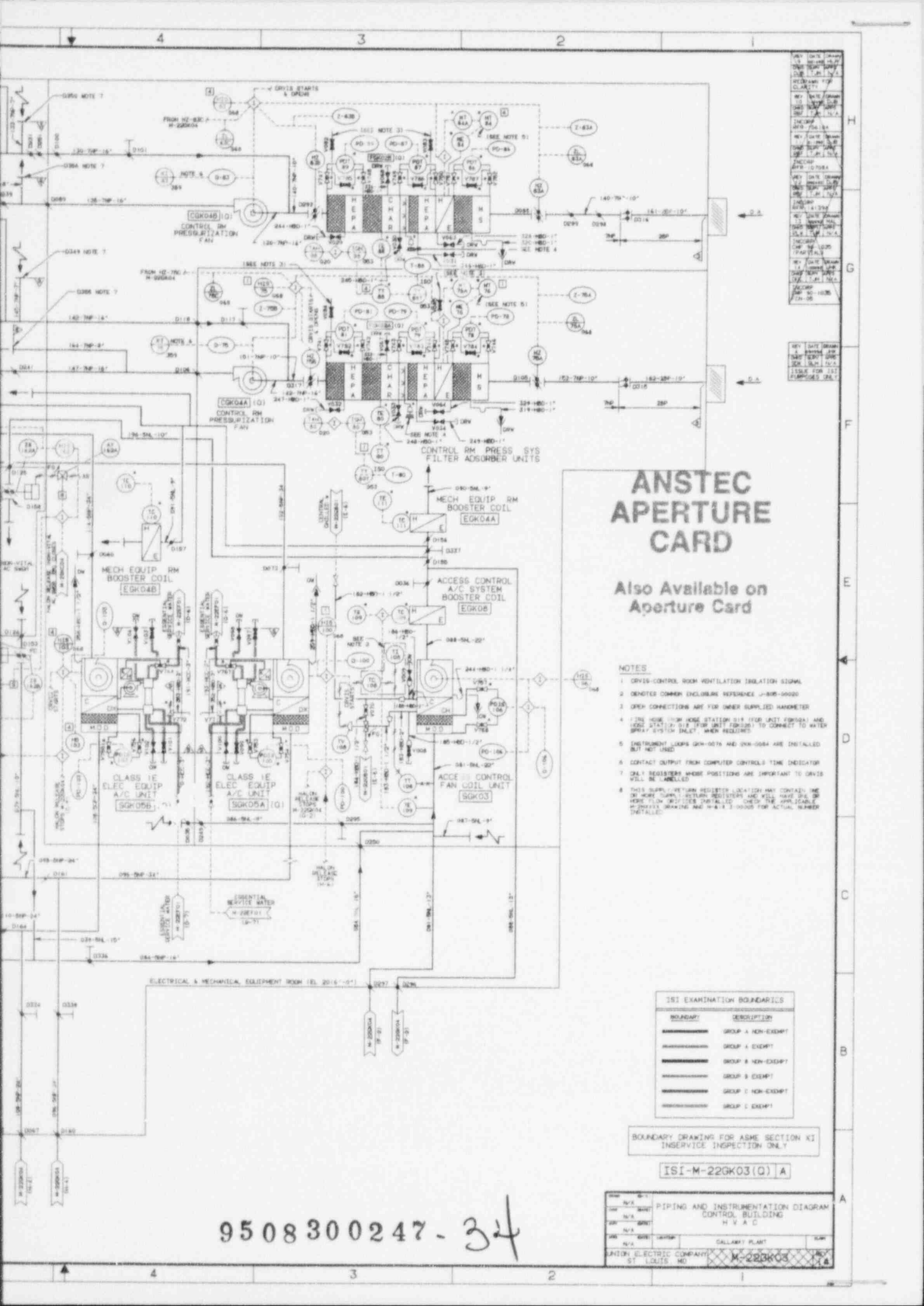
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BOUNDARY	DESCRIPTION
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-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-220002(Q) A

9508300247-32

NO.	DATE	DESCRIPTION	BY
N/A	N/A	PIPING & INSTRUMENTATION DIAGRAM FUEL BUILDING HVAC	
N/A	N/A		
N/A	N/A		
N/A	N/A		
N/A	N/A		
CALLAMAY PLANT		SLW	
MAYNOR ELECTRIC COMPANY ST. LOUIS, MO		M-220002(Q)	



ANSTEC APERTURE CARD

Also Available on Aperture Card

- NOTES**
- 1 DRIVES CONTROL ROOM VENTILATION ISOLATION SIGNAL
 - 2 DENOTES COMMON ENCLOSURE REFERENCE U-809-9000
 - 3 DRIP CONNECTIONS ARE FOR OWNER SUPPLIED HAMMER
 - 4 THE HOSE FROM HOSE STATION 019 (FOR UNIT FORK001) AND HOSE STATION 018 (FOR UNIT FORK001) TO CONNECT TO WATER SPRAY SYSTEM INLET WHEN REQUIRED
 - 5 INSTRUMENT LOOPS QCN-0076 AND QCN-0084 ARE INSTALLED BUT NOT USED
 - 6 CONTACT OUTPUT FROM COMPUTER CONTROLS TIME INDICATOR
 - 7 ONLY REGISTERS WHERE POSITIONS ARE IMPORTANT TO DRIVES WILL BE LABELLED
 - 8 THIS SUPPLY RETURN REGISTER LOCATION MAY CONTAIN ONE OR MORE SUPPLY RETURN REGISTERS AND WILL HAVE ONE OR MORE FLOW INDICATORS INSTALLED CHECK FOR APPLICABLE INSTRUMENT DRAWING AND INSTRUMENT SCHEDULE FOR ACTUAL NUMBER INSTALLED

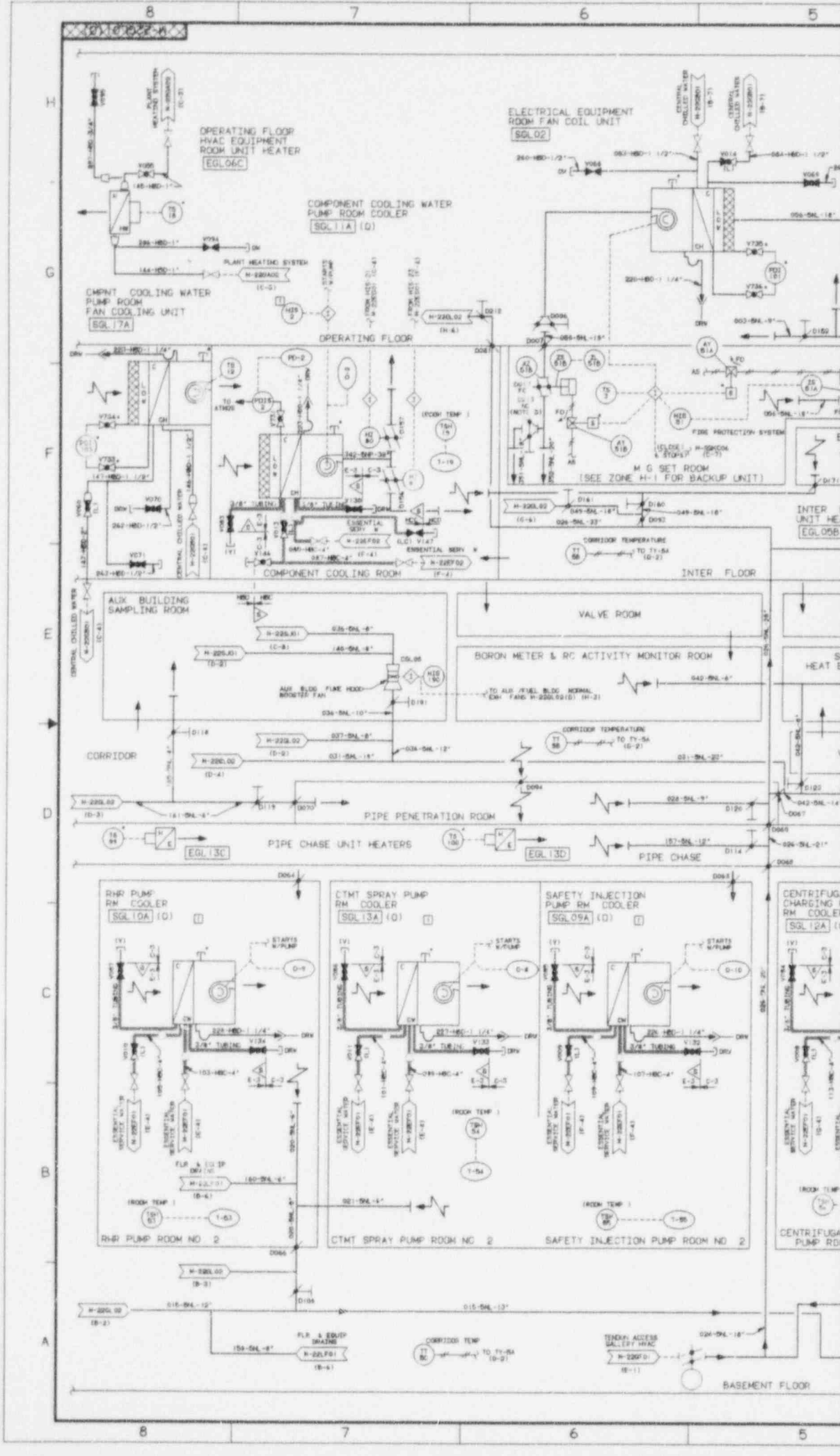
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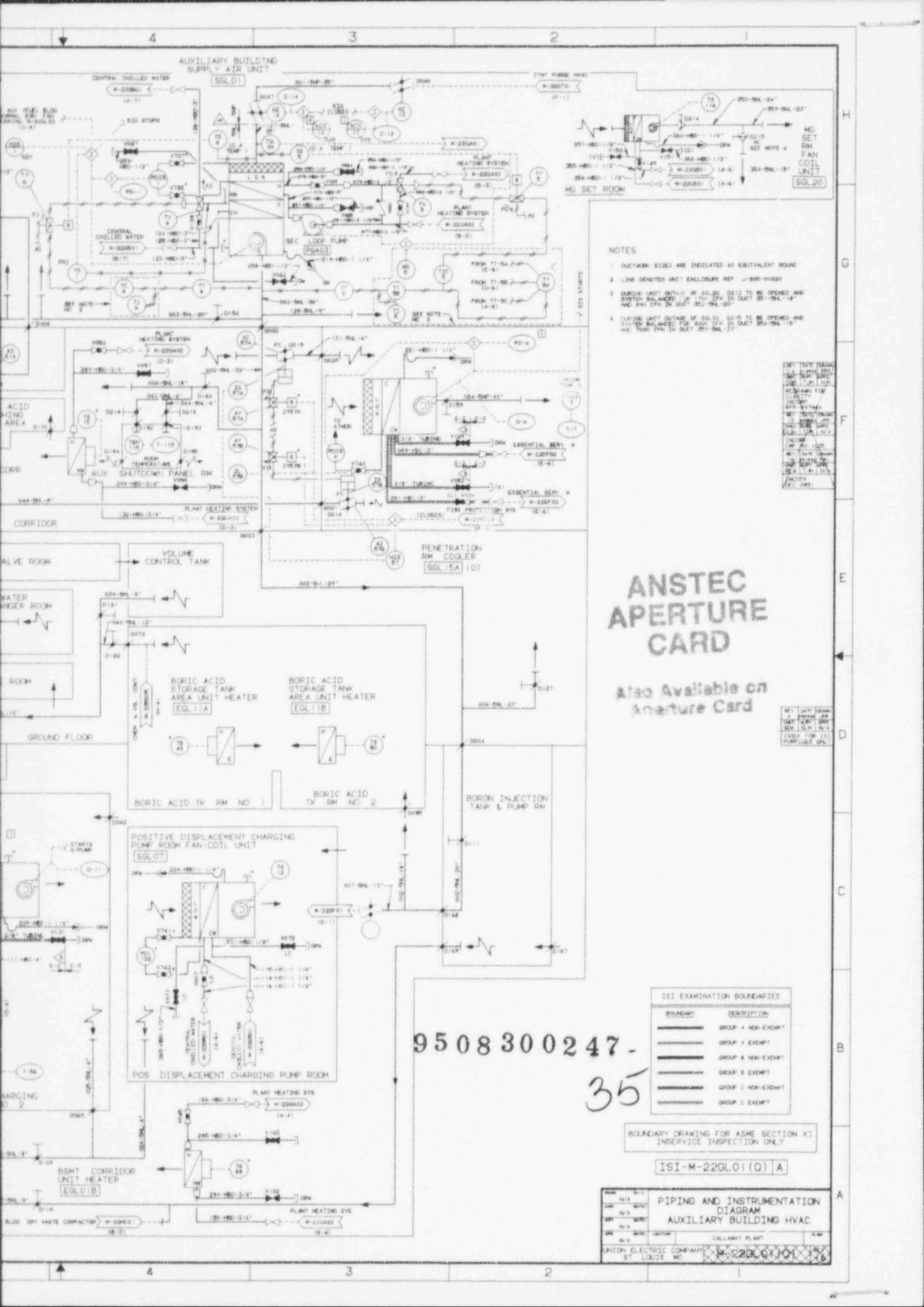
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22GK03(Q) A

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29	11/14/83	WJ	ISSUE FOR CONSTRUCTION
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100	11/14/83	WJ	ISSUE FOR CONSTRUCTION

9508300247-34





- NOTES
1. OUTDOOR SIZES ARE INDICATED AS EQUIVALENT ROUND.
 2. LINE DENOTES UNIT ENCLOSURE REF. U-600-10000.
 3. OUTSIDE UNIT OUTSIDE OF SGL20, SGL22 TO BE ORDERED AND SYSTEM BALANCED FOR 1700 CFM IN DUCT 20\"/>

ANSTEC APERTURE CARD

Also Available on Aperture Card

9508300247-
35

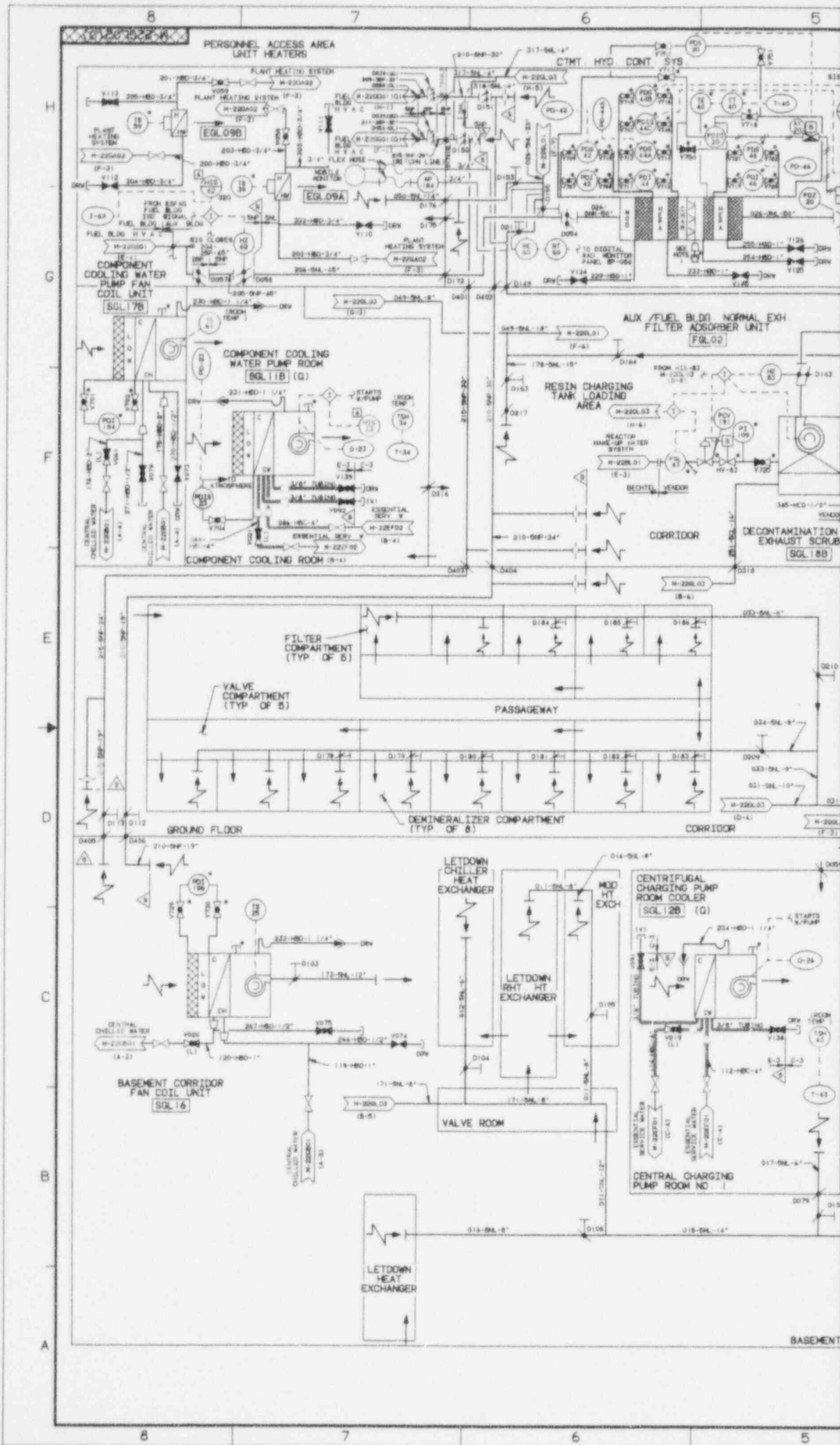
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
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—————	GROUP B EXEMPT
—————	GROUP C NON-EXEMPT
—————	GROUP C EXEMPT

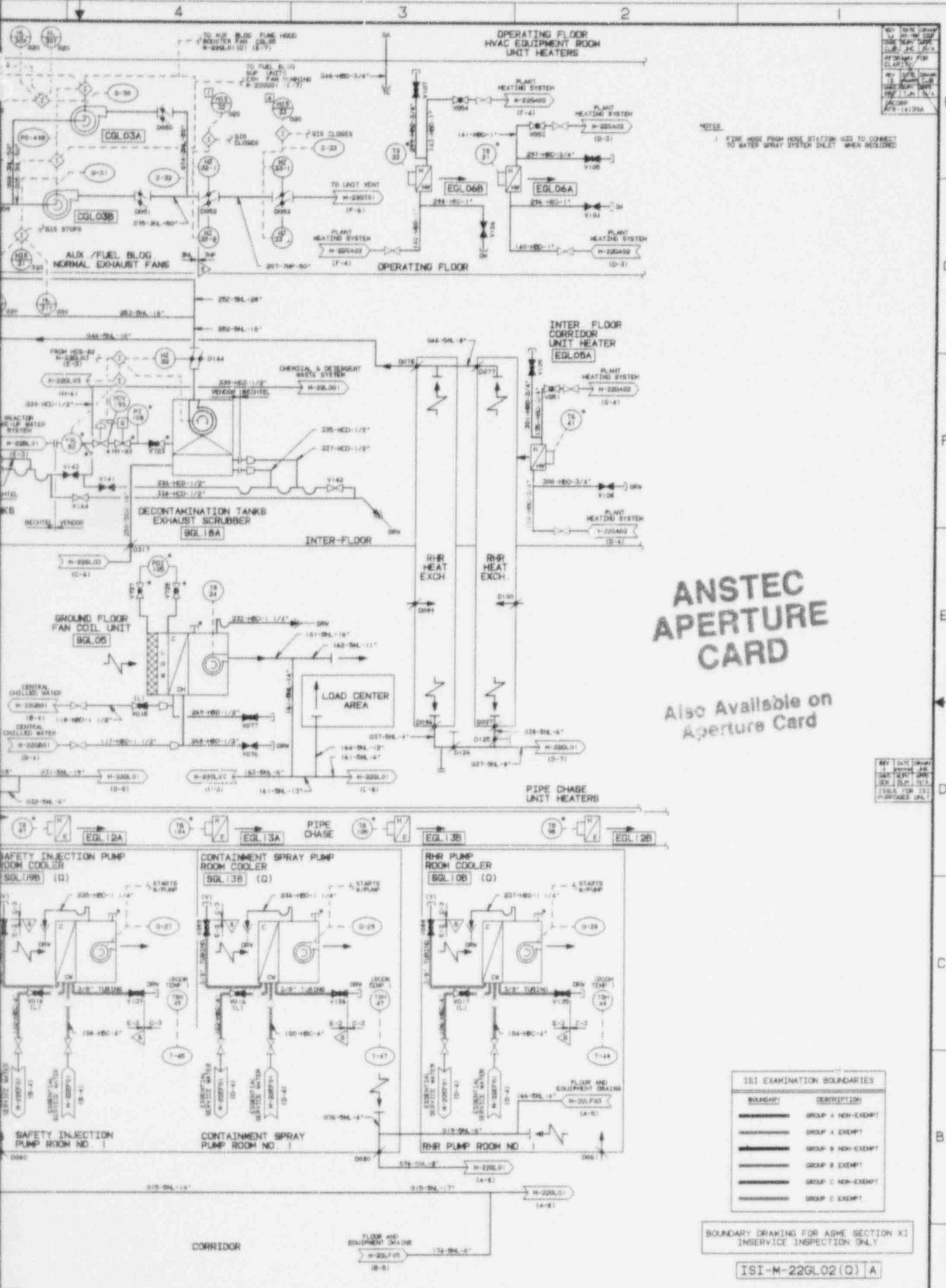
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22GLO1(O) A

DATE	REV	DESCRIPTION	BY
10/1/78	1	PIPING AND INSTRUMENTATION DIAGRAM	...
10/1/78	2	AUXILIARY BUILDING HVAC	...
10/1/78	3	GALLERY PLANT	...
10/1/78	4	CALLANBY PLANT	...

UNION ELECTRIC COMPANY ST. LOUIS, MO





NOTE
 FIRE HOSE FROM HOSE STATION 022 TO CONNECT TO WATER SPRAY SYSTEM INLET WHEN REQUIRED

ANSTEC APERTURE CARD
 Also Available on Aperture Card

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
	GROUP A NON-EXEMPT
	GROUP A EXEMPT
	GROUP B NON-EXEMPT
	GROUP B EXEMPT
	GROUP C NON-EXEMPT
	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22GL02(Q) A

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
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2	1				REVISED

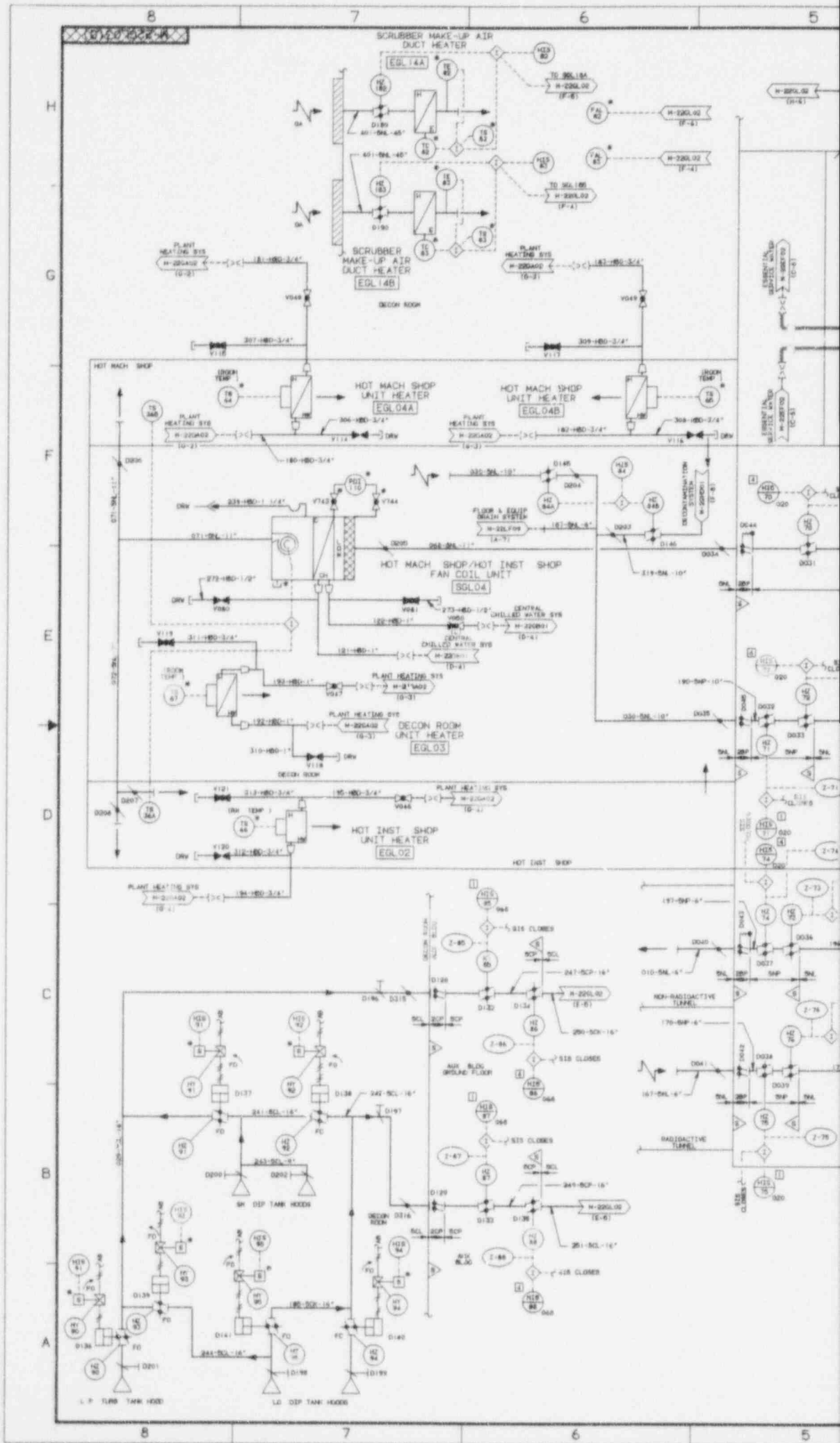
PIPING AND INSTRUMENTATION DIAGRAM
 AUXILIARY BUILDING HVAC

CALLAWAY PLANT

UNION ELECTRIC COMPANY
 ST. LOUIS, MO

M-22GL02(Q) A

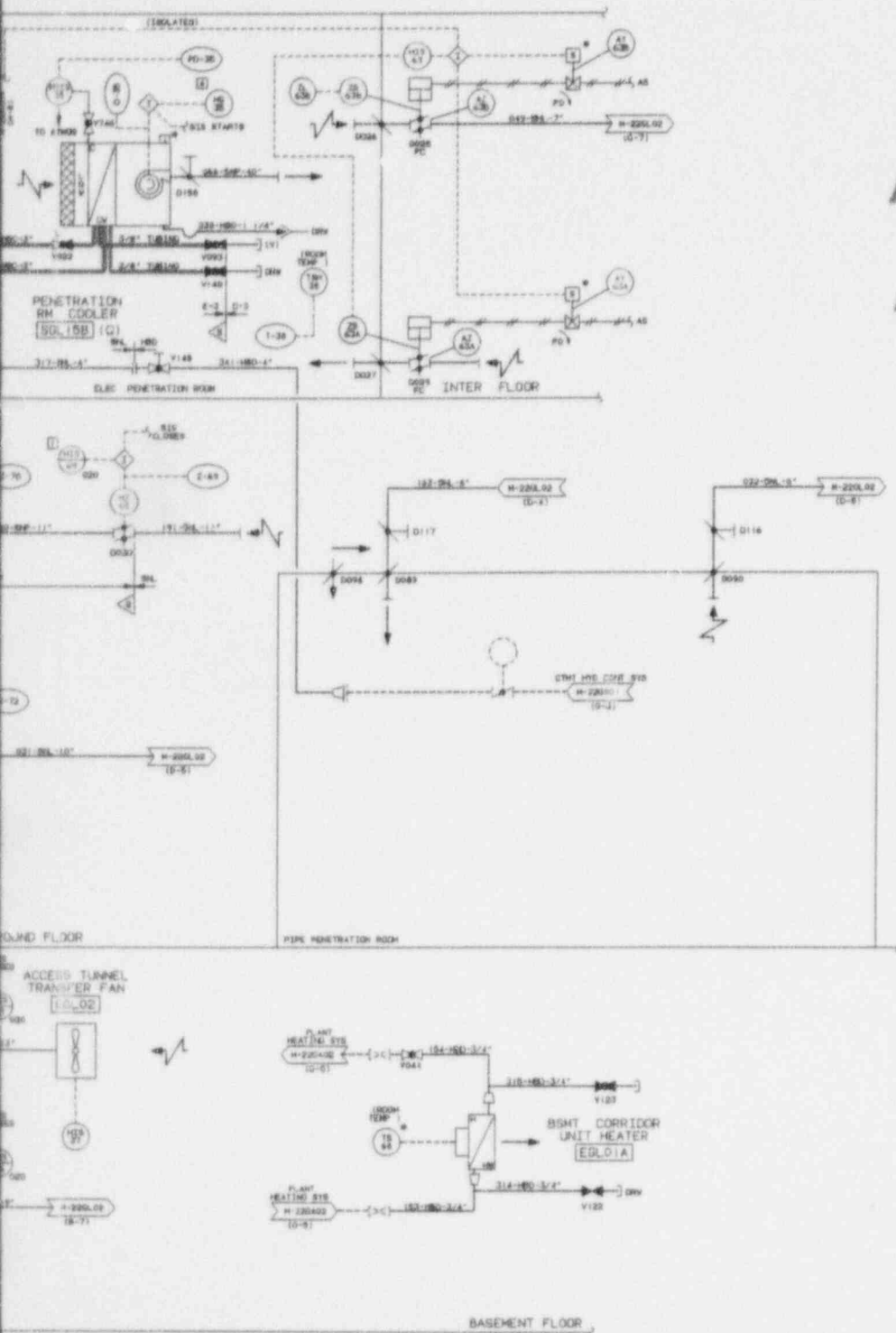
9508300247-36



REV DATE DRAWN
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 2 08/11/03
 3 08/11/03
 4 08/11/03
 5 08/11/03
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 7 08/11/03
 8 08/11/03
 9 08/11/03
 10 08/11/03
 11 08/11/03
 12 08/11/03
 13 08/11/03
 14 08/11/03
 15 08/11/03
 16 08/11/03
 17 08/11/03
 18 08/11/03
 19 08/11/03
 20 08/11/03

ANSTEC APERTURE CARD

Also Available on Aperture Card



REV DATE DRAWN
 1 08/11/03
 2 08/11/03
 3 08/11/03
 4 08/11/03
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 6 08/11/03
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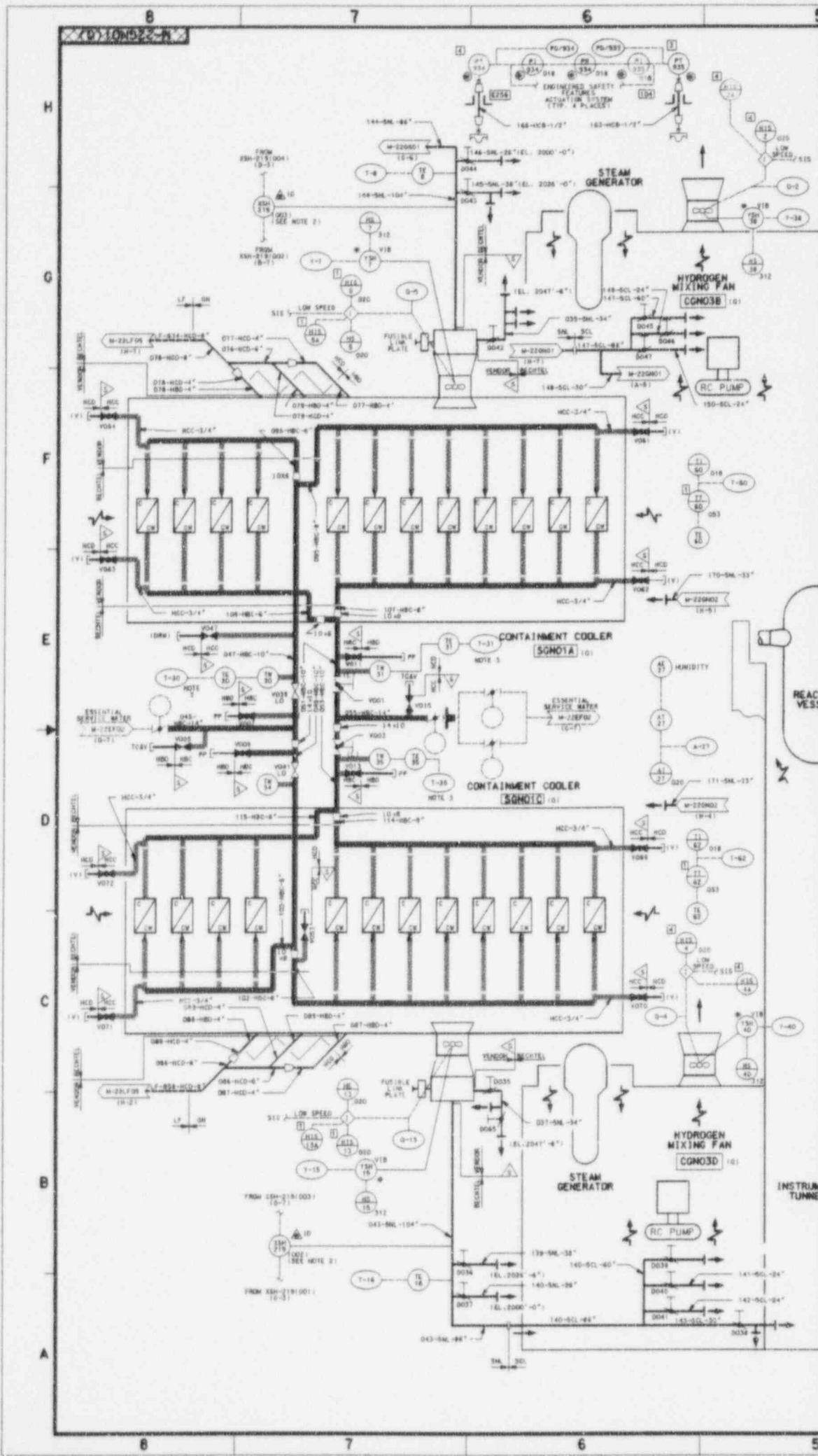
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BOUNDARY	DESCRIPTION
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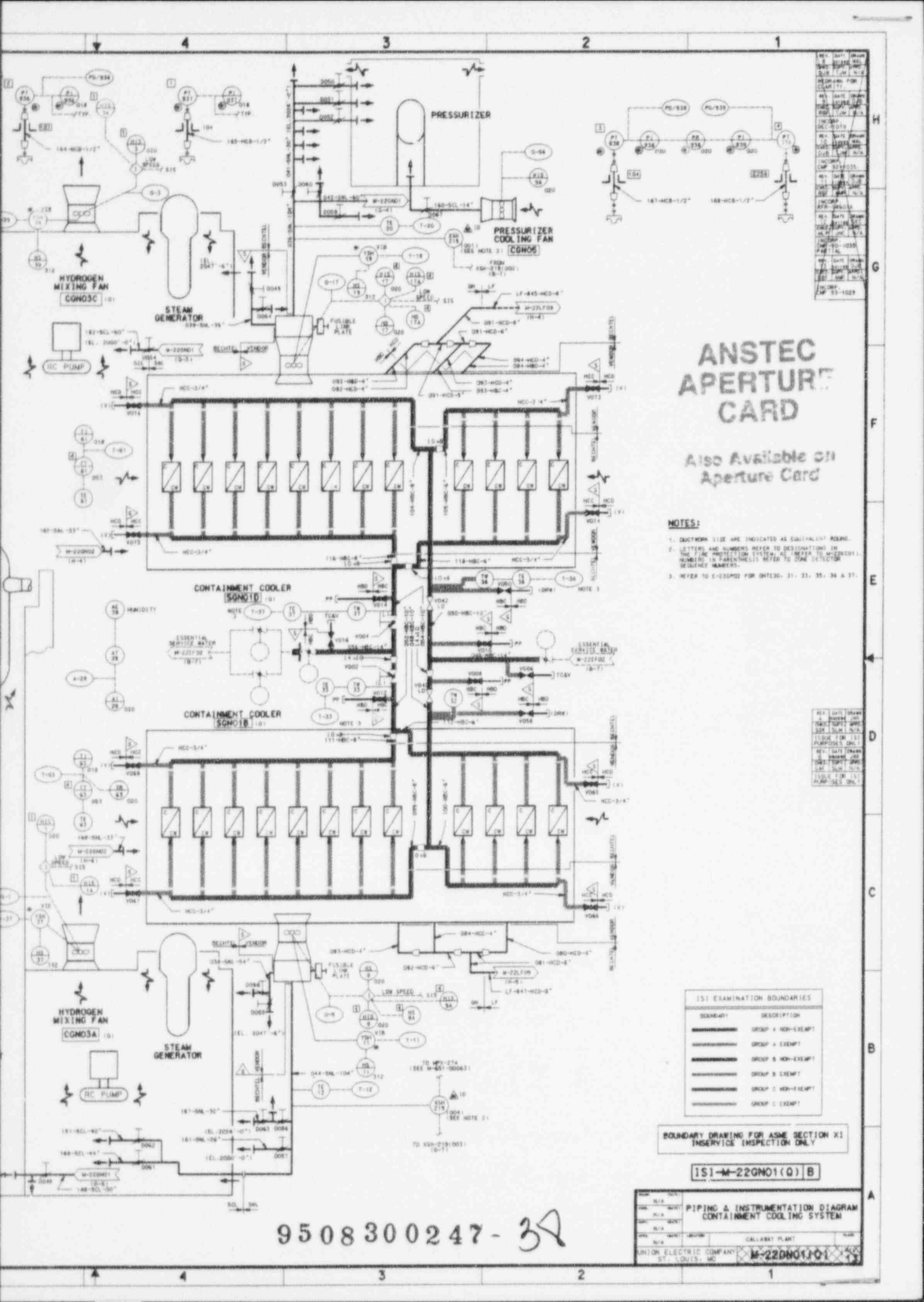
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22GL03(Q) | A

DATE	REV	DESCRIPTION	BY	CHK
08/11/03	1	PIPING & INSTRUMENTATION DIAGRAM		
08/11/03	2	AUXILIARY BUILDING		
08/11/03	3	HVAC		
08/11/03	4			
08/11/03	5			
08/11/03	6			
08/11/03	7			
08/11/03	8			
08/11/03	9			
08/11/03	10			
08/11/03	11			
08/11/03	12			
08/11/03	13			
08/11/03	14			
08/11/03	15			
08/11/03	16			
08/11/03	17			
08/11/03	18			
08/11/03	19			
08/11/03	20			

9508300247-37





ANSTEC APERTURE CARD

Also Available on Aperture Card

- NOTES:**
1. DIMENSION SIZES ARE INDICATED AS EQUIVALENT ROUND.
 2. LETTERS AND NUMBERS REFER TO DESIGNATIONS IN THE FIRE PROTECTION SYSTEM. REFER TO M-22GNO1 NUMBER IN PARENTHESES REFER TO ZONE DETECTOR SECURITY NUMBERS.
 3. REFER TO Z-23002 FOR INSTR. 31, 33, 35, 36 & 37.

ISI EXAMINATION BOUNDARIES

BOUNDARY	DESCRIPTION
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-----	GROUP A EXEMPT
-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

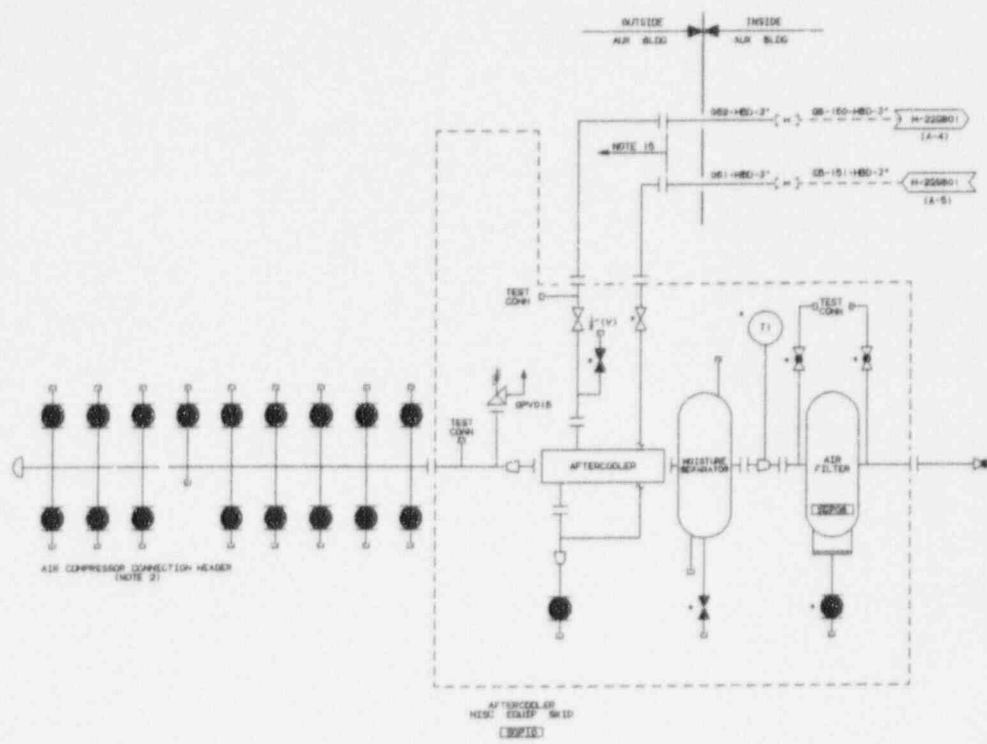
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

IS1-M-22GNO1(Q) B

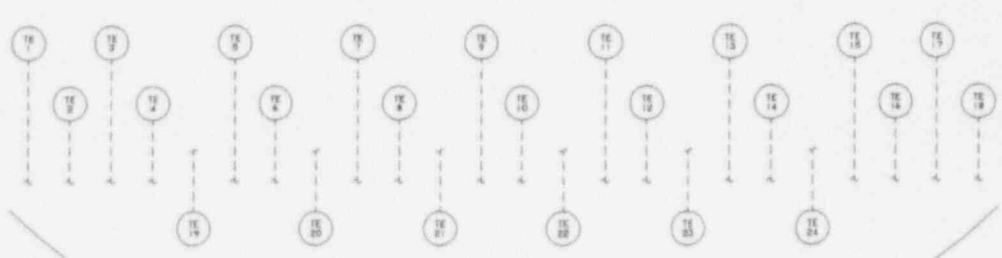
NO.	DATE	BY	DESCRIPTION
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2	11/15/83	W. J. HARRIS	ISSUED FOR CONSTRUCTION
3	11/15/83	W. J. HARRIS	ISSUED FOR CONSTRUCTION
4	11/15/83	W. J. HARRIS	ISSUED FOR CONSTRUCTION
5	11/15/83	W. J. HARRIS	ISSUED FOR CONSTRUCTION
6	11/15/83	W. J. HARRIS	ISSUED FOR CONSTRUCTION
7	11/15/83	W. J. HARRIS	ISSUED FOR CONSTRUCTION
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15	11/15/83	W. J. HARRIS	ISSUED FOR CONSTRUCTION
16	11/15/83	W. J. HARRIS	ISSUED FOR CONSTRUCTION
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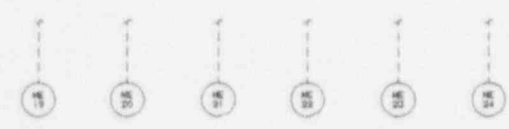
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CTMT TEMPERATURE MONITORS (24) (NOTE B)



CTMT DEWPOINT MONITORS (NOTE B)



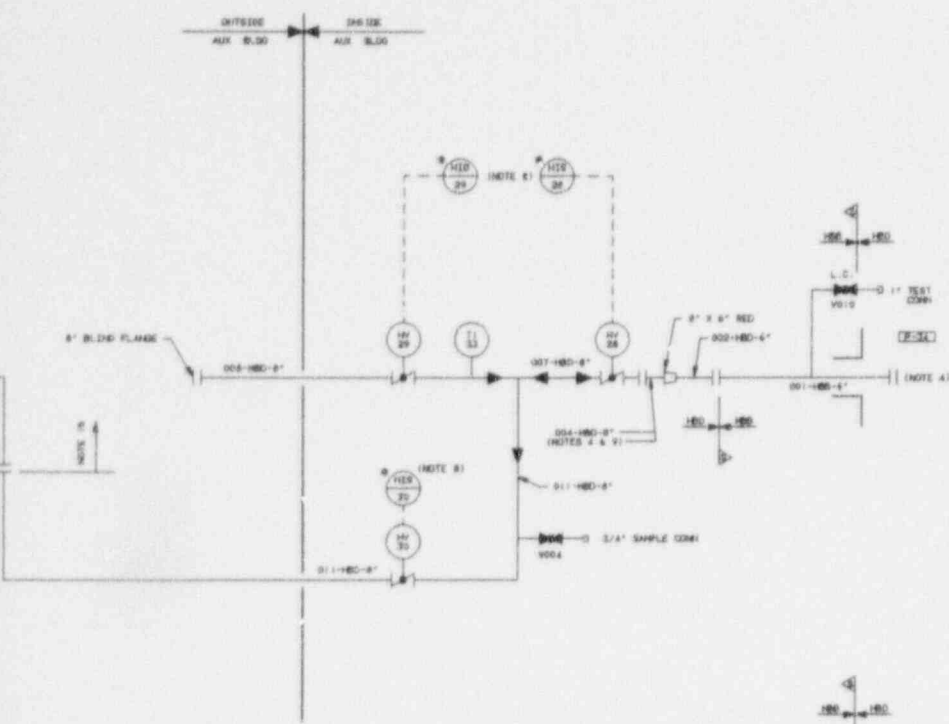
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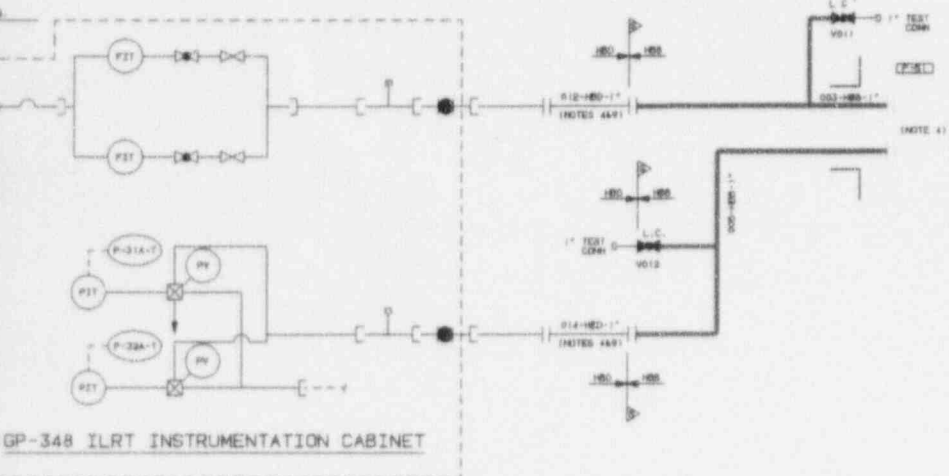
NO. DATE DRAWN
BY: J. W. BROWN
CHECKED: J. W. BROWN
DATE: 11/11/66
SCALE: 1/8" = 1'-0"
PROJECT: LEAK RATE TEST
DRAWING NO.: M-22GP01(Q)A

NO. DATE DRAWN
BY: J. W. BROWN
CHECKED: J. W. BROWN
DATE: 11/11/66
SCALE: 1/8" = 1'-0"
PROJECT: LEAK RATE TEST
DRAWING NO.: M-22GP01(Q)A



ANSTEC APERTURE CARD

Also Available on Aperture Card



- NOTES**
- 1 COOLING WATER REQUIREMENTS ARE DETERMINED BASED ON SEPARATION NEEDS
 - 2 AIR COMPRESSORS ARE SUPPLIED BY UTILITY
 - 3 * INDICATES VENDOR SUPPLIED VENDOR EQUIPMENT IS PROVIDED BY THE UTILITY AND AFTER-COOLER/DRY EQUIP. (W/O CARTRIDGE) SHALL BE SITE FABRICATED
 - 4 BLOWN FLANGE TO BE INSTALLED DURING NORMAL OPERATION
 - 5 DELETED
 - 6 LOGICAL INPUTS FOR 8-A-2-1 BINARY CODED DECIMAL INPUT TO COMPUTER - REF 2-250003
 - 7 A DEMPSTER HYDROMETER (MT) IS PROVIDED FOR EACH LOOP (75 TMA 247 LOOP A-7-19 IS SHOWN)
 - 8 TIME TEMP MONITORS, DEMONSTRATION PANELS AND ALL ASSOCIATED INSTRUMENTATION INCLUDING (W/O CONNECTIONS) TO BE PROVIDED BY THE UTILITY. ALL INDICATED COMPUTER POINTS (EXCLUDING INTERCONNECTIONS) WILL BE PROVIDED BY BECHTEL
 - 9 SPOOL PIECE INSTALLED (O/A) DURING SLRT
 - 10 FLOW AND PRESSURE INSTRUMENTATION AND INTERCONNECTIONS WILL BE PROVIDED BY THE UTILITY. FLOW AND PRESSURE COMPUTER POINTS (EXCLUDING INTERCONNECTIONS) WILL BE PROVIDED BY BECHTEL
 - 11 ALL INSTRUMENTATION WILL BE HEAVY DUTY EQUIPMENT BY THE SUPPLIER
 - 12 DELETED
 - 13 TUBING INSTALLED DURING SLRT
 - 14 CAP TO BE INSTALLED FOR NORMAL PLANT OPERATION
 - 15 BLOWN FLANGES INSTALLED DURING NORMAL PLANT OPERATION TO EQUIPMENT (1) INSTALLED ONLY DURING CONTAINMENT SLRT

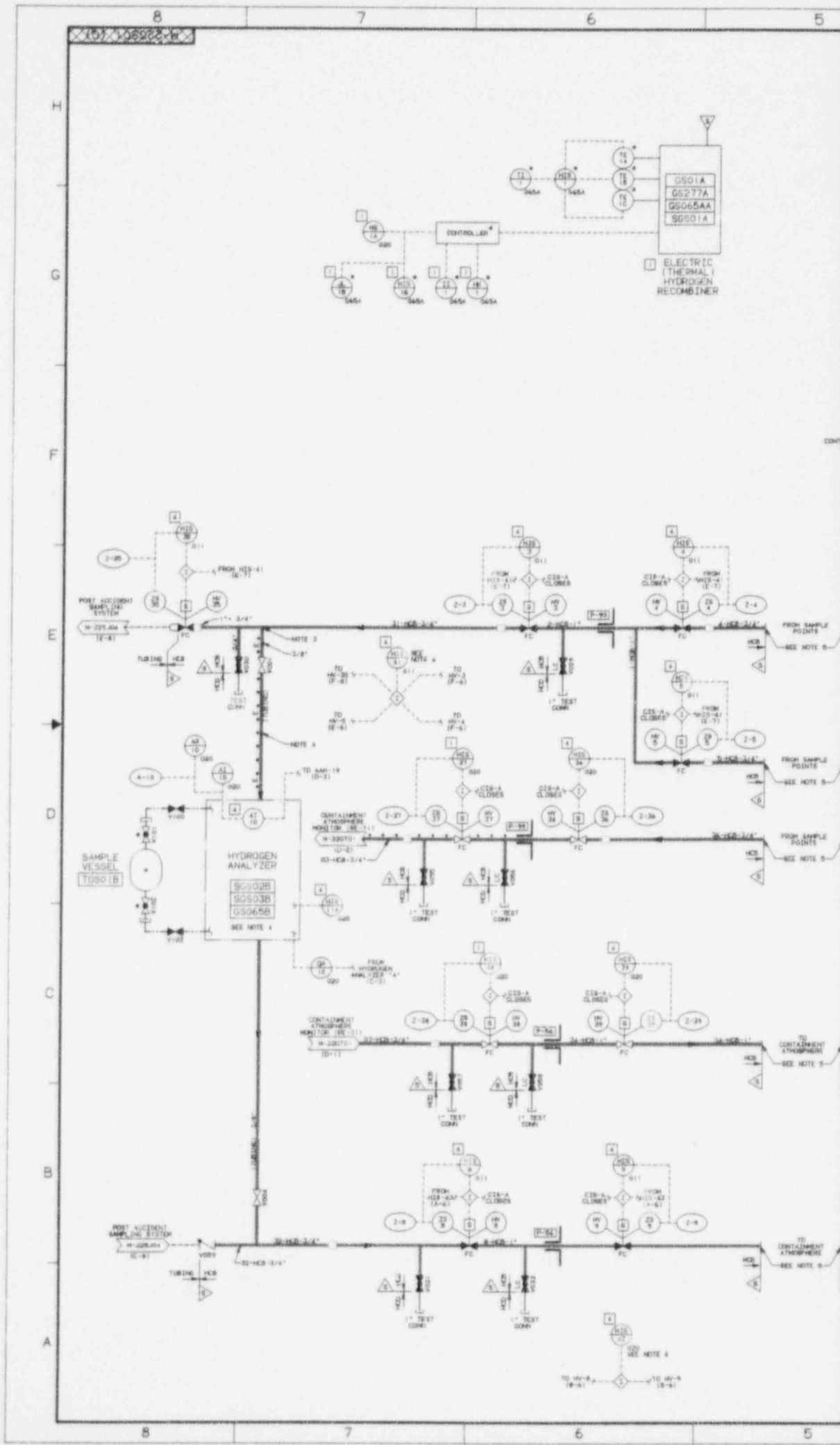
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-----	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22GP01(Q)A

NO.	DATE	DESCRIPTION	BY	CHK
1	N/A	PIPING AND INSTRUMENTATION DIAGRAM CONTAINMENT INTEGRATED LEAK RATE TEST	J. W. BROWN	J. W. BROWN
2	N/A			
3	N/A			
4	N/A			
UNION ELECTRIC COMPANY ST. LOUIS, MO				



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ELECTRIC (THERMAL) HYDROGEN RECOMBINER

CONTROLLER

HYDROGEN ANALYZER

SAMPLE VESSEL TDSO (B)

POST ACCIDENT SAMPLING SYSTEM

CONTAINMENT ATMOSPHERE MONITOR

POST ACCIDENT SAMPLING SYSTEM

FROM SAMPLE POINTS

FROM SAMPLE POINTS

FROM SAMPLE POINTS

TO CONTAINMENT ATMOSPHERE

TO CONTAINMENT ATMOSPHERE

NOTE 3

NOTE 4

NOTE 1

NOTE 2

NOTE 5

NOTE 6

M-201 (E-8)

FROM HIS-41 (E-7)

FROM HIS-41 (E-7)

FROM HIS-41 (E-7)

FROM HIS-41 (E-7)

FROM HIS-41 (E-7)

FROM HIS-41 (E-7)

FROM HIS-41 (E-7)

FROM HIS-41 (E-7)

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TO HIS-41 (E-7)

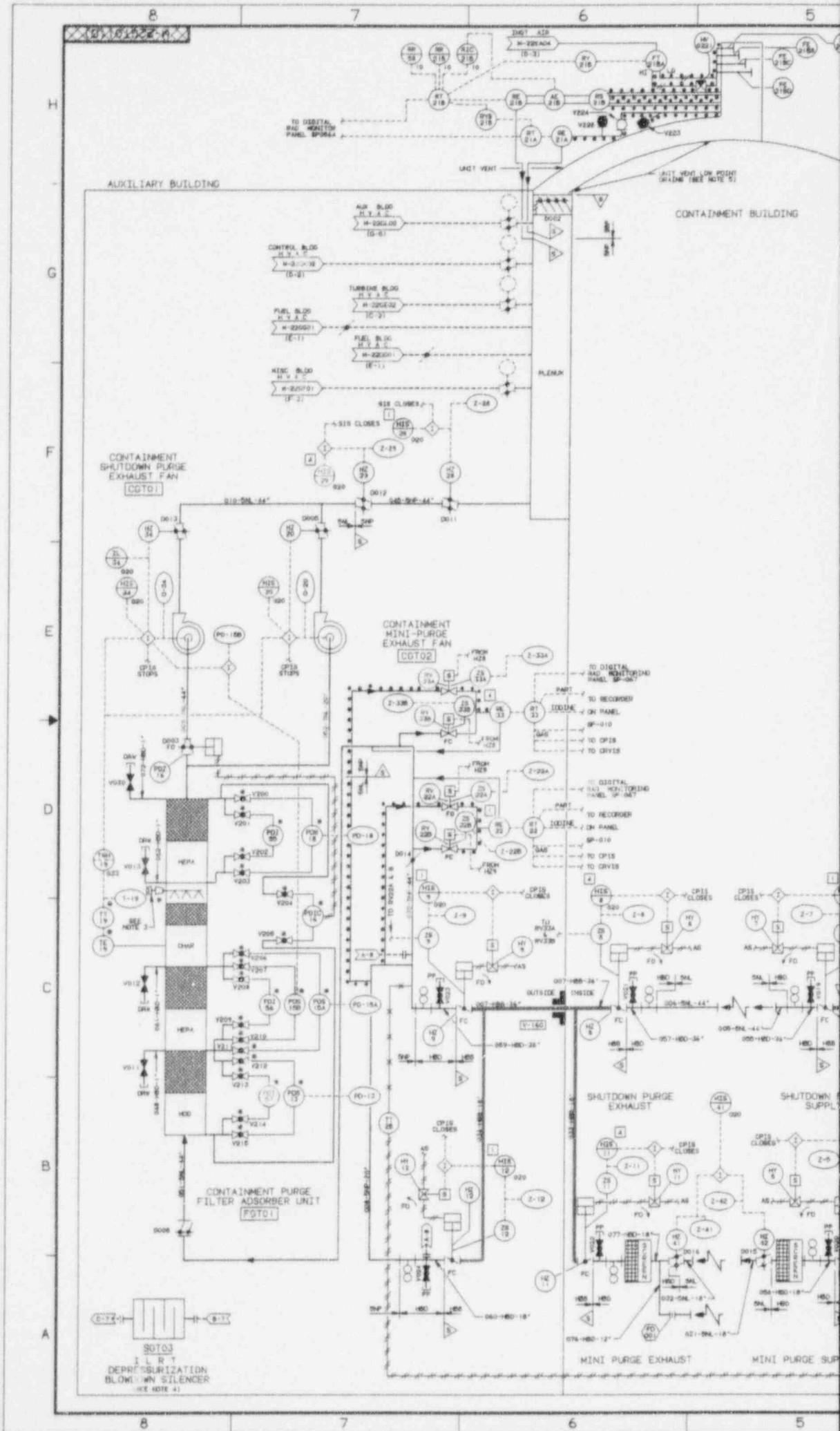
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TO HIS-41 (E-7)

TO HIS-41 (E-7)

TO HIS-41 (E-7)

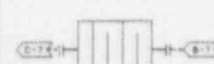
TO HIS-41 (E-7)



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SUT03

 SLRT

 DEPRESSURIZATION

 BLOWDOWN SILENCER

 (SEE NOTE 4)

SHUTDOWN PURGE EXHAUST

MINI PURGE EXHAUST

MINI PURGE SUPPLY

AUXILIARY BUILDING

CONTAINMENT BUILDING

CONTAINMENT MINI-PURGE EXHAUST FAN

CONTAINMENT SHUTDOWN PURGE EXHAUST FAN

CONTAINMENT PURGE FILTER ADSORBER UNIT

AIR BLDG

CONTROL BLDG

FUEL BLDG

FUEL BLDG

HSC BLDG

SHUTDOWN PURGE SUPPLY

MINI PURGE SUPPLY

M-2261.00

M-2261.30

M-2261.02

M-2261.01

M-2261.01

CGT01

CGT02

CGT01

PFC01

TO DIGITAL READ OUT MONITORING PANEL SP-067

TO RECORDER ON PANEL SP-010

TO CP15 TO DRIVE

TO DIGITAL READ OUT MONITORING PANEL SP-067

TO RECORDER ON PANEL SP-010

TO CP15 TO DRIVE

TO DIGITAL READ OUT MONITORING PANEL SP-067

TO RECORDER ON PANEL SP-010

TO CP15 TO DRIVE

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TO RECORDER ON PANEL SP-010

TO CP15 TO DRIVE

TO DIGITAL READ OUT MONITORING PANEL SP-067

TO RECORDER ON PANEL SP-010

TO CP15 TO DRIVE

TO DIGITAL READ OUT MONITORING PANEL SP-067

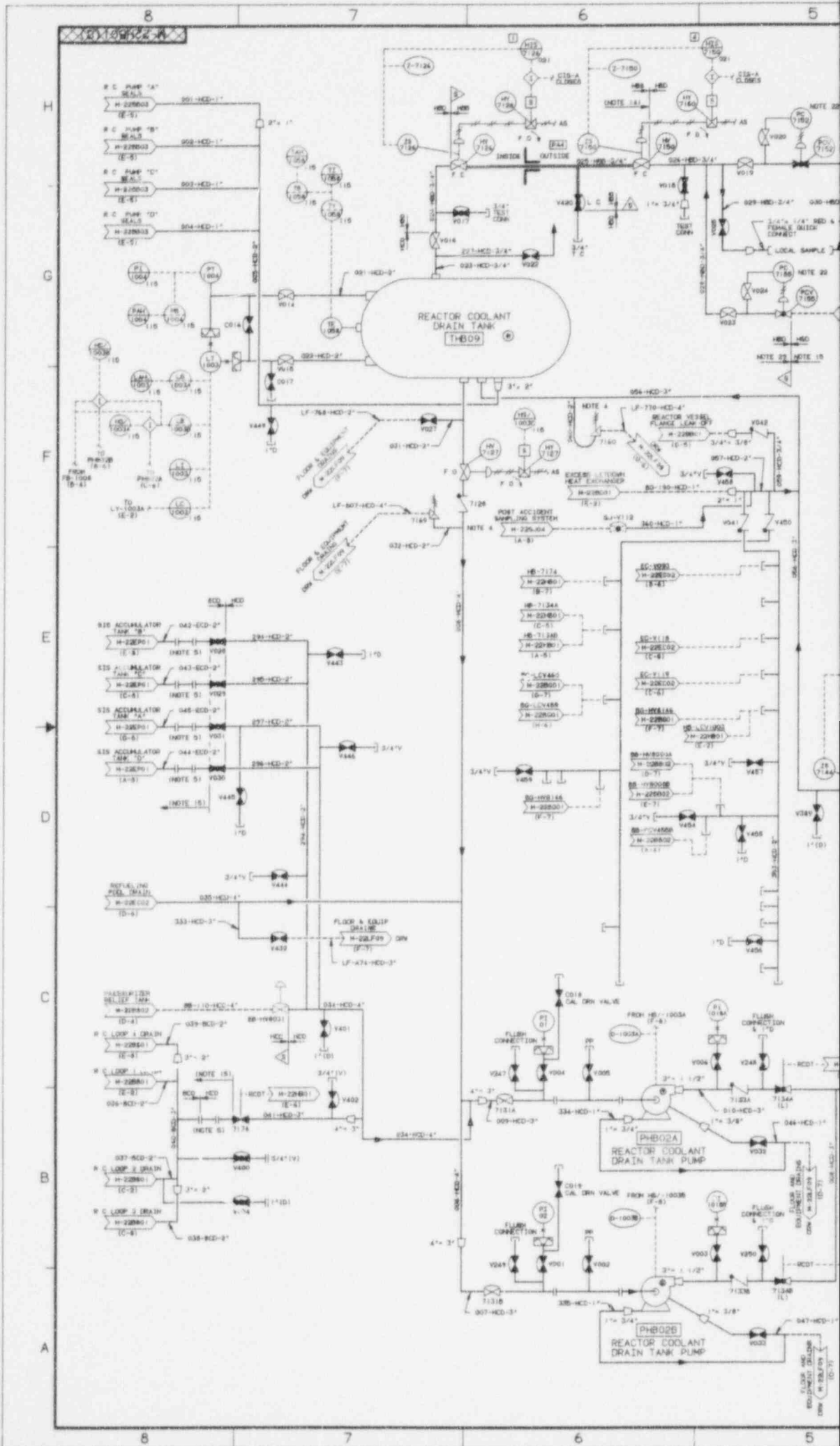
TO RECORDER ON PANEL SP-010

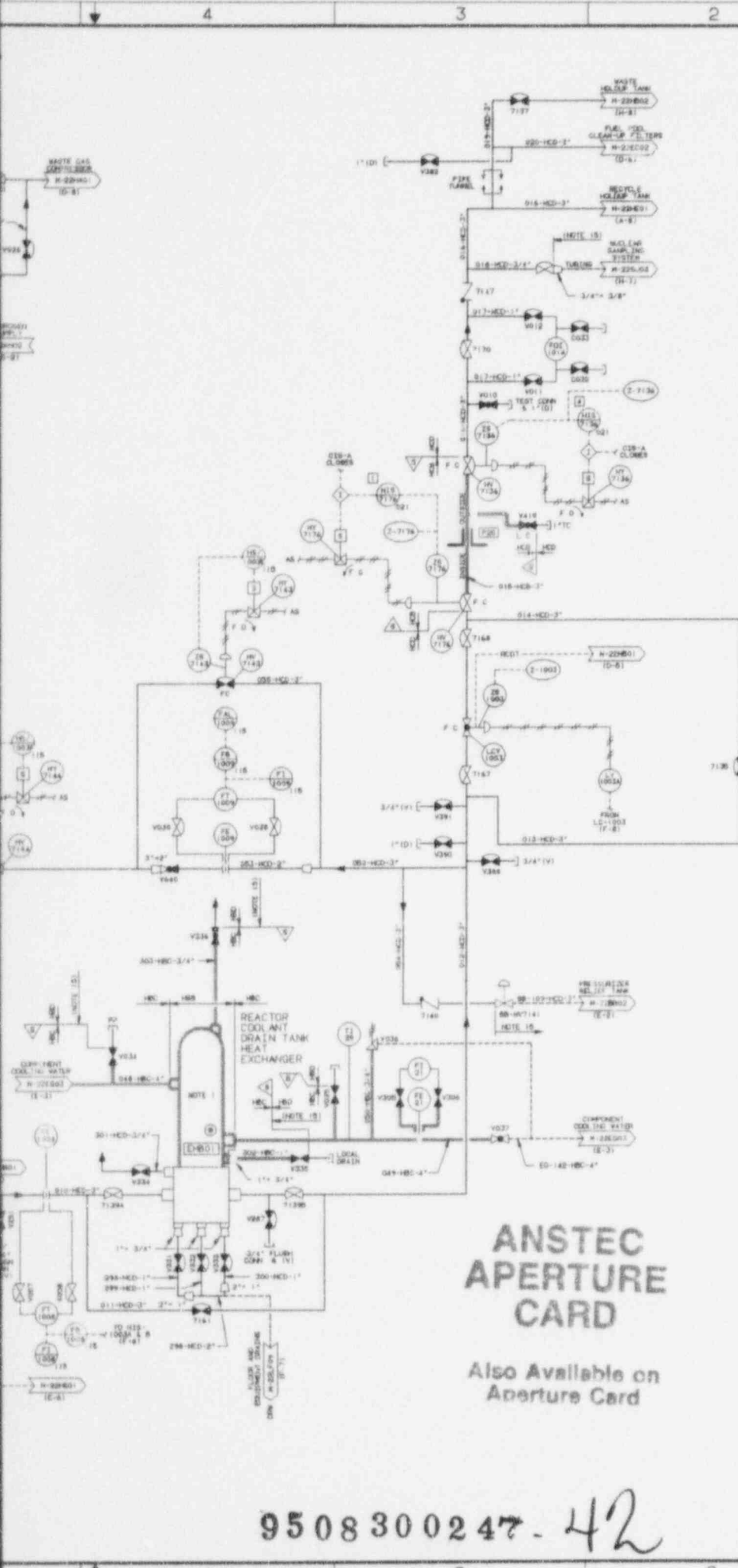
TO CP15 TO DRIVE

TO DIGITAL READ OUT MONITORING PANEL SP-067

TO RECORDER ON PANEL SP-010

TO CP15 TO DRIVE





NOTES

- 1 THE FOLLOWING WESTINGHOUSE STANDARD EQUIPMENT IS SUPPLIED TO A HIGHER QUALITY GROUP DESIGN CLASSIFICATION AND PRINCIPAL CONSTRUCTION CODE THAN IS REQUIRED BASED ON ITS SAFETY RELATED IMPORTANCE AS INDICATED BY GRADE AND FUNCTIONAL REQUIREMENTS AND BY THE CONSEQUENCE OF THE FAILURE. EQUIPMENT CLASSIFICATION SYMBOL IS FOR IDENTIFICATION PURPOSES ONLY. A WELD END PREPARED. ACTUAL CLASSIFICATION OF THE EQUIPMENT IS THE LOWER CLASSIFICATION AS INDICATED FOR THE ASSOCIATED PIPING.
 - A WASTE HOLDUP TANK
 - B WASTE EVAP FEED PUMP
 - C WASTE EVAP FEED FILTER
 - D REACTOR COOLANT DRAIN TANK HEAT EXCHANGER
 - E DRAIN TANK HEAT EXCHANGER
 - F WASTE EVAP CONDENSATE REHEATER
 - G WASTE HOLDUP TANK CONDENSER
 - H WASTE HOLDUP TANK FILTER
 - I WASTE EVAP CONDENSATE TANK FILTER
- 2 PORTIONS OF THIS SYSTEM THAT CONTAIN RADIOACTIVE FLUIDS ARE IDENTIFIED BY QUALITY CLASSIFICATION TO SHALL MEET THE ALLEGED REQUIREMENTS.
- 3 THIS STANDARD BASED ON WESTINGHOUSE STANDARDS 1140000 (EXCEPT SYMBOLS 1-2 AND 3)
- 4 MAKE CONNECTIONS TO SIDE OR BOTTOM OF TANK
- 5 WELD, PIPE, NORMALLY REMOVED, TO BE INSTALLED ONLY AFTER DEPRESSURIZATION FOR DEWELDING.
- 6 VENT LINES TO EXTEND WITHIN 12 INCHES OF FLOOR
- 7 OVERFLOW LOOP SEAL TO EXTEND 12 INCHES BELOW TANK CONNECTION AND TO TOP OF TANK WITH OTHER BREAK ON TOP OF LOOP SEAL.
- 8 LOOP SEAL TO EXTEND 12 INCHES BELOW HORIZ. AND TOP OF SEAL TO EXTEND 6 INCHES BELOW CLAMPING FLANGE WITH OTHER BREAKER LOCATED ON TOP OF LOOP.
- 9 LOOP SEAL TO EXTEND 12" ABOVE AND BELOW PIPE
- 10 THE FOLLOWING EQUIPMENT IS SUPPLIED WITH EVAPORATOR PACKAGE BY VENDOR
 - A Y-STRAINER-20014
 - B FCV-151
 - C FCV-152
 - D FCV-153
 - E FCV-154
 - F FCV-155
 - G FCV-156
 - H FCV-157
 - I FCV-158
 - J FCV-159
 - K FCV-160
 - L FCV-161
 - M FCV-162
 - N FCV-163
 - O FCV-164
 - P FCV-165
 - Q FCV-166
 - R FCV-167
 - S FCV-168
 - T FCV-169
 - U FCV-170
 - V FCV-171
 - W FCV-172
 - X FCV-173
 - Y FCV-174
 - Z FCV-175
- 11 LOOP SEAL TO EXTEND 12 INCHES BELOW PIPE
- 12 THE PORTION OF THIS SYSTEM THAT IS D-D LISTED INCLUDES PIPING AND VALVES ASSOCIATED WITH CONTAINMENT PENETRATIONS AND THE SMALL SIDE OF THE REACTOR COOLANT DRAIN TANK HEAT EXCHANGER AND ITS ASSOCIATED PIPING AND VALVES
- 13 MECHANICAL DESIGNATING PER W-20001
- 14 THIS POINT DEFINES THE 'D' BOUNDARY FOR CONTAINMENT ISOLATION. FROM THIS POINT DOWNSTREAM PIPING IS ANALYZED CONSIDERING A SINGLE DESIGN OF FREEDOM.
- 15 INDICATED PORTIONS OF THIS SYSTEM IDENTIFIED BY THIS NOTE AND QUALITY GROUP 'D' KEY-IDENTIFIED
- 16 DELETED
- 17 CONTROLS FOR WASTE EVAPORATOR ARE ON PANEL H-22B36 (WASTE EVAPORATOR CONTROL PANEL)
- 18 LINES 014 & 016 TO BE BOM 100 WITH SCH. 40S BORE TO MATCH VALVES 7146, 7150, LUY-1003 AND H-22B36
- 19 INDICATED PORTIONS OF THIS SYSTEM TO BE 316L SS
- 20 INDICATED VALVES TO LOCATED CLOSE TOGETHER
- 21 LOCATE INDICATOR WITHIN VIEW PUMP (BOTTLE) VALVE
- 22 PRESSURE CONTROLLER IS VALVE RELATED
- 23 INSTRUMENTATION IDENTIFIED BY THIS NOTE IS SUPPLIED BY THE SOLID RADIOACTIVE PACKAGE VENDOR UNDER SPECIFICATION W-135
- 24 CONNECTIONS TO BE SEAL WELDED
- 25 PIPING AND INSTRUMENTATION DIAGRAM FOR THE RESIDUE SYMBOLS LIST IS SHOWN ON SHEET: DMS, W-22B-100000
- 26 PIPING AND INSTRUMENTATION DIAGRAM FOR THE WASTE EVAPORATOR IS SHOWN ON WESTINGHOUSE DMS, A-200004
- 27 REMOVABLE BRIDGES PROVIDED FOR START-UP
- 28 LOCATE WASTE EVAPORATOR READY TANK TO ALLOW GRAVITY DRAIN TO WASTE EVAPORATOR
- 29 PIPING DOWNSTREAM OF THIS NOTE IS ANALYZED CONSIDERING A SINGLE DESIGN OF FREEDOM
- 30 STAINLESS STEEL BY COMP. AND WELD FITTINGS AND ASSOCIATED FLANGE CAPS NOT BE USED INSTEAD OF VENTS AND DRAIN CAPS PER W-22B-3719 REV. A

ISI EXAMINATION BOUNDARIES

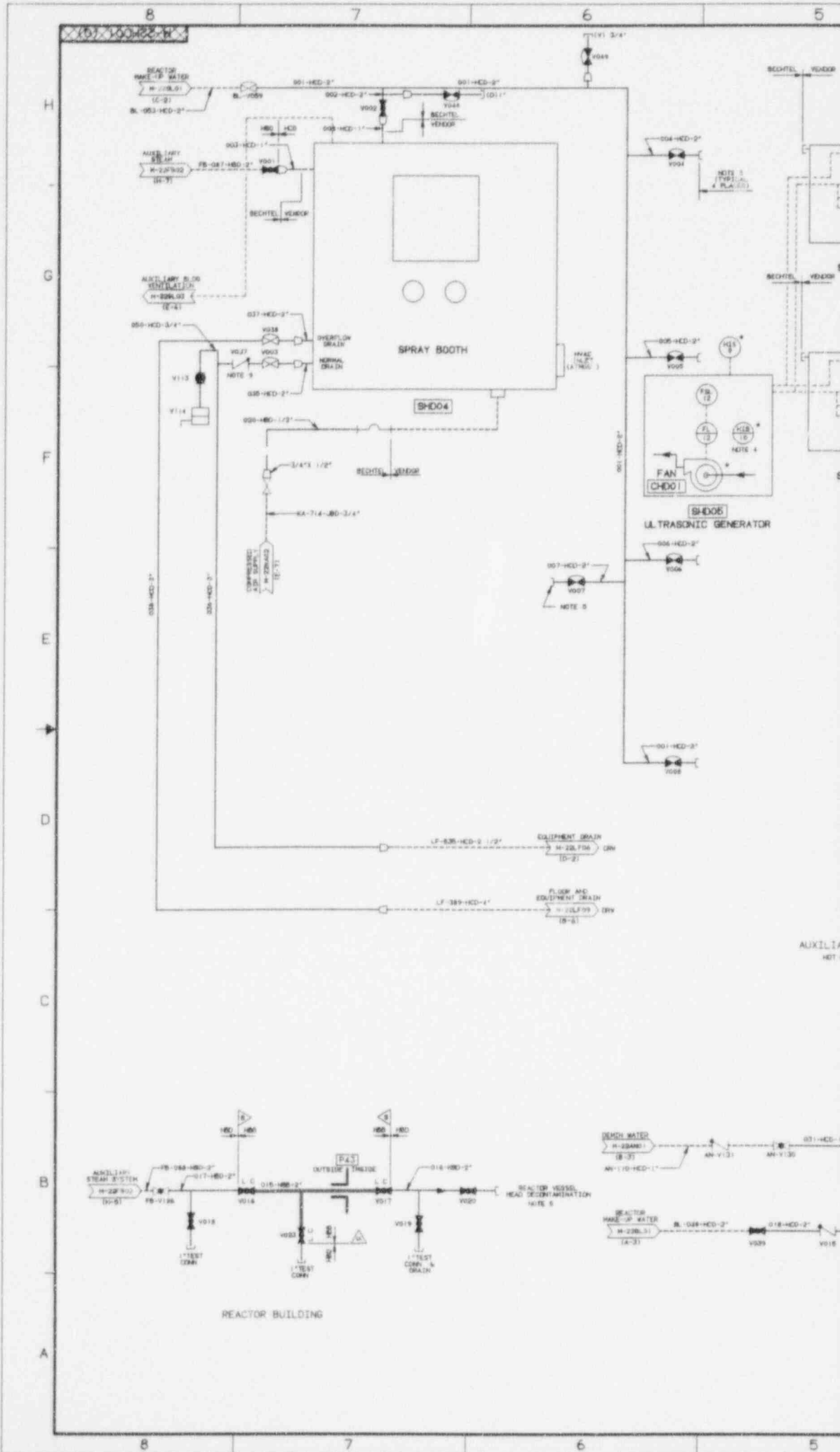
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—————	GROUP A - EXEMPT
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—————	GROUP B - EXEMPT
—————	GROUP C - NON-EXEMPT
—————	GROUP C - EXEMPT

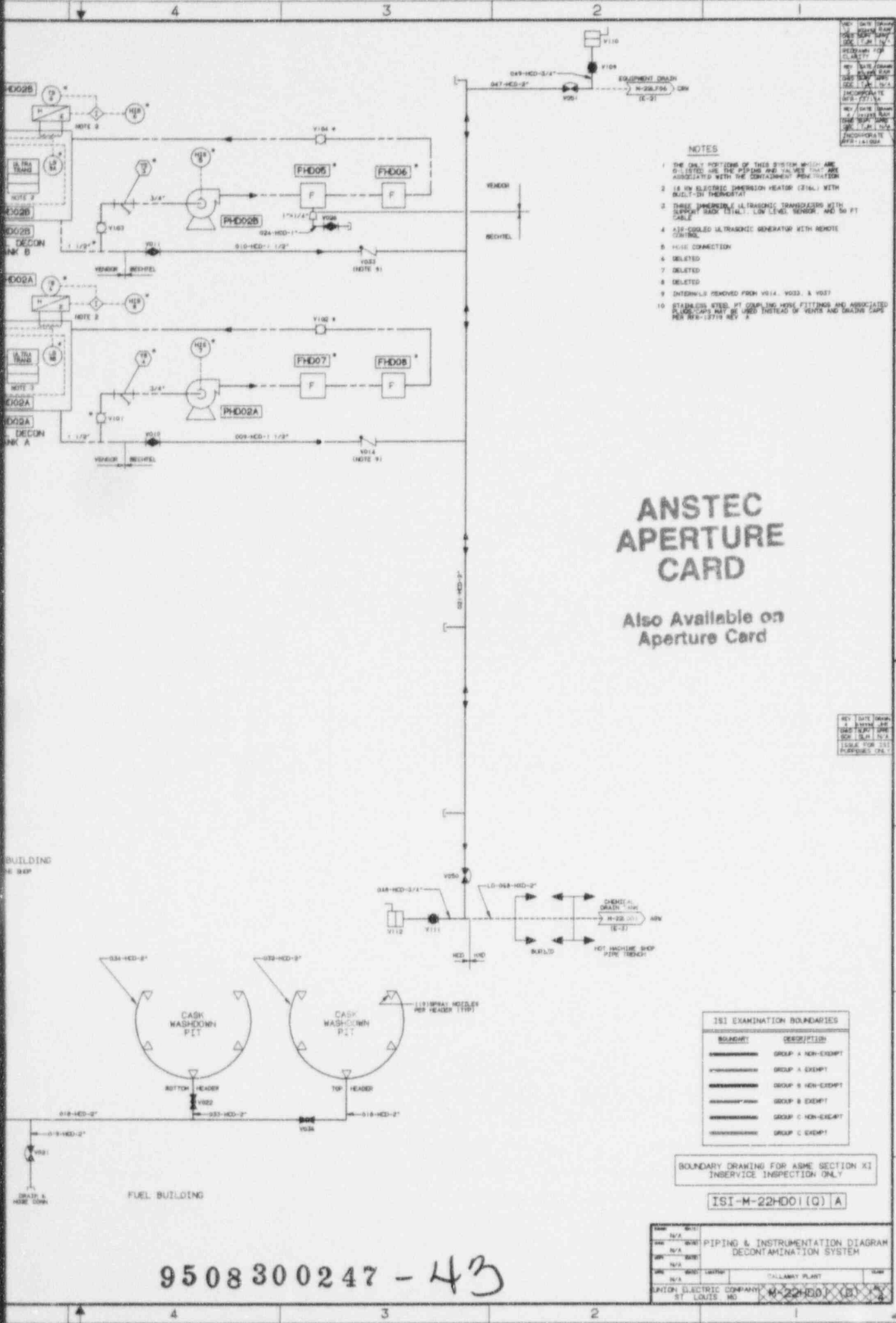
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22B01(Q) A

REV	DATE	DESCRIPTION
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2	11/15/81	ISSUE FOR 101 PURCHASE ORDER
3	12/15/81	ISSUE FOR 101 PURCHASE ORDER
4	01/15/82	ISSUE FOR 101 PURCHASE ORDER
5	02/15/82	ISSUE FOR 101 PURCHASE ORDER
6	03/15/82	ISSUE FOR 101 PURCHASE ORDER
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98	11/15/89	ISSUE FOR 101 PURCHASE ORDER
99	12/15/89	ISSUE FOR 101 PURCHASE ORDER
100	01/15/90	ISSUE FOR 101 PURCHASE ORDER

9508300247-42





REV DATE DRAWN BY CHECKED BY
 001 11/15/88 J. B. BERRY JR. J. B. BERRY JR.
 002 01/16/89 J. B. BERRY JR. J. B. BERRY JR.
 003 03/15/89 J. B. BERRY JR. J. B. BERRY JR.
 004 04/15/89 J. B. BERRY JR. J. B. BERRY JR.
 005 05/15/89 J. B. BERRY JR. J. B. BERRY JR.
 006 06/15/89 J. B. BERRY JR. J. B. BERRY JR.
 007 07/15/89 J. B. BERRY JR. J. B. BERRY JR.
 008 08/15/89 J. B. BERRY JR. J. B. BERRY JR.
 009 09/15/89 J. B. BERRY JR. J. B. BERRY JR.
 010 10/15/89 J. B. BERRY JR. J. B. BERRY JR.

NOTES

- 1 THE ONLY PORTIONS OF THIS SYSTEM WHICH ARE Delineated ARE THE PIPING AND VALVES THAT ARE ASSOCIATED WITH THE CONTAINMENT PENETRATION
- 2 IS AN ELECTRIC IMMERSION HEATER (EIH) WITH BUILT-IN THERMOSTAT
- 3 THREE IMMERSION ULTRASONIC TRANSDUCERS WITH SUPPLY CABLE (EIH) - LOW LEVEL SENSORS AND 50 FT CABLE
- 4 AIR-COOLED ULTRASONIC GENERATOR WITH REMOTE CONTROL
- 5 FUSE CONNECTION
- 6 DELETED
- 7 DELETED
- 8 DELETED
- 9 INTERNALS REMOVED FROM V104, V103, & V101
- 10 STANDARD STEEL PT COMPLYING WITH FITTINGS AND ASSOCIATED PIPING SHALL BE USED INSTEAD OF VENTS AND DRAINS CAPS PER 800-12719 REV 2

ANSTEC APERTURE CARD

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REV DATE DRAWN BY CHECKED BY
 001 11/15/88 J. B. BERRY JR. J. B. BERRY JR.
 002 01/16/89 J. B. BERRY JR. J. B. BERRY JR.
 003 03/15/89 J. B. BERRY JR. J. B. BERRY JR.
 004 04/15/89 J. B. BERRY JR. J. B. BERRY JR.
 005 05/15/89 J. B. BERRY JR. J. B. BERRY JR.
 006 06/15/89 J. B. BERRY JR. J. B. BERRY JR.
 007 07/15/89 J. B. BERRY JR. J. B. BERRY JR.
 008 08/15/89 J. B. BERRY JR. J. B. BERRY JR.
 009 09/15/89 J. B. BERRY JR. J. B. BERRY JR.
 010 10/15/89 J. B. BERRY JR. J. B. BERRY JR.

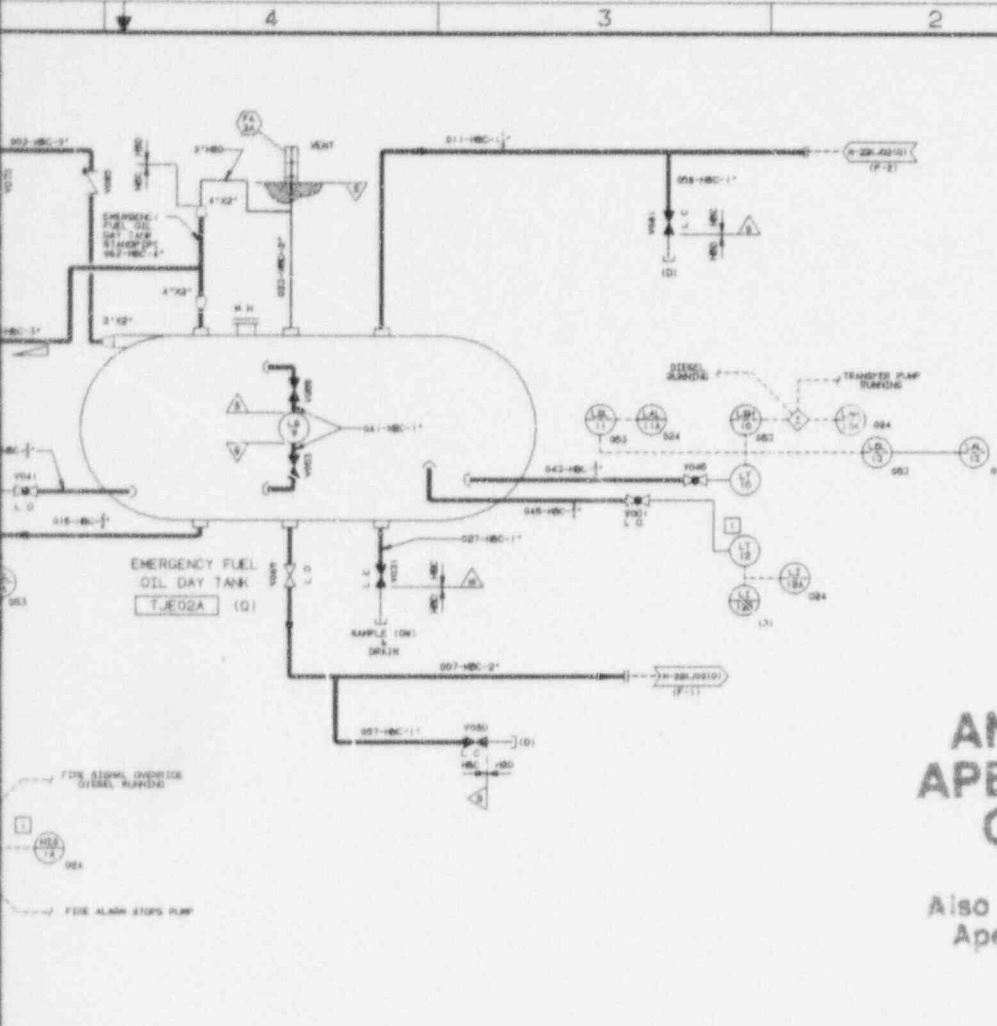
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BOUNDARY	DESCRIPTION
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-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
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-----	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22HD01(Q) A

DATE	REV	DESCRIPTION
11/15/88	1	ISSUE FOR ISI PURPOSES (06)
01/16/89	2	ISSUE FOR ISI PURPOSES (06)
03/15/89	3	ISSUE FOR ISI PURPOSES (06)
04/15/89	4	ISSUE FOR ISI PURPOSES (06)
05/15/89	5	ISSUE FOR ISI PURPOSES (06)
06/15/89	6	ISSUE FOR ISI PURPOSES (06)
07/15/89	7	ISSUE FOR ISI PURPOSES (06)
08/15/89	8	ISSUE FOR ISI PURPOSES (06)
09/15/89	9	ISSUE FOR ISI PURPOSES (06)
10/15/89	10	ISSUE FOR ISI PURPOSES (06)

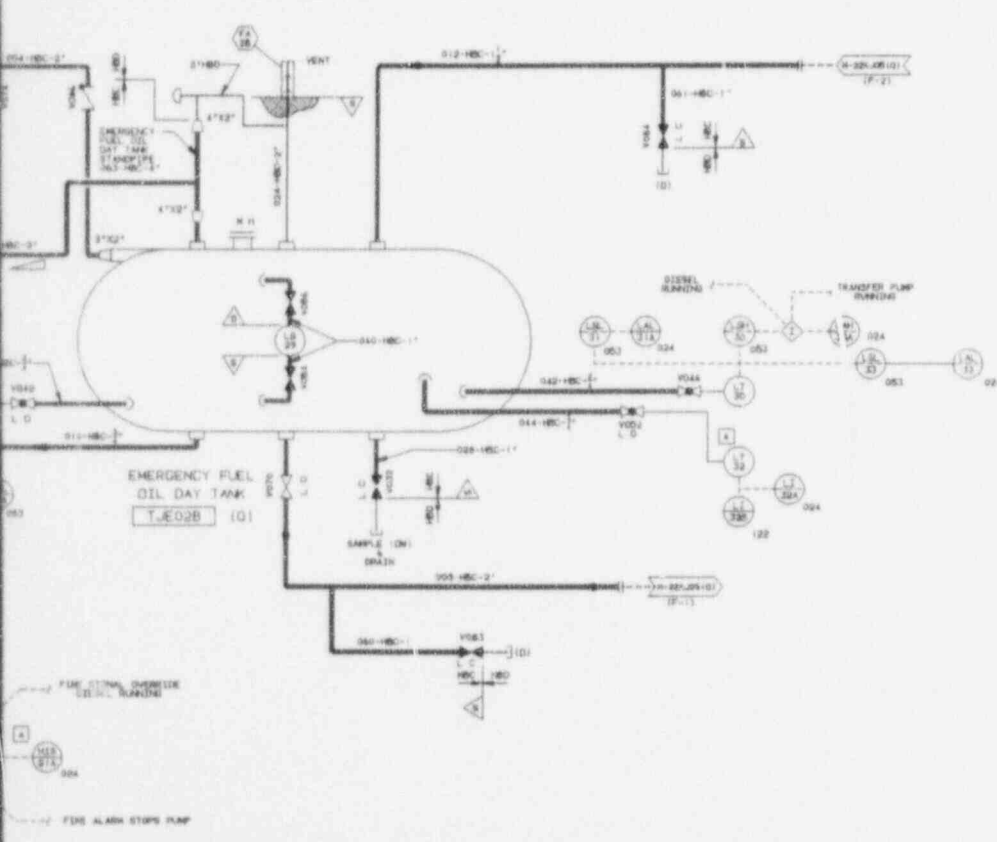
9508300247 - 43



- NOTES
- 1 THE ABOVE SECTION ISI CLASS 3 COMPONENTS ARE SUBJECT TO VISUAL INSERVICE INSPECTION REQUIREMENTS
 - 2 HYDROTESTING FOR INSERVICE INSPECTION SHALL BE WITH NO 2 DIESEL OIL
 - 3 ALL BLASSED LINES TO SLOPE 1/2" PER FOOT TOWARD EMERGENCY FUEL OIL STOP & TANKS
 - 4 INSULATING FLANGES ARE PROVIDED FOR CATHODIC PROTECTION MATERIALS SHALL BE COMPATIBLE WITH NO 2 DIESEL FUEL OIL
 - 5 L.I.B. & L.I.P.S. ARE LOCATED OUTSIDE THE DIESEL BUILDING ADJACENT TO THE PUMP CONNECTION
 - 6 DELETED

ANSTEC APERTURE CARD

Also Available on Aperture Card



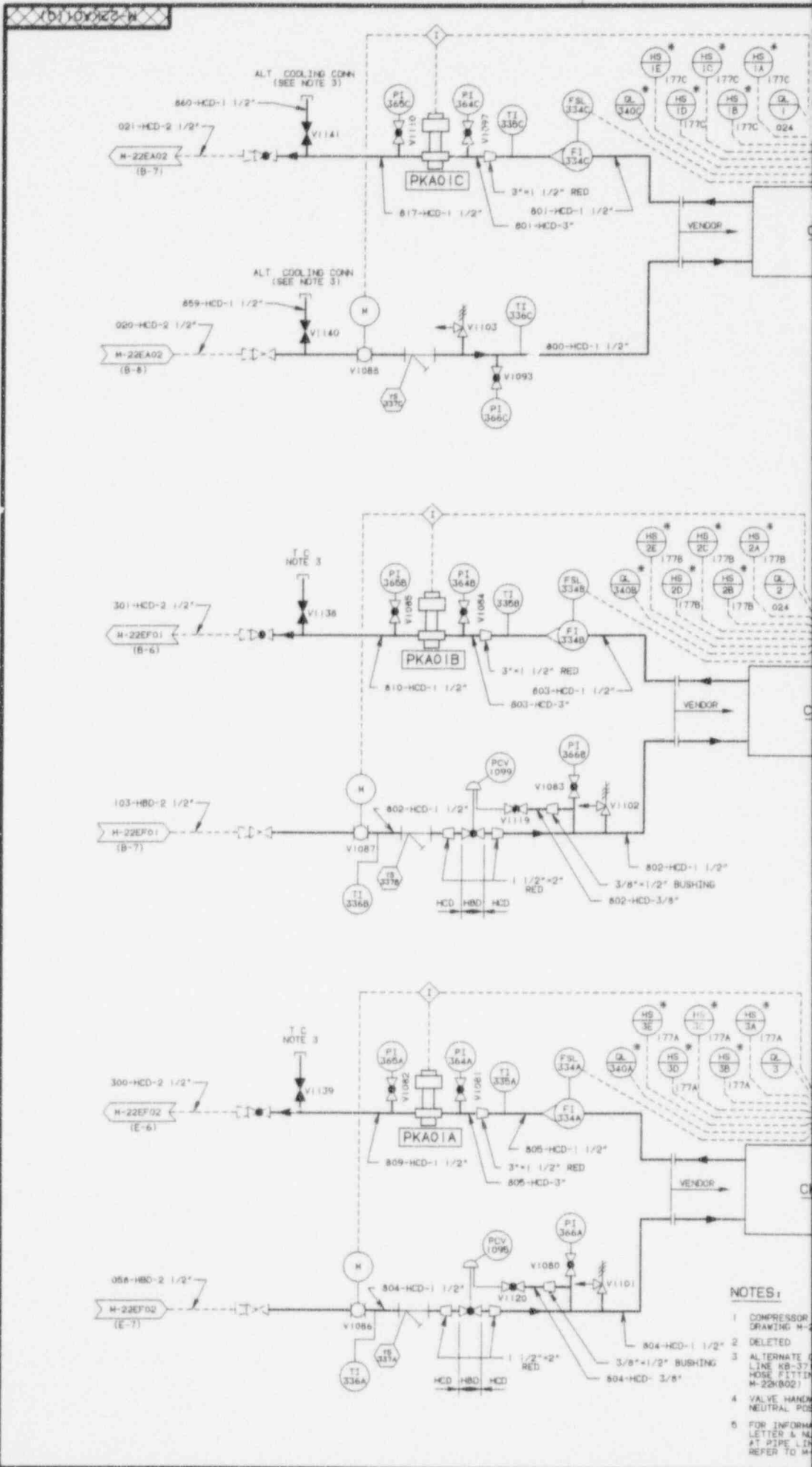
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
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—————	GROUP A EXEMPT
—————	GROUP B NON-EXEMPT
—————	GROUP B EXEMPT
—————	GROUP C NON-EXEMPT
—————	GROUP C EXEMPT
—————	ALLEGED ISI PER REG. ATTOR. SLIDE - 127 GROUP C - EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22JE01 (Q) A

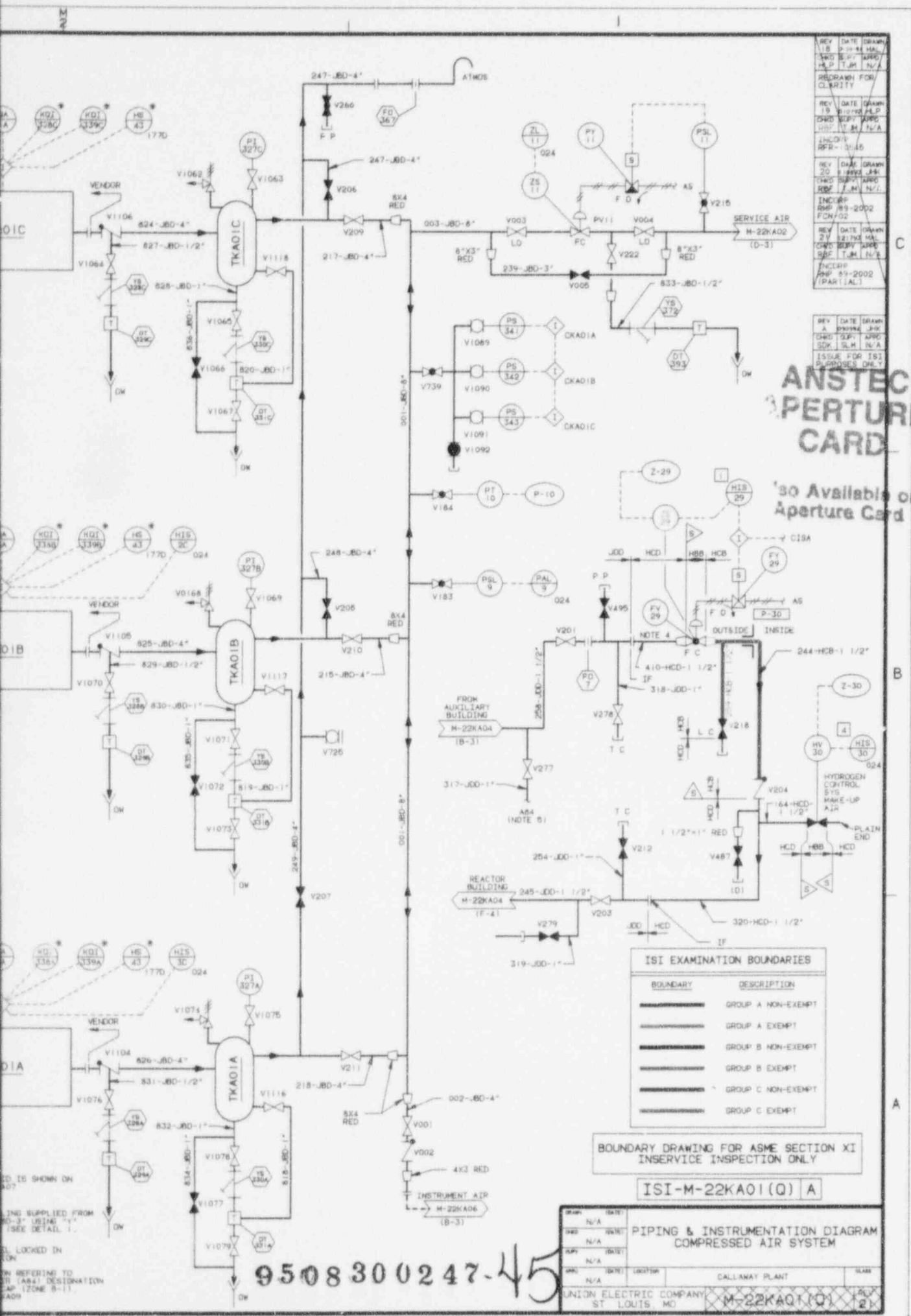
9508300247 - 44

REV	NO	DATE	DESCRIPTION
N/A	1		PIPEING AND INSTRUMENTATION DIAGRAM EMERGENCY FUEL OIL SYSTEM
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N/A	3		
N/A	4		
N/A	5		
N/A	6		
N/A	7		
N/A	8		
N/A	9		
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N/A	97		
N/A	98		
N/A	99		
N/A	100		



NOTES:

- 1 COMPRESSOR DRAWING N-2
- 2 DELETED
- 3 ALTERNATE LINE KB-37 HOSE FITTING N-23(802)
- 4 VALVE HANDLE NEUTRAL POS
- 5 FOR INFORMATION LETTER & NUMBER AT PIPE LINE REFER TO M-



REV	DATE	DRWN	CHKD
18	8-14-81	HAL	HAL
19	10-10-81	PLP	PLP
20	11-11-81	PLP	PLP
21	11-11-81	PLP	PLP
22	11-11-81	PLP	PLP
23	11-11-81	PLP	PLP
24	11-11-81	PLP	PLP
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40	11-11-81	PLP	PLP

**ANSTEC
APERTURE
CARD**

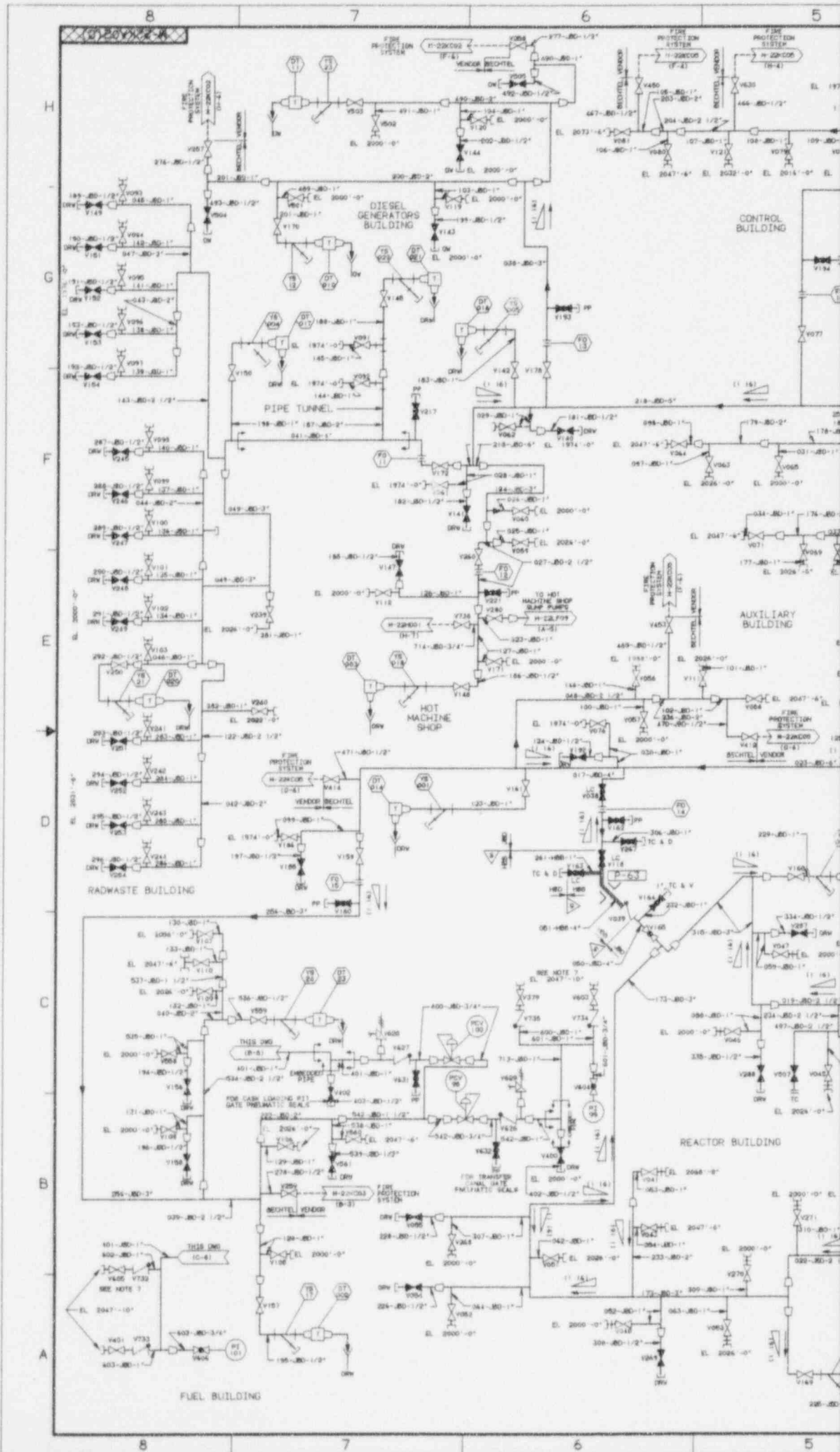
'80 Available on
Aperture Card

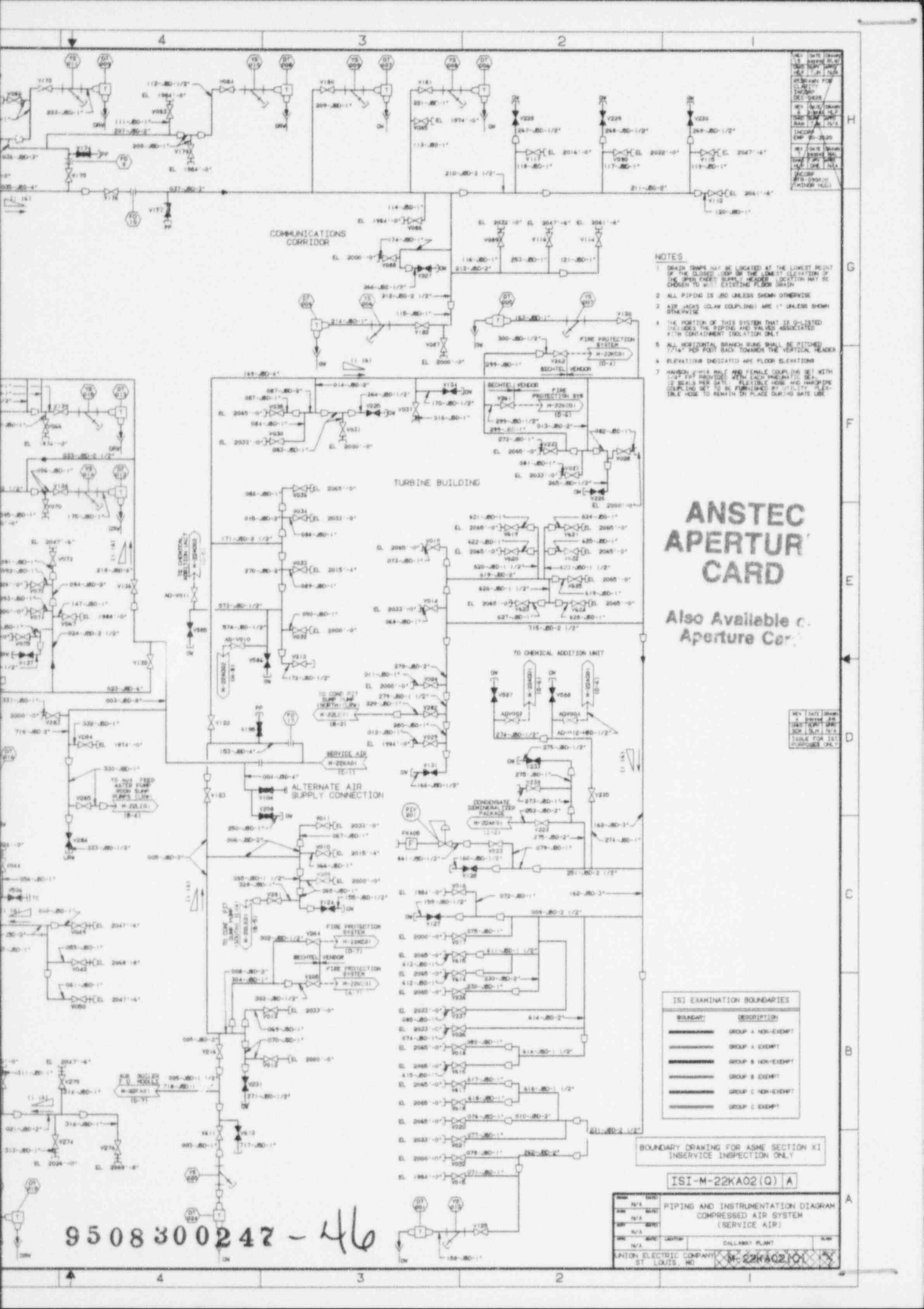
BOUNDARY	DESCRIPTION
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-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI
INSERVICE INSPECTION ONLY

ISI-M-22KA01(Q) A

DRWN	N/A	DATE	
CHKD	N/A	DATE	
APPV	N/A	DATE	
ENGR	N/A	DATE	
ISSD	N/A	DATE	
LOCATOR		CALL-OUT PLANT	SLAB
UNION ELECTRIC COMPANY		M-22KA01(Q)	2
ST. LOUIS, MO			





REV 1 DATE 08/08
 BY 10410/10410
 CHECKED BY 10410/10410
 APPROVED BY 10410/10410
 TITLE FOR ISL DRAWINGS ONLY

- NOTES
1. DRAIN TRAPS MAY BE LOCATED AT THE LOWEST POINT OF THE CLOSED LOOP OF THE LOWEST ELEVATION OF THE OPEN EXHAUST SUPPLY HEADER. LOCATION MAY BE CHANGED TO SUIT EXISTING FLOOR GRAIN.
 2. ALL PIPING IS 300 UNLESS SHOWN OTHERWISE.
 3. AIR LINES COOL COUPLING ARE 1" UNLESS SHOWN OTHERWISE.
 4. THE PORTION OF THIS SYSTEM THAT IS D-LISTED INCLUDES THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION ONLY.
 5. ALL HORIZONTAL BRANCHES SHALL BE FITTED 1/2" DIA. FOR FOOT BACK TOWARDS THE VERTICAL HEADER.
 6. ELEVATIONS INDICATED ARE FLOOR ELEVATIONS.
 7. HANGERS, CHAIN RIGS AND FEMALE COUPLERS SET WITH 1/2" TYP. PROVIDE WITH EACH INSTRUMENT. SEE IS-M-22KA2 FOR DETAILS. FLEXIBLE HOSE AND HANGING COUPLING SET TO BE PUBLISHED BY UTILITY. FLEXIBLE HOSE TO REMAIN IN PLACE DURING GATE USE.

ANSTEC APERTUR CARD

Also Available as Aperture Card

REV 1 DATE 08/08
 BY 10410/10410
 CHECKED BY 10410/10410
 APPROVED BY 10410/10410
 TITLE FOR ISL DRAWINGS ONLY

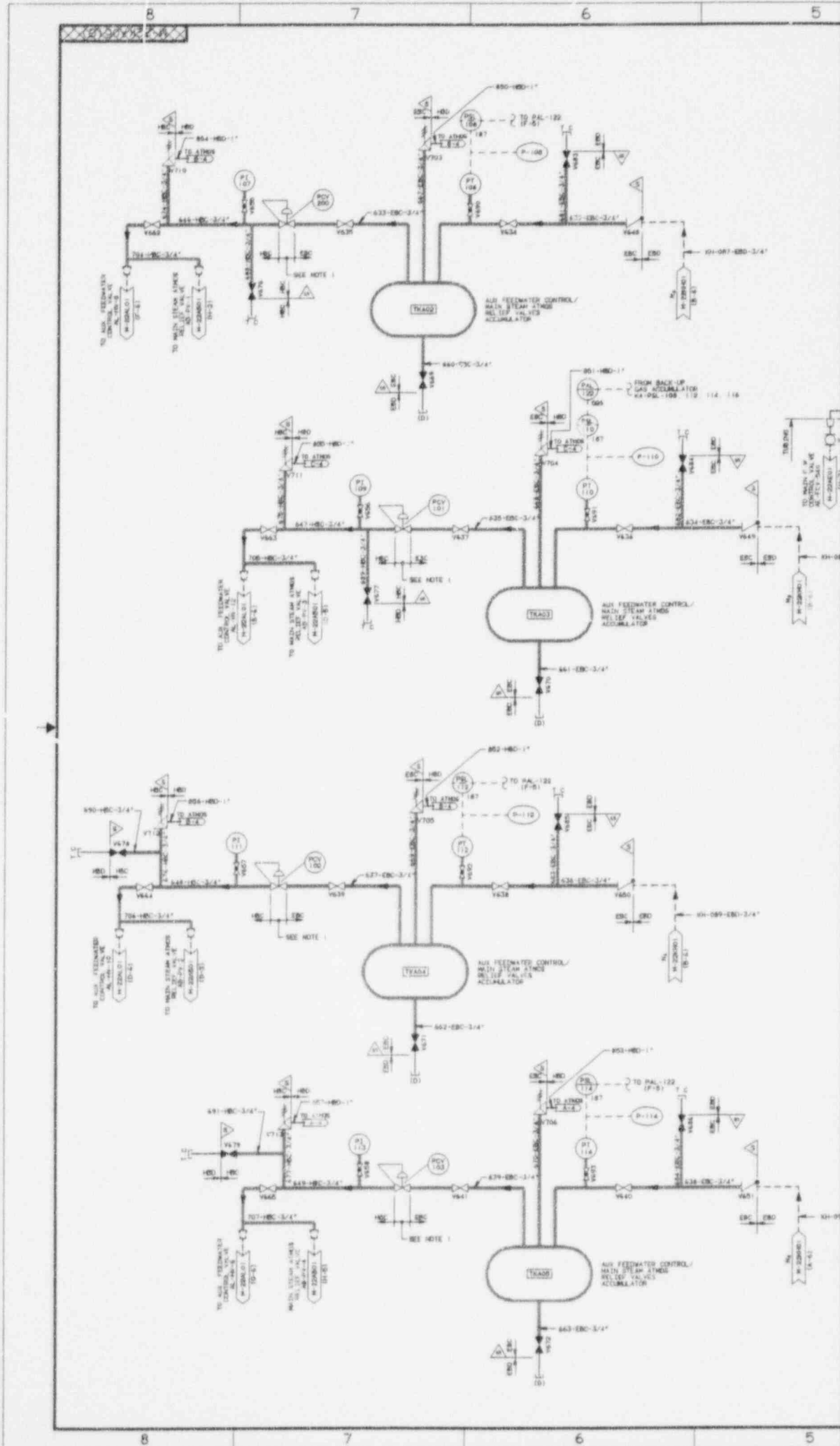
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
-----	GROUP A NON-EXEMPT
-----	GROUP A EXEMPT
-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22KA02(Q) A

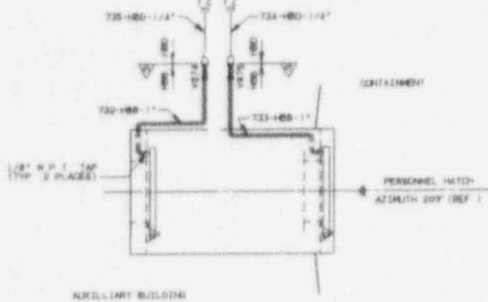
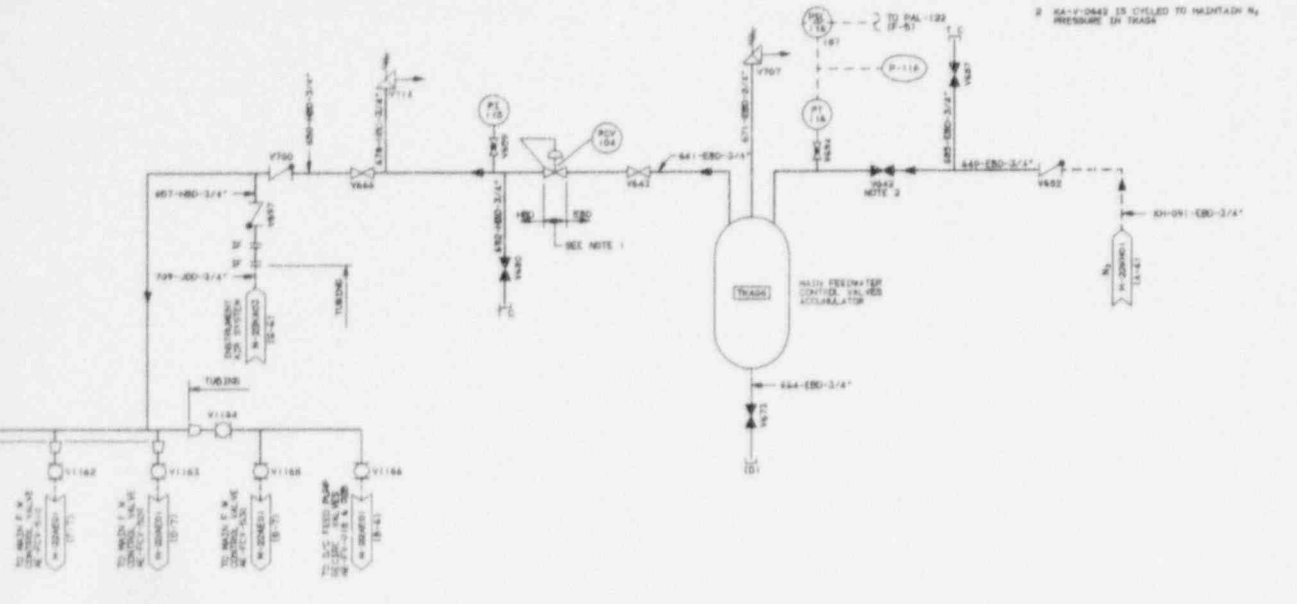
DATE	08/08	PROJECT	PIPING AND INSTRUMENTATION DIAGRAM
REV	N/A	SHEET	COMPRESSED AIR SYSTEM
APP	N/A	BY	(SERVICE AIR)
CHK	N/A	DATE	DALLARY PLANT
DES	N/A	NO	ST. LOUIS MO
<input checked="" type="checkbox"/> ASME SECTION XI INSERVICE INSPECTION ONLY		<input checked="" type="checkbox"/> ISI-M-22KA02(Q) A	

9508300247-46



REV DATE DRAWN BY
 1 11/18/88 JRM
 2 03/11/89 JRM
 3 05/21/89 JRM
 4 08/14/89 JRM
 5 09/11/89 JRM
 6 10/11/89 JRM
 7 11/11/89 JRM
 8 12/11/89 JRM
 9 01/11/90 JRM
 10 02/11/90 JRM
 11 03/11/90 JRM
 12 04/11/90 JRM
 13 05/11/90 JRM
 14 06/11/90 JRM
 15 07/11/90 JRM
 16 08/11/90 JRM
 17 09/11/90 JRM
 18 10/11/90 JRM
 19 11/11/90 JRM
 20 12/11/90 JRM

NOTE
 1 SEE SPECIFICATION 2014 FOR P&ID DESIGN REQUIREMENTS
 2 24-1-0448 IS CYCLED TO MAINTAIN A PRESSURE IN TRASH

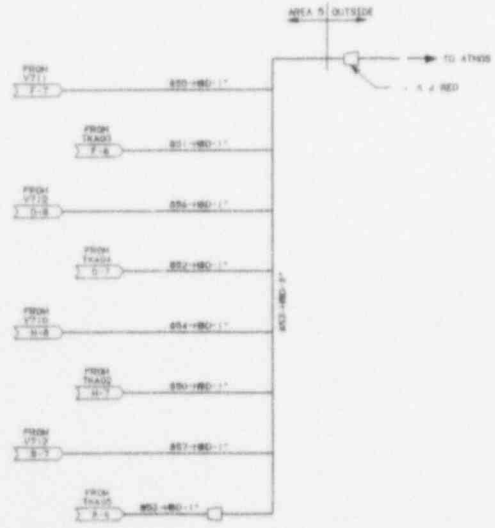


CONTAINMENT (PERSONNEL HATCH) 2047-1-1
 MEDICAL/HAZARDOUS INTERFALL AT 12\"/>

ANSTEC APERTURE CARD

Not Available on Aperture Card

REV DATE DRAWN BY
 1 11/18/88 JRM
 2 03/11/89 JRM
 3 05/21/89 JRM
 4 08/14/89 JRM
 5 09/11/89 JRM
 6 10/11/89 JRM
 7 11/11/89 JRM
 8 12/11/89 JRM
 9 01/11/90 JRM
 10 02/11/90 JRM
 11 03/11/90 JRM
 12 04/11/90 JRM
 13 05/11/90 JRM
 14 06/11/90 JRM
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 18 10/11/90 JRM
 19 11/11/90 JRM
 20 12/11/90 JRM



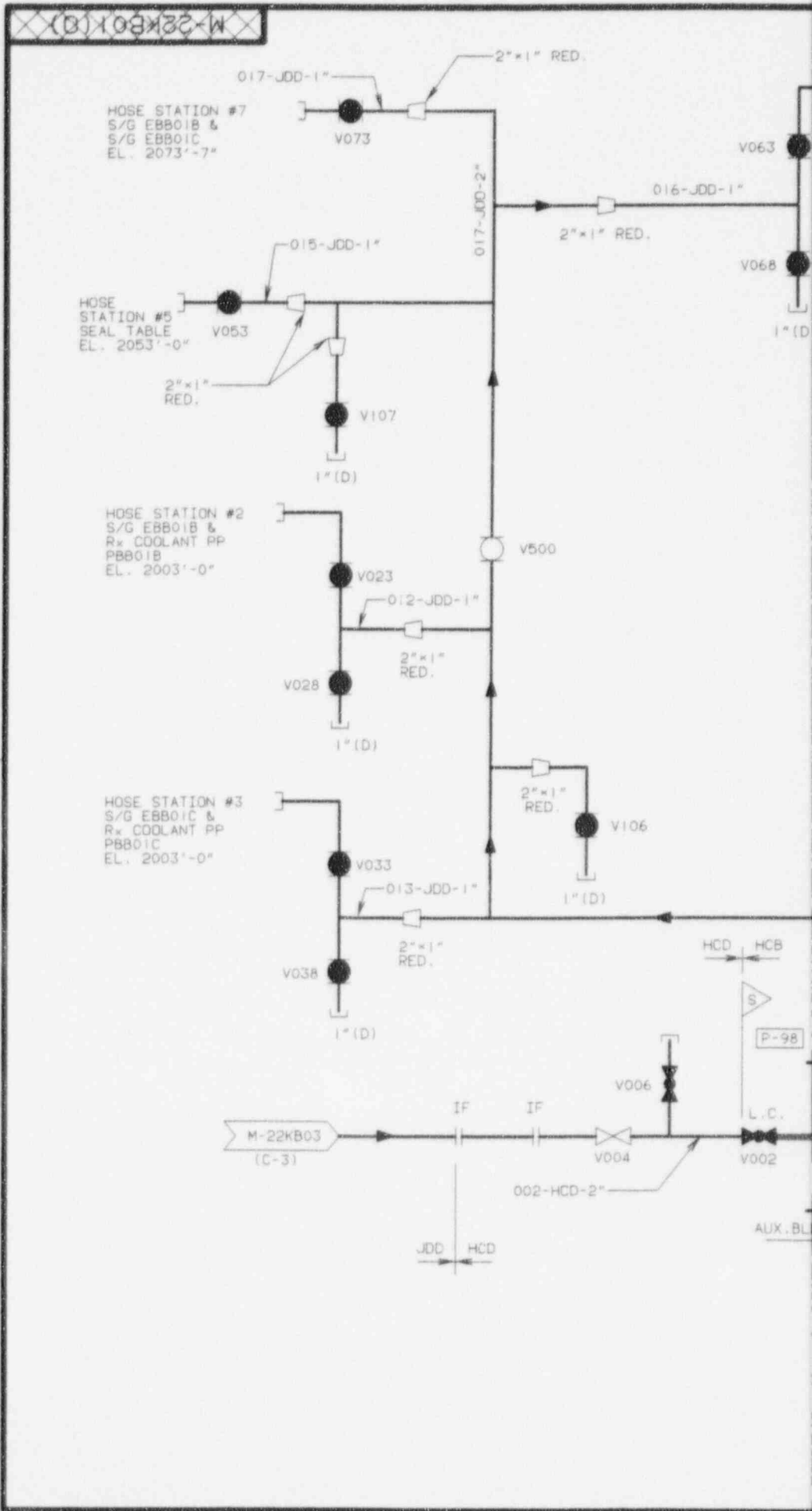
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BOUNDARY	DESCRIPTION
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=====	GROUP B NON-EXEMPT
=====	GROUP B EXEMPT
=====	GROUP C NON-EXEMPT
=====	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-N-22KA05(Q) A

9508300247-47

DATE	REV	BY	CHKD	APP'D
P&ID AND INSTRUMENTATION DIAGRAM COMPRESSED AIR SYSTEM				
CALL AWAY PLANT				
UNION ELECTRIC COMPANY ST. LOUIS, MO				
N-22KA05(Q) A				



HOSE STATION #6
R x HEAD LAYDOWN &
REFUEL CANAL
EL. 2052'-0"

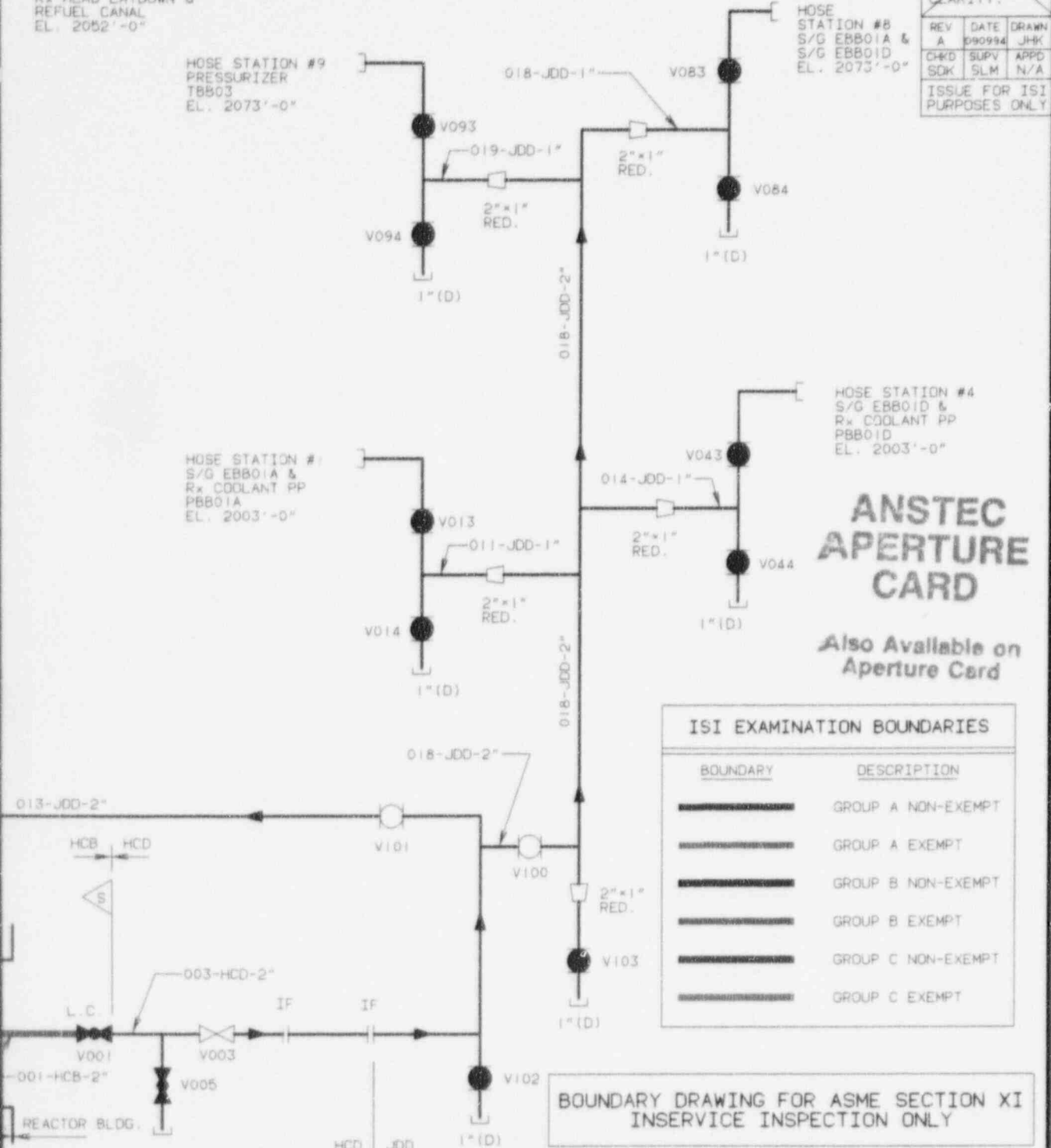
HOSE STATION #9
PRESSURIZER
TBB03
EL. 2073'-0"

HOSE STATION #8
S/G EBB01A &
S/G EBB01D
EL. 2073'-0"

HOSE STATION #1
S/G EBB01A &
R x COOLANT PP
PBB01A
EL. 2003'-0"

HOSE STATION #4
S/G EBB01D &
R x COOLANT PP
PBB01D
EL. 2003'-0"

REV	DATE	DRAWN
2	7/19/91	MAL
CHKD	SUPV	APPD
HLP	TJM	N/A
REDRAWN FOR CLARITY.		
REV	DATE	DRAWN
A	090994	JHK
CHKD	SUPV	APPD
SDK	SLM	N/A
ISSUE FOR ISI PURPOSES ONLY		



ANSTEC APERTURE CARD
Also Available on Aperture Card

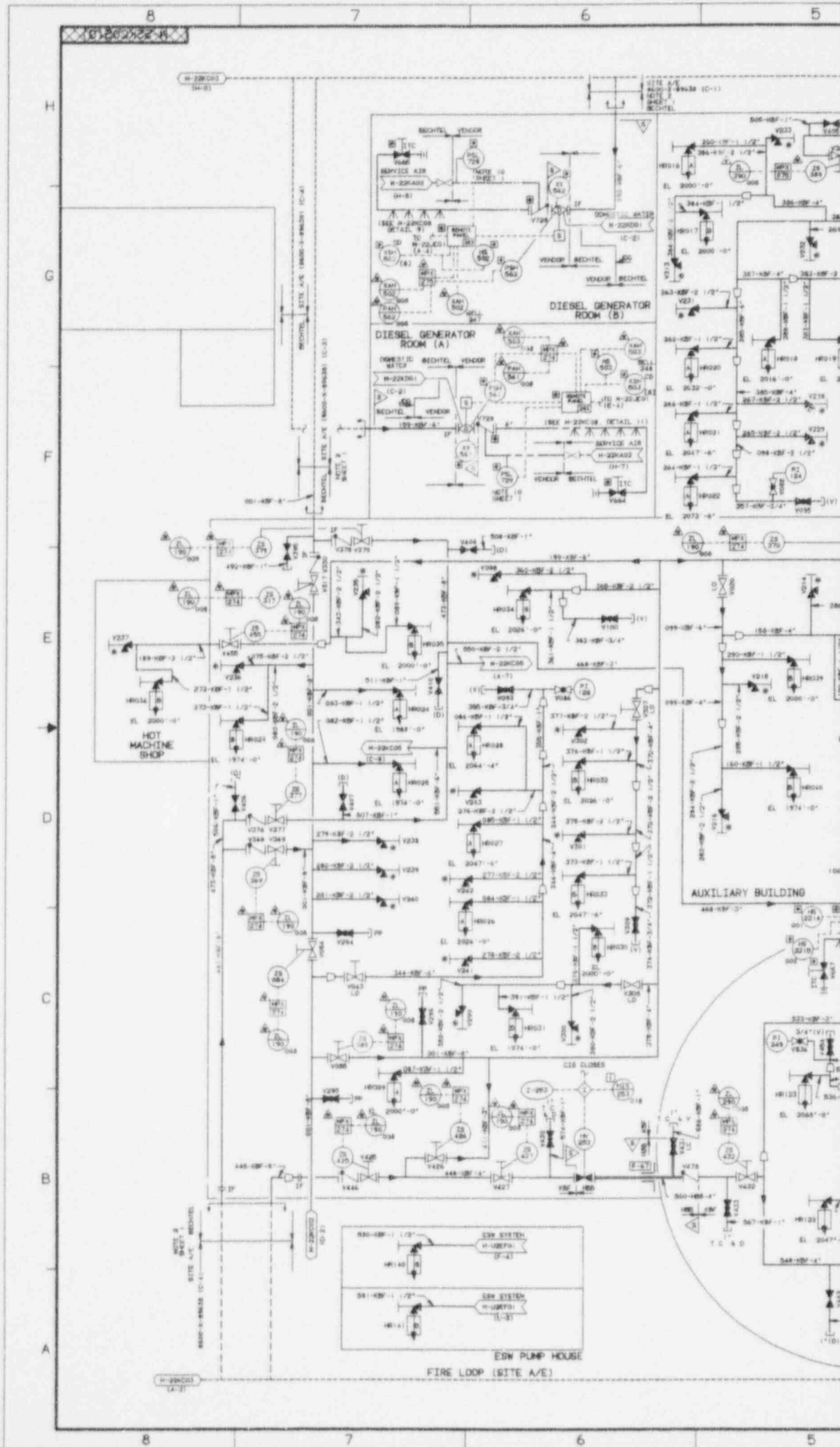
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
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	GROUP A EXEMPT
	GROUP B NON-EXEMPT
	GROUP B EXEMPT
	GROUP C NON-EXEMPT
	GROUP C EXEMPT

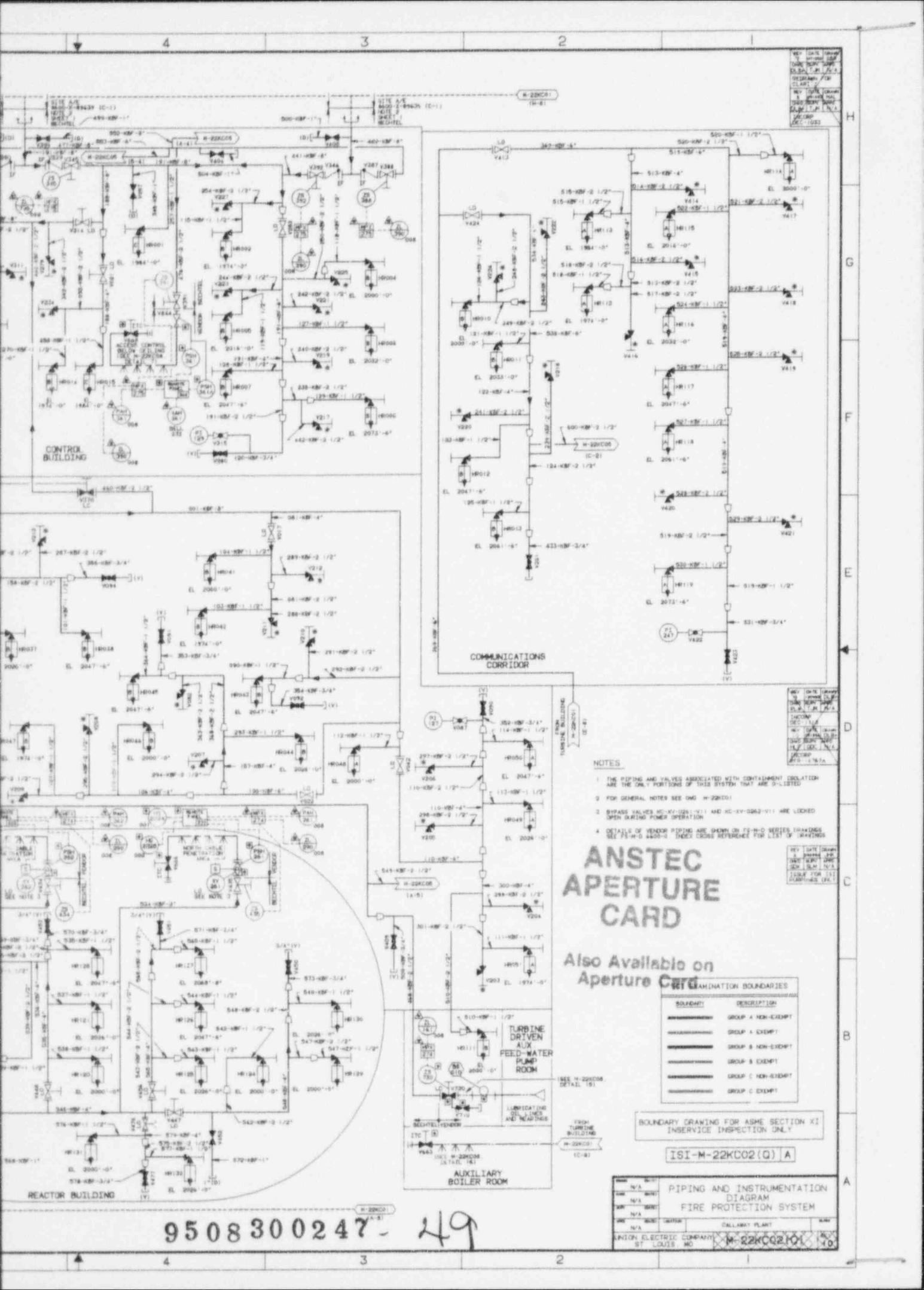
BOUNDARY DRAWING FOR ASME SECTION XI
INSERVICE INSPECTION ONLY

9508300247-48

ISI-M-22KB01(Q) A

DESIGN	(DATE)	PIPING & INSTRUMENTATION DIAGRAM BREATHING AIR SYSTEM	
N/A			
COND	(DATE)		
N/A			
SUPV	(DATE)		
N/A			
APPD	(DATE)	LOCATION	CLASS
N/A		CALLAWAY PLANT	
UNION ELECTRIC COMPANY, ST. LOUIS, MO		M-22KB01(Q)	REV 4





REV DATE DRAWN BY CHECKED BY
 10/15/80 J. A. A. J. A. A.
 11/15/80 J. A. A. J. A. A.
 12/15/80 J. A. A. J. A. A.
 01/15/81 J. A. A. J. A. A.
 02/15/81 J. A. A. J. A. A.
 03/15/81 J. A. A. J. A. A.

- NOTES**
- 1 THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT ISOLATION ARE THE ONLY PORTIONS OF THIS SYSTEM THAT ARE D-LISTED
 - 2 FOR GENERAL NOTES SEE SHEET M-22KC01
 - 3 BYPASS VALVES VC-VY-0261(V-1) AND VC-VY-0262(V-1) ARE LOCKED OPEN DURING POWER OPERATION
 - 4 DETAILS OF VENDOR PIPING ARE SHOWN ON P2-W-D SERIES DRAWINGS SEE P2-W-D 4400-1 INDEX CROSS REFERENCE FOR LIST OF DRAWINGS

ANSTEC APERTURE CARD

Also Available on Aperture Card

BOUNDARY	DESCRIPTION
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-----	GROUP A EXEMPT
-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT

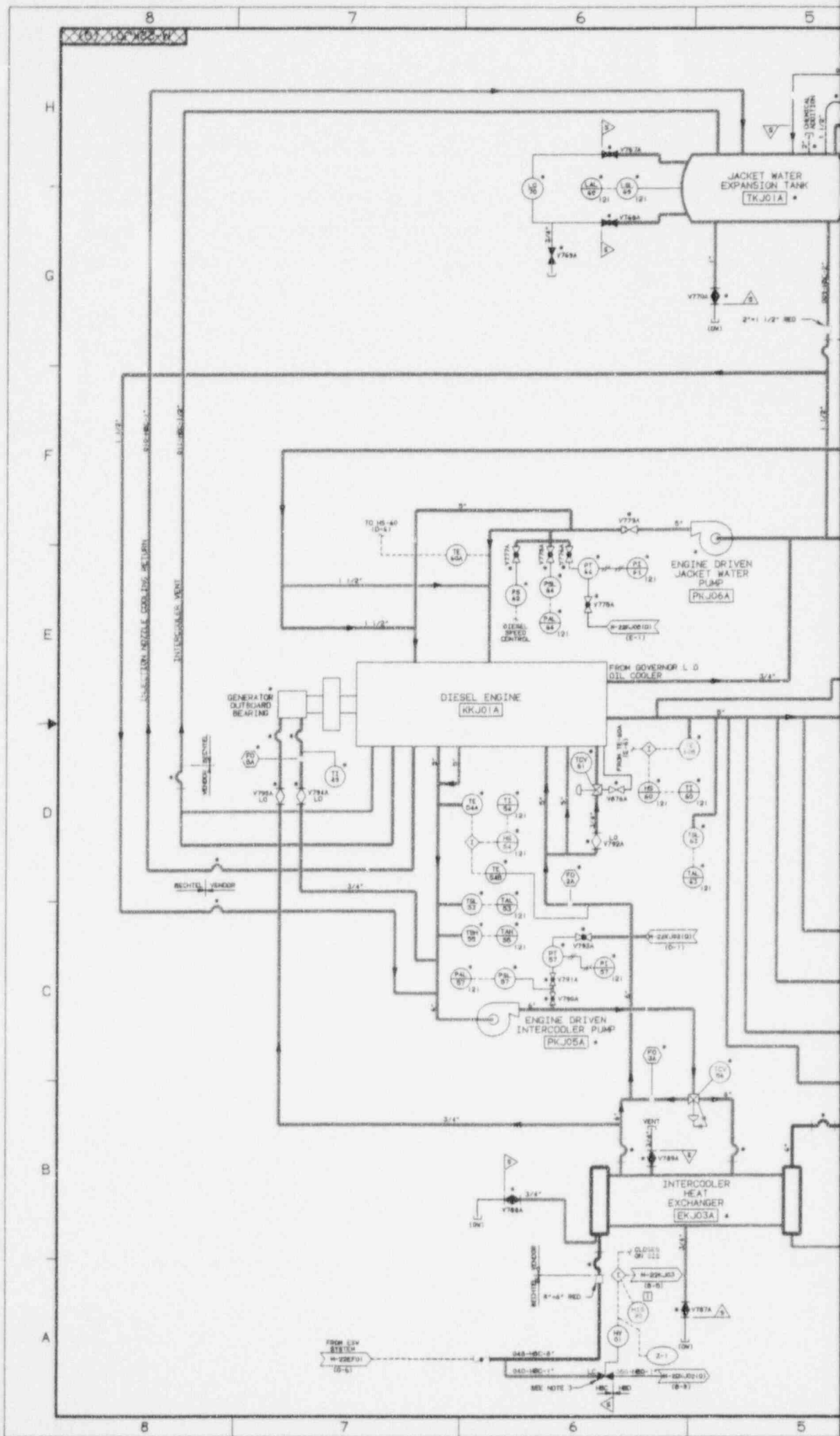
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

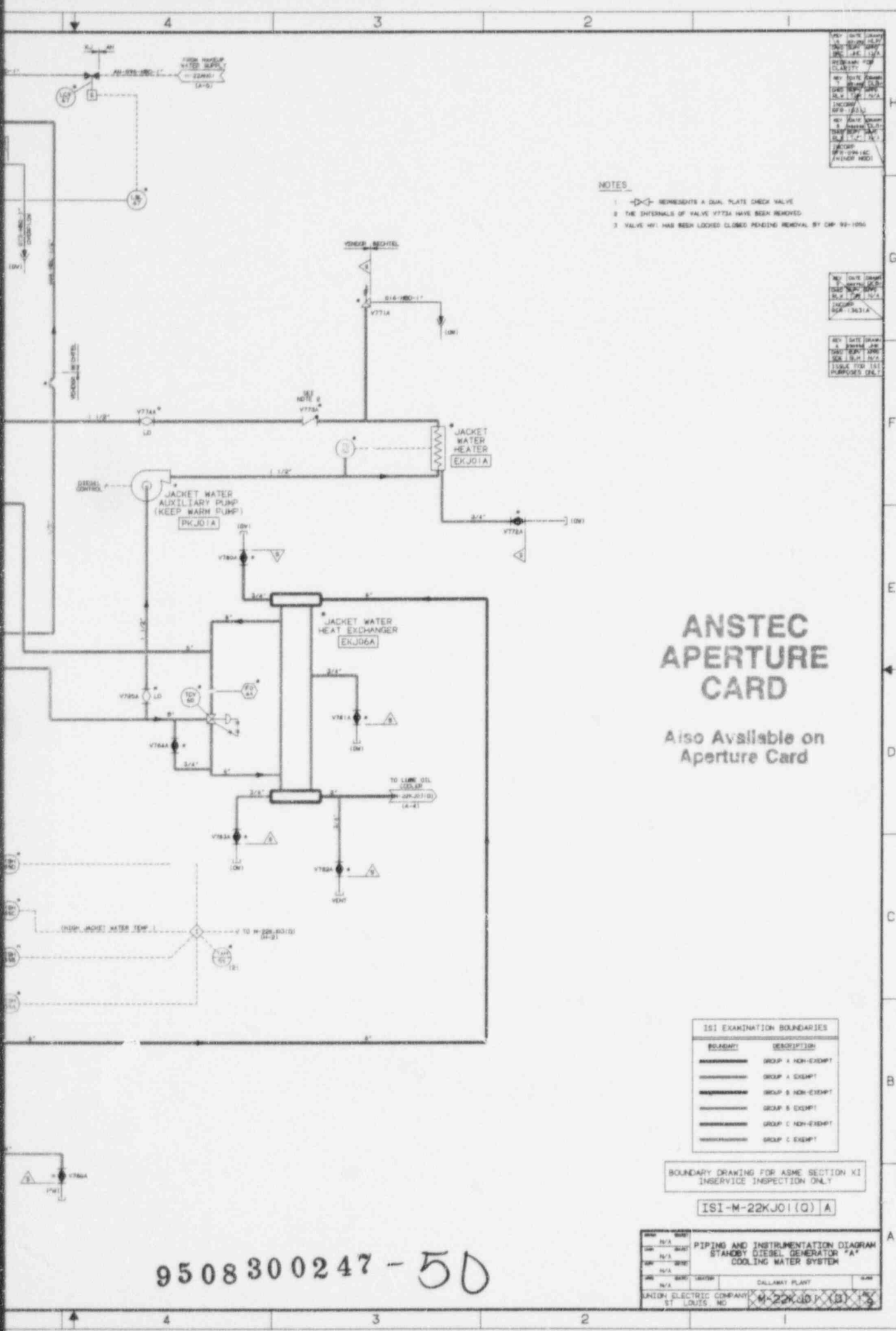
ISI-M-22KC02(Q) A

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/15/80	ISSUE FOR P.I.D.	J. A. A.	J. A. A.
2	11/15/80	ISSUE FOR P.I.D.	J. A. A.	J. A. A.
3	12/15/80	ISSUE FOR P.I.D.	J. A. A.	J. A. A.
4	01/15/81	ISSUE FOR P.I.D.	J. A. A.	J. A. A.
5	02/15/81	ISSUE FOR P.I.D.	J. A. A.	J. A. A.
6	03/15/81	ISSUE FOR P.I.D.	J. A. A.	J. A. A.

CALLAWAY PLANT
 UNION ELECTRIC COMPANY
 ST. LOUIS, MO

9508300247-49





- NOTES**
- 1. REPRESENTS A DUAL PLATE CHECK VALVE
 - 2. THE INTERNALS OF VALVE V773A HAVE BEEN REMOVED
 - 3. VALVE V71 HAS BEEN LOCKED CLOSED PENDING REMOVAL BY CWP 99-1056

REV	DATE	BY	DESCRIPTION
1	10/11/77	WJG	ISSUE FOR CONSTRUCTION
2	11/14/77	WJG	REVISION TO VALVE V773A
3	12/15/77	WJG	REVISION TO VALVE V773A
4	01/11/78	WJG	REVISION TO VALVE V773A
5	02/02/78	WJG	REVISION TO VALVE V773A
6	03/02/78	WJG	REVISION TO VALVE V773A
7	04/02/78	WJG	REVISION TO VALVE V773A
8	05/02/78	WJG	REVISION TO VALVE V773A
9	06/02/78	WJG	REVISION TO VALVE V773A
10	07/02/78	WJG	REVISION TO VALVE V773A
11	08/02/78	WJG	REVISION TO VALVE V773A
12	09/02/78	WJG	REVISION TO VALVE V773A
13	10/02/78	WJG	REVISION TO VALVE V773A
14	11/02/78	WJG	REVISION TO VALVE V773A
15	12/02/78	WJG	REVISION TO VALVE V773A

ANSTEC APERTURE CARD

Also Available on Aperture Card

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
	GROUP A NON-EXEMPT
	GROUP A EXEMPT
	GROUP B NON-EXEMPT
	GROUP B EXEMPT
	GROUP C NON-EXEMPT
	GROUP C EXEMPT

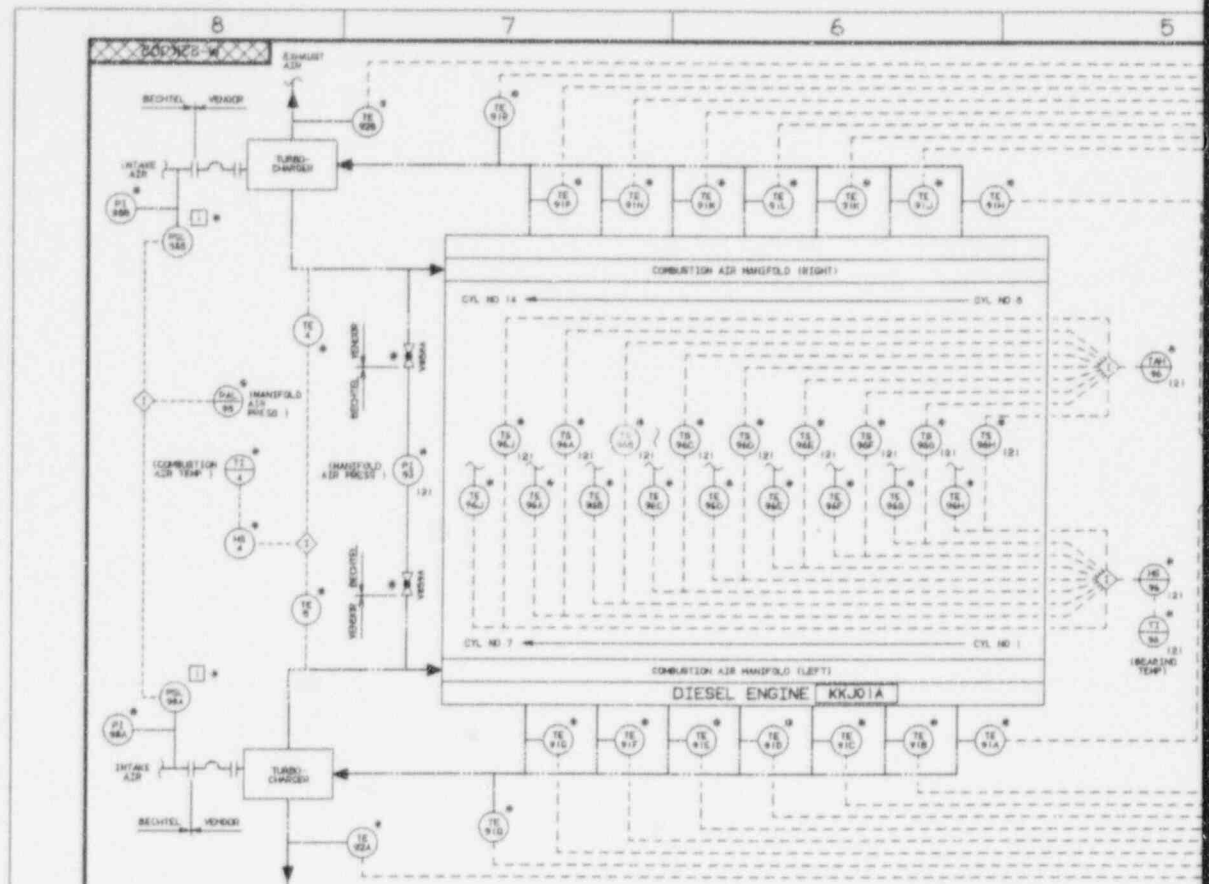
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22KJ01(Q) A

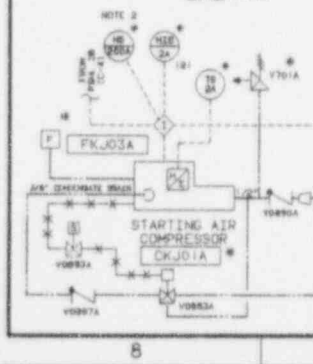
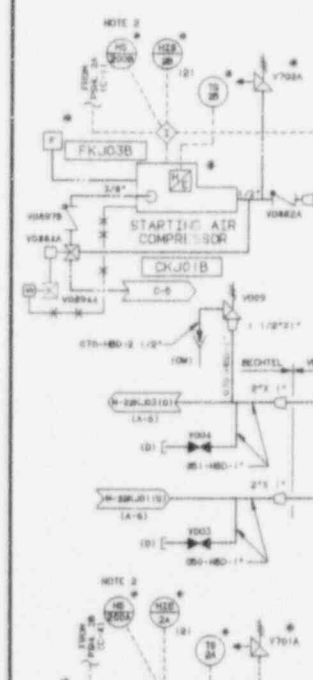
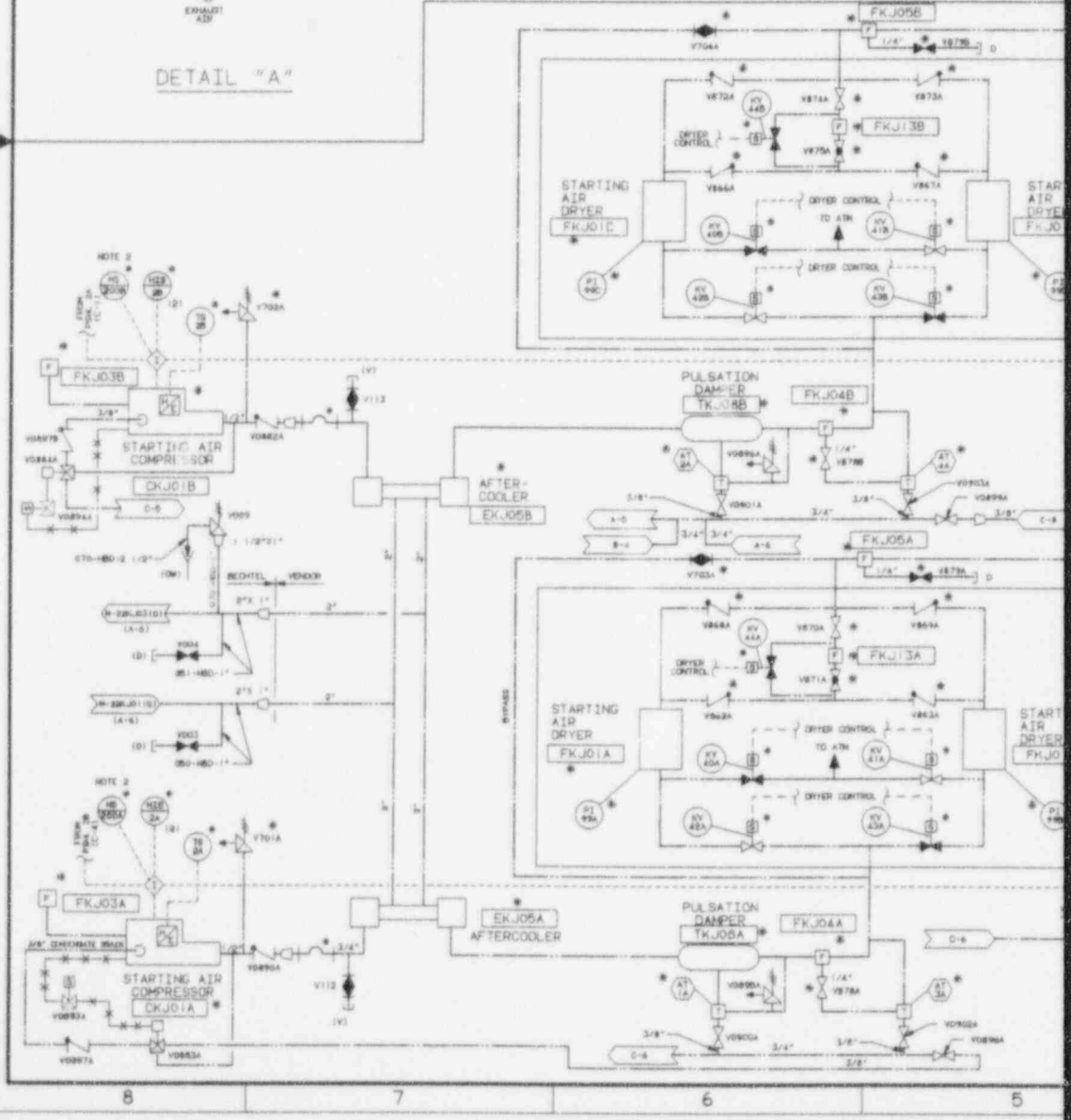
NO.	REV.	DATE	BY	DESCRIPTION
1	1	10/11/77	WJG	ISSUE FOR CONSTRUCTION
2	2	11/14/77	WJG	REVISION TO VALVE V773A
3	3	12/15/77	WJG	REVISION TO VALVE V773A
4	4	01/11/78	WJG	REVISION TO VALVE V773A
5	5	02/02/78	WJG	REVISION TO VALVE V773A
6	6	03/02/78	WJG	REVISION TO VALVE V773A
7	7	04/02/78	WJG	REVISION TO VALVE V773A
8	8	05/02/78	WJG	REVISION TO VALVE V773A
9	9	06/02/78	WJG	REVISION TO VALVE V773A
10	10	07/02/78	WJG	REVISION TO VALVE V773A
11	11	08/02/78	WJG	REVISION TO VALVE V773A
12	12	09/02/78	WJG	REVISION TO VALVE V773A
13	13	10/02/78	WJG	REVISION TO VALVE V773A
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15	15	12/02/78	WJG	REVISION TO VALVE V773A

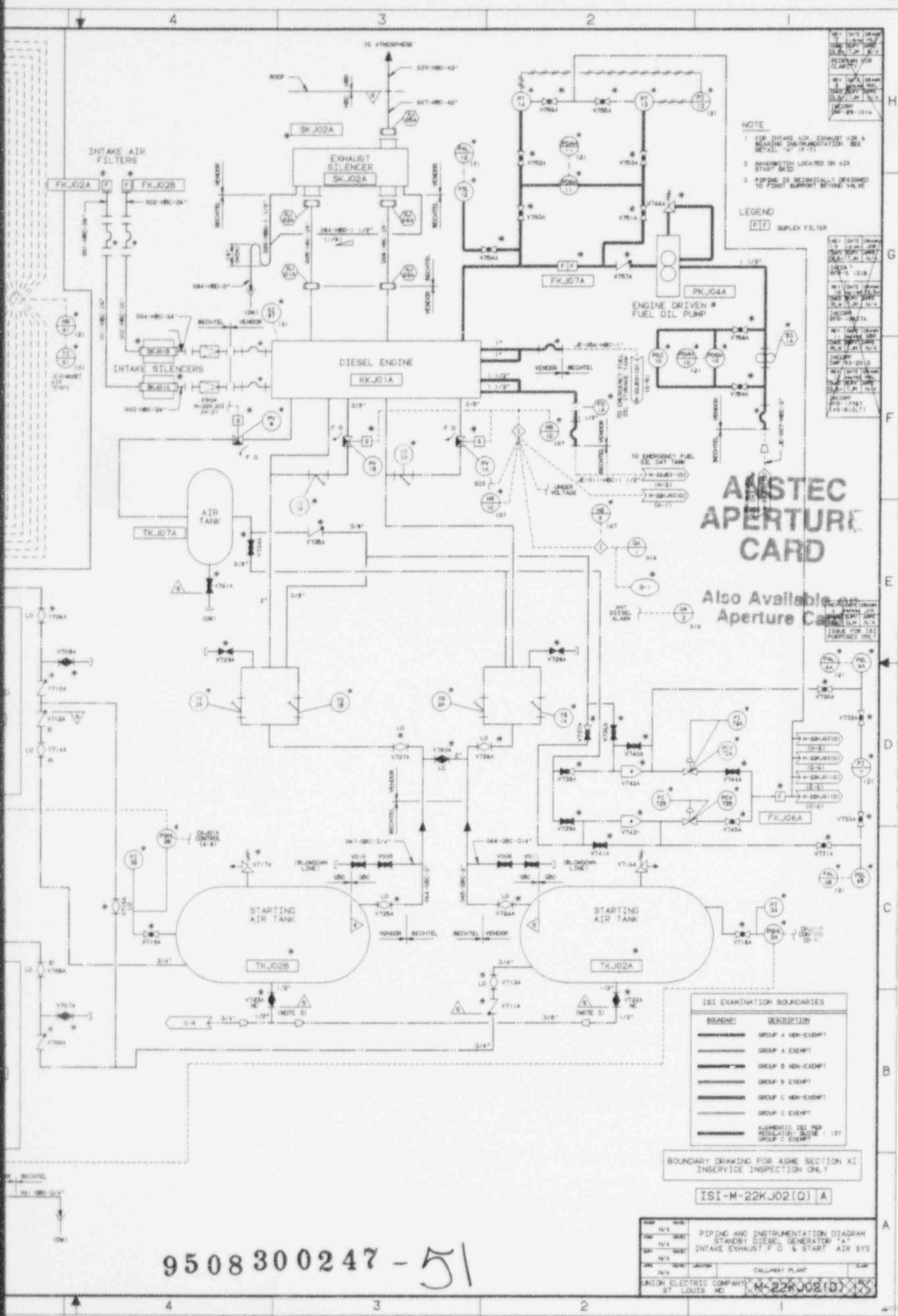
9508300247-50

UNION ELECTRIC COMPANY ST. LOUIS, MO M-22KJ01(Q) A



DETAIL "A"





REV 10/71 (DRAWN BY: J. L. H. / CHECKED BY: J. L. H. / DESIGNED BY: J. L. H. / DATE: 10/71 / PROJECT: M-22KJ02(0) / SHEET: 1 OF 1

- NOTE**
- FOR INTAKE AIR EXHAUST F.O. & START AIR SYSTEMS SEE DETAIL "A" (P-7)
 - HANDSWITCH LOCATED ON AIR START SKID
 - PIPING IS THEORETICALLY DESIGNED TO FIGHT BURSTING VALVE

LEGEND
 [P/F] DUPLEX FILTER

REV 10/71 (DRAWN BY: J. L. H. / CHECKED BY: J. L. H. / DESIGNED BY: J. L. H. / DATE: 10/71 / PROJECT: M-22KJ02(0) / SHEET: 1 OF 1

ANSTEC APERTURE CARD

Also Available on Aperture Card

ISI EXAMINATION BOUNDARIES

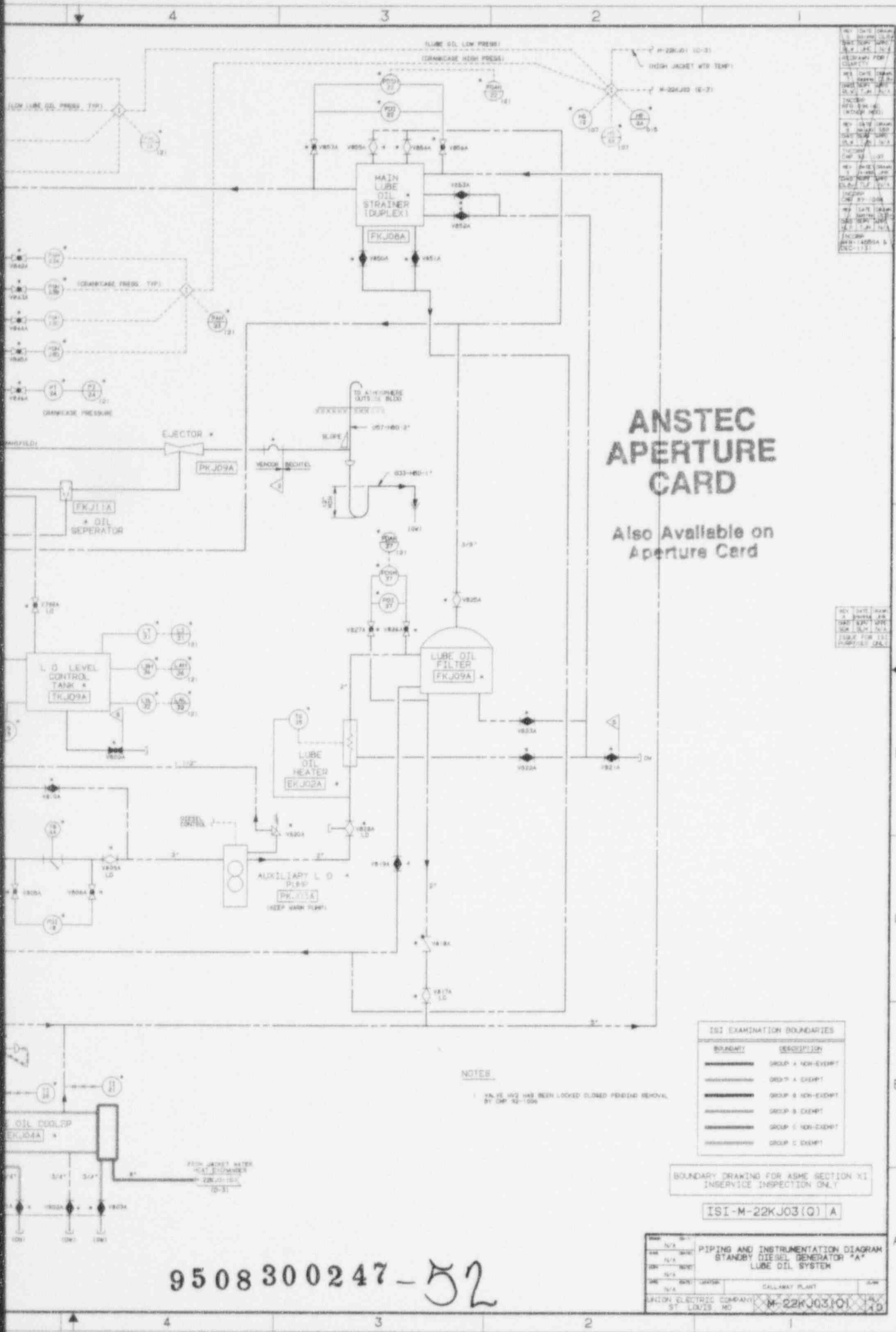
BOUNDARY	DESCRIPTION
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-----	GROUP A EXEMPT
-----	GROUP B NON-EXEMPT
-----	GROUP B EXEMPT
-----	GROUP C NON-EXEMPT
-----	GROUP C EXEMPT
-----	ALPHABETIC ISI PER REGULATORY STATE GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22KJ02(0) | A

DATE	REV	BY	CHK	APP	DESCRIPTION	DATE
N/A	N/A	N/A	N/A	N/A	PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR "A" INTAKE EXHAUST F.O. & START AIR SYS	
N/A	N/A	N/A	N/A	N/A	CALLAWAY PLANT	
UNION ELECTRIC COMPANY ST. LOUIS, MO						M-22KJ02(0)

9508300247-51



**ANSTEC
APERTURE
CARD**

Also Available on
Aperture Card

NOTES

1. V850, V852 HAS BEEN LOCKED CLOSED PERIODIC MAINTENANCE BY OMP 12-1-006

ISI EXAMINATION BOUNDARIES

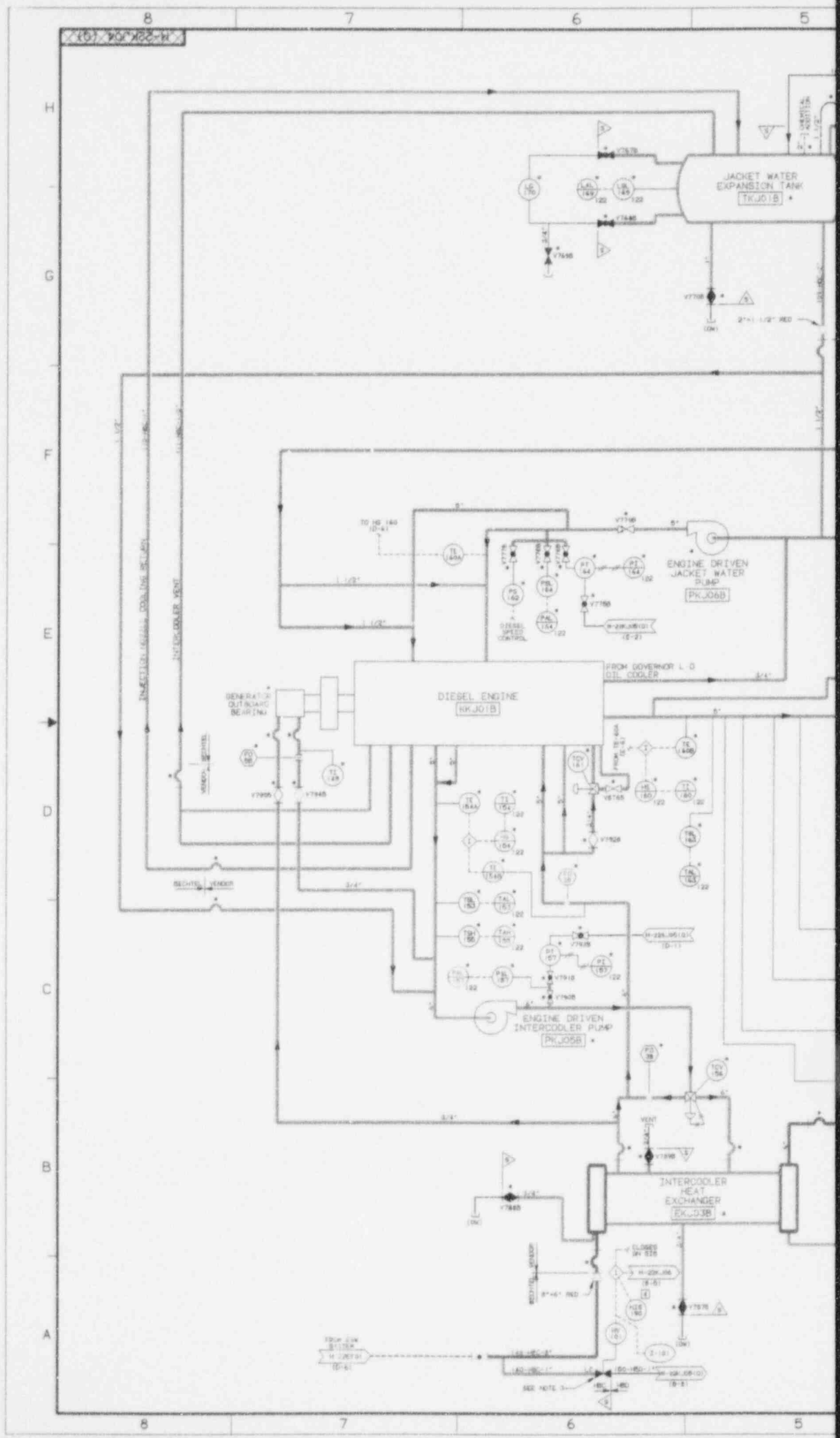
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-----	GROUP B - NON-EXEMPT
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-----	GROUP C - NON-EXEMPT
-----	GROUP C - EXEMPT

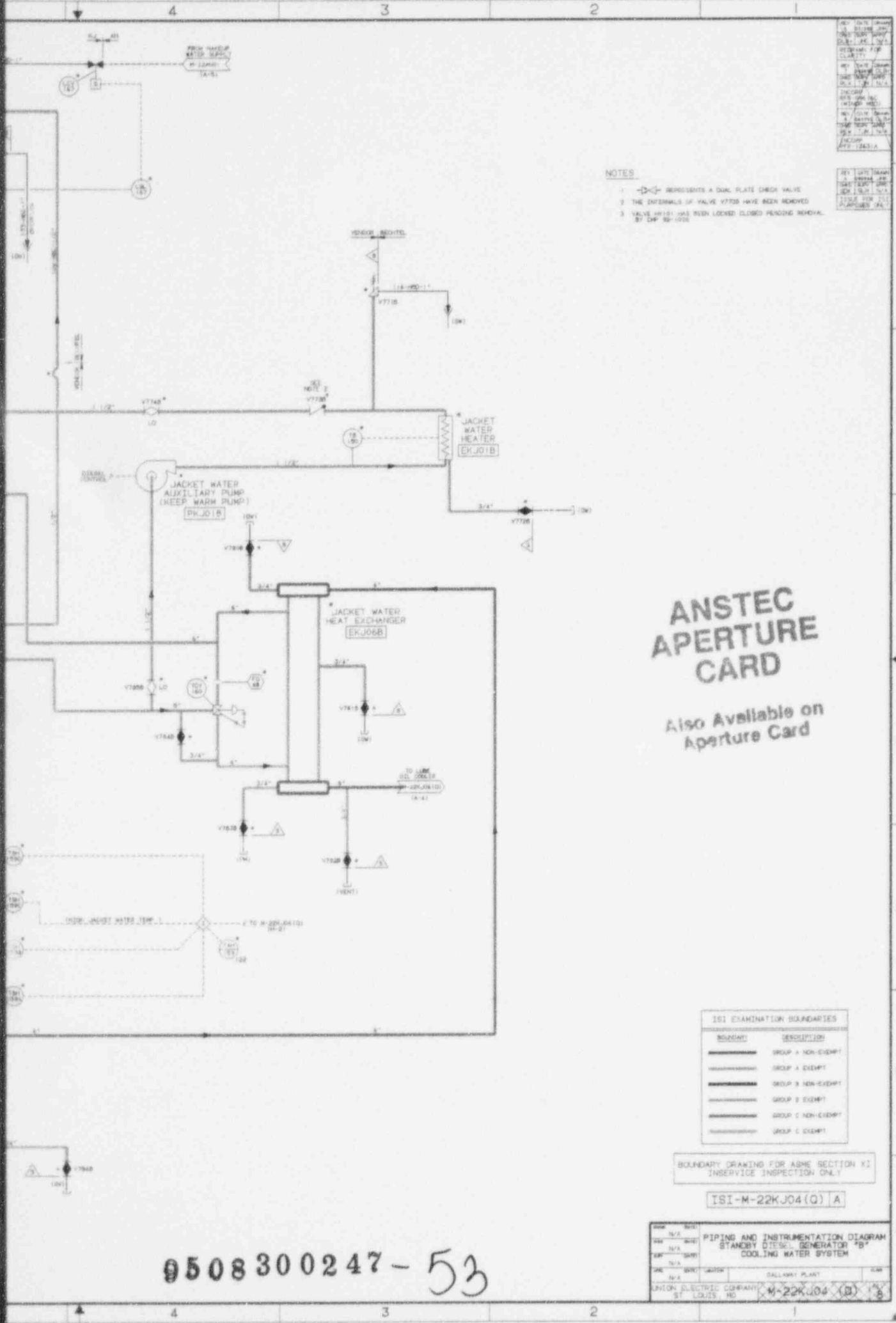
BOUNDARY DRAWING FOR ASME SECTION XI
INSERVICE INSPECTION ONLY

ISI-M-22KJ03(Q) A

NO.	REV.	DATE	BY	CHKD.	GROUP	CALLAWAY PLANT	DATE
1	N/A						
PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR "A" LUBE OIL SYSTEM							
LIGON ELECTRIC COMPANY ST. LOUIS, MO						M-22KJ03101	10

9508300247-52





- NOTES
1. REPRESENTS A DUAL PLATE CHECK VALVE
 2. THE INTERNALS OF VALVE V7708 HAVE BEEN REMOVED
 3. VALVE V7711 HAS BEEN LOCKED CLOSED PENDING REPAIR BY DP 89-1002

**ANSTEC
APERTURE
CARD**

Also Available on
Aperture Card

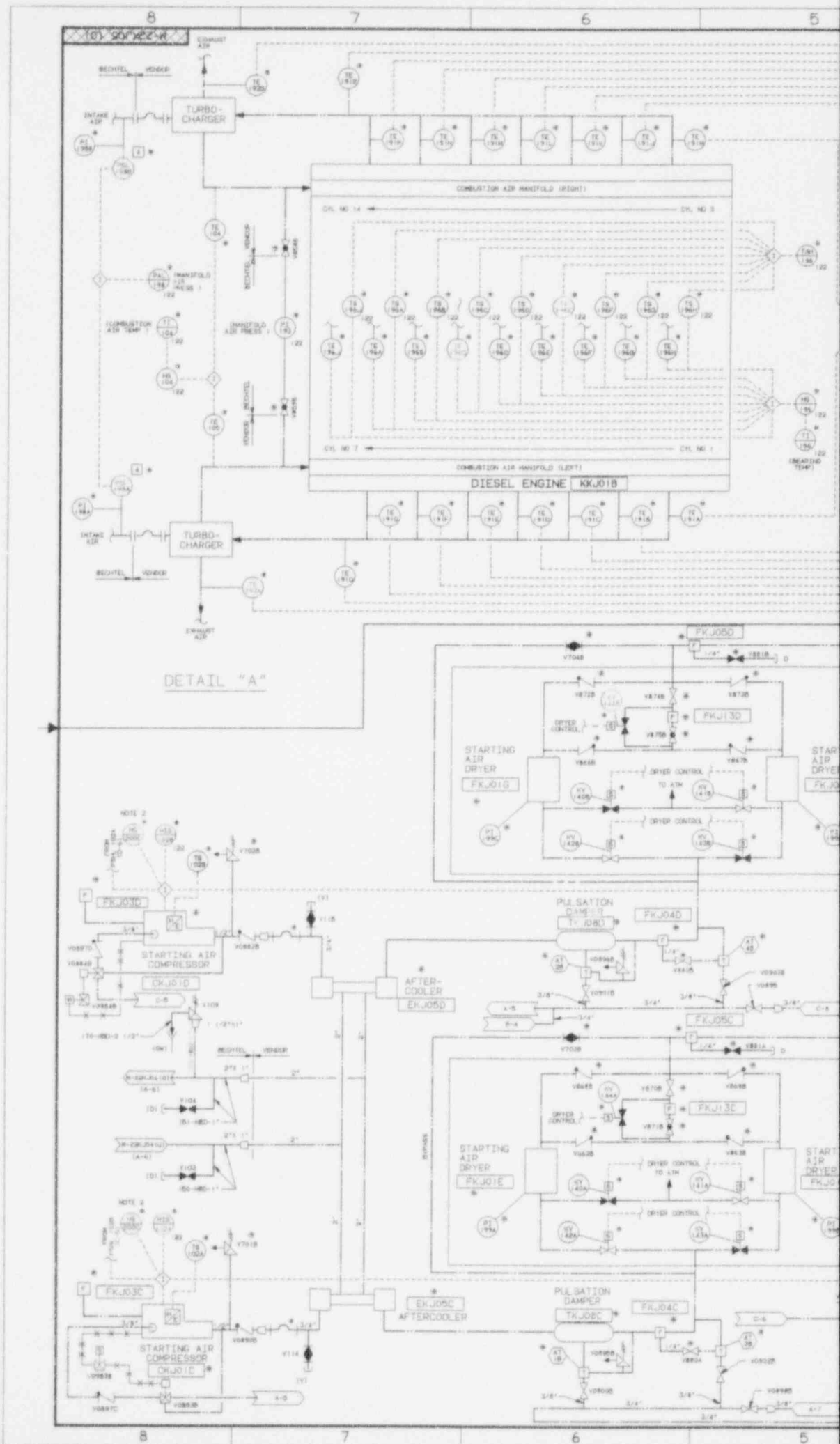
ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
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	GROUP C NON-EXEMPT
	GROUP C EXEMPT

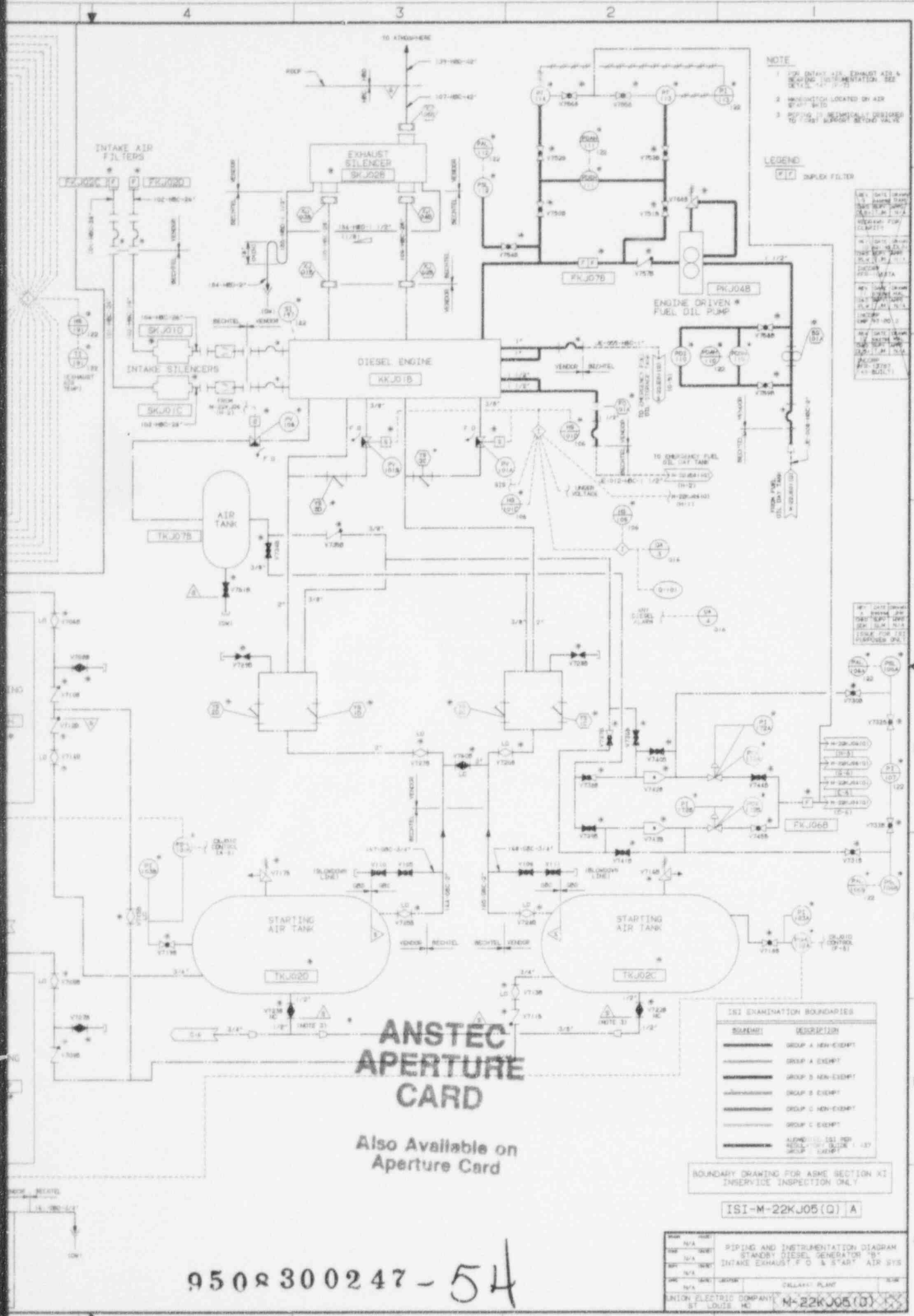
BOUNDARY DRAWING FOR ASME SECTION XI
INSERVICE INSPECTION ONLY

ISI-M-22KJ04(Q) A

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99	1	10/1/80	ISSUED FOR CONSTRUCTION
100	1	10/1/80	ISSUED FOR CONSTRUCTION

9508300247-53





NOTE

1. FOR INTAKE AIR, EXHAUST AIR & STARTING AIR, SEE SECTION 101-110.
2. SWITCH LOCATED ON AIR START VALVE.
3. PIPING TO BE INSTALLED BEFORE TO TEST MARKET BEFORE VALVE.

LEGEND

PI 100 IMPLY FILTER

KEY

1. 100-110-01-01
2. 100-110-01-02
3. 100-110-01-03
4. 100-110-01-04
5. 100-110-01-05
6. 100-110-01-06
7. 100-110-01-07
8. 100-110-01-08
9. 100-110-01-09
10. 100-110-01-10
11. 100-110-01-11
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18. 100-110-01-18
19. 100-110-01-19
20. 100-110-01-20

KEY

1. 100-110-01-21
2. 100-110-01-22
3. 100-110-01-23
4. 100-110-01-24
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16. 100-110-01-36
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19. 100-110-01-39
20. 100-110-01-40

ISI EXAMINATION BOUNDARIES

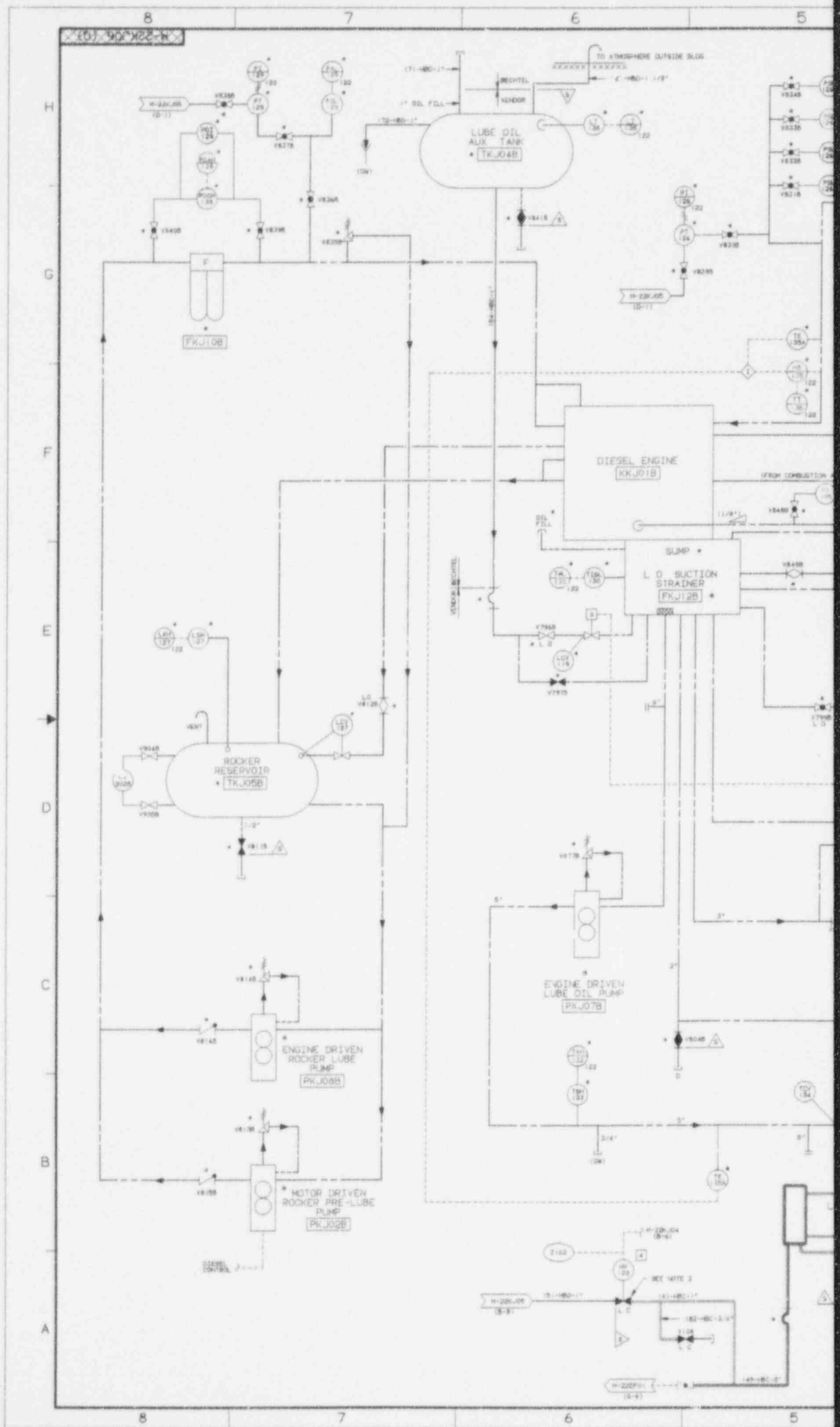
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—	GROUP A CRITICAL
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—	ALIGNED ISI FOR ASME SECTION XI INSERVICE INSPECTION ONLY

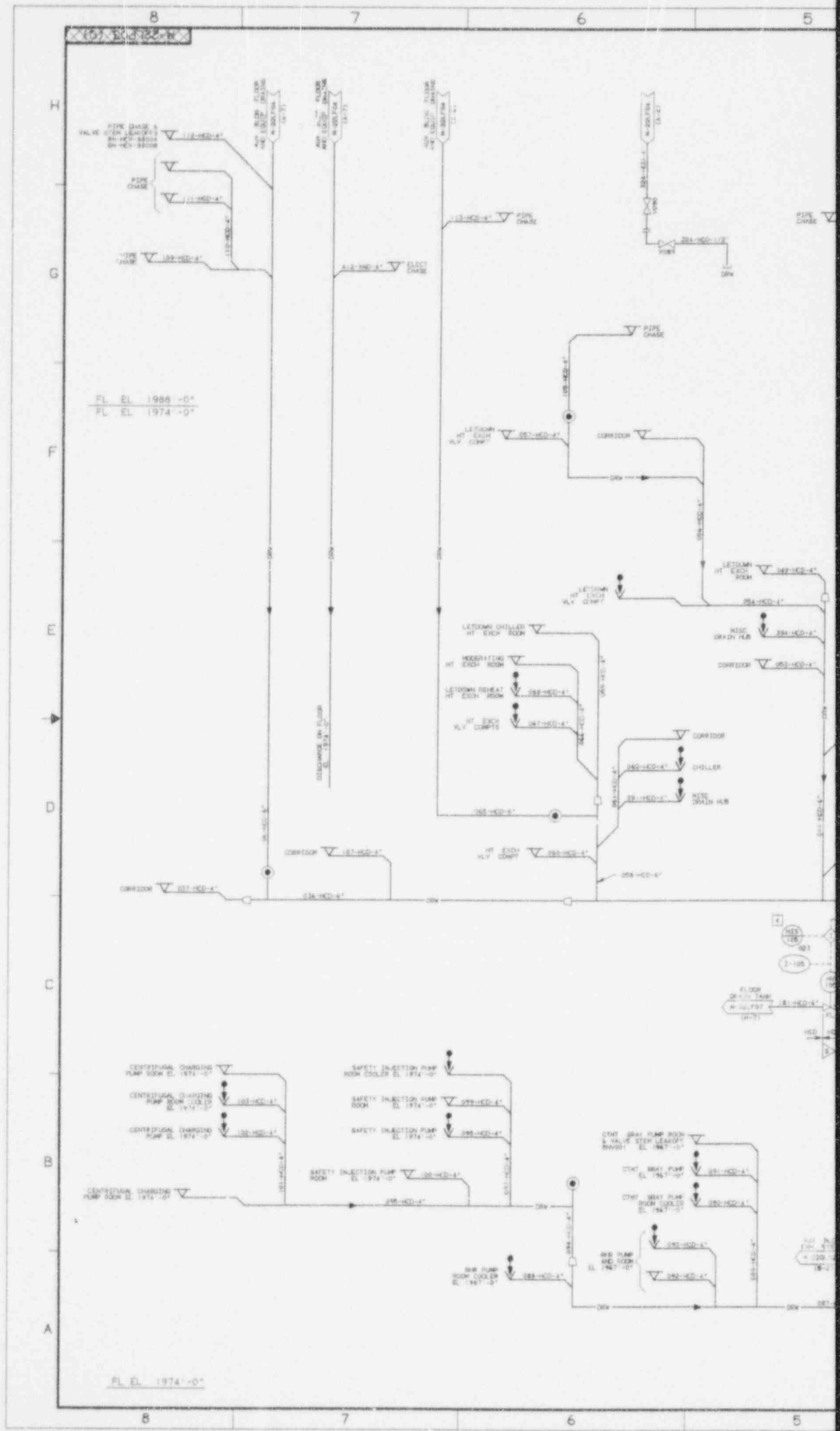
BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22KJ05(Q) A

NO.	REV.	DESCRIPTION	DATE
1	1	PIPING AND INSTRUMENTATION DIAGRAM STANDBY DIESEL GENERATOR 'B' INTAKE EXHAUST F.O. & START AIR SYS	
1	1	DESIGNED BY	
1	1	CHECKED BY	
1	1	APPROVED BY	
1	1	DATE	
UNION ELECTRIC COMPANY ST. LOUIS, MO			

9508300247-54

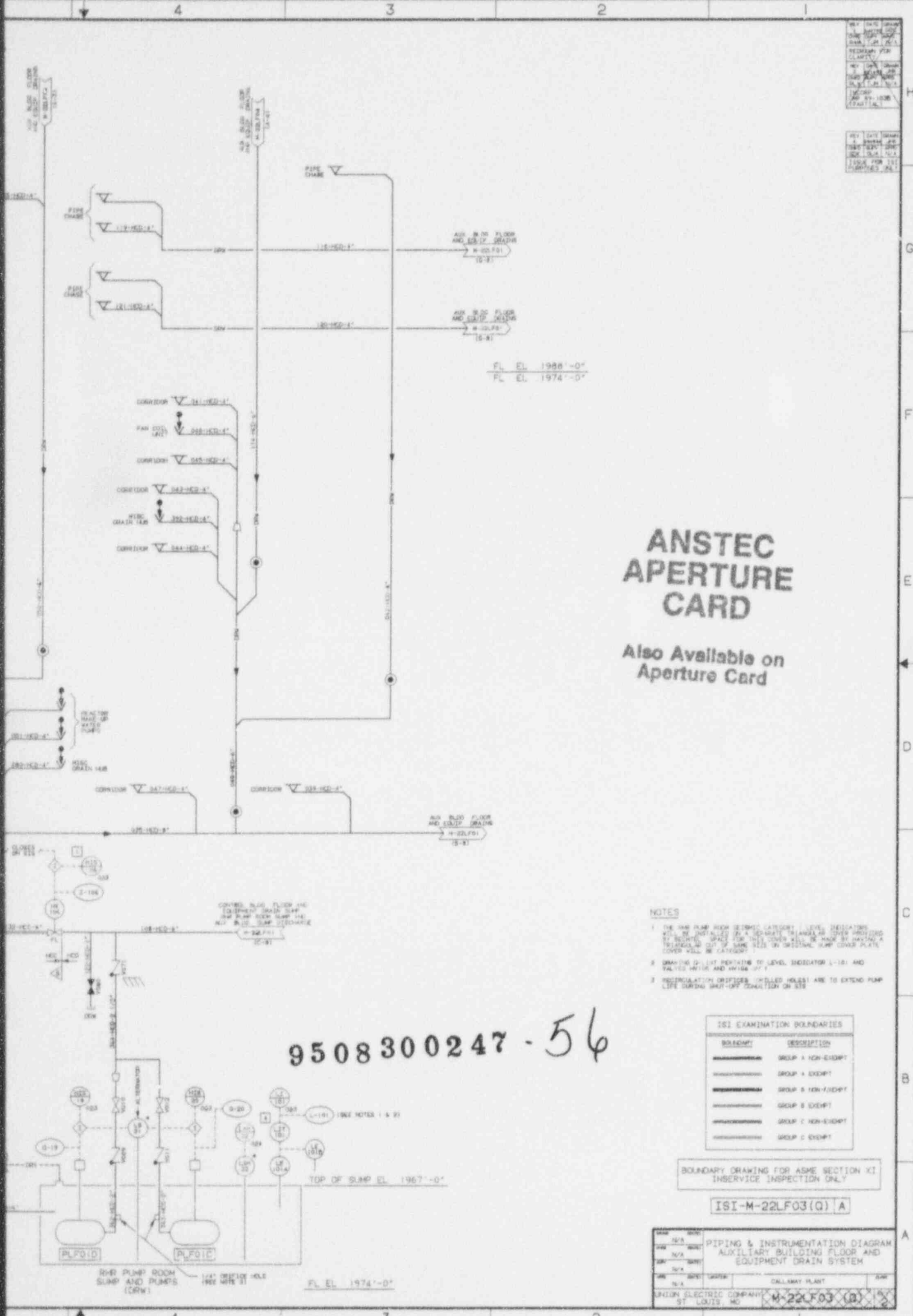




FL EL 1986 -0'
FL EL 1974 -0'

FL EL 1974 -0'





REV	DATE	BY	CHKD	GROUP
1	10/1/74	J. H. ...	J. H. ...	...
2	10/1/74	J. H. ...	J. H. ...	...
3	10/1/74	J. H. ...	J. H. ...	...
4	10/1/74	J. H. ...	J. H. ...	...
5	10/1/74	J. H. ...	J. H. ...	...

REV	DATE	BY	CHKD	GROUP
1	10/1/74	J. H. ...	J. H. ...	...
2	10/1/74	J. H. ...	J. H. ...	...
3	10/1/74	J. H. ...	J. H. ...	...
4	10/1/74	J. H. ...	J. H. ...	...
5	10/1/74	J. H. ...	J. H. ...	...

ANSTEC APERTURE CARD

Also Available on Aperture Card

9508300247-56

NOTES

1. THE DRG PUMP ROOM CATEGORY I LEVEL INDICATORS WILL BE INSTALLED IN A SEPARATE TRIANGLE COVER PROVIDED BY THE USER. SPACE FOR THIS COVER WILL BE MARKED BY HAVING A TRIANGLE CUT TO SAME SIZE ON DRINKING PUMP COVER PLATE. COVER WILL BE CATEGORY I.
2. DRAWING LIST PERTAINING TO LEVEL INDICATOR I-101 AND VALVES W-101 AND W-102 IS OFF.
3. PENETRATION BRIDGES (WELDED HOLES) ARE TO EXTEND PUMP LIFE DURING SHUT-OFF CONDITION ON SITE.

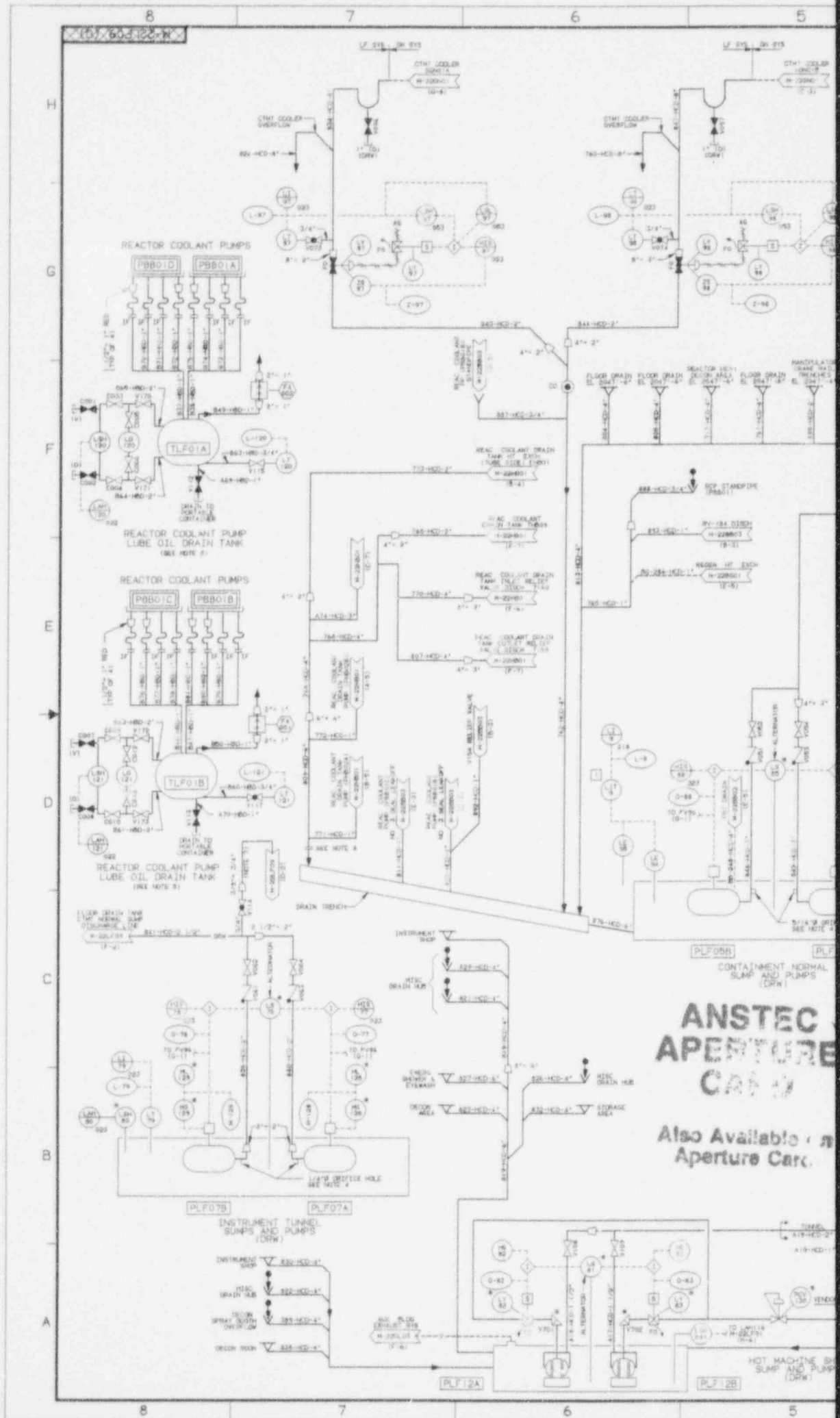
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-----	GROUP C EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22LF03(Q) A

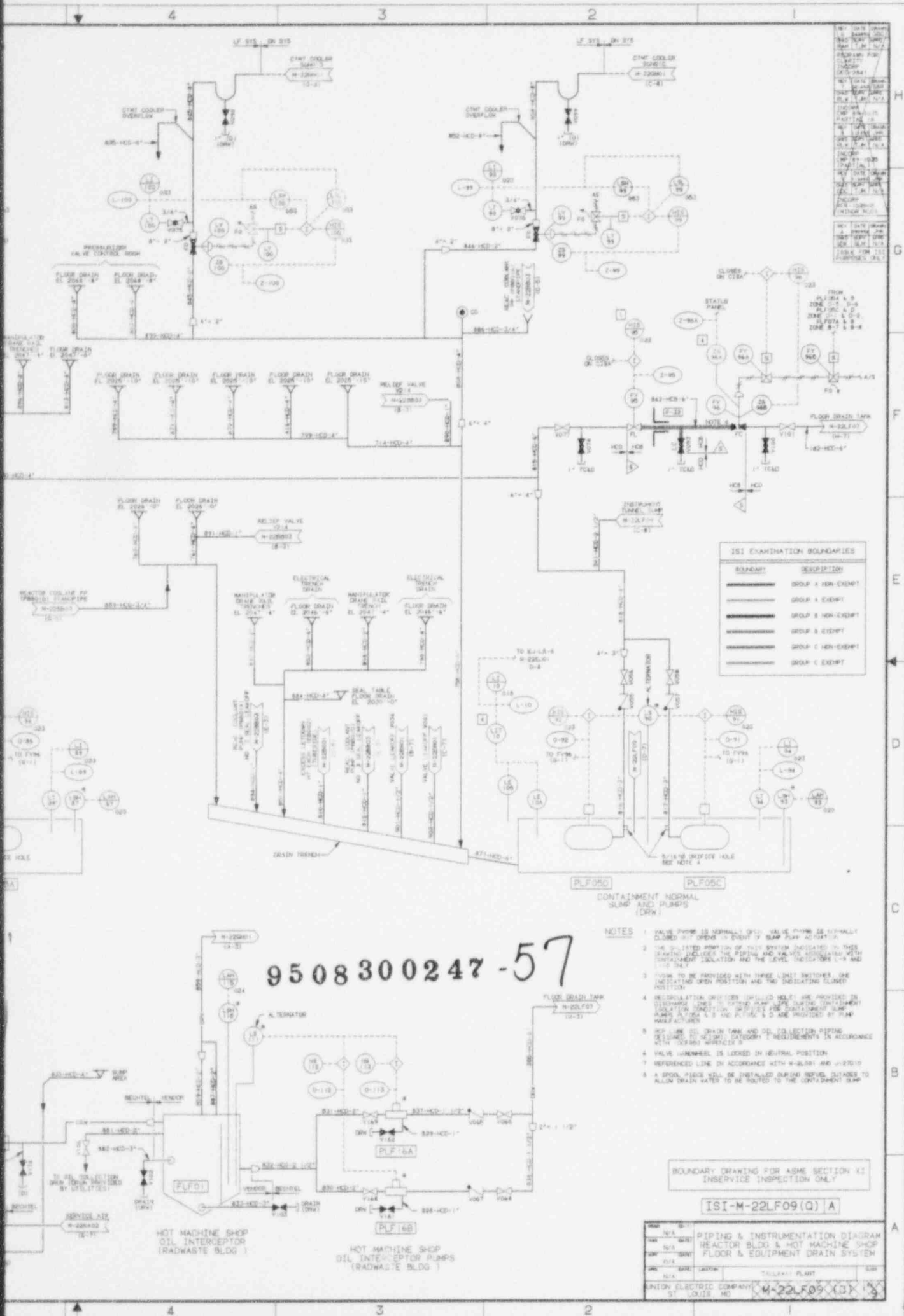
DATE	10/1/74	BY	J. H. ...	CHKD	J. H. ...	GROUP	...
PIPING & INSTRUMENTATION DIAGRAM AUXILIARY BUILDING FLOOR AND EQUIPMENT DRAIN SYSTEM							
BRUNN ELECTRIC COMPANY ST. LOUIS, MO				CALLAWAY PLANT			
				M-22LF03 (Q) A			

FL. EL. 1974'-0"



ANSTEC
APERTURE
CARD

Also Available in Aperture Card.



9508300247-57

ISI EXAMINATION BOUNDARIES

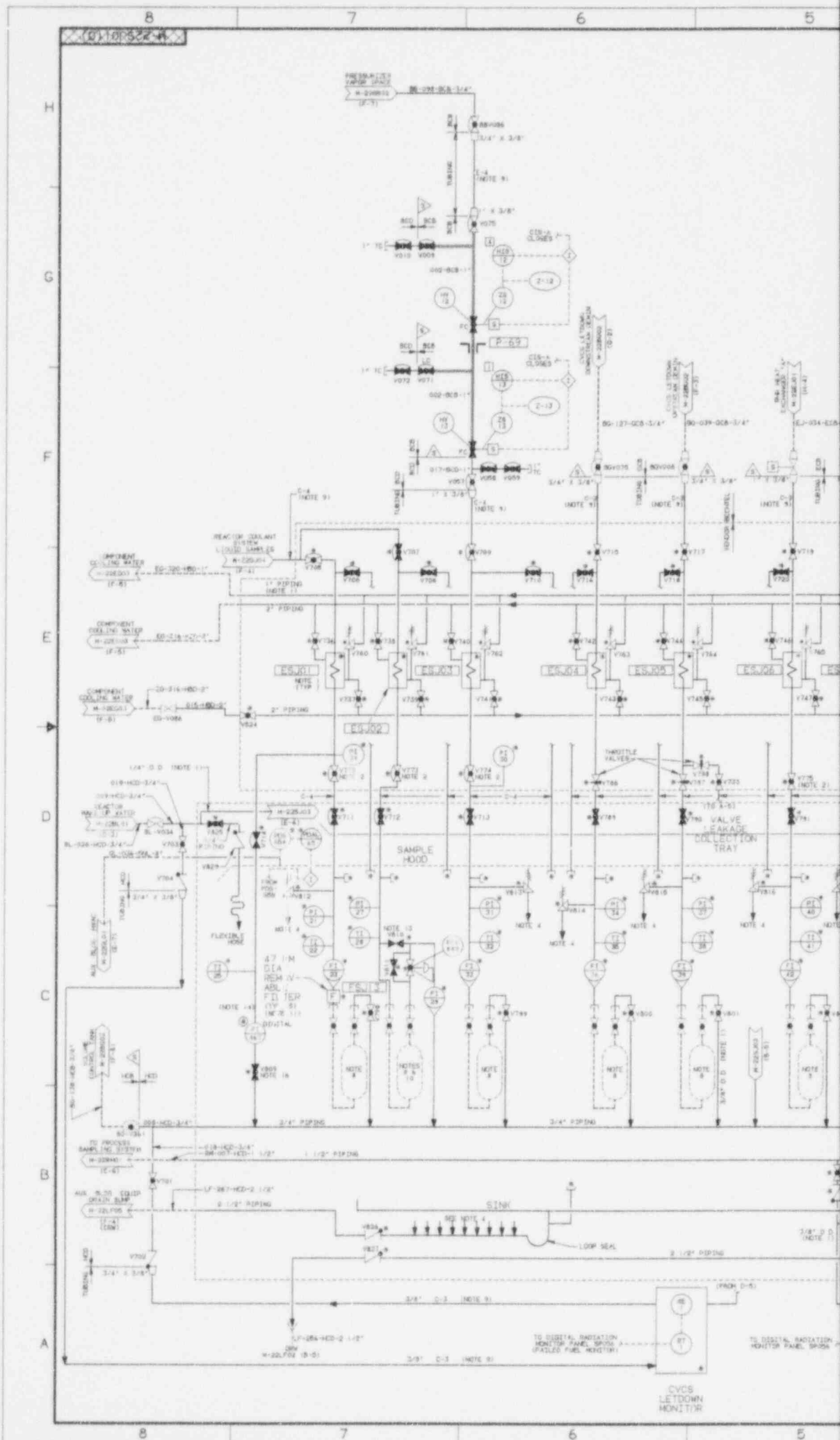
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---	GROUP B NON-EXEMPT
---	GROUP B EXEMPT
---	GROUP C NON-EXEMPT
---	GROUP C EXEMPT

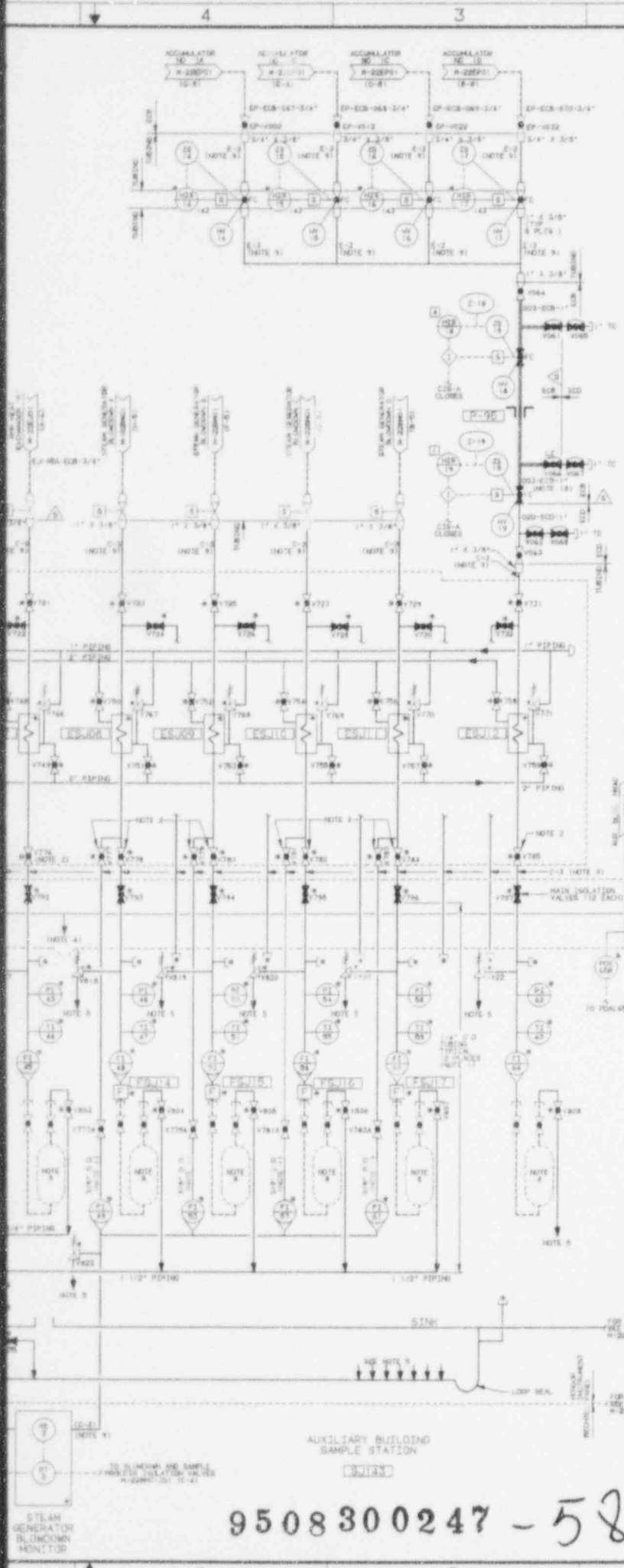
- NOTES
1. VALVE STROKE IS NORMALLY OPEN. VALVE STROKE IS NORMALLY CLOSED UNLESS INDICATED BY SHARP POINT ACTUATOR.
 2. THE EXCLUDED PORTION OF THIS SYSTEM INDICATED IN THIS DRAWING INCLUDES THE PIPING AND VALVES INDICATED WITH CONTAINMENT ISOLATION AND THE LEVEL INDICATORS L-9 AND L-10.
 3. PUMP TO BE PROVIDED WITH THREE LIMIT SWITCHES ONE INDICATING OPEN POSITION AND TWO INDICATING CLOSED POSITION.
 4. DISCHARGE ORIFICES (SHIELDED NOZZLE) ARE PROVIDED ON DISCHARGE LINES TO OTHER PUMP LINES DURING CONTAINMENT ISOLATION CONDITION. SPILLAGE FROM CONTAINMENT PUMP PIPING AT ZONE A, B AND PLUMB A & D ARE PROVIDED BY PUMP WAKE ACTUATOR.
 5. HOT MACHINE SHOP OIL DRAIN TANK AND OIL COLLECTION PIPING BELONGS TO ASME SECTION 4 REQUIREMENTS IN ACCORDANCE WITH 10CFR60.409(c)(2).
 6. VALVE HANDBOOK IS LOCKED IN NEUTRAL POSITION.
 7. REFERENCED LINE IN ACCORDANCE WITH H-22201 AND H-27010.
 8. A SPILL PLATE WILL BE INSTALLED OUTSIDE SERVICE SHUTDOGS TO ALLOW DRAIN WATER TO BE ROUTED TO THE CONTAINMENT SWAMP.

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-22LF09(Q) A

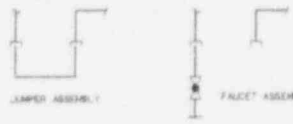
REV	NO	DATE	DESCRIPTION
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2	1	10/15/80	PIPING & INSTRUMENTATION DIAGRAM REACTOR BLDG & HOT MACHINE SHOP FLOOR & EQUIPMENT DRAIN SYSTEM
3	1	10/15/80	PIPING & INSTRUMENTATION DIAGRAM REACTOR BLDG & HOT MACHINE SHOP FLOOR & EQUIPMENT DRAIN SYSTEM
4	1	10/15/80	PIPING & INSTRUMENTATION DIAGRAM REACTOR BLDG & HOT MACHINE SHOP FLOOR & EQUIPMENT DRAIN SYSTEM
5	1	10/15/80	PIPING & INSTRUMENTATION DIAGRAM REACTOR BLDG & HOT MACHINE SHOP FLOOR & EQUIPMENT DRAIN SYSTEM
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50	1	10/15/80	PIPING & INSTRUMENTATION DIAGRAM REACTOR BLDG & HOT MACHINE SHOP FLOOR & EQUIPMENT DRAIN SYSTEM





NOTES

1. ALL VESSEL SAMPLE LINES ARE AUTHENTIC STAINLESS STEEL TUBING IN ACCORDANCE WITH STANDARD CODES FOR POWER PLANT PARTS. THE TUBING IS 1/4" DIA. S.S. 316. THE SAMPLE LINES SHALL BE 1/4" DIA. STAINLESS STEEL TUBING. THE SAMPLE LINES SHALL BE 1/4" DIA. STAINLESS STEEL TUBING. THE SAMPLE LINES SHALL BE 1/4" DIA. STAINLESS STEEL TUBING. THE SAMPLE LINES SHALL BE 1/4" DIA. STAINLESS STEEL TUBING.
2. THIS VALVE IS AN ADJUSTABLE RED-IN-TIME TIME FOR PRESSURE DROP AND FLOW CONTROL.
3. VALVE POSITIONS ARE SHOWN WHEN THE SAMPLE SYSTEM IS NOT IN OPERATION.
4. DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER TO AIR WASH DRAIN PUMP (LWV).
5. DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER TO AIR WASH DRAIN PUMP (LWV).
6. DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER TO AIR WASH DRAIN PUMP (LWV).
7. DIRECT DISCHARGE VIA A CLOSED CONNECTION TO A SINK DRAIN HEADER TO AIR WASH DRAIN PUMP (LWV).
8. EACH SAMPLE VESSEL SHALL BE OF 500 ML CAPACITY WHEN SAMPLE VESSELS ARE NOT IN USE. A TUBING JAMPER ASSEMBLY SHALL BE INSTALLED INTO THE VALVE DISCONNECT COUPPLER TO PREVENT SPRING RETURN VALVE SAMPLE VESSELS TO BE EXPOSED TO THE ATOMOSPHERE. AT LEAST ONE VALVE DISCONNECT COUPPLER SHALL BE PROVIDED FOR EACH SAMPLE VESSEL. THE VALVE DISCONNECT COUPPLER SHALL BE PROVIDED FOR PURPOSES OF OBTAINING SAMPLES INTO AN OPEN CONTAINER.



9. FOR TREATMENT PIPING CLASS SPECIFICATION FOR STAINLESS STEEL TUBING SEE DWG. P-23-10-1.
10. THIS SAMPLE SHALL BE TAKEN AT HIGH PRESSURE TO PREVENT AIRING TO THE SAMPLE LINE FOR PURPOSES OF CONTAMINATION BY AIR OR OXYGENATION.
11. REMOVABLE IN-LINE FILTERS FOR TRANSPORT TO THE HOT LABORATORY FOR FURTHER ANALYSIS.
12. FOUR SET FRAME SAMPLE LINES COMPLETE WITH INSTRUMENTS AND VALVES SHALL BE PROVIDED FOR EACH SAMPLE VESSEL. THE INSTRUMENTS SHALL BE INSTALLED INTO THE INSTRUMENT PANEL AS SHOWN FOR FUTURE EXPANSION. THE INSTRUMENT PANEL SHALL BE INSTALLED INTO THE INSTRUMENT PANEL AS SHOWN FOR FUTURE EXPANSION.
13. THIS VALVE IS USED TO RELEASE THE SAMPLE LINE PRESSURE TO ATMOSPHERE BEFORE DISCONNECTING THE SAMPLE VESSEL AND OBTAINING HIGH PRESSURE SAMPLES.
14. THE INSTRUMENT TUBING LINE SHOULD FORM A DEAD END OR A LOOP SEAL TO PREVENT AIRING DURING THE CASE OF LOSS OF COMPONENT COOLING WATER TO THE SAMPLE COOLER.
15. STEMS SUPPLIED BY METTINGHOUSE ELECTRIC CORP. (MESA).
16. DIGITAL PRESSURE INDICATOR BLEED VALVE SHALL BE PAIR WANTED IN ORDER TO PREVENT THE INSTRUMENT DURING THE SAMPLE COLLECTION USED TO ISOLATE REACTOR DRAINAGE SYSTEM PRESSURE INSTRUMENTATION.
17. THE UNLISTED PORTION OF THIS SYSTEM IS ONLY THE PIPING AND VALVES ASSOCIATED WITH CONTAINMENT PENETRATIONS.
18. CONTAINMENT PENETRATION PIPING 000-SCD-11 IS 3/8" DIA.
19. SWITCH PROVIDED FOR POWER LOCKOUT.
20. DELETED.

ANSTEC APERTURE CARD
Also Available on Aperture Card

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
—————	GROUP A - NON-EXEMPT
—————	GROUP A - EXEMPT
—————	GROUP B - NON-EXEMPT
—————	GROUP B - EXEMPT
—————	GROUP C - NON-EXEMPT
—————	GROUP C - EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION DATA

ISI-M-225J01(Q) A

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9508300247-58

STEAM GENERATOR BLOWDOWN MONITOR

AUXILIARY BUILDING SAMPLE STATION

ISIRY

FOR CONTINUATION SEE DRAWING N-225-01

FOR CONTINUATION SEE DRAWING N-225-01

FOR CONTINUATION SEE DRAWING N-225-01

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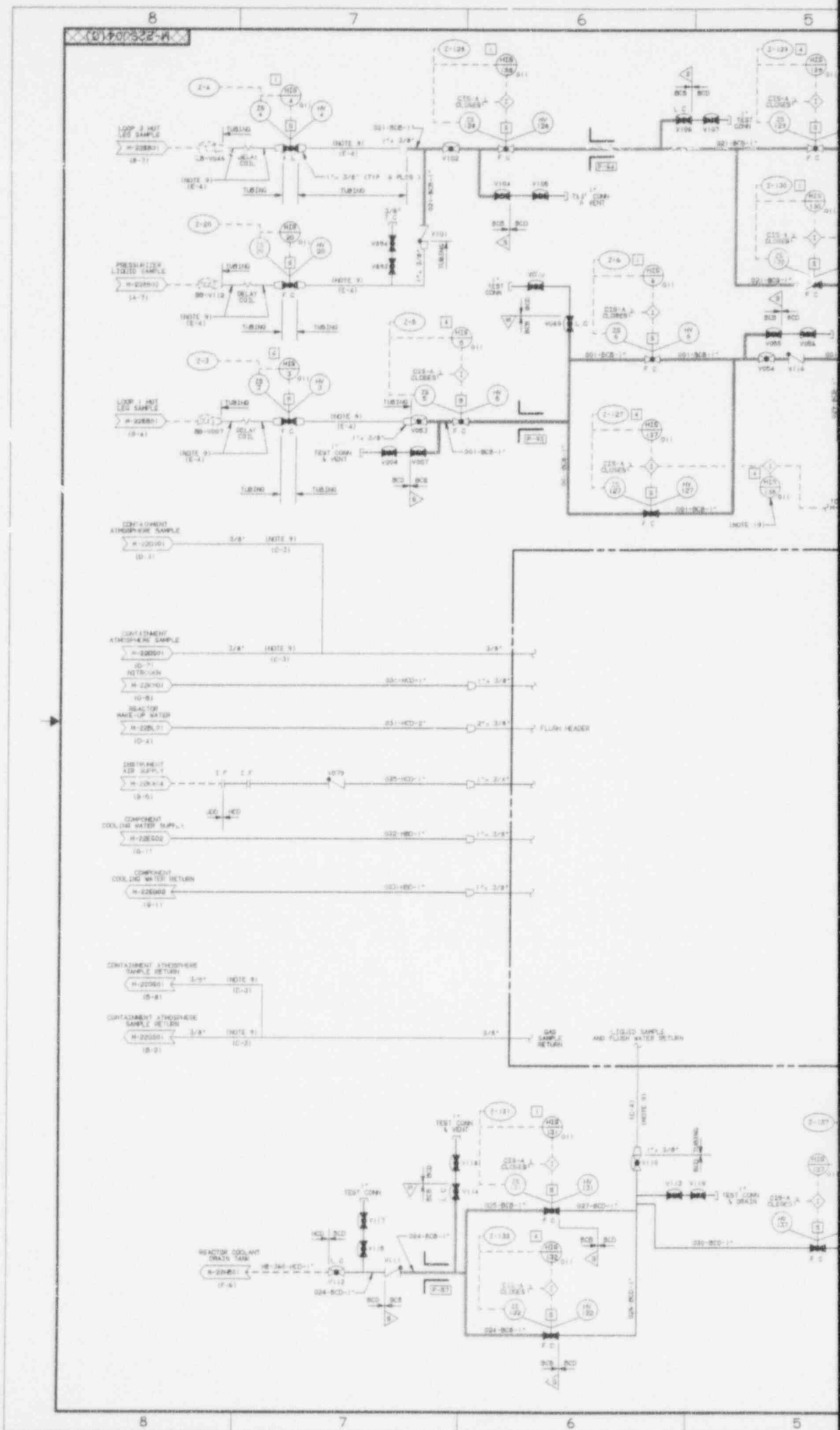
FOR CONTINUATION SEE DRAWING N-225-01

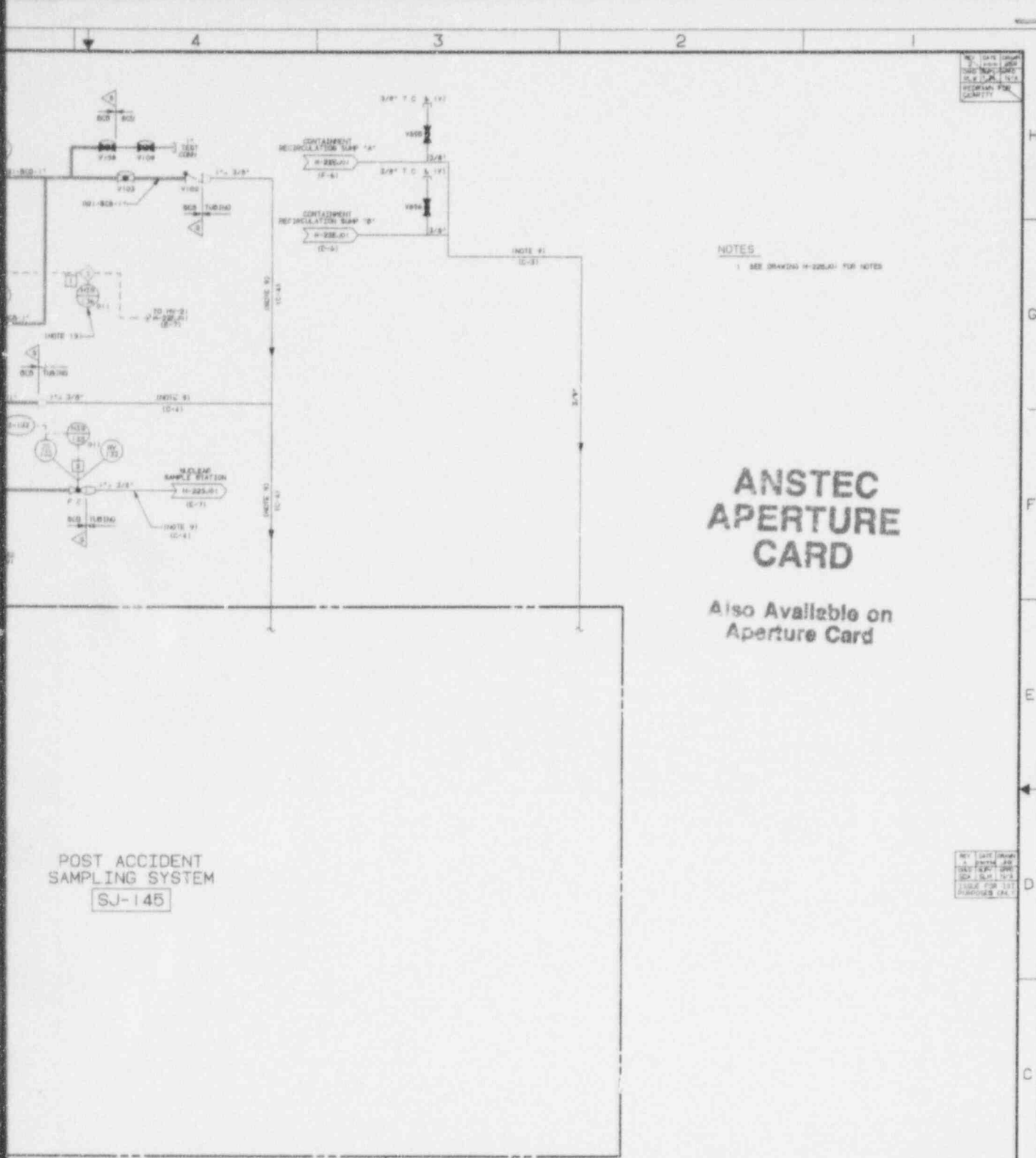
FOR CONTINUATION SEE DRAWING N-225-01

FOR CONTINUATION SEE DRAWING N-225-01

FOR CONTINUATION SEE DRAWING N-225-01

FOR CONTINUATION SEE DRAWING N-225-01





POST ACCIDENT SAMPLING SYSTEM
SJ-145

NOTES
1. SEE DRAWING H-225J01 FOR NOTES

ANSTEC APERTURE CARD

Also Available on Aperture Card

ISI EXAMINATION BOUNDARIES	
BOUNDARY	DESCRIPTION
-----	GROUP 1 NON-EXEMPT
-----	GROUP 1 EXEMPT
-----	GROUP 2 NON-EXEMPT
-----	GROUP 2 EXEMPT
-----	GROUP 3 NON-EXEMPT
-----	GROUP 3 EXEMPT

BOUNDARY DRAWING FOR ASME SECTION XI INSERVICE INSPECTION ONLY

ISI-M-225J04(Q) A

9508300247-59

REV	DATE	DESCRIPTION
N/A	01/10/81	PIPING AND INSTRUMENTATION DIAGRAM NUCLEAR SAMPLING SYSTEM
N/A	01/10/81	CALLAWAY PLANT
UNION ELECTRIC COMPANY		M-225J04(Q) A
ST. LOUIS, MO		

REV. DATE DRAWN
BY: H-225J04
DATE: 01/10/81
FORM: P-10
QUANTITY

REV. DATE DRAWN
BY: H-225J04
DATE: 01/10/81
FORM: P-10
QUANTITY

**ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
VOLUME 2**

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INTERVAL INSERVICE INSPECTION PROGRAM PLAN AND ASSOCIATED RELIEF REQUESTS

ADDITIONAL INFORMATION - SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION
PLAN

APPENDIX A, CALLAWAY 2ND INTERVAL INSERVICE INSPECTION SCHEDULE

APPENDIX B-1, BOUNDARY DIAGRAMS

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APPENDIX B-3, EQUIPMENT DETAIL DRAWINGS

APPENDIX B-4, COMPONENT/EQUIPMENT SUPPORT DRAWINGS

APPENDIX C, REACTOR VESSEL SUPPORT DETAIL DRAWINGS

August 11, 1995

**ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
CALLAWAY NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-483**

ATTACHMENT B-2

PIPING ISOMETRICS

DATE: 11/15/84
 DRAWING NO: 138-03
 SHEET NO: 10

SYSTEM	DRAWING NUMBER	SHEET NUMBER	DRAWING TITLE	REV	DATE
A	AE-01-01	1	MAIN STEAM	AE-01-1	AE-01-1
	AE-01-02	2	LOOP 1	AE-01-2	AE-01-2
	AE-01-03	3	LOOP 2	AE-01-3	AE-01-3
	AE-01-04	4	LOOP 3	AE-01-4	AE-01-4
	AE-01-05	5	LOOP 4	AE-01-5	AE-01-5
	AE-01-06	6	MAIN FEEDBACK	AE-01-6	AE-01-6
	AE-01-07	7	LOOP 1	AE-01-7	AE-01-7
	AE-01-08	8	LOOP 2	AE-01-8	AE-01-8
	AE-01-09	9	LOOP 3	AE-01-9	AE-01-9
	AE-01-10	10	LOOP 4	AE-01-10	AE-01-10
B	AE-02-01	1	REACTOR GENERATOR	AE-02-1	AE-02-1
	AE-02-02	2	REACTOR GENERATOR FEEDWATER PUMP "A" DISCHARGE PIPING	AE-02-2	AE-02-2
	AE-02-03	3	REACTOR GENERATOR FEEDWATER PUMP "B" DISCHARGE PIPING	AE-02-3	AE-02-3
	AE-02-04	4	REACTOR GENERATOR FEEDWATER PUMP "C" DISCHARGE PIPING	AE-02-4	AE-02-4
	AE-02-05	5	REACTOR GENERATOR FEEDWATER PUMP "D" DISCHARGE PIPING	AE-02-5	AE-02-5
	AE-02-06	6	REACTOR GENERATOR FEEDWATER PUMP "E" DISCHARGE PIPING	AE-02-6	AE-02-6
	AE-02-07	7	REACTOR GENERATOR FEEDWATER PUMP "F" DISCHARGE PIPING	AE-02-7	AE-02-7
	AE-02-08	8	REACTOR GENERATOR FEEDWATER PUMP "G" DISCHARGE PIPING	AE-02-8	AE-02-8
	AE-02-09	9	REACTOR GENERATOR FEEDWATER PUMP "H" DISCHARGE PIPING	AE-02-9	AE-02-9
	AE-02-10	10	REACTOR GENERATOR FEEDWATER PUMP "I" DISCHARGE PIPING	AE-02-10	AE-02-10
C	AE-03-01	1	REACTOR COOLANT SYSTEM	AE-03-1	AE-03-1
	AE-03-02	2	REACTOR COOLANT SYSTEM	AE-03-2	AE-03-2
	AE-03-03	3	REACTOR COOLANT SYSTEM	AE-03-3	AE-03-3
	AE-03-04	4	REACTOR COOLANT SYSTEM	AE-03-4	AE-03-4
	AE-03-05	5	REACTOR COOLANT SYSTEM	AE-03-5	AE-03-5
	AE-03-06	6	REACTOR COOLANT SYSTEM	AE-03-6	AE-03-6
	AE-03-07	7	REACTOR COOLANT SYSTEM	AE-03-7	AE-03-7
	AE-03-08	8	REACTOR COOLANT SYSTEM	AE-03-8	AE-03-8
	AE-03-09	9	REACTOR COOLANT SYSTEM	AE-03-9	AE-03-9
	AE-03-10	10	REACTOR COOLANT SYSTEM	AE-03-10	AE-03-10
D	AE-04-01	1	REACTOR COOLANT SYSTEM	AE-04-1	AE-04-1
	AE-04-02	2	REACTOR COOLANT SYSTEM	AE-04-2	AE-04-2
	AE-04-03	3	REACTOR COOLANT SYSTEM	AE-04-3	AE-04-3
	AE-04-04	4	REACTOR COOLANT SYSTEM	AE-04-4	AE-04-4
	AE-04-05	5	REACTOR COOLANT SYSTEM	AE-04-5	AE-04-5
	AE-04-06	6	REACTOR COOLANT SYSTEM	AE-04-6	AE-04-6
	AE-04-07	7	REACTOR COOLANT SYSTEM	AE-04-7	AE-04-7
	AE-04-08	8	REACTOR COOLANT SYSTEM	AE-04-8	AE-04-8
	AE-04-09	9	REACTOR COOLANT SYSTEM	AE-04-9	AE-04-9
	AE-04-10	10	REACTOR COOLANT SYSTEM	AE-04-10	AE-04-10
E	AE-05-01	1	REACTOR COOLANT SYSTEM	AE-05-1	AE-05-1
	AE-05-02	2	REACTOR COOLANT SYSTEM	AE-05-2	AE-05-2
	AE-05-03	3	REACTOR COOLANT SYSTEM	AE-05-3	AE-05-3
	AE-05-04	4	REACTOR COOLANT SYSTEM	AE-05-4	AE-05-4
	AE-05-05	5	REACTOR COOLANT SYSTEM	AE-05-5	AE-05-5
	AE-05-06	6	REACTOR COOLANT SYSTEM	AE-05-6	AE-05-6
	AE-05-07	7	REACTOR COOLANT SYSTEM	AE-05-7	AE-05-7
	AE-05-08	8	REACTOR COOLANT SYSTEM	AE-05-8	AE-05-8
	AE-05-09	9	REACTOR COOLANT SYSTEM	AE-05-9	AE-05-9
	AE-05-10	10	REACTOR COOLANT SYSTEM	AE-05-10	AE-05-10

SYSTEM	DRAWING NUMBER	SHEET NUMBER	DRAWING TITLE	REV	DATE
E	EE-01-01	1	COMPONENT AT COOLING WATER	EE-01-1	EE-01-1
	EE-01-02	2	"X" TRASH RETURN	EE-01-2	EE-01-2
	EE-01-03	3	"Y" TRASH RETURN	EE-01-3	EE-01-3
	EE-01-04	4	COMMON HEADER	EE-01-4	EE-01-4
	EE-01-05	5	COMMON HEADER	EE-01-5	EE-01-5
	EE-01-06	6	COMMON HEADER	EE-01-6	EE-01-6
	EE-01-07	7	COMMON HEADER	EE-01-7	EE-01-7
	EE-01-08	8	COMMON HEADER	EE-01-8	EE-01-8
	EE-01-09	9	COMMON HEADER	EE-01-9	EE-01-9
	EE-01-10	10	COMMON HEADER	EE-01-10	EE-01-10
F	EE-02-01	1	COMPONENT AT COOLING WATER	EE-02-1	EE-02-1
	EE-02-02	2	"X" TRASH RETURN	EE-02-2	EE-02-2
	EE-02-03	3	"Y" TRASH RETURN	EE-02-3	EE-02-3
	EE-02-04	4	COMMON HEADER	EE-02-4	EE-02-4
	EE-02-05	5	COMMON HEADER	EE-02-5	EE-02-5
	EE-02-06	6	COMMON HEADER	EE-02-6	EE-02-6
	EE-02-07	7	COMMON HEADER	EE-02-7	EE-02-7
	EE-02-08	8	COMMON HEADER	EE-02-8	EE-02-8
	EE-02-09	9	COMMON HEADER	EE-02-9	EE-02-9
	EE-02-10	10	COMMON HEADER	EE-02-10	EE-02-10

UNION ELECTRIC

INSERVICE INSPECTION
DRAWING CROSS REFERENCE

CALUMNEY NUCLEAR PLANT
DRYER ELECTRIC COMPANY
FALCON, MISSOURI

SCALE: 1/8" = 1'-0"

DATE: 11/15/84

DESIGNED FOR: RECORD INITIALS TO BE PLACED UPON

DATE: 11/15/84

REVISIONS:

NO.	DATE	BY	DESCRIPTION

DATE: 11/15/84

DESIGNED FOR: RECORD INITIALS TO BE PLACED UPON

DATE: 11/15/84

REVISIONS:

NO.	DATE	BY	DESCRIPTION

SCALE: 1/8" = 1'-0"

DATE: 11/15/84

DESIGNED FOR: RECORD INITIALS TO BE PLACED UPON

DATE: 11/15/84

REVISIONS:

NO.	DATE	BY	DESCRIPTION

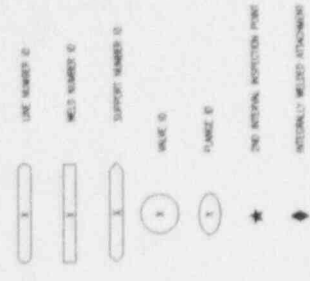
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ISL DRAWING SYMBOLS

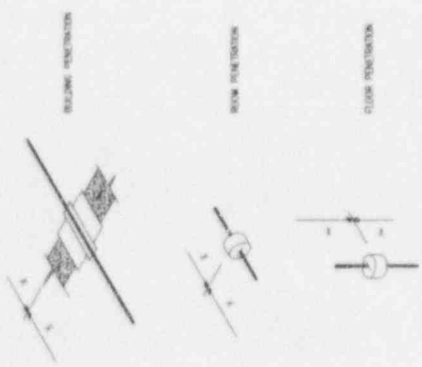
PIPE SYMBOLS
(SEE NOTE 1)



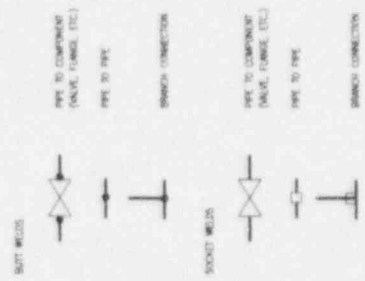
COMPONENT LABELS



PUNCTURING



WELD SYMBOLS



NOTES:
1. SYMBOLS NOT SHOWN HERE ARE
PROBABLY DERIVED ON THE
APPLICABLE DRAWING.

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED	REVISION	DATE	BY	DESCRIPTION
1	8/27/85	REVISED FROM ISL TO THE INTERNAL INSPECTION POINT	SLM	DAF	SLM	1			
2	8/23/84	ISSUED THE SECOND INTERNAL IS PROBABLY UPDATE	SLM	DAF	SLM	2			

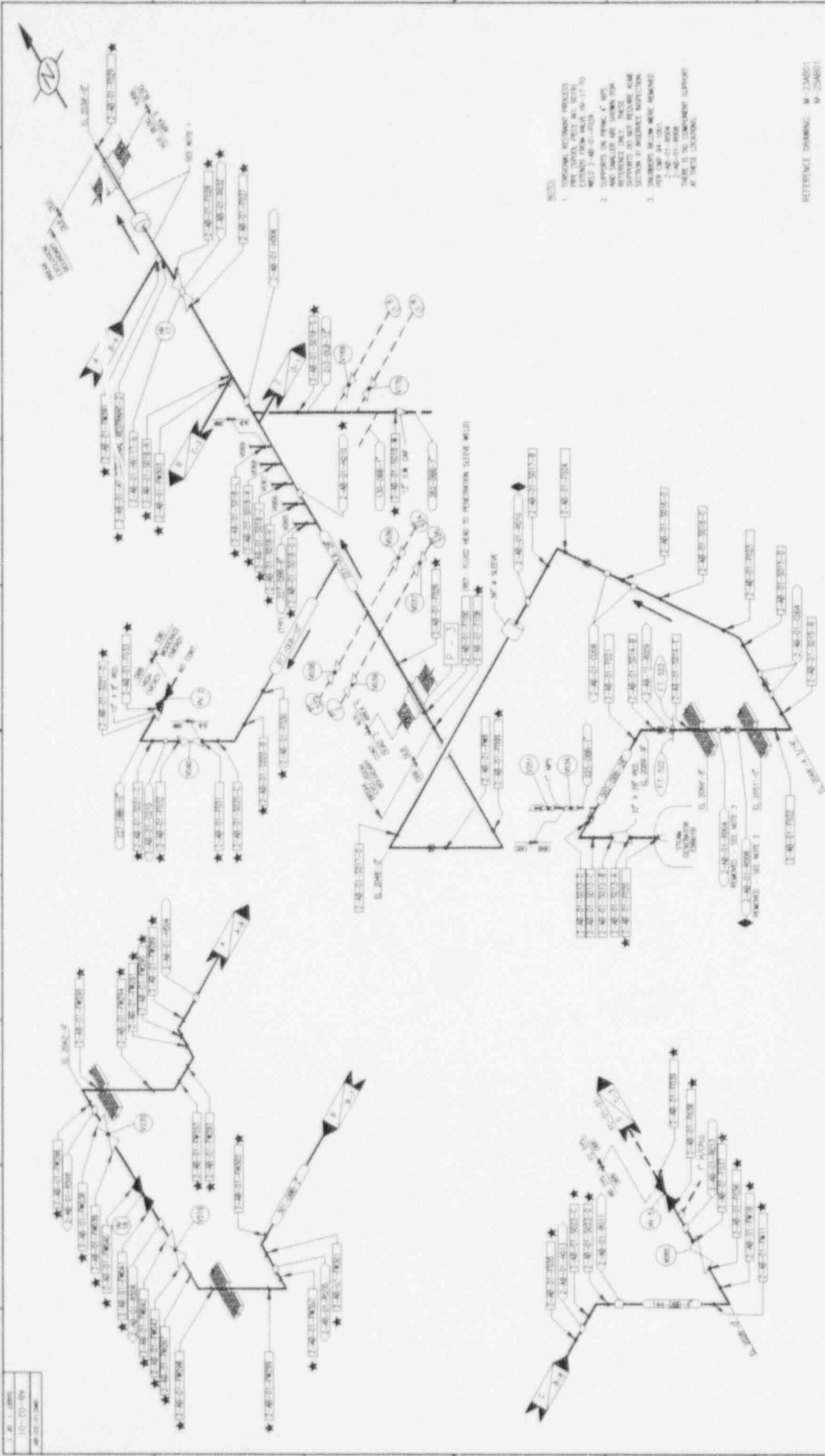
UNION ELECTRIC

INSERVICE INSPECTION DRAWING SYMBOLS

CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI

DATE: 8/23/84
JOB NO. 44001
DRAWING NO. 44001-10
ISSUED BY: SLM
CHECKED BY: DAF
APPROVED BY: SLM
PAGE 3 OF 7

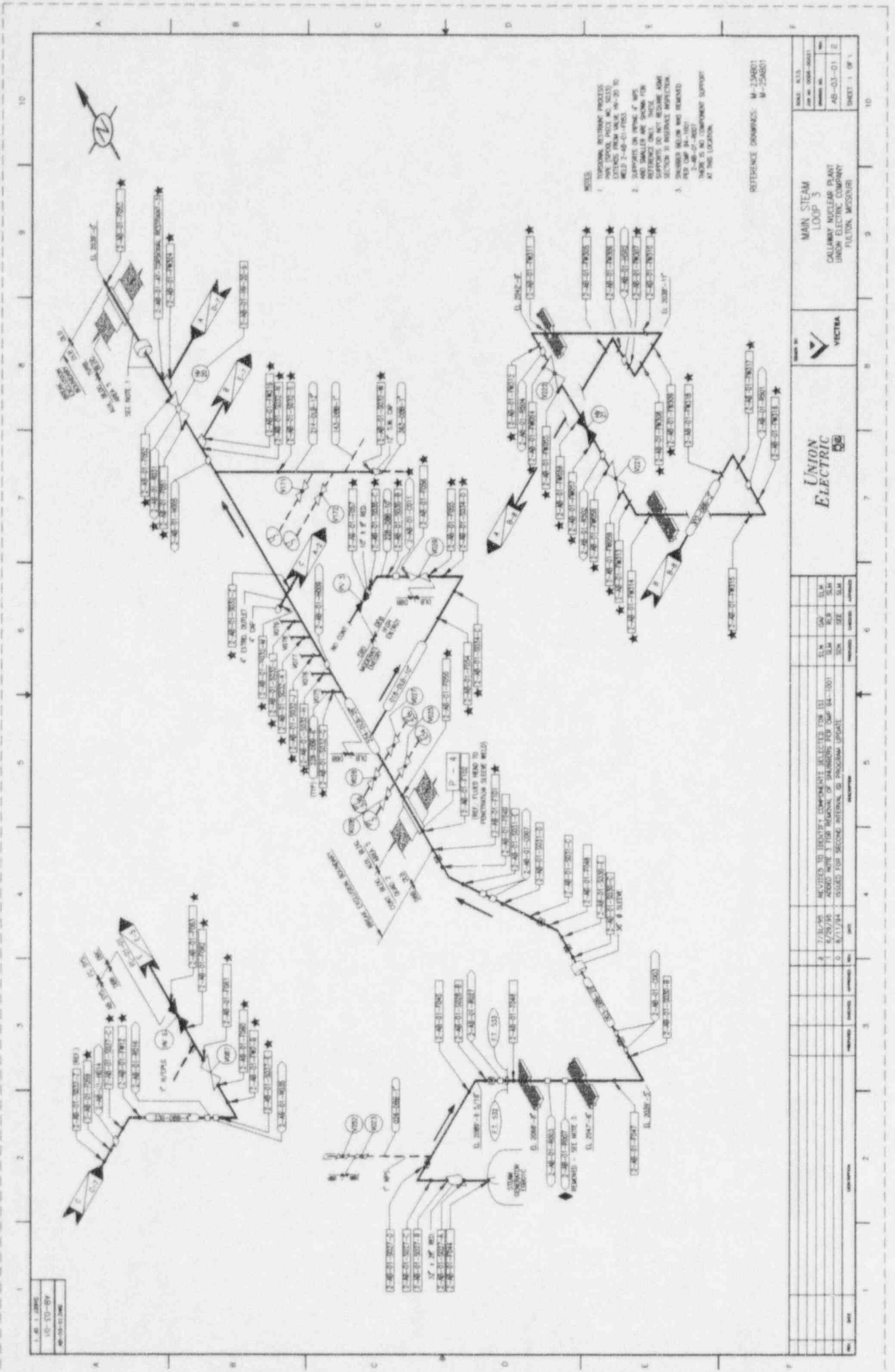
AS 1.0000
110-10-000
08-01-0000



- NOTES:**
1. PERSONAL RETAINMENT PROCESS PER (LOCAL) PERM NO. 0015
 2. SUPPORTS ON STEAM L. MSG AND JARVIS ARE TAKEN FOR MAINTENANCE ONLY. THESE SUPPORTS ARE NOT TO BE REMOVED FROM THE SYSTEM. IF MAINTENANCE IS REQUIRED, CONTACT THE MAINTENANCE SUPERVISOR FOR THE SUPPORTS TO BE REMOVED PER (LOCAL) PERM NO. 0015
 3. MAINTENANCE ON THE SUPPORTS SHALL BE IN ACCORDANCE WITH THE MAINTENANCE SUPPORT AT THESE LOCATIONS.

REFERENCE DRAWING: M-234001
M-234001

				MAIN STEAM LOOP 2 CHALK POINT NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSISSIPPI		SHEET NO. 10 OF 10 SHEETS
NO.	DATE	BY	CHKD.	DESCRIPTION	REVISION	APPROVED
1	07/25/89	REVIEWED BY: BENTLEY, J. H.	01/11/90	REVISION 1: AS SHOWN	1	
2	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 2: AS SHOWN	2	
3	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 3: AS SHOWN	3	
4	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 4: AS SHOWN	4	
5	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 5: AS SHOWN	5	
6	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 6: AS SHOWN	6	
7	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 7: AS SHOWN	7	
8	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 8: AS SHOWN	8	
9	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 9: AS SHOWN	9	
10	08/11/89	DESIGNED BY: BENTLEY, J. H.	01/11/90	REVISION 10: AS SHOWN	10	



- NOTES**
1. TYPICAL INSTRUMENT PROCESSING POINTS (PUMP, PRESS, AND SENSITIVITY) LISTED FROM WALK 94-20 TO WALK 94-21-1000.
 2. ALL VALVES ARE SHOWN FOR REFERENCE ONLY. INSTRUMENT SUPPORTS DO NOT SHOW ASHAP AND/OR VALVE SUPPORTS. SECTION 2 INDICATES IMPROPER AND/OR VALVE SUPPORTS. MARK IS NO TEMPORARY SUPPORT AT THIS LOCATION.

REFERENCE DOMAINS: M-20601
M-25601

DATE	8/13
BY	W. J. BROWN
REVISION NO.	AS-03-01 B
SHEET	1 OF 1

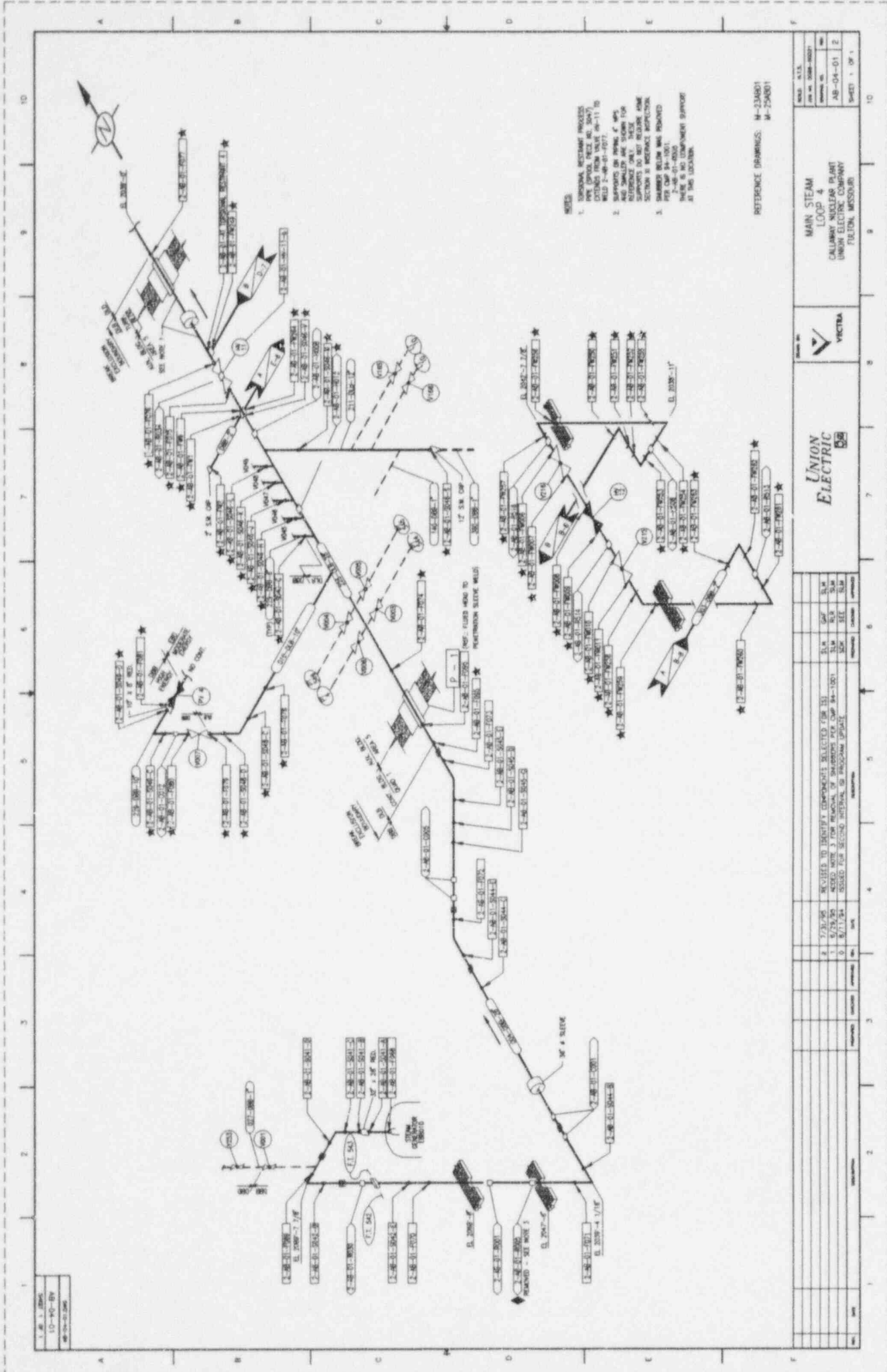
MAIN STEAM LOOP 3
CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



UNION ELECTRIC
50

NO.	DATE	DESCRIPTION	BY	CHKD.
1	7/21/95	REVISED TO INDICATE COMPONENTS SELECTED FOR USE	W. J. BROWN	W. J. BROWN
2	8/29/95	ADDED NOTE FOR REVISION OF SHOWN FOR USE	W. J. BROWN	W. J. BROWN
3	8/11/94	ISSUED FOR SECOND INTERNAL IS PROGRAM UPDATE	W. J. BROWN	W. J. BROWN

DATE	8/13
BY	W. J. BROWN
REVISION NO.	AS-03-01 B
SHEET	1 OF 1



- NOTES
1. UNKNOWN INSTANT PROCESS
 2. PUMP (DIPLO PRESS AC 200V) WAS USED FROM 08-11 TO 08-12-00
 3. REPAIRS ON PUMP 6 WPS AND SMALLER ARE UNDER FOR REFERENCE ONLY. CHECK SECTION 3. REFERENCE SUPPLIER.
 4. DAMAGED BELUM WAS REPAIRED BY 08-01-0000.
 5. THERE IS NO COMPONENT EFFORT AT THIS LOCATION.

REFERENCE DRAWINGS: M-234601
M-250001

SCALE: N.T.S.	DATE: 08-01-00
PROJECT: M-234601	SHEET: 1 OF 1

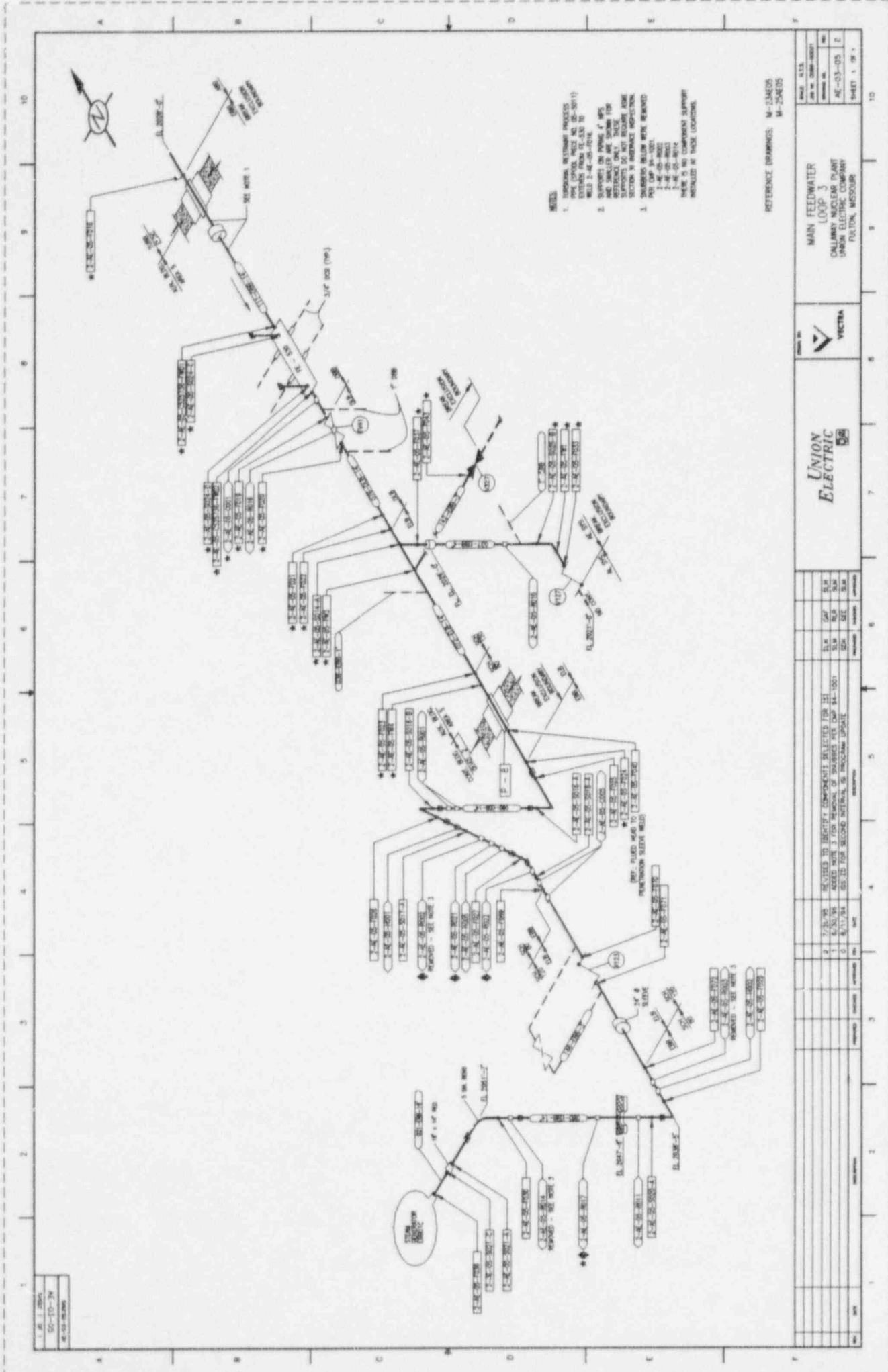
MAIN STEAM LOOP 4
CALUMET NUCLEAR PLANT
UNION ELECTRIC COMPANY
FALCON, MISSOURI



UNION ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/1/00	ISSUED FOR SECOND REVISION TO PREVIOUS DRAWING		
2	8/1/00	REVISED TO IDENTIFY COMPONENTS SELECTED FOR DIS		
3	8/1/00	REVISED WORK 3 FOR REVISION OF DRAWINGS FOR CAMP 84-1001		
4	8/1/00	ISSUED FOR SECOND REVISION TO PREVIOUS DRAWING		

1	8/1/00	ISSUED FOR SECOND REVISION TO PREVIOUS DRAWING
2	8/1/00	REVISED TO IDENTIFY COMPONENTS SELECTED FOR DIS
3	8/1/00	REVISED WORK 3 FOR REVISION OF DRAWINGS FOR CAMP 84-1001
4	8/1/00	ISSUED FOR SECOND REVISION TO PREVIOUS DRAWING



- NOTES:**
1. INSTRUMENTATION PROCESS PIPE (SPOOL PIECE AND 2\"/>

REFERENCE DRAWINGS: M-234200
M-234203

MAIN FEEDWATER LOOP 3
CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



UNION ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	8/1/74	REVISED TO REFLECT COMPONENTS ELIMATED FOR THE 3/4\"/>			
2	8/1/74	REVISED TO REFLECT INSTRUMENTATION CHANGES			
3	8/1/74	REVISED TO REFLECT INSTRUMENTATION CHANGES			
4	8/1/74	REVISED TO REFLECT INSTRUMENTATION CHANGES			
5	8/1/74	REVISED TO REFLECT INSTRUMENTATION CHANGES			

REVISIONS

DATE

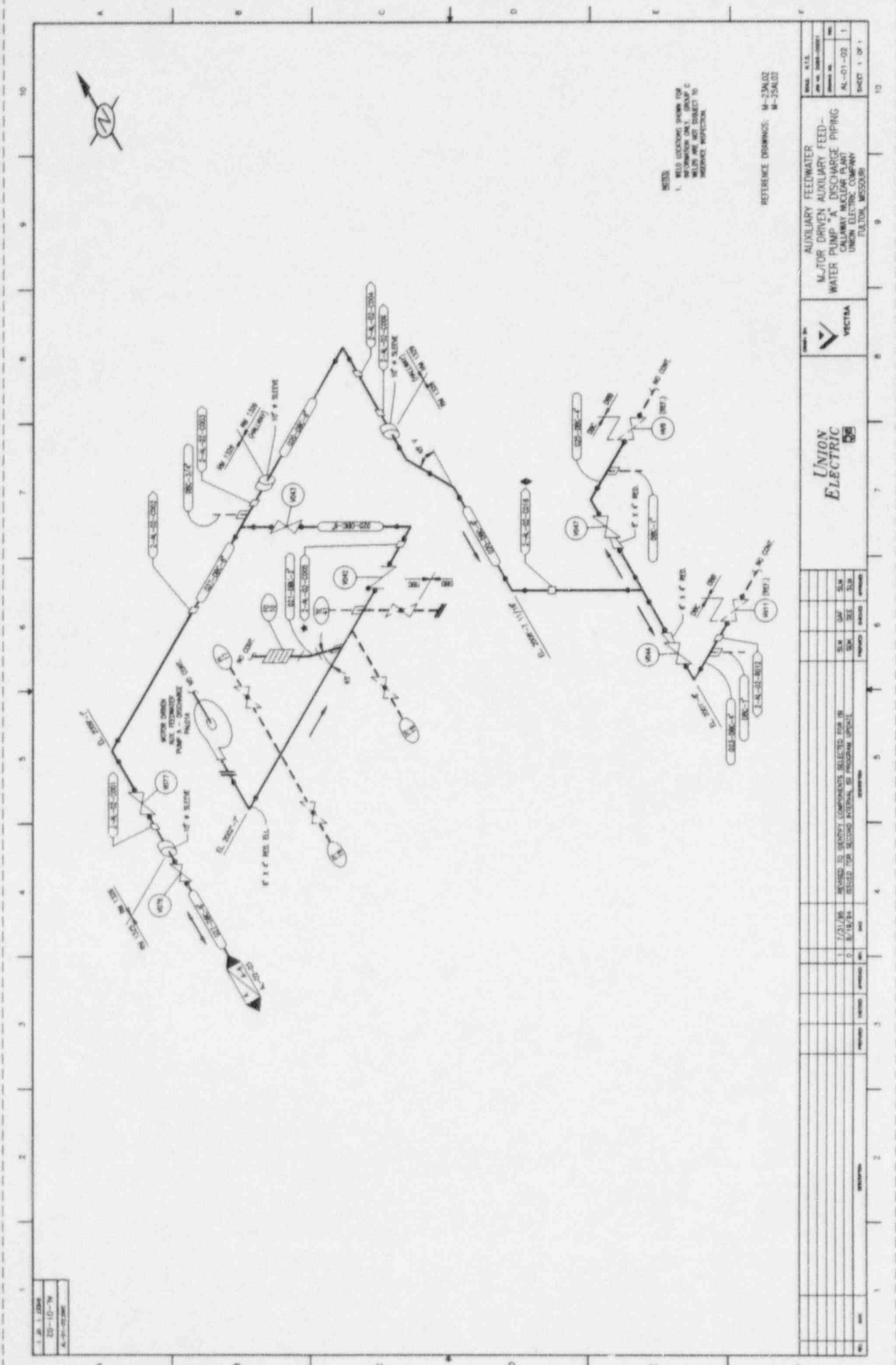
DESCRIPTION

BY

CHECKED

APPROVED

1. 10-1-25000
 2. 10-10-74
 3. 10-01-25000

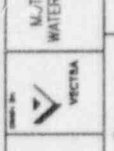


NOTES:
 1. FIELD LOCATIONS SHOWN FOR PUMPS AND VALVES ARE SUBJECT TO INTERPRETATION.

REFERENCE DRAWINGS: M-25A102
 M-25A103

DATE	BY	CHKD
10-01-74	J. L. [unclear]	[unclear]
10-01-74	[unclear]	[unclear]
10-01-74	[unclear]	[unclear]

AUXILIARY FEEDWATER
 MOTOR DRIVEN AUXILIARY FEED-
 WATER PUMP "A" DISCHARGE PIPING
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



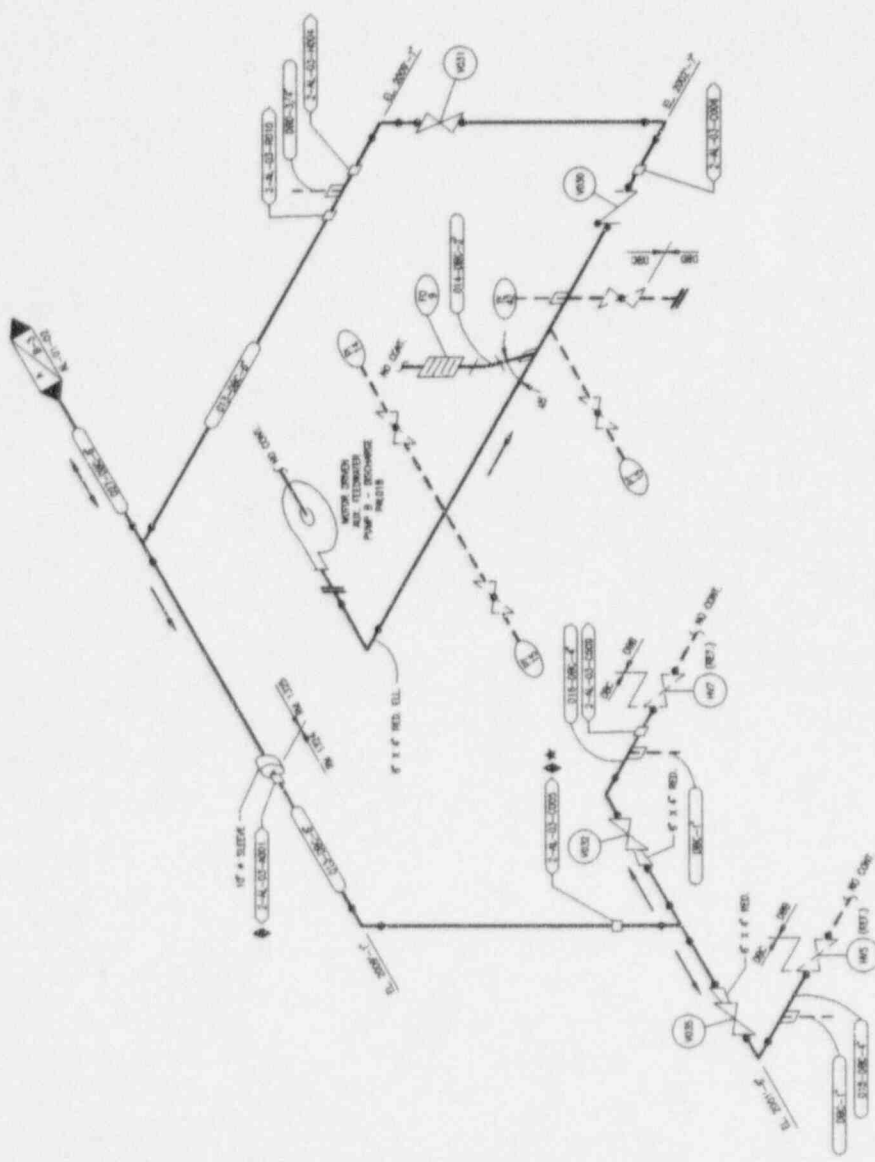
NO.	DATE	DESCRIPTION	BY	CHKD
1	10-01-74	ISSUED TO START COMPONENTS SELECTED FOR	J. L. [unclear]	[unclear]
2	10-01-74	REVISED FOR SECOND REVISION TO PROGRAM SPEC	[unclear]	[unclear]

NO.	DATE	DESCRIPTION	BY	CHKD
1	10-01-74	ISSUED TO START COMPONENTS SELECTED FOR	J. L. [unclear]	[unclear]
2	10-01-74	REVISED FOR SECOND REVISION TO PROGRAM SPEC	[unclear]	[unclear]



NOTES:
 1. WELD LOCATIONS SHOWN FOR REFERENCE ONLY. GROUP C WELDS ARE NOT SUBJECT TO INSERVICE INSPECTION

REFERENCE DRAWINGS: M-2540.03
 M-2540.02



DESIGNED BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE

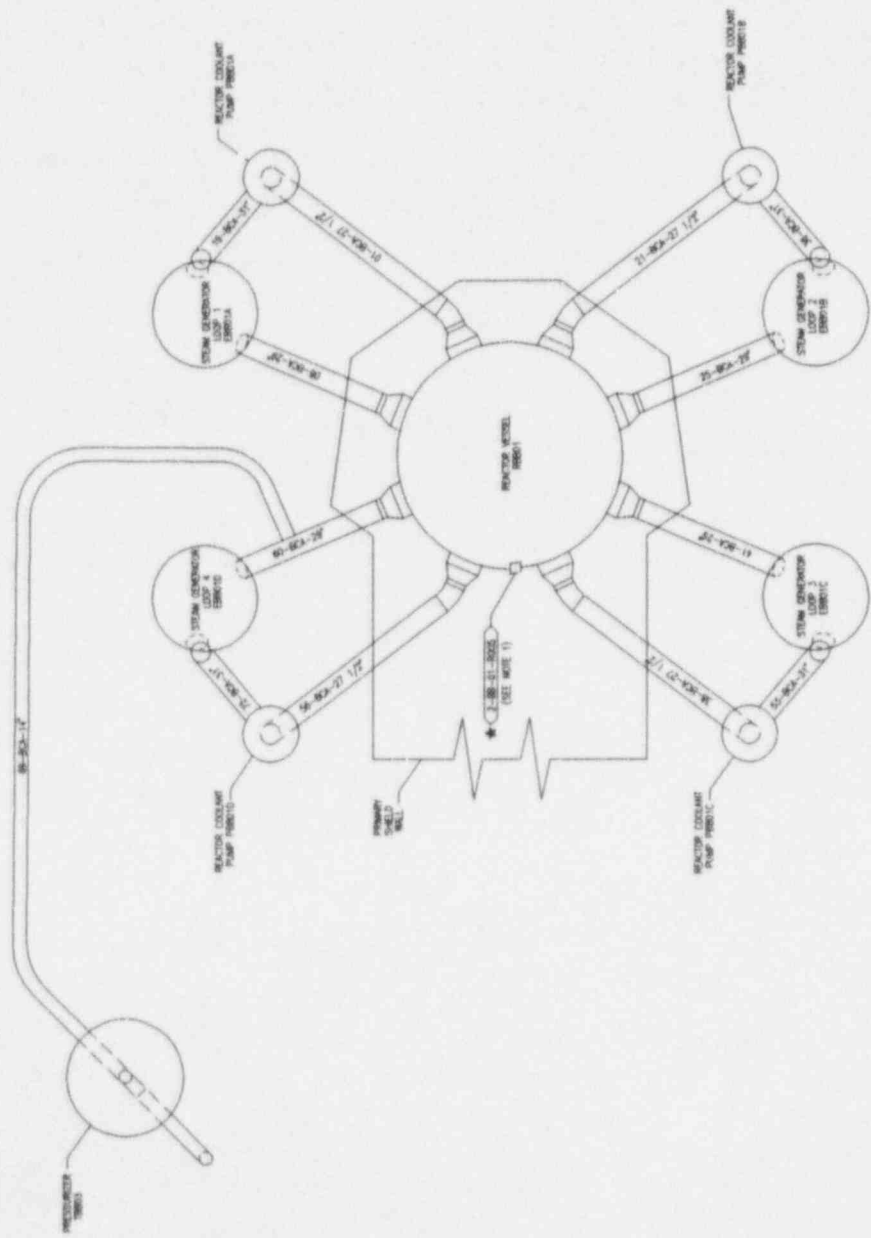
NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REVISION
1	7/21/85	ISSUED TO IDENTIFY COMPONENTS SELECTED FOR ISIRI				
2	8/11/84	ISSUED FOR SERVICE INTERVALS TO PROVISION UPDATES				

UNION ELECTRIC

VICTRIA

AUXILIARY FEEDWATER
 MOTOR DRIVEN AUXILIARY FEEDWATER
 PUMP "B" DISCHARGE PIPING
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FAULTON, MISSOURI

SCALE: N.T.S.
 SHEET NO. M-2540.03
 AL-02-03
 SHEET 1 OF 1



NOTES:
 1. SEE 10-000 & THE CONTINGENCY PLAN FOR RESTRICTIONS. SEE RESTRICTIONS DRAWING 12-1124 FOR DETAILS.

REFERENCE DRAWINGS: M-238601
 M-238601

1	10-00-000
2	10-00-000
3	10-00-000

NO.	DATE	BY	CHKD.	REVISION	DESCRIPTION
1	8/1/82				REVISED TO REFLECT COMPONENTS SELECTED FOR IS
2	8/1/84				ISSUED FOR SECURE INTERNAL TO PROGRAM UPDATE

UNION ELECTRIC

VECTRA

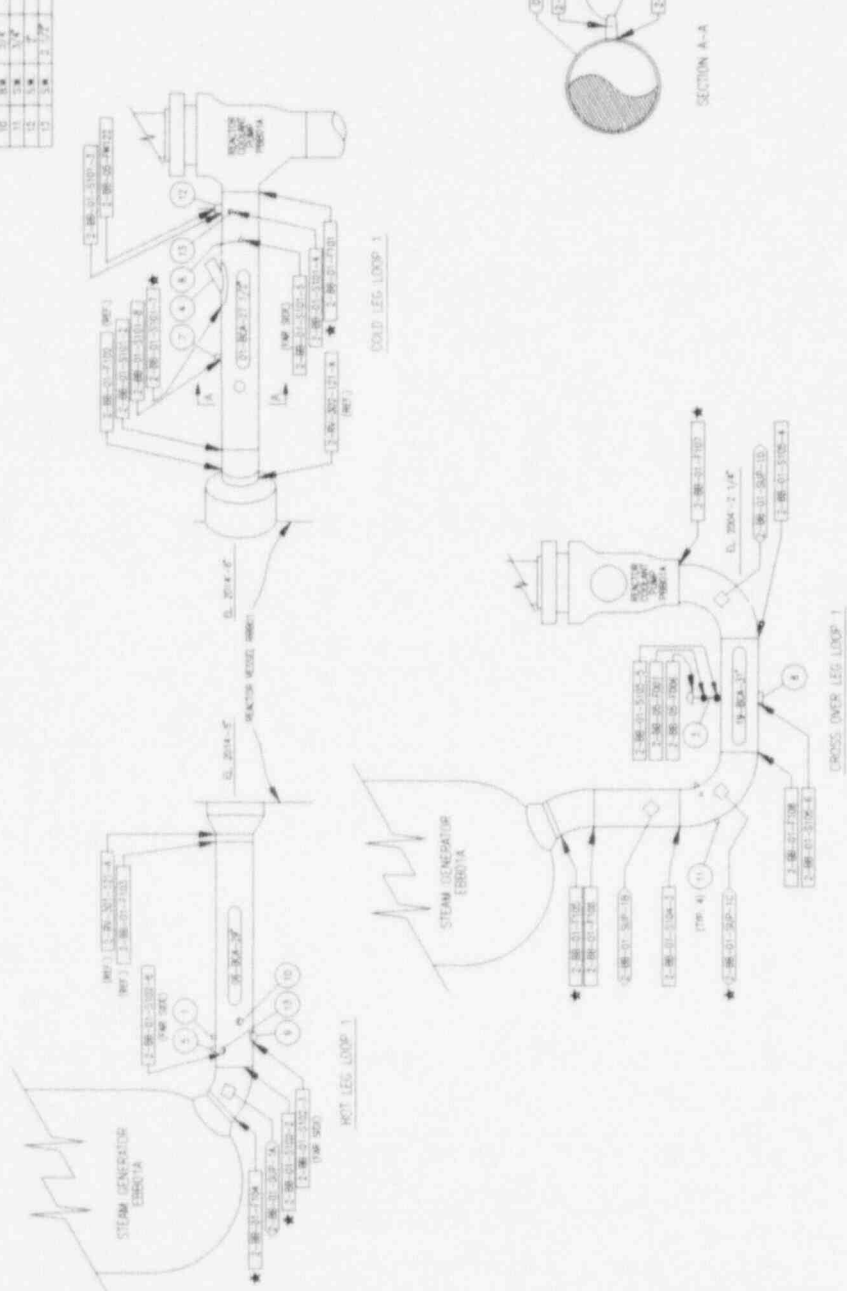
REACTOR COOLANT PRIMARY LOOP GENERAL LAYOUT

DALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI

SCALE: N.T.S.
 DRAWING NO. RB-00-01
 SHEET 1 OF 1

1 2 3 4 5 6 7 8 9 10

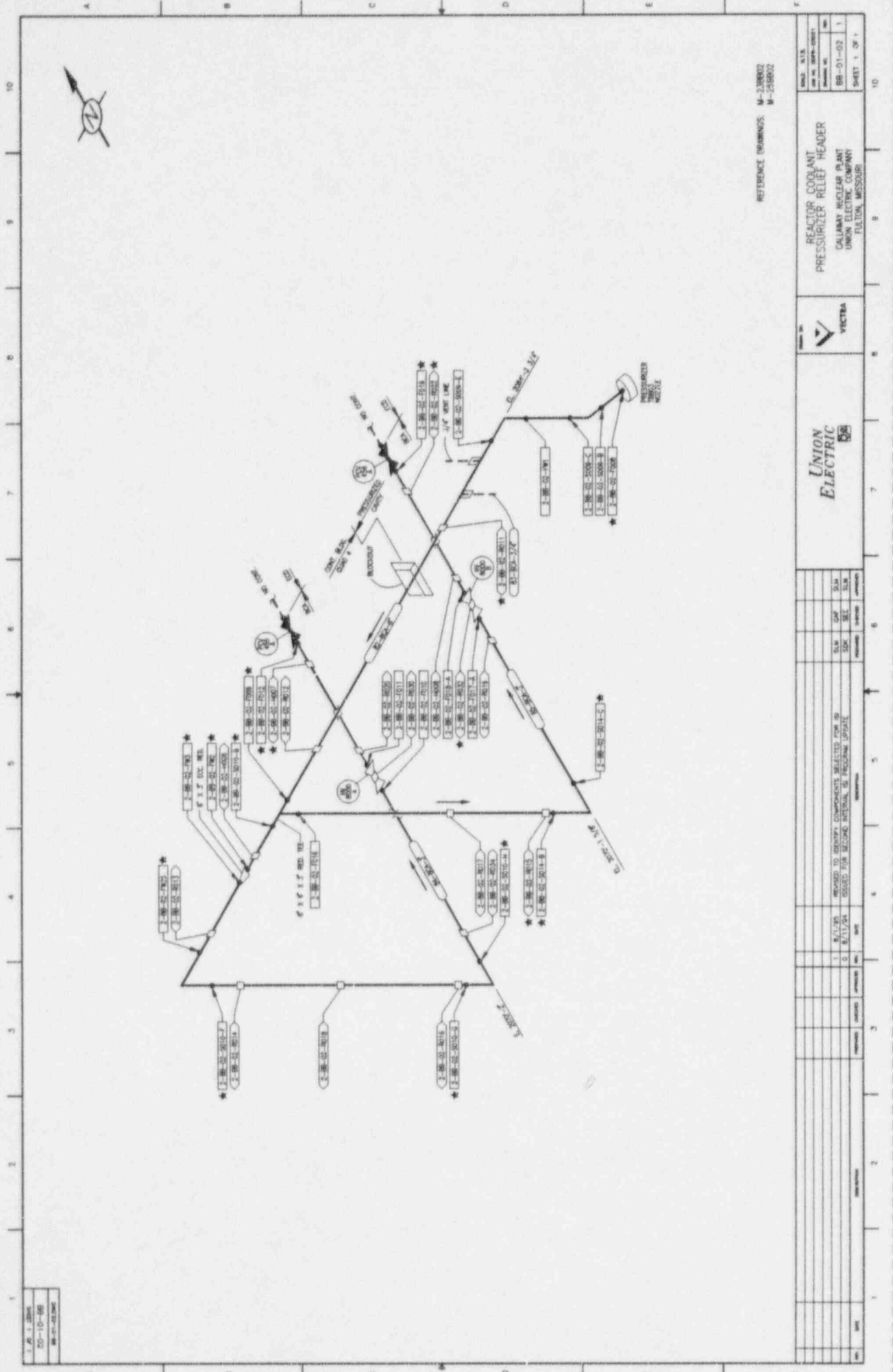
ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
1	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
2	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
3	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
4	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
5	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
6	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
7	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
8	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
9	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
10	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
11	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS
12	STEAM GENERATOR	1	EA	SEE DRAWING FOR PARTS



NOTES
 1. REFER TO REACTOR COOLANT LOOP 1 FOR PARTS LIST.

REFERENCE DRAWING: M-238801

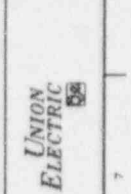
				REACTOR COOLANT LOOP 1 OAK RIDGE NATIONAL LABORATORY UNION ELECTRIC COMPANY FLUOR, MISSOURI	
DATE	BY	CHKD	APP'D	REV	DESCRIPTION
11/17/53	W. J. B. /	W. J. B. /	W. J. B. /	1	ISSUED FOR REACTOR COOLANT LOOP 1
11/17/53	W. J. B. /	W. J. B. /	W. J. B. /	2	REVISED TO SHOW COMPONENTS SELECTED FOR 60 MW OPERATION
11/17/53	W. J. B. /	W. J. B. /	W. J. B. /	3	REVISED TO SHOW REACTOR COOLANT LOOP 1



REFERENCE MARKINGS: M-238802
M-258802

SCALE: 1/8" = 1'-0"
PROJECT NO: M-238802
DATE: 08-01-02
SHEET: 1 OF 1

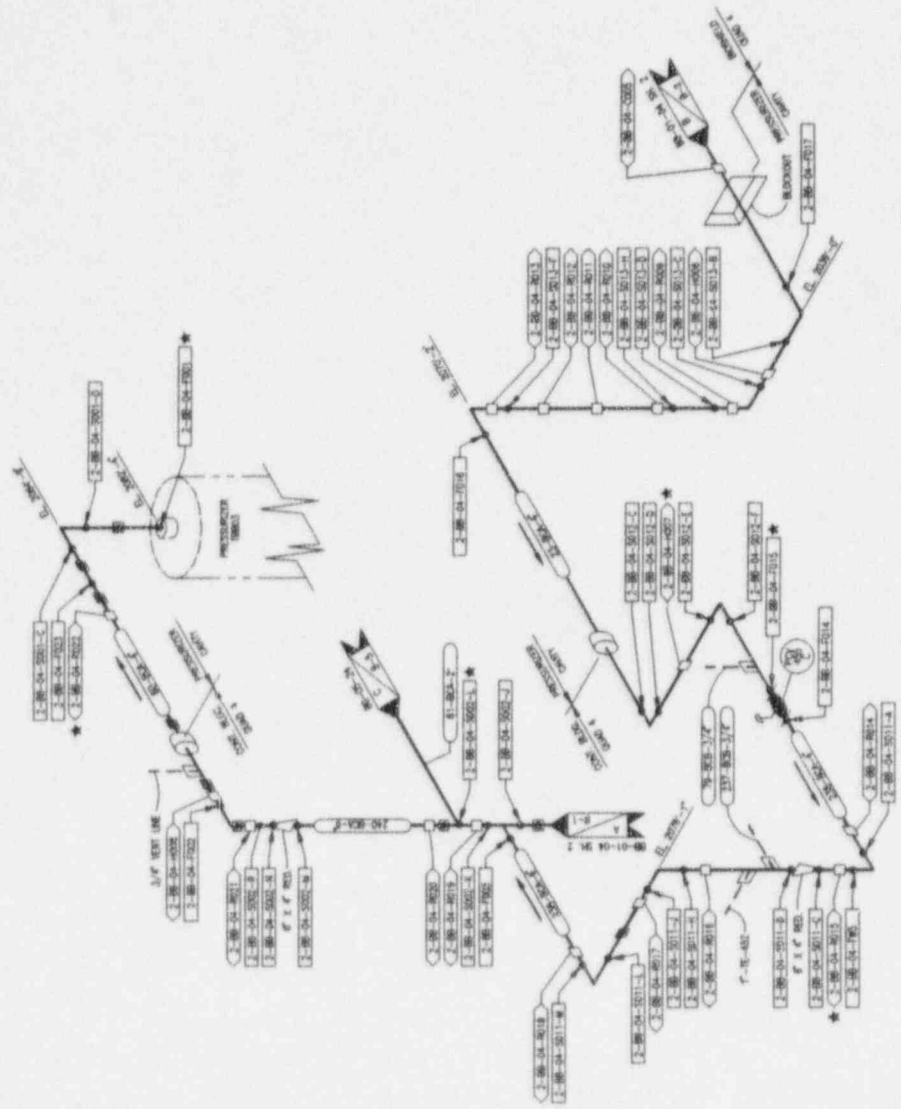
REACTOR COOLANT
PRESSURIZER RELIEF HEADER
CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



NO.	DATE	DESCRIPTION	BY	CHECKED
1	8/1/02	ISSUED TO GROUPS COMPONENTS SELECTED FROM IS		
2	8/1/02	ISSUED FOR RECORD INTERNAL TO PROJECT OFFICE		

1	8/1/02	ISSUED TO GROUPS COMPONENTS SELECTED FROM IS		
2	8/1/02	ISSUED FOR RECORD INTERNAL TO PROJECT OFFICE		

T. W. J. 238804
 10-11-68
 10-11-68



REFERENCE DRAWINGS: M-238804
 M-238804

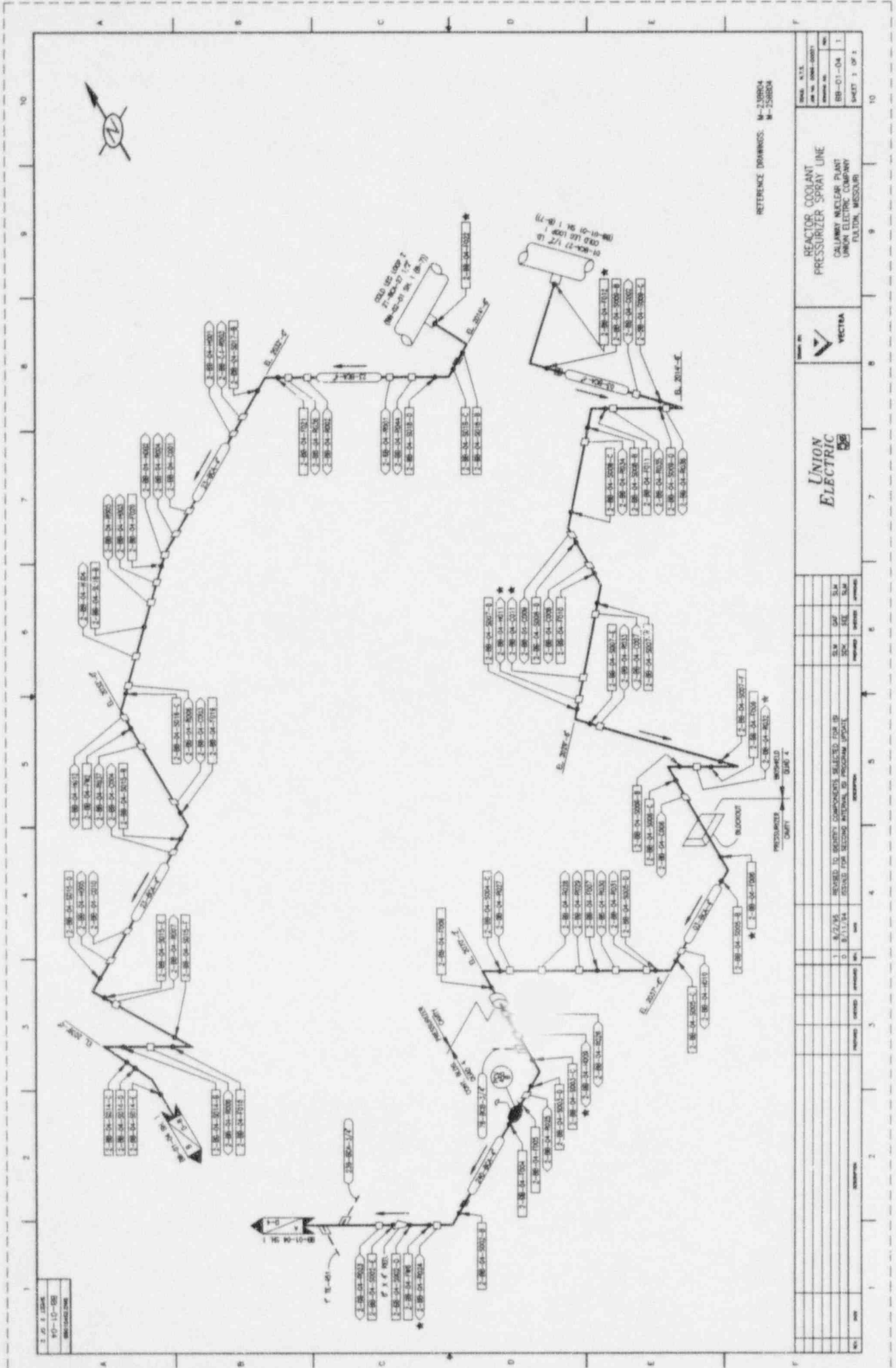
DATE	BY	CHKD
10-11-68	T. W. J.	
10-11-68		
10-11-68		

REACTOR COOLANT
 PRESSURIZER SPRAY LINE
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



NO.	DESCRIPTION	DATE	BY	CHKD
1	ISSUED AS CHECKY COMPONENTS SELECTED FOR AS			
2	REVISED FOR SECOND REVISION, IN PROGRESS 10/11/68			
3				

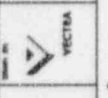
NO.	DATE	DESCRIPTION	BY	CHKD



2. 28-04-5001-1
 2. 28-04-5002-1
 2. 28-04-5003-1
 2. 28-04-5004-1
 2. 28-04-5005-1
 2. 28-04-5006-1
 2. 28-04-5007-1
 2. 28-04-5008-1
 2. 28-04-5009-1
 2. 28-04-5010-1
 2. 28-04-5011-1
 2. 28-04-5012-1
 2. 28-04-5013-1
 2. 28-04-5014-1
 2. 28-04-5015-1
 2. 28-04-5016-1
 2. 28-04-5017-1
 2. 28-04-5018-1
 2. 28-04-5019-1
 2. 28-04-5020-1
 2. 28-04-5021-1
 2. 28-04-5022-1
 2. 28-04-5023-1
 2. 28-04-5024-1
 2. 28-04-5025-1
 2. 28-04-5026-1
 2. 28-04-5027-1
 2. 28-04-5028-1
 2. 28-04-5029-1
 2. 28-04-5030-1
 2. 28-04-5031-1
 2. 28-04-5032-1
 2. 28-04-5033-1
 2. 28-04-5034-1
 2. 28-04-5035-1
 2. 28-04-5036-1
 2. 28-04-5037-1
 2. 28-04-5038-1
 2. 28-04-5039-1
 2. 28-04-5040-1
 2. 28-04-5041-1
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 2. 28-04-5043-1
 2. 28-04-5044-1
 2. 28-04-5045-1
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 2. 28-04-5050-1
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 2. 28-04-5052-1
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 2. 28-04-5054-1
 2. 28-04-5055-1
 2. 28-04-5056-1
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 2. 28-04-5066-1
 2. 28-04-5067-1
 2. 28-04-5068-1
 2. 28-04-5069-1
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 2. 28-04-5071-1
 2. 28-04-5072-1
 2. 28-04-5073-1
 2. 28-04-5074-1
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 2. 28-04-5078-1
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 2. 28-04-5081-1
 2. 28-04-5082-1
 2. 28-04-5083-1
 2. 28-04-5084-1
 2. 28-04-5085-1
 2. 28-04-5086-1
 2. 28-04-5087-1
 2. 28-04-5088-1
 2. 28-04-5089-1
 2. 28-04-5090-1
 2. 28-04-5091-1
 2. 28-04-5092-1
 2. 28-04-5093-1
 2. 28-04-5094-1
 2. 28-04-5095-1
 2. 28-04-5096-1
 2. 28-04-5097-1
 2. 28-04-5098-1
 2. 28-04-5099-1
 2. 28-04-5100-1

REFERENCE DRAWINGS: M-250804
 M-250804
 M-250804

REACTOR COOLANT
 PRESSURIZER SPRAY LINE
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI

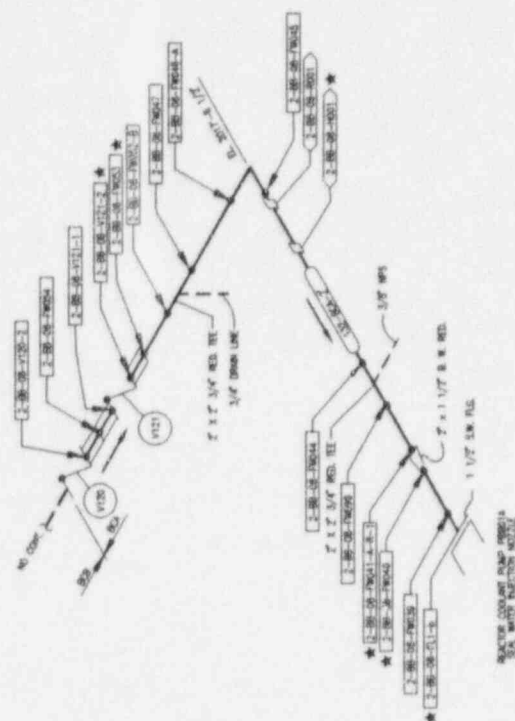
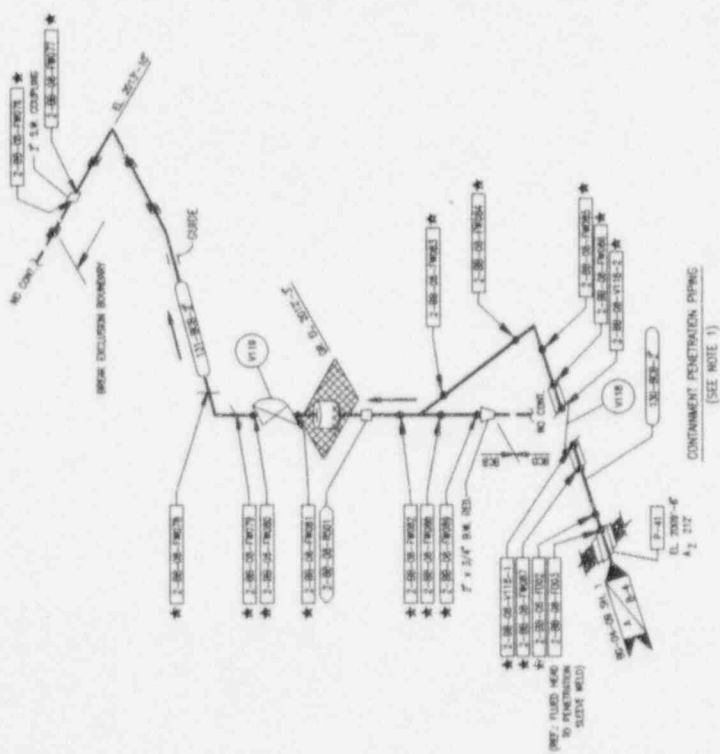


**UNION
ELECTRIC**

REV.	DATE	BY	CHKD.	DESCRIPTION
1	8/2/75	REMOVED TO GROUP'S COMPONENTS SELECTED FOR 30		
2	8/11/74	ISSUED FOR SECOND REVISION, BY PROGRAMS GROUP		

1. 10-1-10000
 10-1-10-100
 10-1-10-100

10 9 8 7 6 5 4 3 2 1



NOTES
 1. SUPPORTS ON LINES 10-100-100
 2. SUPPORTS ON LINES 10-100-100
 3. SUPPORTS ON LINES 10-100-100
 4. SUPPORTS ON LINES 10-100-100
 5. SUPPORTS ON LINES 10-100-100
 6. SUPPORTS ON LINES 10-100-100
 7. SUPPORTS ON LINES 10-100-100
 8. SUPPORTS ON LINES 10-100-100
 9. SUPPORTS ON LINES 10-100-100
 10. SUPPORTS ON LINES 10-100-100

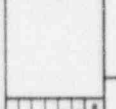
REFERENCE DRAWINGS: M-238808
 M-238809

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REVISION
1	10-1-10000	ISSUED FOR DESIGN PURPOSES				
2	10-1-10000	ISSUED FOR DESIGN PURPOSES				
3	10-1-10000	ISSUED FOR DESIGN PURPOSES				
4	10-1-10000	ISSUED FOR DESIGN PURPOSES				
5	10-1-10000	ISSUED FOR DESIGN PURPOSES				
6	10-1-10000	ISSUED FOR DESIGN PURPOSES				
7	10-1-10000	ISSUED FOR DESIGN PURPOSES				
8	10-1-10000	ISSUED FOR DESIGN PURPOSES				
9	10-1-10000	ISSUED FOR DESIGN PURPOSES				
10	10-1-10000	ISSUED FOR DESIGN PURPOSES				

REACTOR COOLANT PUMP "A" SEAL
 WATER INJECTION LINE
 CALAMITY NUCLEAR PLANT
 INDIAN ELECTRIC COMPANY
 FULTON, MISSOURI



UNION
 ELECTRIC

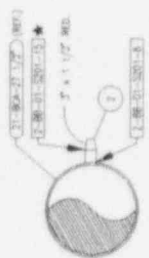
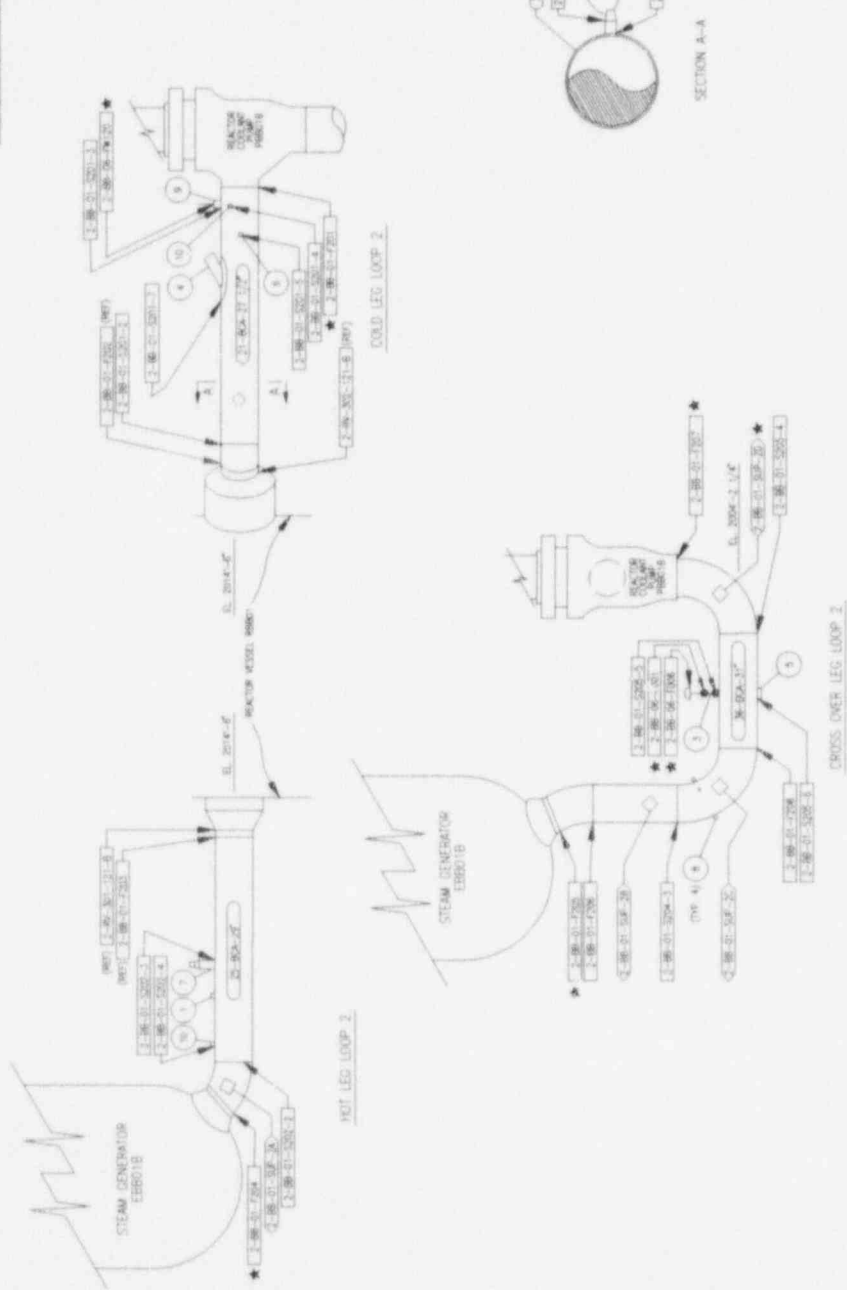


REACTOR COOLANT PUMP "A" SEAL
 WATER INJECTION LINE
 CALAMITY NUCLEAR PLANT
 INDIAN ELECTRIC COMPANY
 FULTON, MISSOURI

10 9 8 7 6 5 4 3 2 1

10-20-50
88-02-01-000

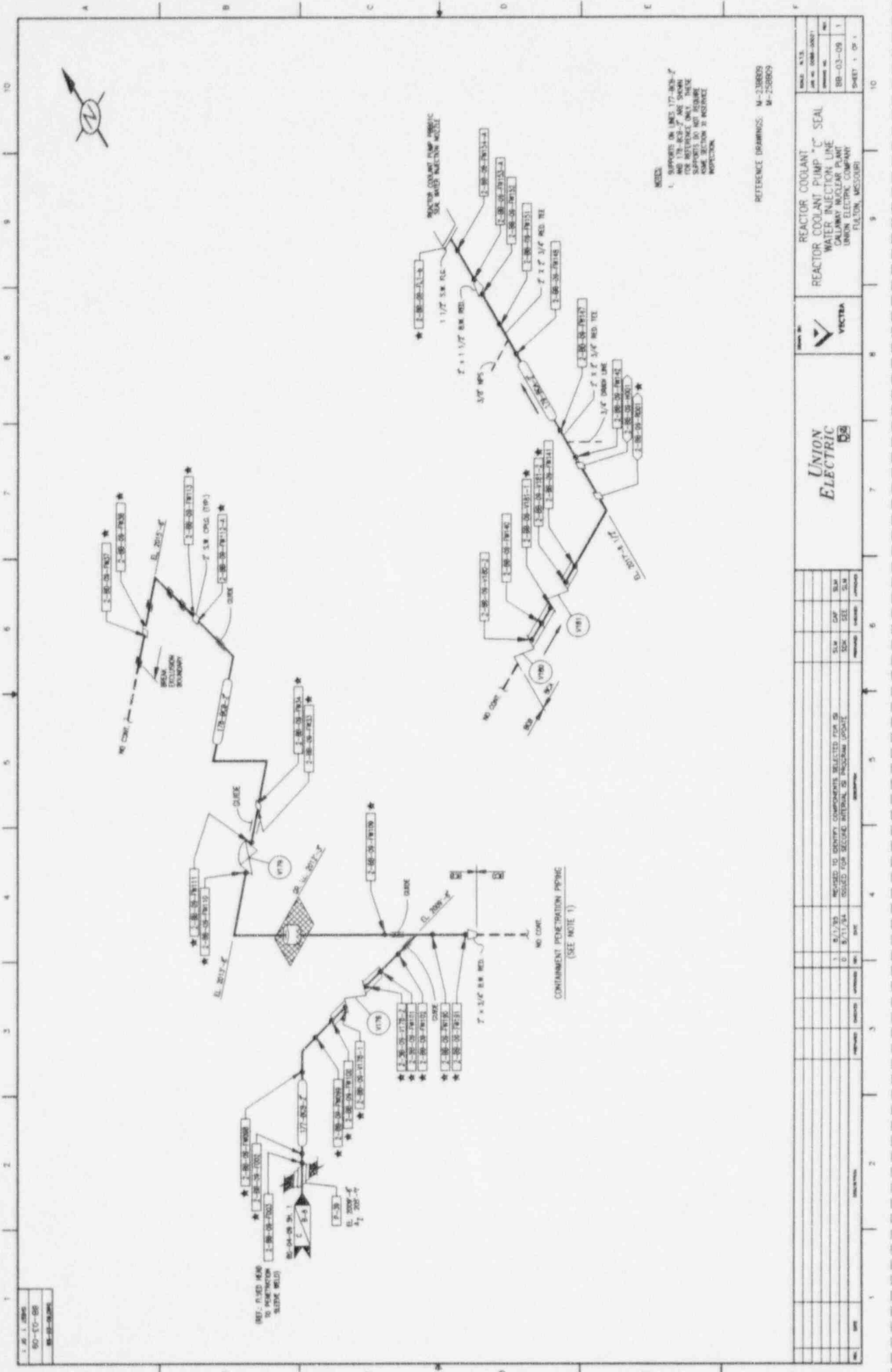
ITEM NUMBER	SYMBOL	QTY	UNIT	DESCRIPTION
1	10-20-50	1	EA	STEAM GENERATOR
2	10-20-50	1	EA	STEAM GENERATOR
3	10-20-50	1	EA	STEAM GENERATOR
4	10-20-50	1	EA	STEAM GENERATOR
5	10-20-50	1	EA	STEAM GENERATOR
6	10-20-50	1	EA	STEAM GENERATOR
7	10-20-50	1	EA	STEAM GENERATOR
8	10-20-50	1	EA	STEAM GENERATOR
9	10-20-50	1	EA	STEAM GENERATOR
10	10-20-50	1	EA	STEAM GENERATOR
11	10-20-50	1	EA	STEAM GENERATOR
12	10-20-50	1	EA	STEAM GENERATOR
13	10-20-50	1	EA	STEAM GENERATOR
14	10-20-50	1	EA	STEAM GENERATOR
15	10-20-50	1	EA	STEAM GENERATOR
16	10-20-50	1	EA	STEAM GENERATOR
17	10-20-50	1	EA	STEAM GENERATOR
18	10-20-50	1	EA	STEAM GENERATOR
19	10-20-50	1	EA	STEAM GENERATOR
20	10-20-50	1	EA	STEAM GENERATOR
21	10-20-50	1	EA	STEAM GENERATOR
22	10-20-50	1	EA	STEAM GENERATOR
23	10-20-50	1	EA	STEAM GENERATOR
24	10-20-50	1	EA	STEAM GENERATOR
25	10-20-50	1	EA	STEAM GENERATOR
26	10-20-50	1	EA	STEAM GENERATOR
27	10-20-50	1	EA	STEAM GENERATOR
28	10-20-50	1	EA	STEAM GENERATOR
29	10-20-50	1	EA	STEAM GENERATOR
30	10-20-50	1	EA	STEAM GENERATOR
31	10-20-50	1	EA	STEAM GENERATOR
32	10-20-50	1	EA	STEAM GENERATOR
33	10-20-50	1	EA	STEAM GENERATOR
34	10-20-50	1	EA	STEAM GENERATOR
35	10-20-50	1	EA	STEAM GENERATOR
36	10-20-50	1	EA	STEAM GENERATOR
37	10-20-50	1	EA	STEAM GENERATOR
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40	10-20-50	1	EA	STEAM GENERATOR
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45	10-20-50	1	EA	STEAM GENERATOR
46	10-20-50	1	EA	STEAM GENERATOR
47	10-20-50	1	EA	STEAM GENERATOR
48	10-20-50	1	EA	STEAM GENERATOR
49	10-20-50	1	EA	STEAM GENERATOR
50	10-20-50	1	EA	STEAM GENERATOR



- NOTES
1. REACTOR AUTOMATIC SHUTDOWN (RAS) SYSTEM
 2. REACTOR AUTOMATIC SHUTDOWN (RAS) SYSTEM
 3. REACTOR AUTOMATIC SHUTDOWN (RAS) SYSTEM

REFERENCE DRAWING: M-210001

REACTOR COOLANT LOOP 2 CALVERT NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI			
DATE	BY	CHKD	APP'D
10-20-50	88-02-01-000		
SHEET 1 OF 1			



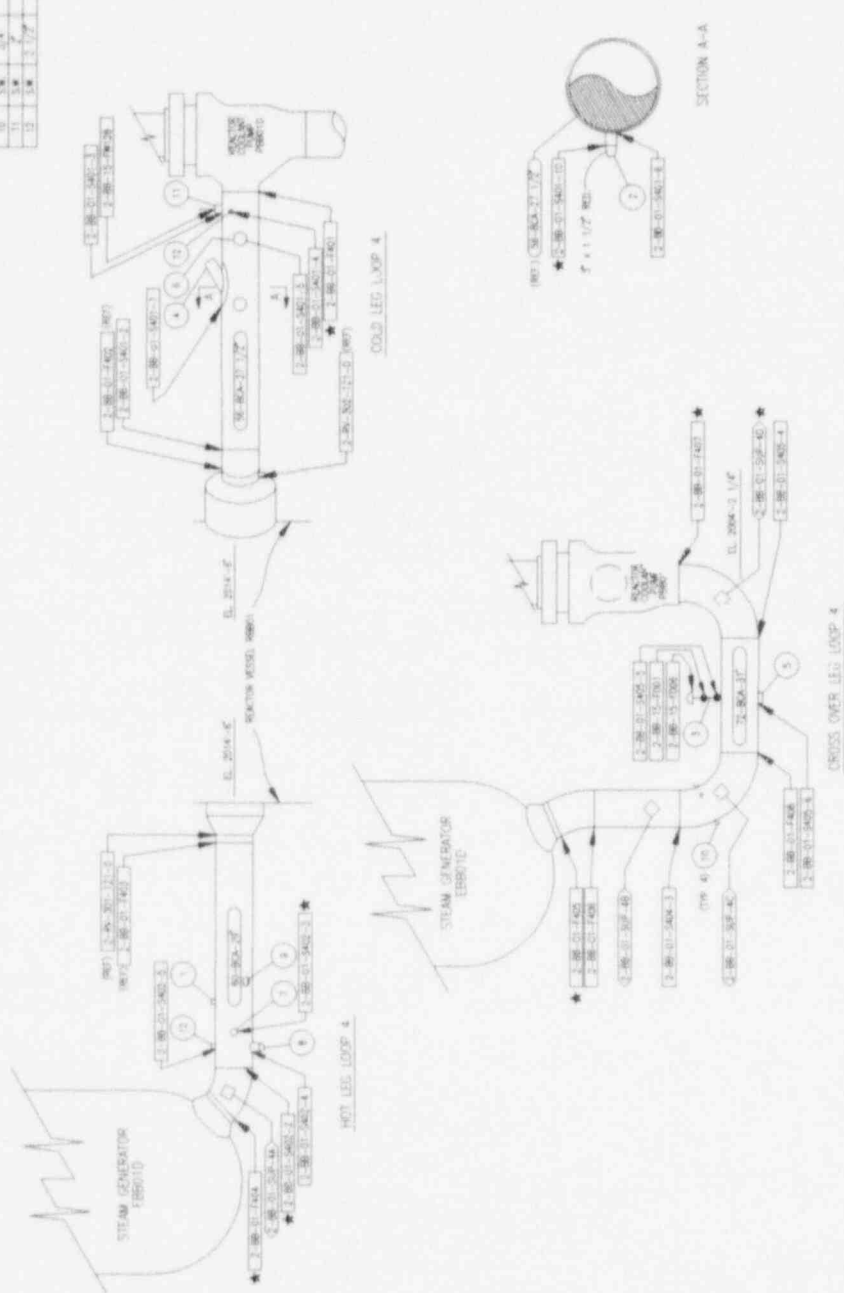
NOTES:
 1. SUPPORTS IN LINE 177-205-2 ARE TO BE INSTALLED IN THE FIELD FOR RETENTION ONLY. THESE SUPPORTS DO NOT REQUIRE CONNECTION TO ADJACENT STRUCTURE.

REFERENCE DRAWINGS: M-218825
 M-218826

REACTOR COOLANT PUMP "C" SEAL WATER INJECTION LINE DALLAMBY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET NO. 1 OF 1
DRAWN BY: [Blank]	CHECKED BY: [Blank]	DATE: [Blank]
PROJECT NO.: 80-02-09	DRAWING NO.: 80-02-09	SCALE: [Blank]
REVISIONS TO DRAWING: [Blank]	REVISIONS TO DRAWING: [Blank]	REVISIONS TO DRAWING: [Blank]

1. 80-02-09
 80-02-09
 80-02-09

ITEM NO.	ITEM NAME	ITEM NUMBER	ITEM DESCRIPTION
1	2-88-01-1402-3	2-88-01-1402-3	VALVE
2	2-88-01-1402-4	2-88-01-1402-4	VALVE
3	2-88-01-1402-5	2-88-01-1402-5	VALVE
4	2-88-01-1402-6	2-88-01-1402-6	VALVE
5	2-88-01-1402-7	2-88-01-1402-7	VALVE
6	2-88-01-1402-8	2-88-01-1402-8	VALVE
7	2-88-01-1402-9	2-88-01-1402-9	VALVE
8	2-88-01-1402-10	2-88-01-1402-10	VALVE
9	2-88-01-1402-11	2-88-01-1402-11	VALVE
10	2-88-01-1402-12	2-88-01-1402-12	VALVE
11	2-88-01-1402-13	2-88-01-1402-13	VALVE
12	2-88-01-1402-14	2-88-01-1402-14	VALVE

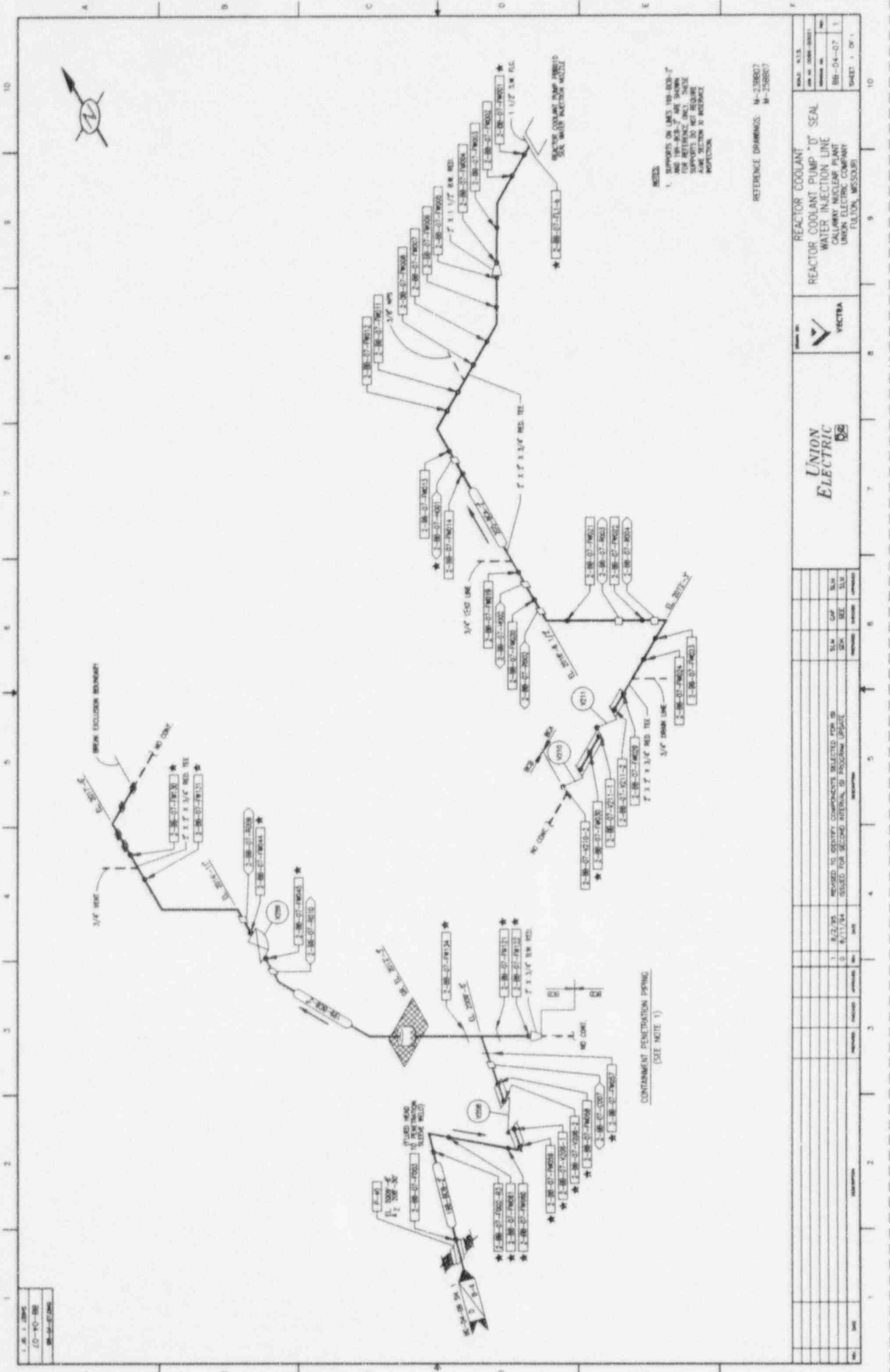


NOTES
 1. REFER TO MECHANICAL DRAWING FOR SUPPORT DETAILS

REFERENCE DRAWING: M-238501

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0.1	01/21	REMOVED TO GROUP COMPONENTS RELEASED FOR DISPOSED FOR RADIOACTIVE WASTE, OR PROPOSED FOR REUSE	SM	SM
2	0.1	01/21	ISSUED FOR RADIOACTIVE WASTE, OR PROPOSED FOR REUSE	SM	SM

UNION ELECTRIC		REACTOR COOLANT LOOP 4	
CALDWAY NUCLEAR PLANT		UNION ELECTRIC COMPANY	
TULSA, OKLAHOMA		TULSA, OKLAHOMA	



1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----



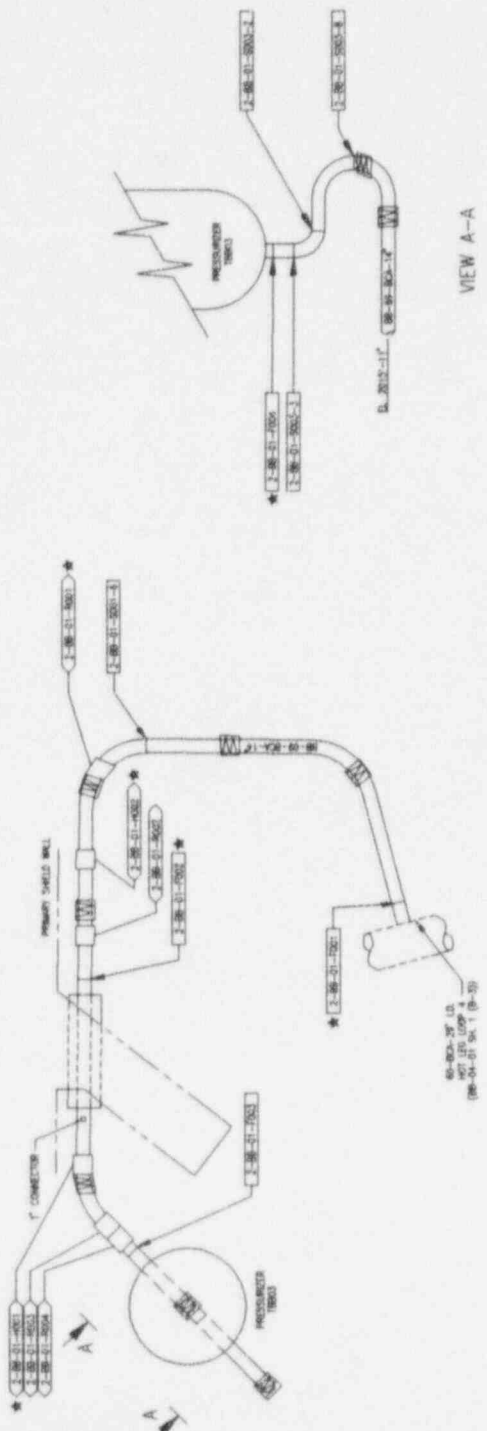
NOTES:
 1. SUPPORTS ON LINES 100-200-7 AND 100-200-7 ARE SHOWN FOR REFERENCE ONLY. THESE SUPPORTS DO NOT REQUIRE PROTECTION.

REFERENCE DRAWINGS: M-238607 M-238607

REACTOR COOLANT PUMP SEAL WATER INJECTION LINE OLLAHAY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET NO. 1 OF 1
REACTOR COOLANT PUMP SEAL WATER INJECTION LINE OLLAHAY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET NO. 1 OF 1
1. 1/2" DIA. BRAN EXCLUSION MANWAY 2. 3/4" DIA. BRAN EXCLUSION MANWAY	3. 3/4" DIA. BRAN EXCLUSION MANWAY 4. 3/4" DIA. BRAN EXCLUSION MANWAY	5. 3/4" DIA. BRAN EXCLUSION MANWAY 6. 3/4" DIA. BRAN EXCLUSION MANWAY

CONTAINMENT PENETRATION PIPING
 (SEE NOTE 1)

10 9 8 7 6 5 4 3 2 1

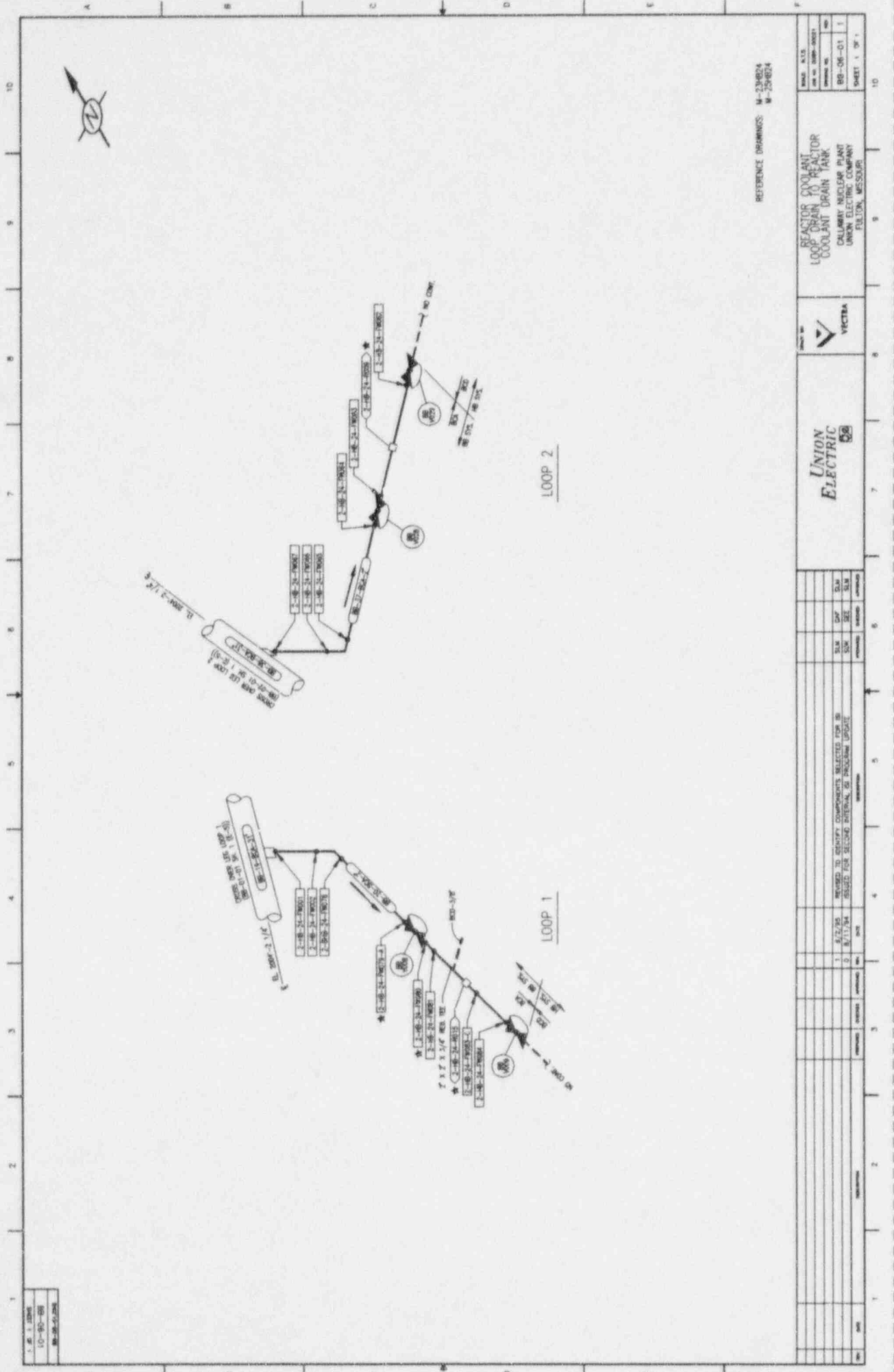


VIEW A-A

REFERENCE DRAWING: M-238801

UNION ELECTRIC 				REACTOR COOLANT PRESSURIZER SURGE LINE DALLAM NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET 1 OF 1	
68-302-27 IS NOT TO BE USED FOR THIS SYSTEM. SEE 68-302-27 FOR DETAILS.		68-302-27 IS NOT TO BE USED FOR THIS SYSTEM. SEE 68-302-27 FOR DETAILS.		68-302-27 IS NOT TO BE USED FOR THIS SYSTEM. SEE 68-302-27 FOR DETAILS.		68-302-27 IS NOT TO BE USED FOR THIS SYSTEM. SEE 68-302-27 FOR DETAILS.	
REV	DATE	BY	CHKD	APP'D	DESCRIPTION	QUANTITY	REMARKS
1	8/17/58				REVISED TO SHOW COMPONENTS SELECTED FOR USE		
2	8/17/58				REVISED FOR DESIGN DETAILS OF PRESSURIZER SURGE LINE		

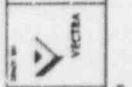
A B C D E F 10 9 8 7 6 5 4 3 2 1



REFERENCE DRAWINGS: M-334824
 M-334824

SCALE: AS SHOWN	DATE: 10-10-68
DRAWING NO.:	REV. NO.:
PROJECT NO.:	REVISION:
SHEET 1 OF 1	

REACTOR COOLANT LOOP DRAIN TO REACTOR COOLANT DRAIN TANK
 CALUMET NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



UNION ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHKD.
1	8/2/68	REVISED TO SHOW COMPONENTS SELECTED FOR 100% TEST		
2	8/11/68	REVISED FOR SECOND PRINTING, OF PROGRAM UPDATE		

REVISIONS TO BE MADE TO THIS DRAWING AS SHOWN ON THE ATTACHED SHEETS.

NO.	DATE	DESCRIPTION	BY	CHKD.
1	8/2/68	REVISED TO SHOW COMPONENTS SELECTED FOR 100% TEST		
2	8/11/68	REVISED FOR SECOND PRINTING, OF PROGRAM UPDATE		

NO.	DATE	DESCRIPTION	BY	CHKD.
1	8/2/68	REVISED TO SHOW COMPONENTS SELECTED FOR 100% TEST		
2	8/11/68	REVISED FOR SECOND PRINTING, OF PROGRAM UPDATE		

12-10-78
12-10-78
12-10-78

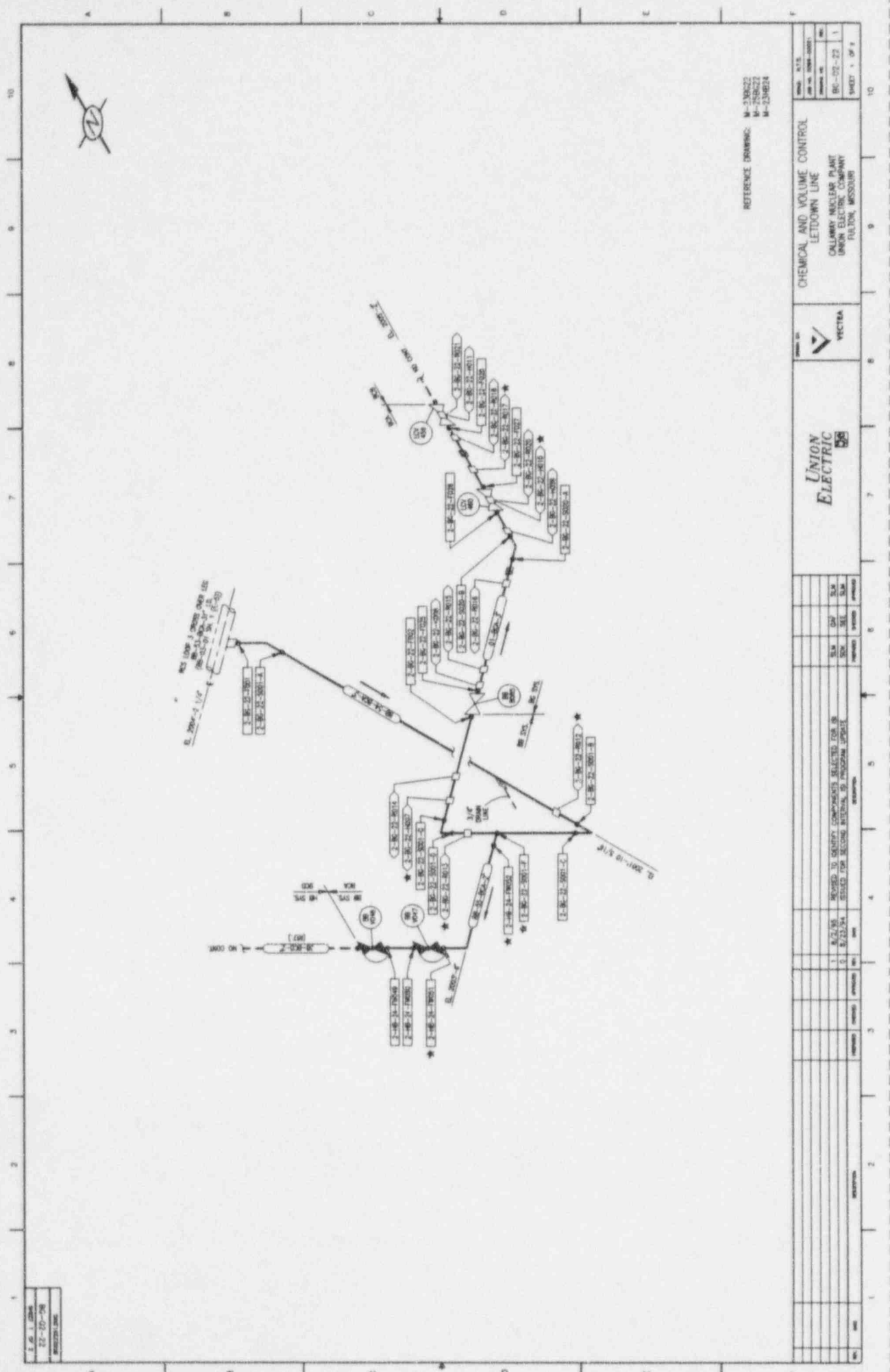


ALTERNATE CHARGING

NORMAL CHARGING

REFERENCE DRAWINGS: 1-239021
2-239021

				CHEMICAL AND VOLUME CONTROL NORMAL & ALTERNATE CHARGING LINES CALUMNY BATTERY PLANT UNION ELECTRIC COMPANY FULLTON, MISSOURI		SHEET 1 OF 1
NO.	DATE	REVISION	BY	DATE	DESCRIPTION	
1	8/1/80				REMOVE 15 RELAYS COMPONENTS RELATED JOB # 873344	
2	8/23/84				ISSUE FOR BUREAU PHYSICAL PROGRAM PLANT	



1-38-22-3001-1
 1-38-22-3001-2
 1-38-22-3001-3
 1-38-22-3001-4
 1-38-22-3001-5
 1-38-22-3001-6
 1-38-22-3001-7
 1-38-22-3001-8
 1-38-22-3001-9
 1-38-22-3001-10
 1-38-22-3001-11
 1-38-22-3001-12

REFERENCE DRAWING:
 M-238622
 M-238623
 M-238624

CHEMICAL AND VOLUME CONTROL
 LETDOWN LINE
 CALUMET REFINERS PLANT
 UNION ELECTRIC COMPANY
 FULLON, MISSOURI



UNION
 ELECTRIC

NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	8/2/85	1	DAY	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/85
2	8/2/84	1	SEL	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/84

NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	8/2/85	1	DAY	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/85
2	8/2/84	1	SEL	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/84

NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	8/2/85	1	DAY	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/85
2	8/2/84	1	SEL	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/84

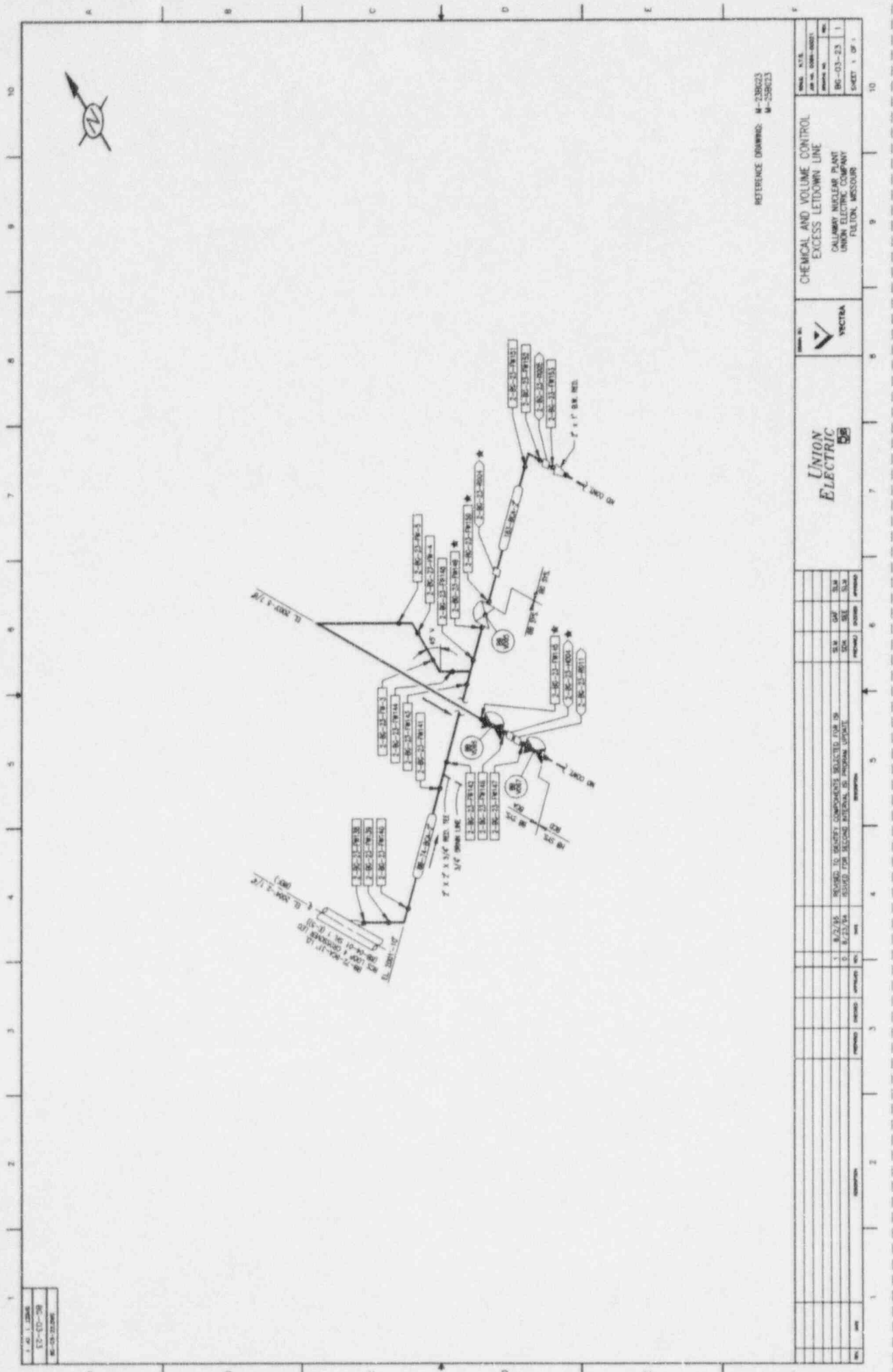
NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	8/2/85	1	DAY	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/85
2	8/2/84	1	SEL	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/84

NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	8/2/85	1	DAY	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/85
2	8/2/84	1	SEL	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/84

NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	8/2/85	1	DAY	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/85
2	8/2/84	1	SEL	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/84

NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	8/2/85	1	DAY	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/85
2	8/2/84	1	SEL	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/84

NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	8/2/85	1	DAY	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/85
2	8/2/84	1	SEL	MOVED TO GROUP COMPONENTS SELECTED FOR 8/2/84



REFERENCE DRAWING: M-238023
M-238023

CHEMICAL AND VOLUME CONTROL
EXCESS LETDOWN LINE
CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



UNION
ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA

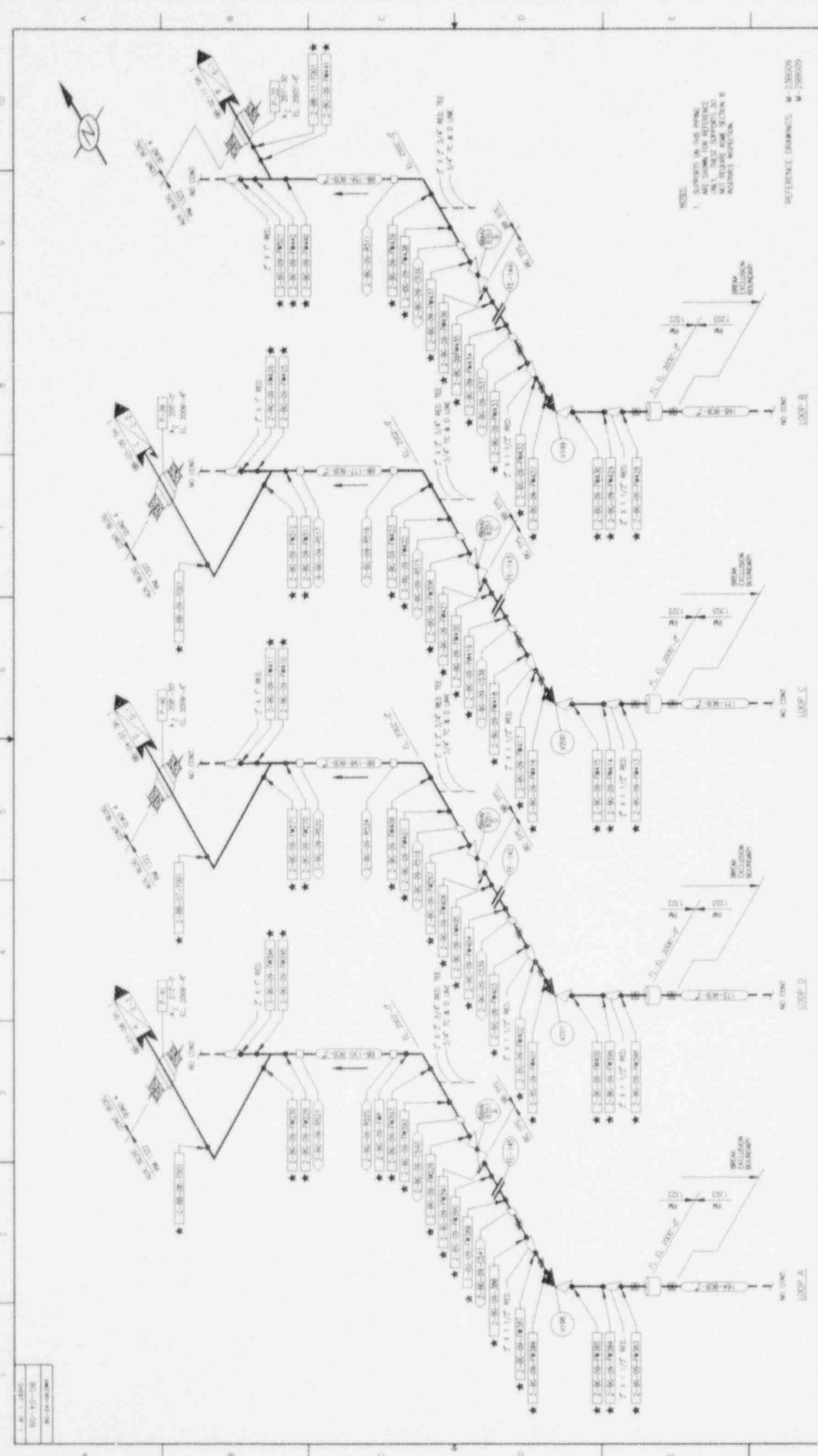
NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA

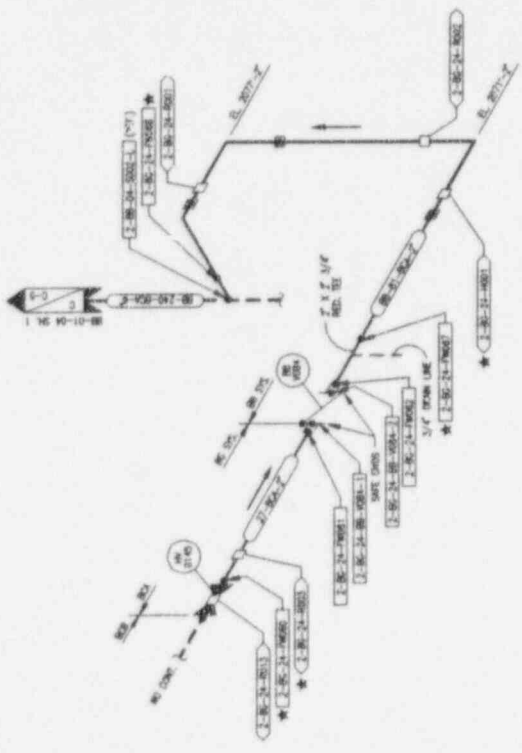
NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA

1	8/2/54	ISSUED TO RECORD COMPONENTS SELECTED FOR IS	SLA	SLA
2	8/2/54	ISSUED FOR RECORD PURPOSES TO RECORD PURPOSE	SLA	SLA



SHEET NO. 10 SHEET 1 OF 1		PROJECT NO. 80-04-09 PROJECT NAME: CALDWAY NUCLEAR PLANT COMPANY: UNION ELECTRIC COMPANY LOCATION: FULTON, MISSOURI	
TITLE: CHEMICAL & VOLUME CONTROL RCP SEAL WATER INLET CONTROL PEN		DRAWN BY: VECTRA CHECKED BY: VECTRA	
UNION ELECTRIC 		REVISIONS:	
NO. DATE 1 8-13-54 2 8-13-54 3 8-13-54 4 8-13-54 5 8-13-54 6 8-13-54 7 8-13-54 8 8-13-54 9 8-13-54 10 8-13-54		REVISIONS:	

1. 10 1. 10
 97-02-08
 8-10-1968



REFERENCE DRAWING: M-23824
 M-25824

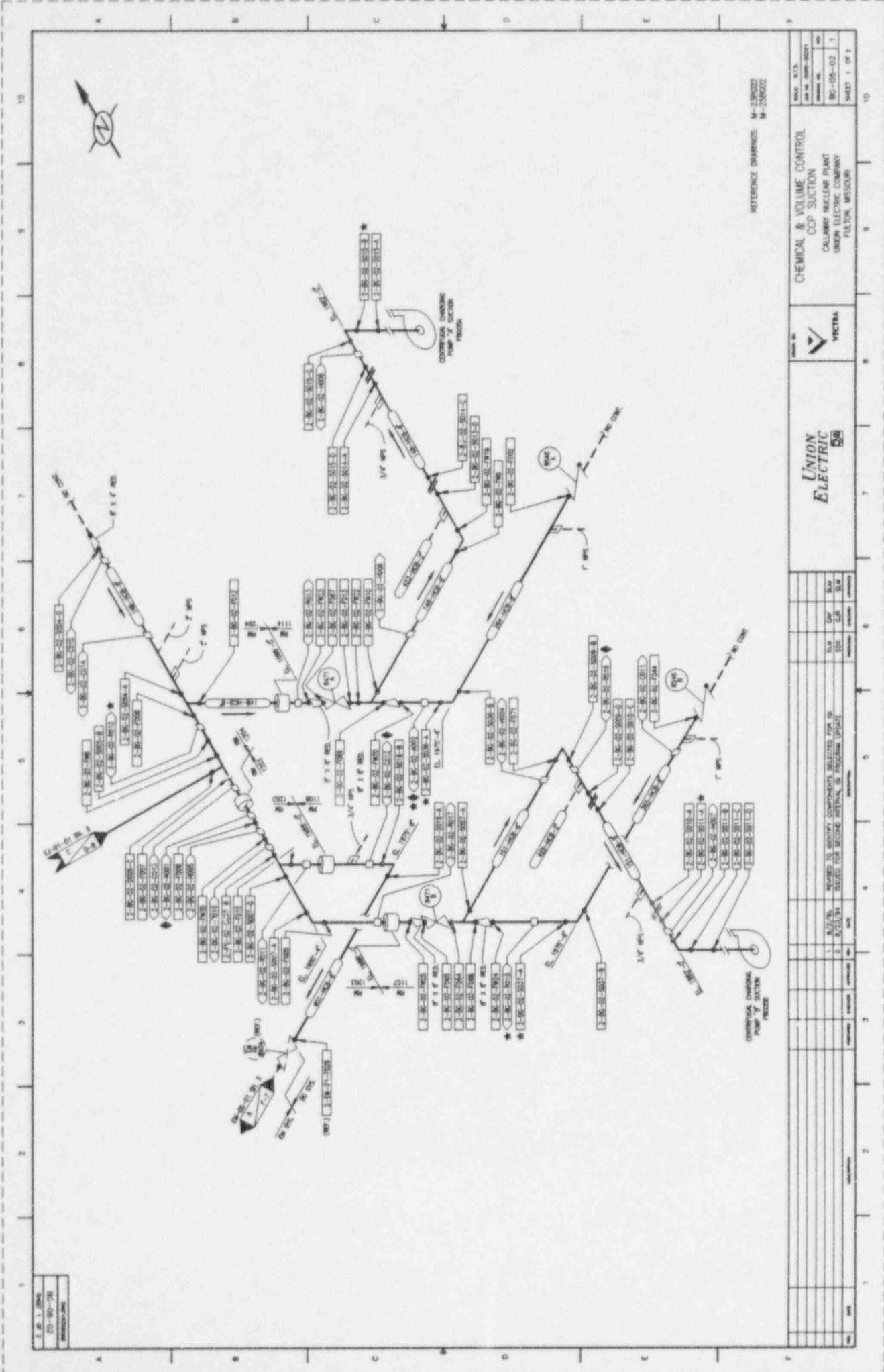
UNION ELECTRIC	DATE: 8-10-68
PROJECT NO.:	8C-05-24
SHEET NO.:	1 OF 1

CHEMICAL AND VOLUME CONTROL
 AUXILIARY SPRAY LINE
 CALDWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



UNION ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	8/2/68	REVISED TO SHOW COMPONENTS SELECTED FOR PHASE 2B	SJM	DAW	SJM
2	8/23/68	REVISED FOR SECOND REVISION OF PROGRAM UPDATE	SJM	SEE	SJM



1. 2-SC-02-2011-A
 2-SC-02-2011-B
 2-SC-02-2011-C
 2-SC-02-2011-D
 2-SC-02-2011-E
 2-SC-02-2011-F
 2-SC-02-2011-G
 2-SC-02-2011-H
 2-SC-02-2011-I
 2-SC-02-2011-J
 2-SC-02-2011-K
 2-SC-02-2011-L

REFERENCE DRAWINGS: M-238002
 M-238002

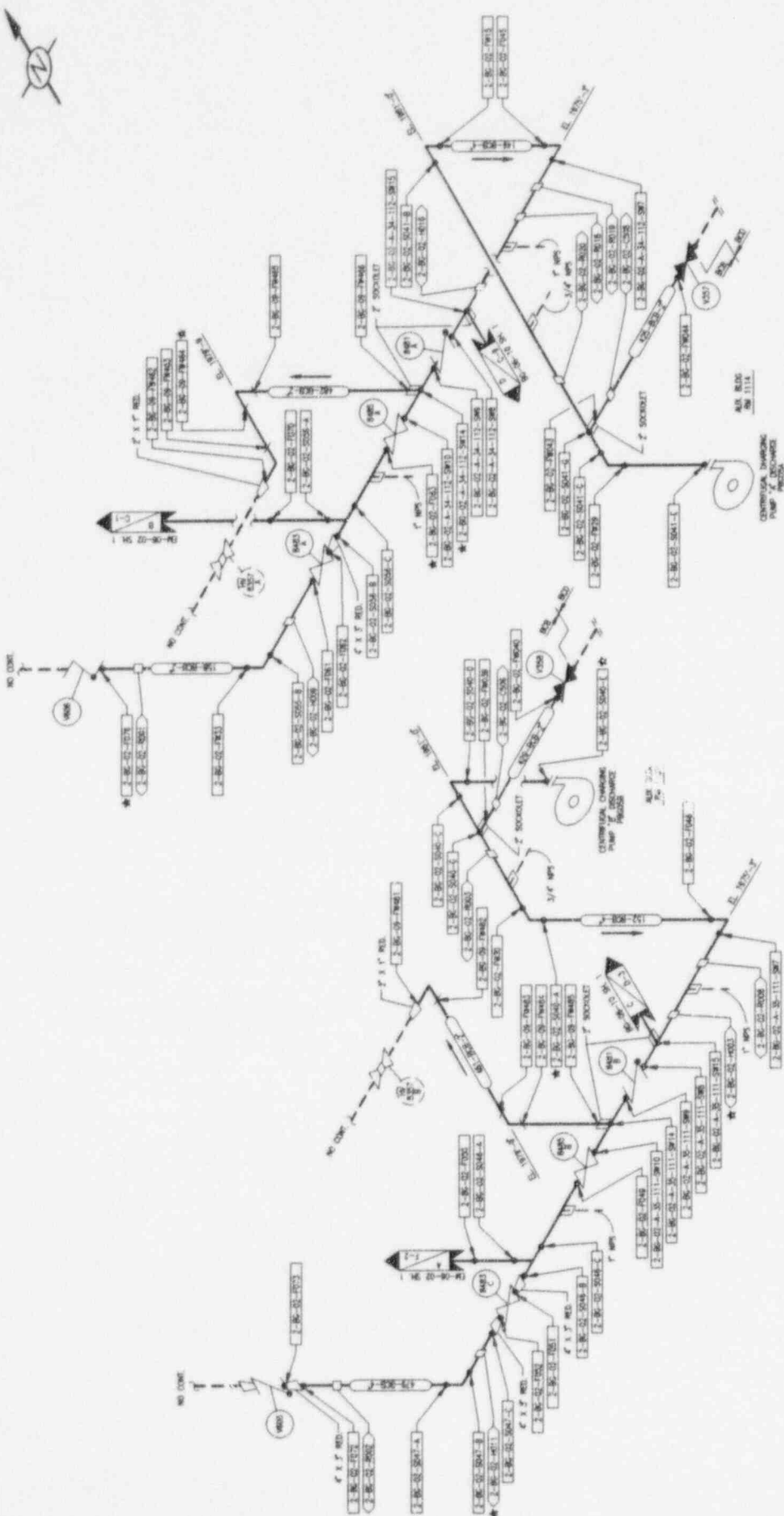
CHEMICAL & VOLUME CONTROL
 CCP SUNCTION
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



SHEET 1 OF 2

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.
1	8/17/76	REVISED TO SHOW COMPONENTS SELECTED FOR IS	SLW	SLW	SLW
2	8/23/76	ISSUED FOR BIDDING PURPOSES TO PROGRAMME UPDATE	SLW	SLW	SLW

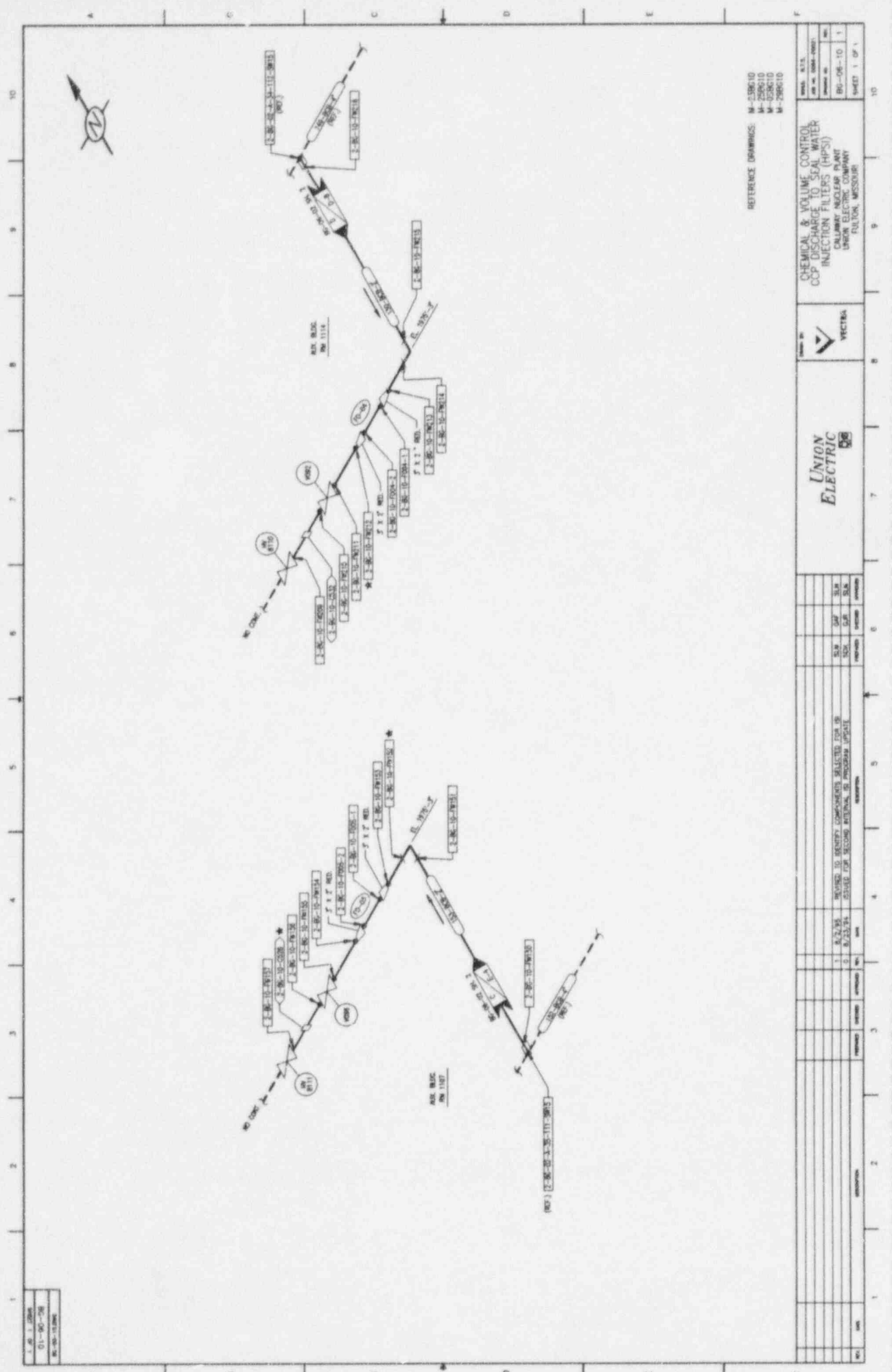
1. SEE 1.00000
 2. SEE 1.00000
 3. SEE 1.00000



REFERENCE DRAWING:
 M-238202
 M-238203
 M-238204
 M-238205

UNION ELECTRIC 		VICTRA 		CHEMICAL & VOLUME CONTROL CCP DISCHARGE (HPSI DISCHARGE) OHLAWAY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI	
NO.	REV.	DATE	BY	CHKD.	APP'D.
1	1	11/17/84	W. J. W.	W. J. W.	W. J. W.
2	1	12/11/84	W. J. W.	W. J. W.	W. J. W.
ISSUED FOR SECOND INTERNAL & EXTERNAL USE					

REV	DATE	DESCRIPTION
1	01-07-58	ISSUED FOR CONSTRUCTION
2	03-05-58	ISSUED FOR CONSTRUCTION



REFERENCE DRAWINGS: M-258610
M-258610
M-258610
M-258610

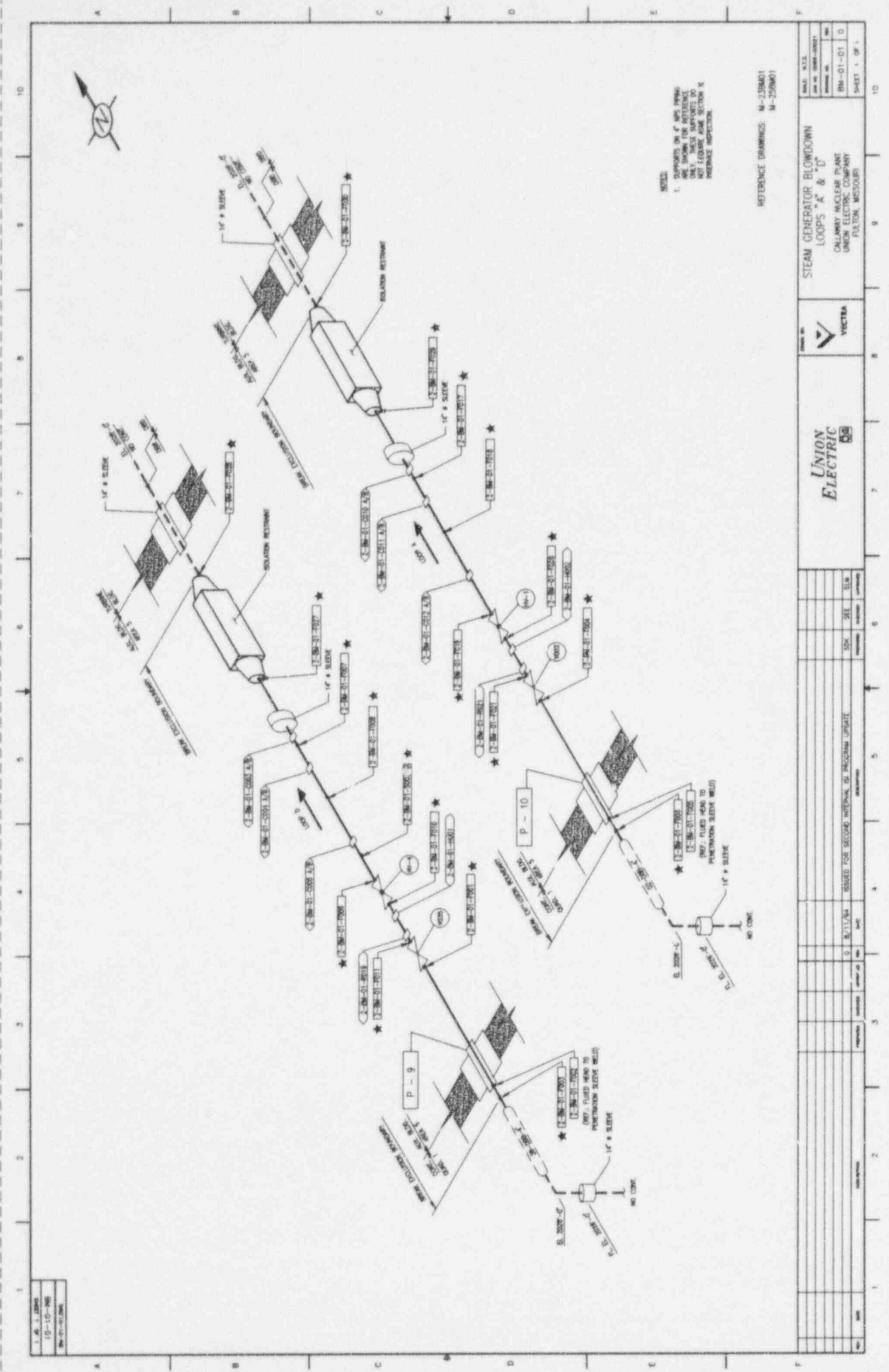
CHEMICAL & VOLUME CONTROL
CCP DISCHARGE TO SEAL WATER
INJECTION FILTERS (HPSI)
CALUMET NUCLEAR PLANT
INDUSTRIAL ELECTRIC COMPANY
PULASKI, MISSOURI



UNION ELECTRIC

NO.	DATE	REVISION	BY	CHKD.	DESCRIPTION
1	8-27-58				ISSUED FOR CONSTRUCTION
2	8-23-58				ISSUED FOR CONSTRUCTION

10	9	8	7	6	5	4	3	2	1
----	---	---	---	---	---	---	---	---	---

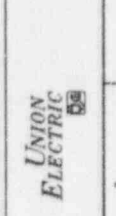


NOTE:
 1. SUPPORTS ON P ARE PERMANENTLY ATTACHED TO THE MAIN SYSTEM AND SHALL REMAIN IN PLACE. DO NOT LOOSE AND SECTION & RECHECK INSPECTION.

REFERENCE DRAWINGS: M-2338601
 M-2338601

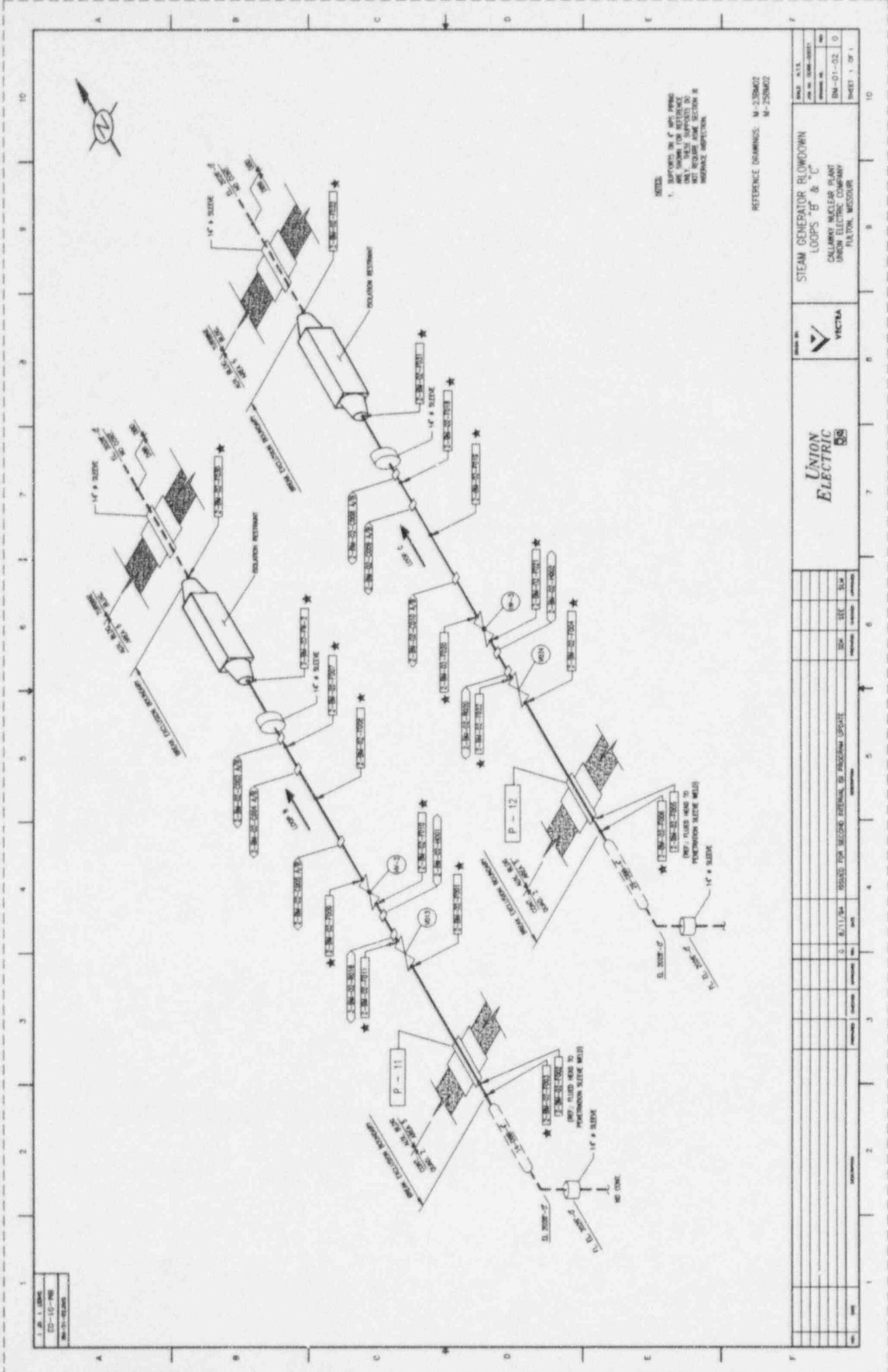
DATE	BY	CHKD
01-01-01		
01-01-01		
01-01-01		

STEAM GENERATOR BLOWDOWN
 LOOPS "A" & "C"
 DALLAS NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



NO.	DATE	DESCRIPTION	BY	CHKD
1	01-01-01	ISSUED FOR SECOND INTERNAL IS INSPECTION UPGRADE		
2				
3				
4				
5				
6				
7				
8				
9				
10				

1	01-01-01	ISSUED FOR SECOND INTERNAL IS INSPECTION UPGRADE
2		
3		
4		
5		
6		
7		
8		
9		
10		



NOTE:
 1. SUPPORTS ON PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE DESIGN BASIS. ONLY THE SUPPORTS SHOWN ON THIS DRAWING SHALL BE INSTALLED. THE SUPPORTS NOT SHOWN ON THIS SECTION ARE INDICATED ON OTHER SECTIONS.

REFERENCE DRAWINGS: M-2520602
 M-2520603

SCALE: 1/4" = 1'-0"
PROJECT NO: BN-01-02-0
SHEET 1 OF 1

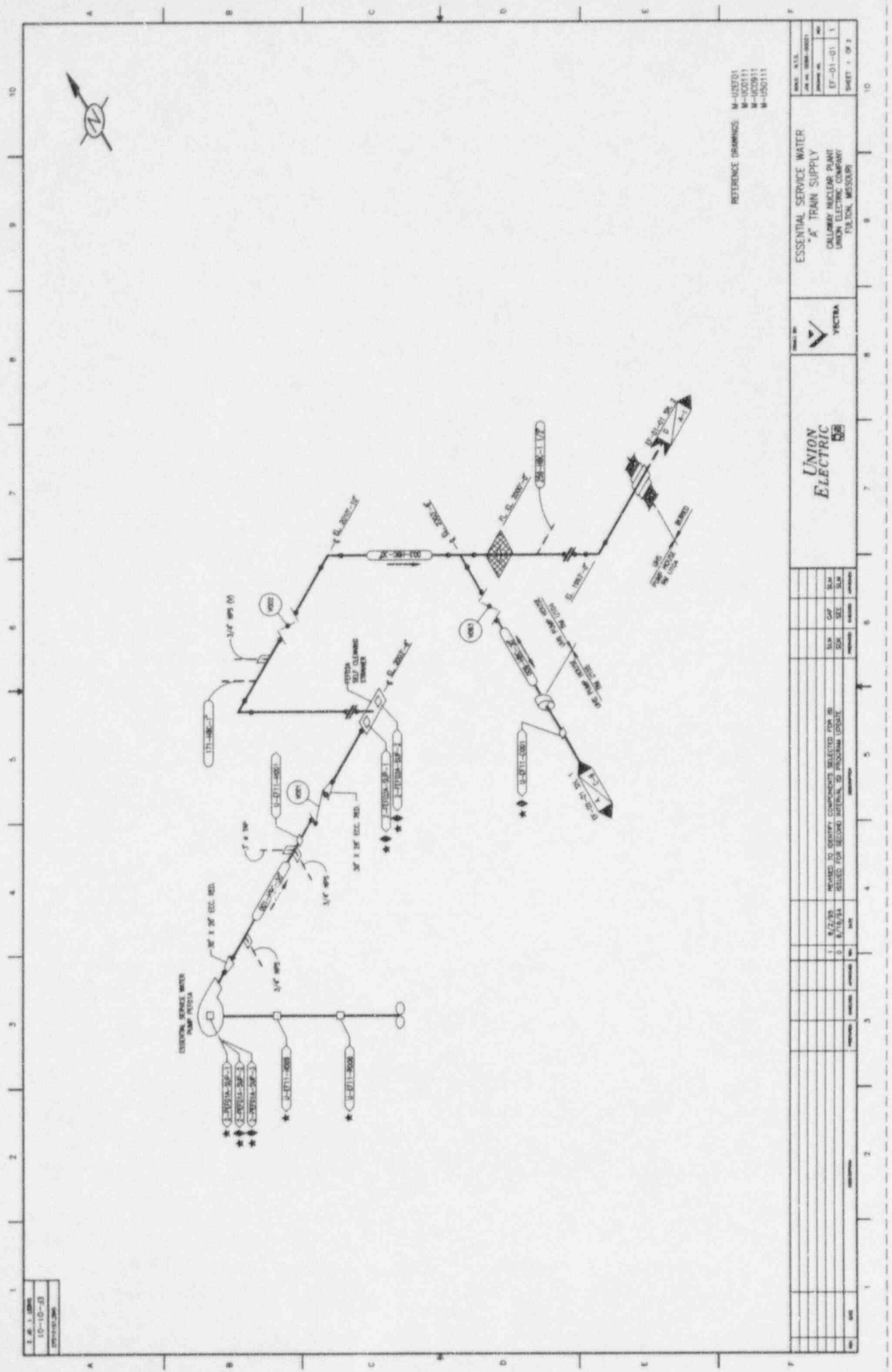
STEAM GENERATOR FLOWDOWN
 LOOPS "B" & "C"
 CHALKLEY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



UNION
 ELECTRIC

NO.	REVISION	DATE	BY	CHK	APP	DESCRIPTION
1						ISSUED FOR RECORD INTERNAL TO PROGRAM OFFICE

1	ED-10-100
2	ED-10-100



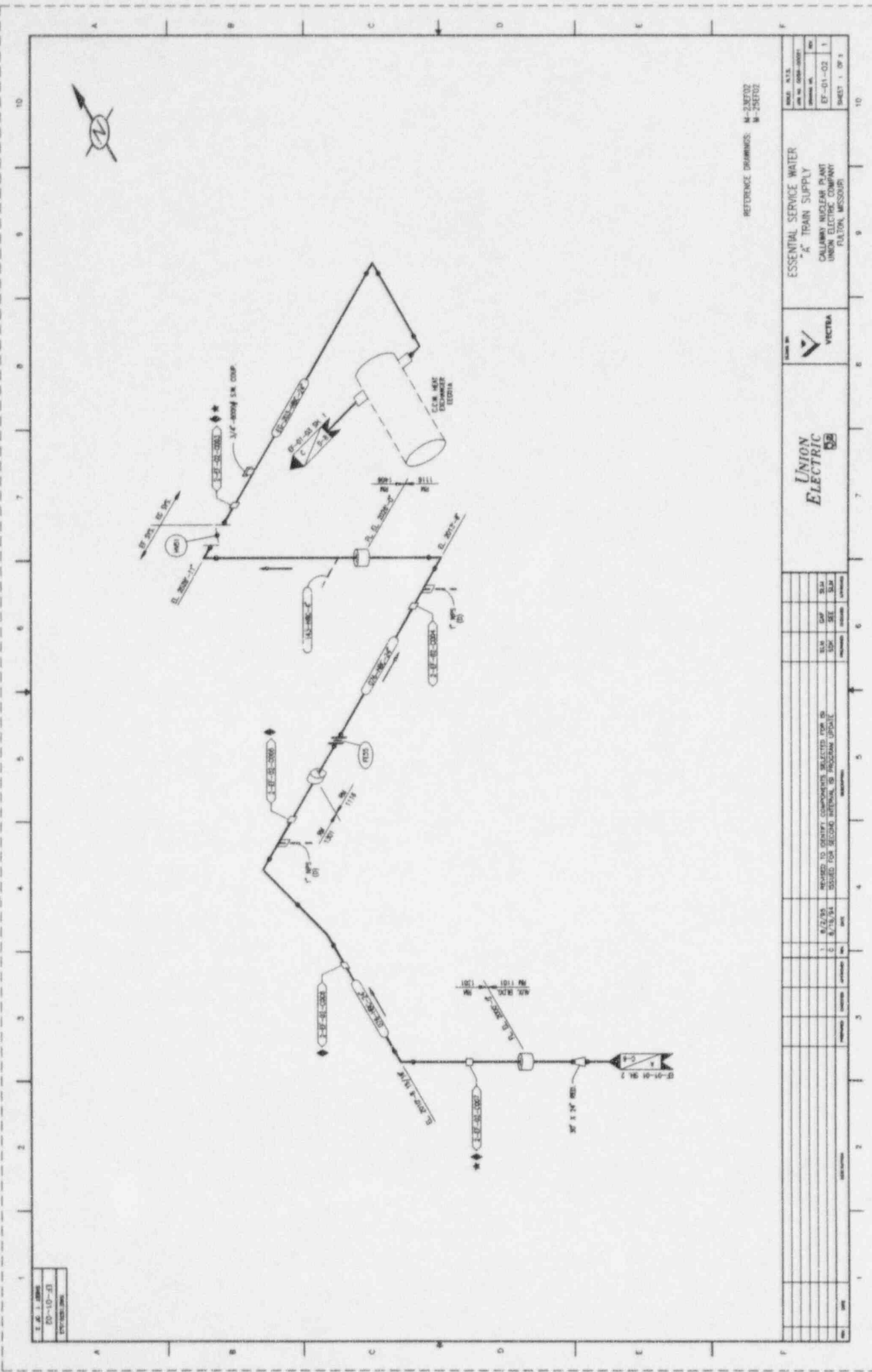
10-10-03
10-10-03
10-10-03

REFERENCE DRAWINGS:
 M-1050701
 M-1050811
 M-1050111

DATE: N/A		SHEET 1 OF 2	
PROJECT: ESSENTIAL SERVICE WATER		UNION ELECTRIC COMPANY	
SUBJECT: "A" TRAIN SUPPLY		FULTON, MISSOURI	
REV.	DESCRIPTION	DATE	BY
1	ISSUED FOR RECORD	10/10/03	...
2	ISSUED FOR RECORD	10/10/03	...
3	ISSUED FOR RECORD	10/10/03	...
4	ISSUED FOR RECORD	10/10/03	...
5	ISSUED FOR RECORD	10/10/03	...
6	ISSUED FOR RECORD	10/10/03	...
7	ISSUED FOR RECORD	10/10/03	...
8	ISSUED FOR RECORD	10/10/03	...
9	ISSUED FOR RECORD	10/10/03	...
10	ISSUED FOR RECORD	10/10/03	...



ESSENTIAL SERVICE WATER
 "A" TRAIN SUPPLY
 CHURCHMAN NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



REFERENCE DRAWINGS: M-258702
M-258703

REV.	DATE	BY	CHK.
1	8/15/54		
2	8/15/54		

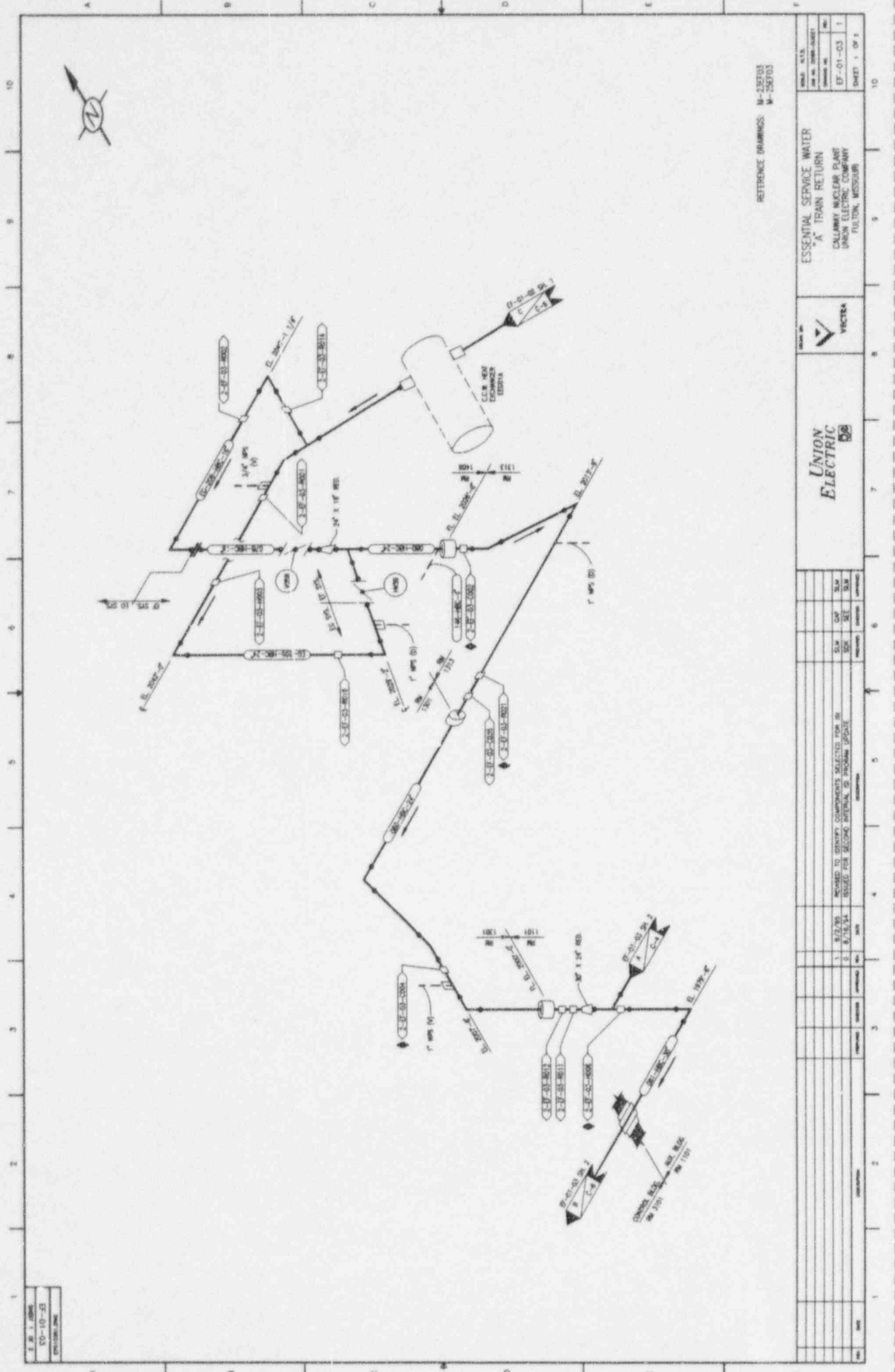
ESSENTIAL SERVICE WATER
"A" TRAIN SUPPLY
CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FALCON, MISSOURI



UNION
ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHK.
1	8/15/54	REVISED TO IDENTIFY COMPONENTS SELECTED FOR DISPOSITION FOR SECOND INTERVAL TO PROGRAM UPDATE		
2	8/15/54	ISSUED FOR SECOND INTERVAL TO PROGRAM UPDATE		

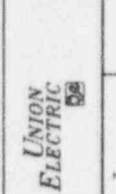
U. S. A. I. 10000
DD-10-43
1-57 (REV. 10-53)



REFERENCE DRAWINGS:
 M-23278
 M-25070

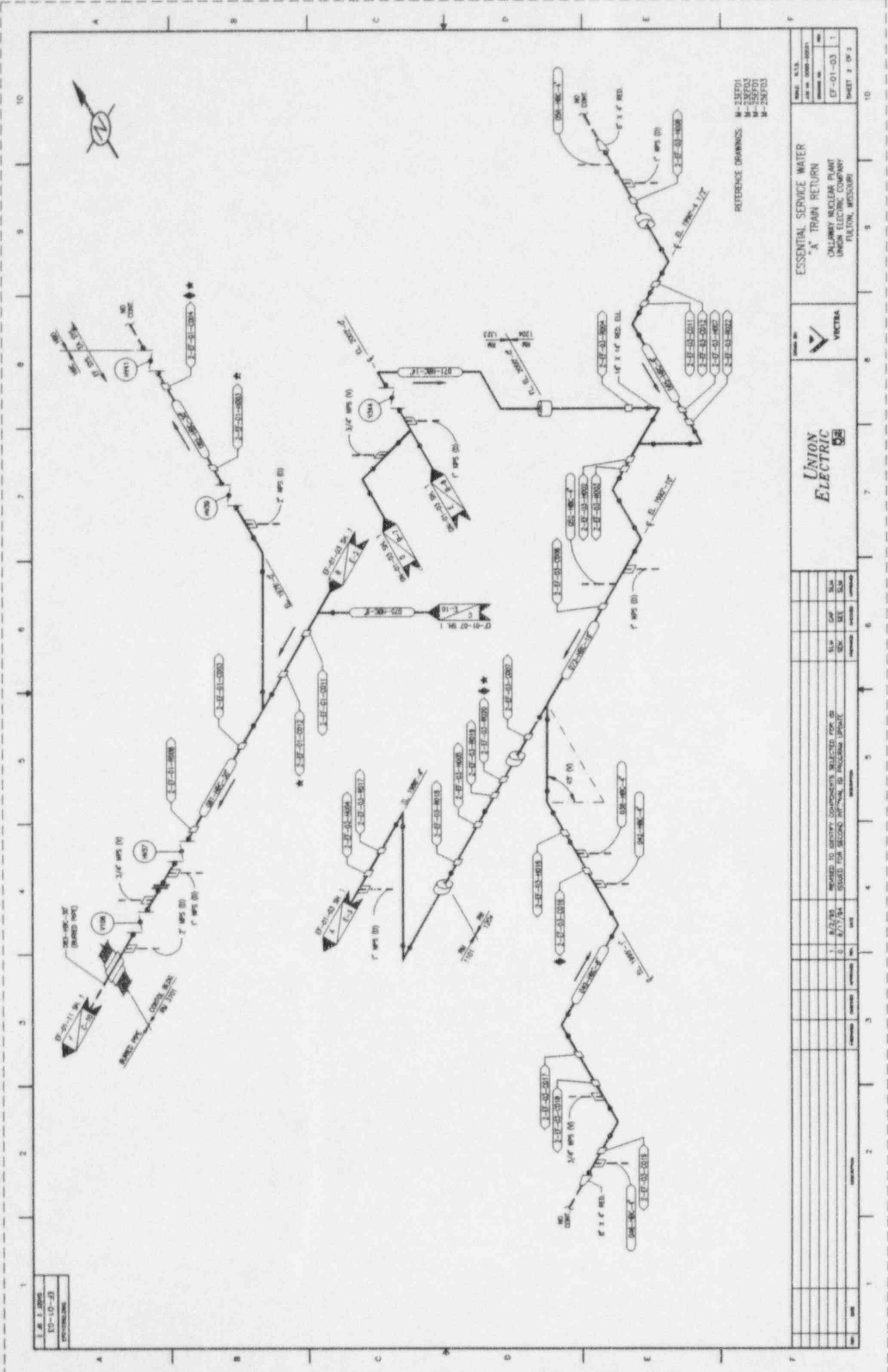
PROJECT NO.	DF-01-03
SHEET NO.	1 OF 2

ESSENTIAL SERVICE WATER
 "A" TRAIN RETURN
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



NO.	DATE	DESCRIPTION	BY	CHKD.
1	8/27/78	ISSUED TO VERIFY DIMENSIONS OF EXISTING PIPE IN		
2	8/28/78	REVISED FOR DESIGN INTERNAL TO HOLDING POINT		

DESIGNED BY	
CHECKED BY	
DATE	



1. 3. 1. 2000
 3-E-51-2000
 3-E-51-2000

3-E-51-2000
 3-E-51-2000

REFERENCE DRAWINGS:
 M-23EFD11
 M-23EFD12
 M-23EFD13
 M-23EFD14

DATE	REV.	BY	CHKD.
07-01-03	1		
SHEET 2 OF 2			

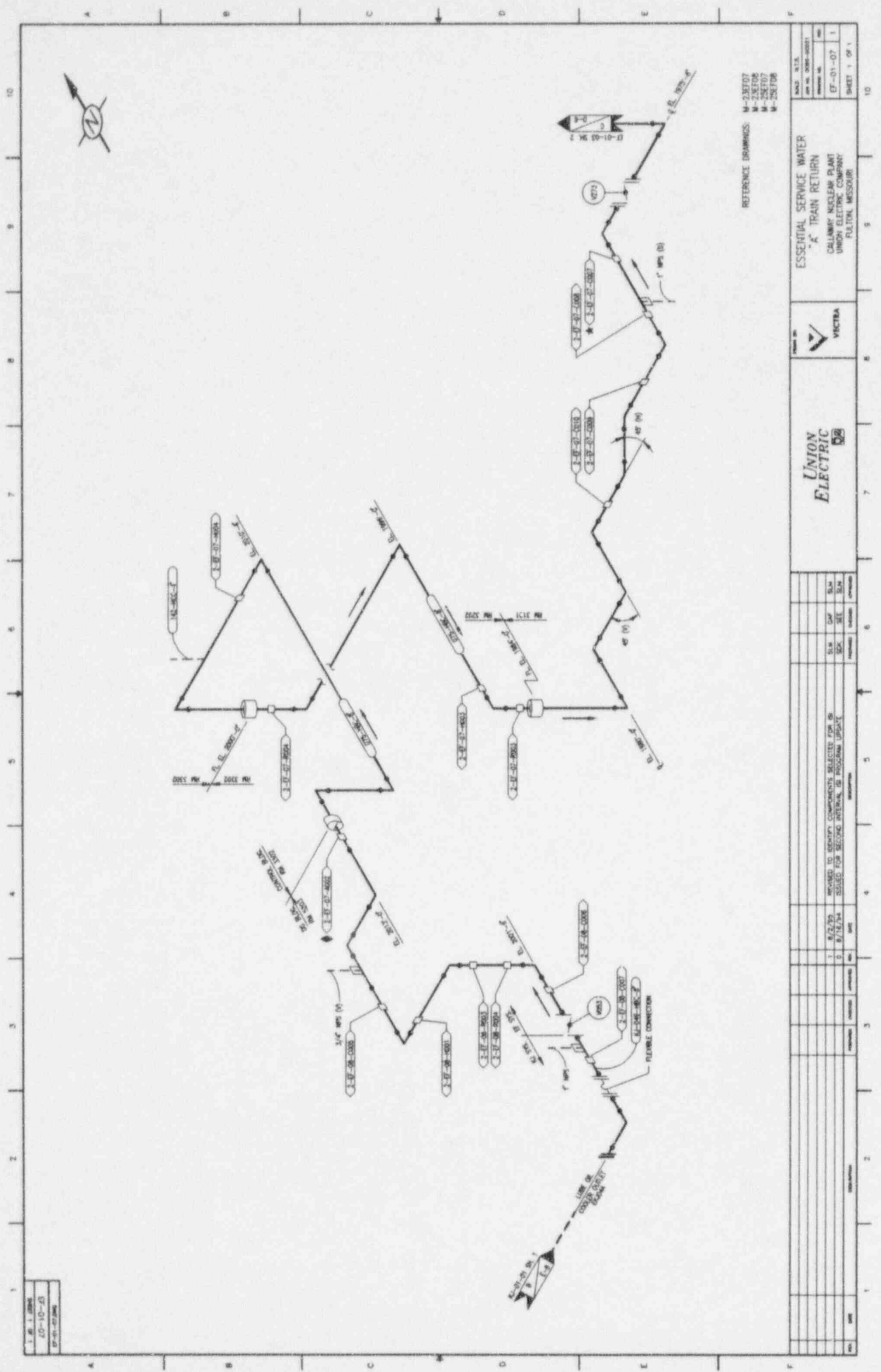
ESSENTIAL SERVICE WATER
 "A" TRAIN RETURN
 OHLWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSISSIPPI



UNION
 ELECTRIC

NO.	DESCRIPTION	DATE	BY	CHKD.
1	ISSUED AS GENERAL INFORMATION SHEET FOR THE			
2	ISSUED FOR RECORD PURPOSES TO INDICATE PANEL			

NO.	DESCRIPTION	DATE	BY	CHKD.
1	ISSUED AS GENERAL INFORMATION SHEET FOR THE			
2	ISSUED FOR RECORD PURPOSES TO INDICATE PANEL			

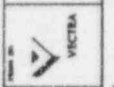


1. 27-07-0001
 27-07-0002
 27-07-0003

REFERENCE DRAWINGS:
 M-28707
 M-28708
 M-28709
 M-28710

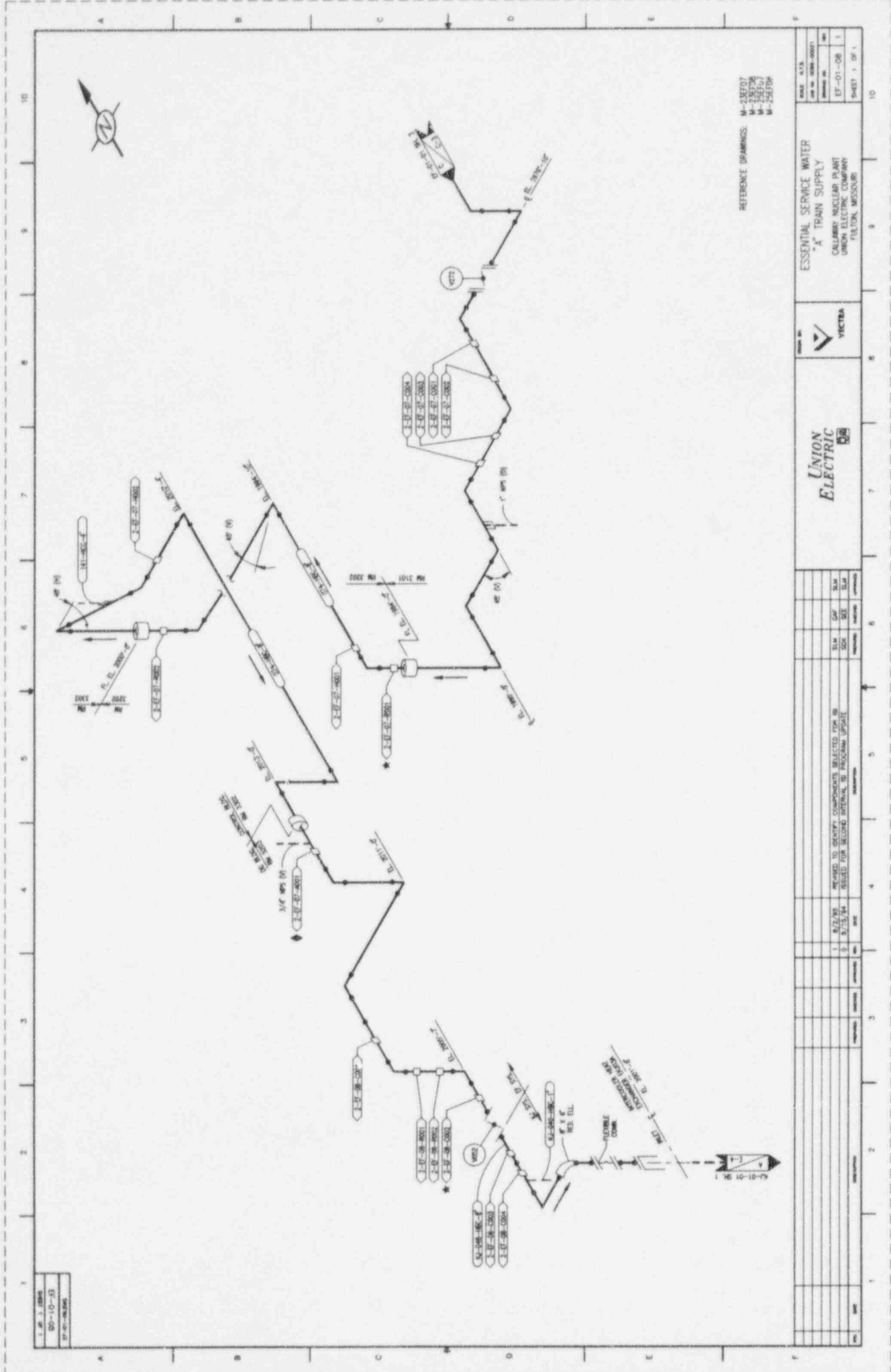
SCALE	AS SHOWN
DATE	10-10-73
BY	W. J. B. / J. W. B.
CHECKED BY	W. J. B. / J. W. B.
APPROVED BY	W. J. B. / J. W. B.
DESIGNED BY	W. J. B. / J. W. B.
PROJECT NO.	27-07-0001
SHEET NO.	1 OF 1

ESSENTIAL SERVICE WATER
 "A" TRAIN RETURN
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



NO.	DESCRIPTION	REV.	DATE	BY	CHKD.
1	ISSUED TO SERVICE COMPANIES FOR FIELD USE	1	10/10/73	W. J. B.	J. W. B.
2	REVISED FOR SERVICE COMPANIES USE	1	10/10/73	W. J. B.	J. W. B.

NO.	DESCRIPTION	REV.	DATE	BY	CHKD.
1	ISSUED TO SERVICE COMPANIES FOR FIELD USE	1	10/10/73	W. J. B.	J. W. B.
2	REVISED FOR SERVICE COMPANIES USE	1	10/10/73	W. J. B.	J. W. B.

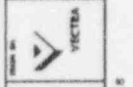


1. 10-10-53
 20-01-08-000

REFERENCE DRAWINGS: M-23EF07
 M-23EF08
 M-23EF09
 M-23EF10

DATE	BY	CHKD
10-10-53	10-10-53	10-10-53
REV	BY	CHKD
1	10-10-53	10-10-53
2	10-10-53	10-10-53
3	10-10-53	10-10-53
4	10-10-53	10-10-53
5	10-10-53	10-10-53
6	10-10-53	10-10-53
7	10-10-53	10-10-53
8	10-10-53	10-10-53
9	10-10-53	10-10-53
10	10-10-53	10-10-53

ESSENTIAL SERVICE WATER
 "A" TRAIN SUPPLY
 OLDHAM NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULLON, MISSOURI



UNION ELECTRIC

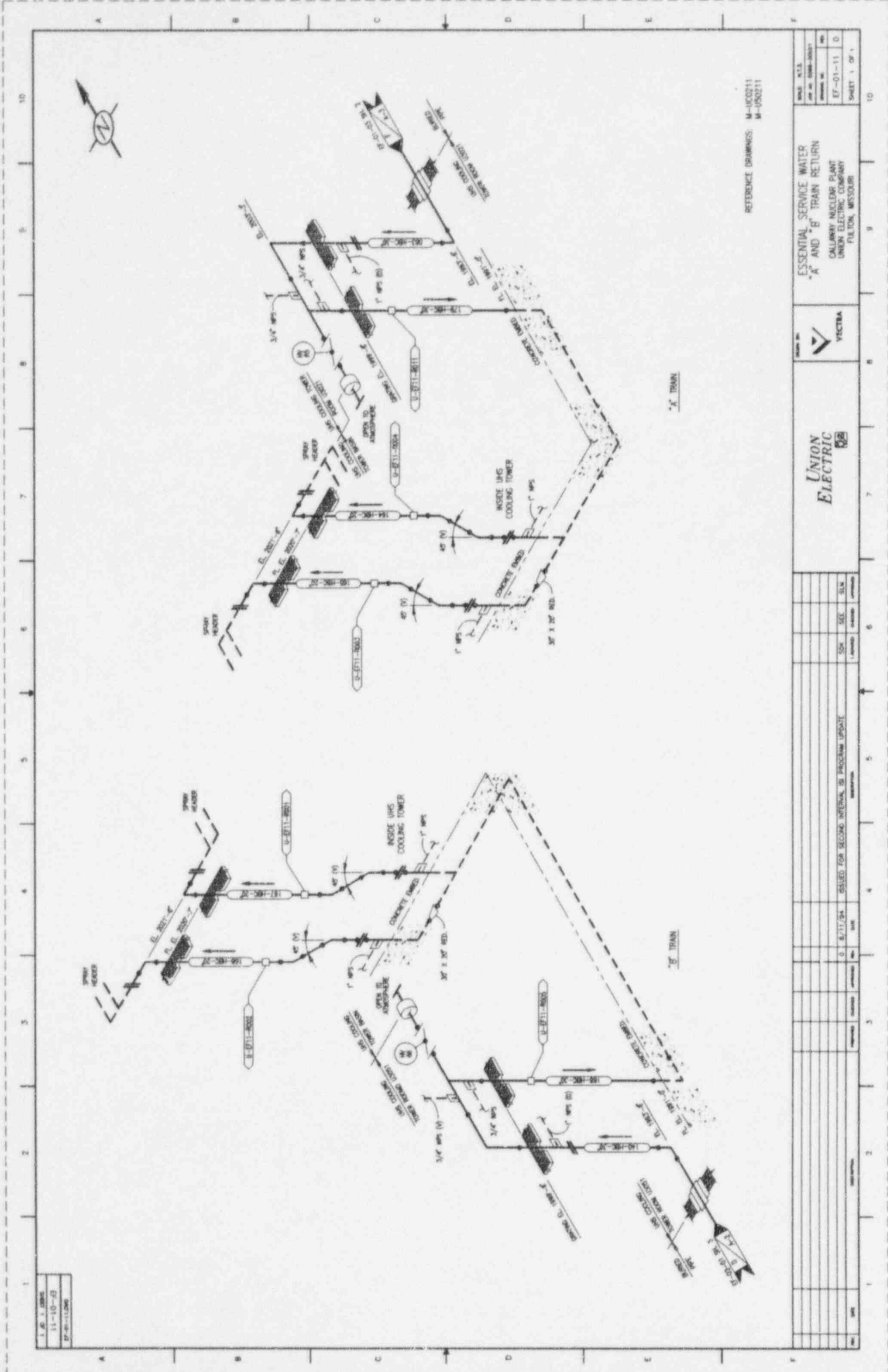
NO.	DATE	BY	CHKD
1	10-10-53	10-10-53	10-10-53
2	10-10-53	10-10-53	10-10-53
3	10-10-53	10-10-53	10-10-53
4	10-10-53	10-10-53	10-10-53
5	10-10-53	10-10-53	10-10-53
6	10-10-53	10-10-53	10-10-53
7	10-10-53	10-10-53	10-10-53
8	10-10-53	10-10-53	10-10-53
9	10-10-53	10-10-53	10-10-53
10	10-10-53	10-10-53	10-10-53

REVISED TO SHOW COMPONENTS SELECTED FOR ISSUE FOR RECORD PURPOSES IN PROCEEDING ISSUE

NO.	DATE	BY	CHKD
1	10-10-53	10-10-53	10-10-53
2	10-10-53	10-10-53	10-10-53
3	10-10-53	10-10-53	10-10-53
4	10-10-53	10-10-53	10-10-53
5	10-10-53	10-10-53	10-10-53
6	10-10-53	10-10-53	10-10-53
7	10-10-53	10-10-53	10-10-53
8	10-10-53	10-10-53	10-10-53
9	10-10-53	10-10-53	10-10-53
10	10-10-53	10-10-53	10-10-53

REVISED TO SHOW COMPONENTS SELECTED FOR ISSUE FOR RECORD PURPOSES IN PROCEEDING ISSUE

NO.	DATE	BY	CHKD
1	10-10-53	10-10-53	10-10-53
2	10-10-53	10-10-53	10-10-53
3	10-10-53	10-10-53	10-10-53
4	10-10-53	10-10-53	10-10-53
5	10-10-53	10-10-53	10-10-53
6	10-10-53	10-10-53	10-10-53
7	10-10-53	10-10-53	10-10-53
8	10-10-53	10-10-53	10-10-53
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10	10-10-53	10-10-53	10-10-53



REFERENCE DRAWINGS: M-180211
M-190211

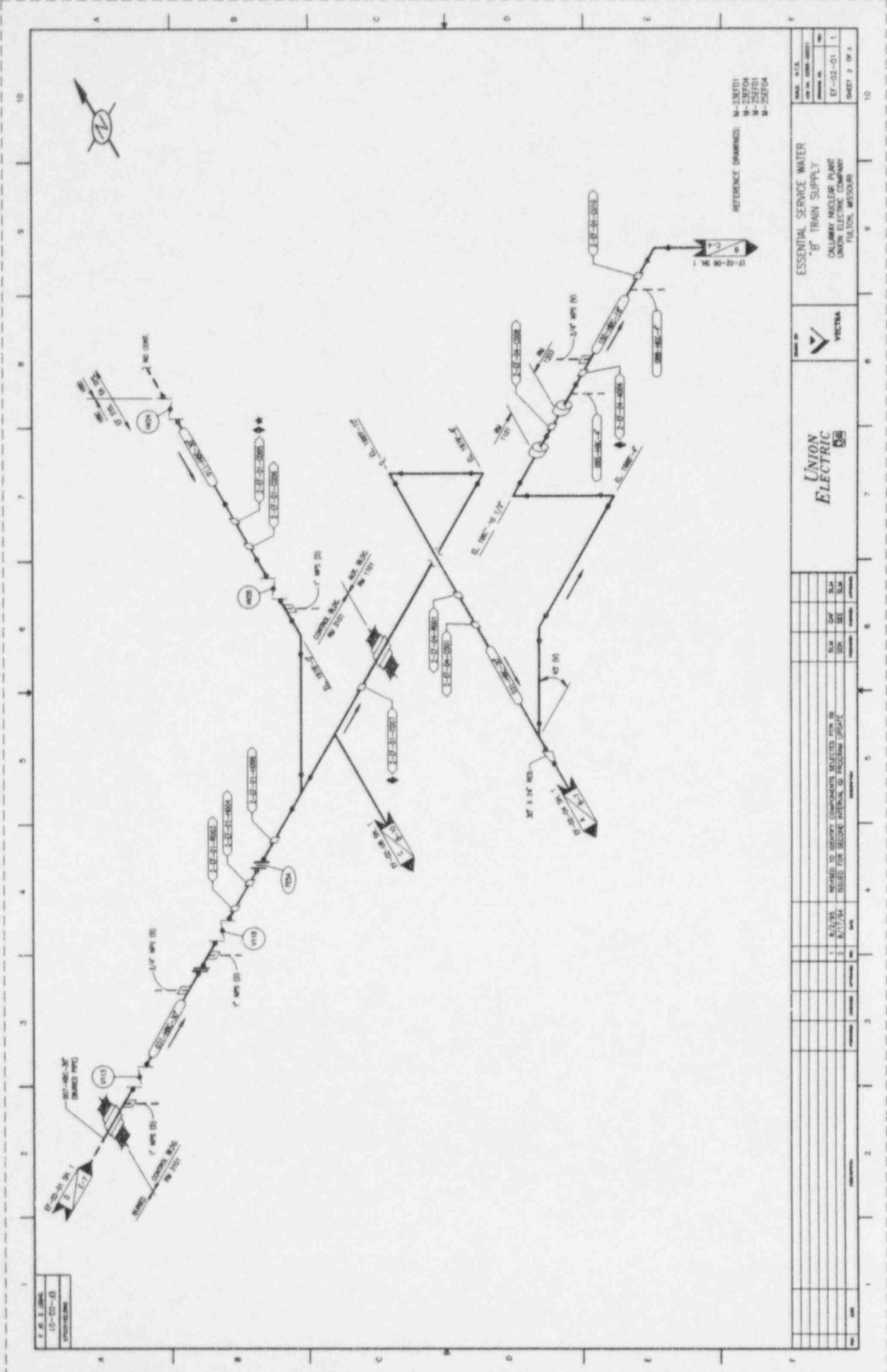
SCALE: N.E. 1/4"	DATE: 11-10-53
PROJECT NO: 11-10-53	DESIGNER: J.F. HARRIS
DATE: 11-10-53	CHECKER: J.F. HARRIS
PROJECT NO: 11-10-53	DATE: 11-10-53
SHEET 1 OF 1	

ESSENTIAL SERVICE WATER
"A" AND "B" TRAIN RETURN
CALUMET NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



UNION
ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHECKED
1	11-10-53	ISSUED FOR SECOND INTERNAL TO PROCEEDING UPDATE	J.F. HARRIS	J.F. HARRIS



DATE	BY	CHKD
07-02-00	...	...
07-02-01	...	...
07-02-01	...	...
07-02-01	...	...

ESSENTIAL SERVICE WATER
 "B" TRAIN SUPPLY
 CALUMET NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FALCON, MISSOURI

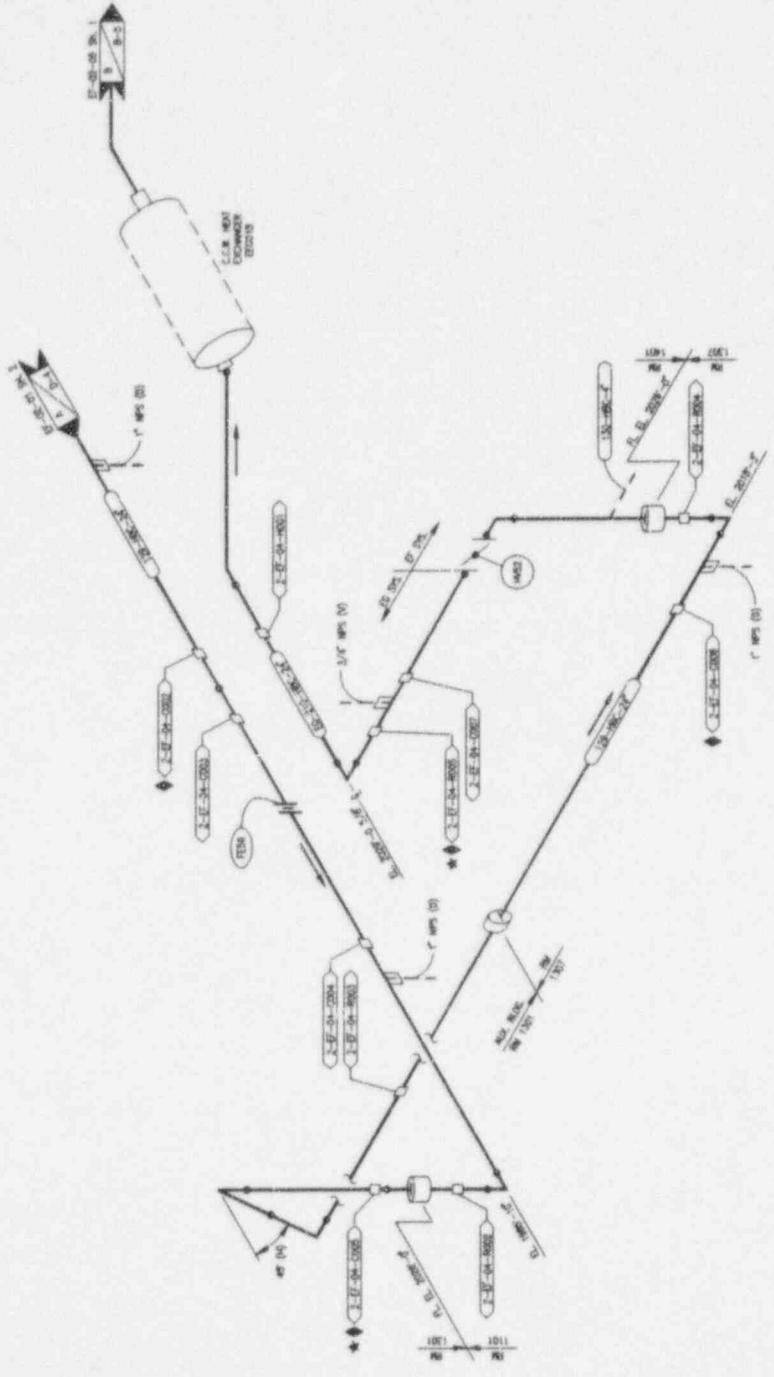


UNION
 ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/2/95	REVISED TO GROUP COMPONENTS SELECTED FOR IS	...	...
2	8/17/94	BASED FOR BEING INSTALLED TO PROPOSED LAYOUT	...	...

U. S. S. DRAWING
10-00-03
0000000000

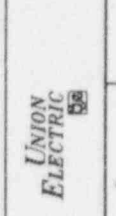
1. 01-01-0000
 101-01-01
 01-01-0000



REFERENCE DRAWING: M-23570A
 M-25570A

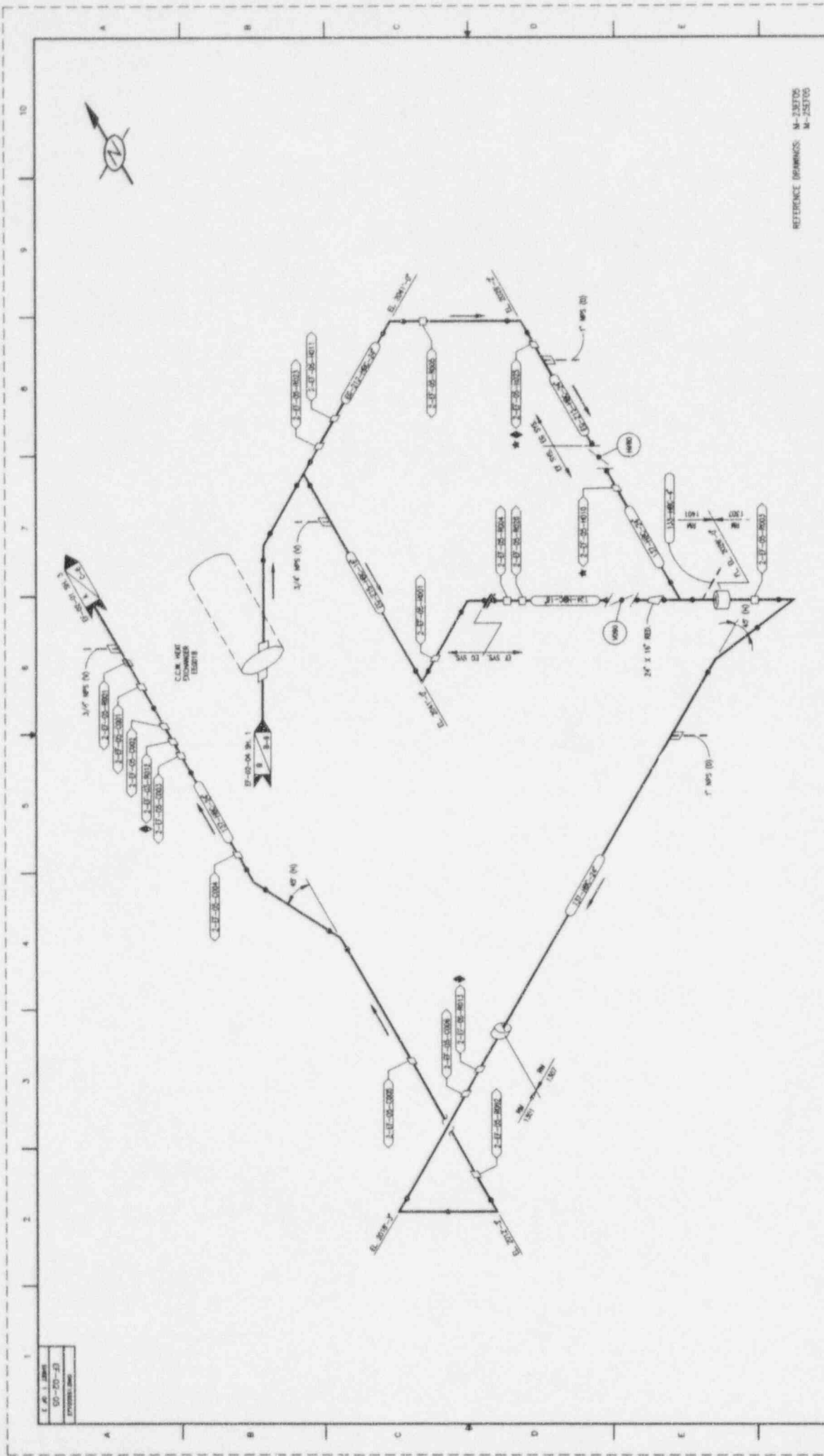
DATE: 11/11/64	BY: J.E. [unclear]
DRAWING NO.: 101-01-01	PROJECT NO.: 101-01-01
REV. NO.: 1	SHEET: 1 OF 1

ESSENTIAL SERVICE WATER
 "B" TRAIN SUPPLY
 CALUMET NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



NO.	DESCRIPTION	DATE	BY	CHKD.	APP'D.
1	ISSUED TO NOTIFY CONTRACTORS SELECTED FOR BID	8/12/64	J.E. [unclear]	[unclear]	[unclear]
2	ISSUED FOR SELECTION OF CONTRACTOR	8/12/64	J.E. [unclear]	[unclear]	[unclear]

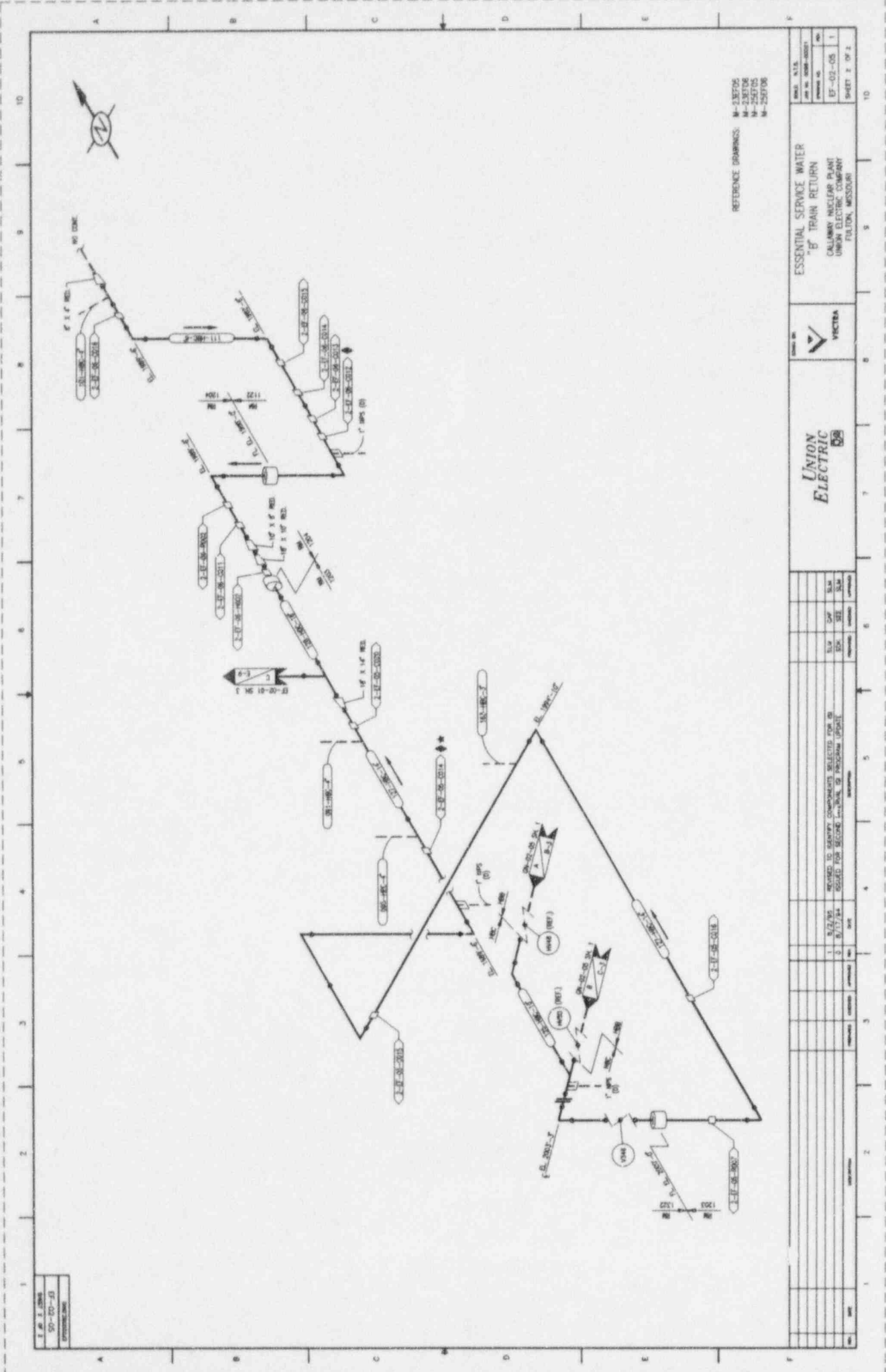
NO.	DESCRIPTION	DATE	BY	CHKD.	APP'D.
1	ISSUED TO NOTIFY CONTRACTORS SELECTED FOR BID	8/12/64	J.E. [unclear]	[unclear]	[unclear]
2	ISSUED FOR SELECTION OF CONTRACTOR	8/12/64	J.E. [unclear]	[unclear]	[unclear]



REFERENCE DRAWINGS: M-238700
M-252100

<p>ESSENTIAL SERVICE WATER "B" TRAIN RETURN CALLAWAY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI</p>																		
<p>NO. 113 REV. 10-1968-0001</p>		<p>DATE 10-1968</p>																
<p>PROJECT NO. EF-02-05</p>		<p>SHEET 1 OF 3</p>																
<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> <th>CHKD.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>8/2/68</td> <td>ISSUED TO GROUPS FOR CONSTRUCTION</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>8/13/68</td> <td>ISSUED FOR REGIONAL INTERNAL TO PROGRAM GROUP</td> <td></td> <td></td> </tr> </tbody> </table>				NO.	DATE	DESCRIPTION	BY	CHKD.	1	8/2/68	ISSUED TO GROUPS FOR CONSTRUCTION			2	8/13/68	ISSUED FOR REGIONAL INTERNAL TO PROGRAM GROUP		
NO.	DATE	DESCRIPTION	BY	CHKD.														
1	8/2/68	ISSUED TO GROUPS FOR CONSTRUCTION																
2	8/13/68	ISSUED FOR REGIONAL INTERNAL TO PROGRAM GROUP																

UNION ELECTRIC COMPANY
EF-02-05
PROJECT NO.

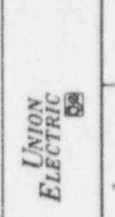


1. J. L. SMITH
 50-070-03
 10/10/00

REFERENCE DRAWINGS:
 M-232705
 M-232706
 M-232707
 M-232708

NO. 112	REV. 112
BY: J. L. SMITH	DATE: 10/10/00
PROJECT NO.	EF-01-05
SHEET 2 OF 2	

ESSENTIAL SERVICE WATER
 OF TRAIN RETURN
 CALUMET NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



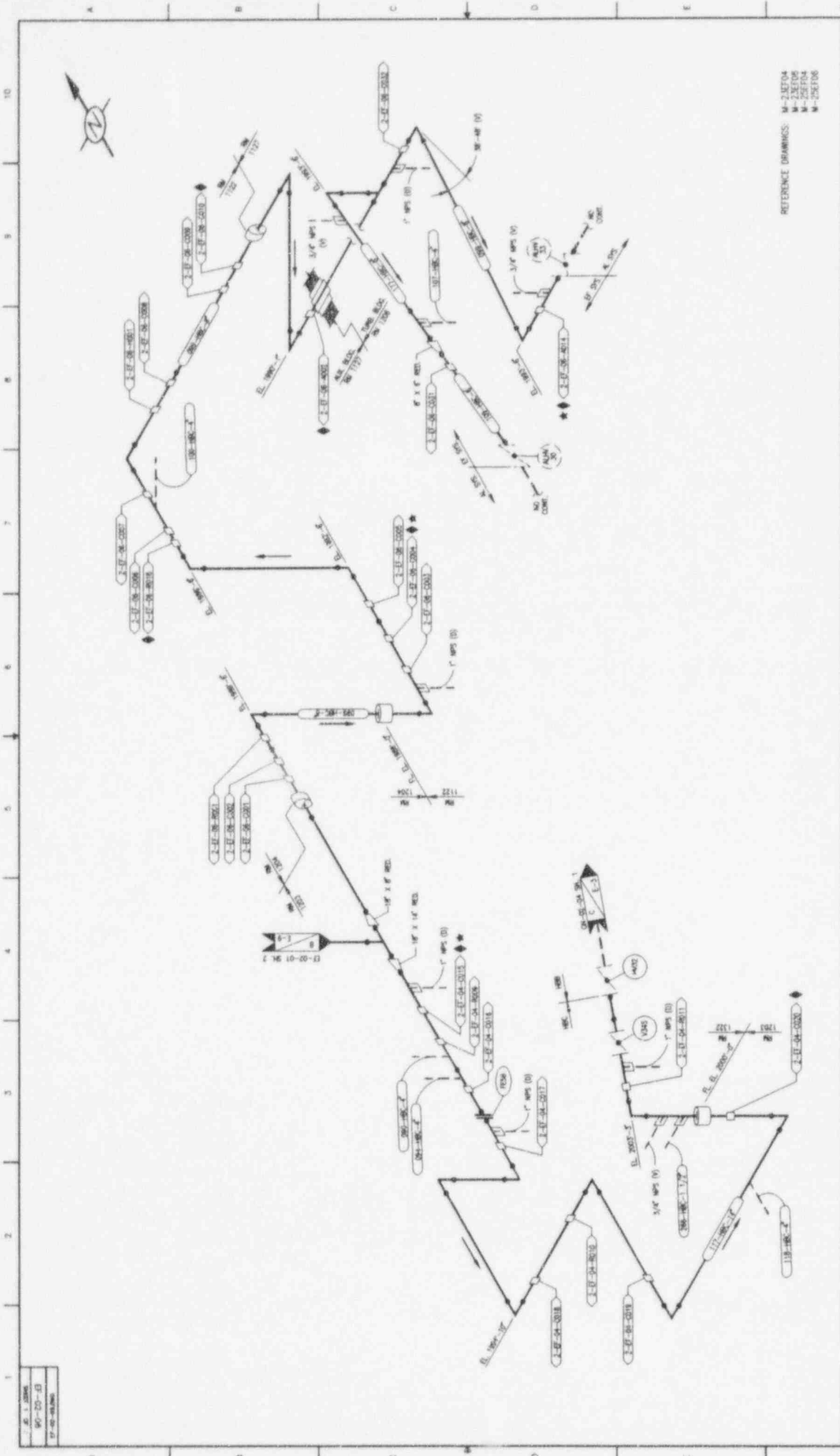
NO.	DESCRIPTION	DATE	BY	CHKD
1	ISSUED TO VERIFY CONSTRUCTION DETAILS FOR 10			
2	ISSUED FOR SECOND REVISION OF WORKING DRAWING			
3				
4				
5				
6				

1. J. L. SMITH
 50-070-03
 10/10/00

NO.	DESCRIPTION	DATE	BY	CHKD
1	ISSUED TO VERIFY CONSTRUCTION DETAILS FOR 10			
2	ISSUED FOR SECOND REVISION OF WORKING DRAWING			
3				
4				
5				
6				

1. J. L. SMITH
 50-070-03
 10/10/00

NO.	DESCRIPTION	DATE	BY	CHKD
1	ISSUED TO VERIFY CONSTRUCTION DETAILS FOR 10			
2	ISSUED FOR SECOND REVISION OF WORKING DRAWING			
3				
4				
5				
6				



10-1-2006
 10-20-10
 10-01-01

REFERENCE DRAWINGS:
 M-24704
 M-24706
 M-24708
 M-24710

DATE	BY	NO.
10-01-01	10-01-01	1
10-02-01	10-02-01	1
10-03-01	10-03-01	1

ESSENTIAL SERVICE SUPPLY
 "B" TRAIN SUPPLY
 OLLAHAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FLAUM, MISSOURI



UNION
 ELECTRIC

REVISION	DATE	BY	CHK	DESCRIPTION
1	10-01-01	10-01-01	10-01-01	ISSUED FOR RECORDING TO PROCEED
2	10-02-01	10-02-01	10-02-01	ISSUED FOR RECORDING TO PROCEED

REVISIONS TO IDENTIFY COMPONENTS SELECTED FOR IS
 ISSUED FOR RECORDING TO PROCEED

NO.	DATE	BY	CHK	DESCRIPTION
1	10-01-01	10-01-01	10-01-01	ISSUED FOR RECORDING TO PROCEED
2	10-02-01	10-02-01	10-02-01	ISSUED FOR RECORDING TO PROCEED

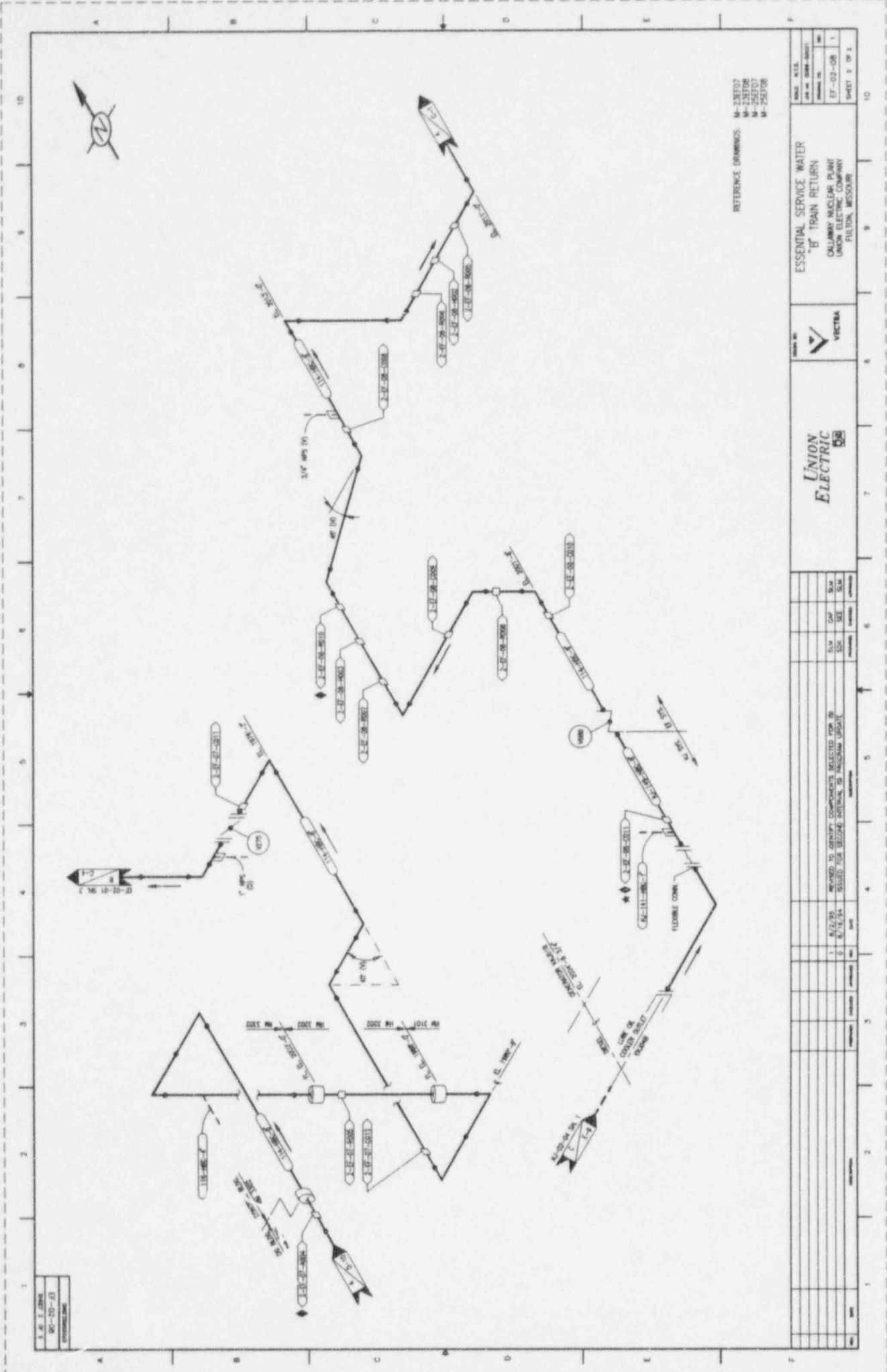
REVISIONS TO IDENTIFY COMPONENTS SELECTED FOR IS
 ISSUED FOR RECORDING TO PROCEED

NO.	DATE	BY	CHK	DESCRIPTION
1	10-01-01	10-01-01	10-01-01	ISSUED FOR RECORDING TO PROCEED
2	10-02-01	10-02-01	10-02-01	ISSUED FOR RECORDING TO PROCEED

REVISIONS TO IDENTIFY COMPONENTS SELECTED FOR IS
 ISSUED FOR RECORDING TO PROCEED

NO.	DATE	BY	CHK	DESCRIPTION
1	10-01-01	10-01-01	10-01-01	ISSUED FOR RECORDING TO PROCEED
2	10-02-01	10-02-01	10-02-01	ISSUED FOR RECORDING TO PROCEED

REVISIONS TO IDENTIFY COMPONENTS SELECTED FOR IS
 ISSUED FOR RECORDING TO PROCEED

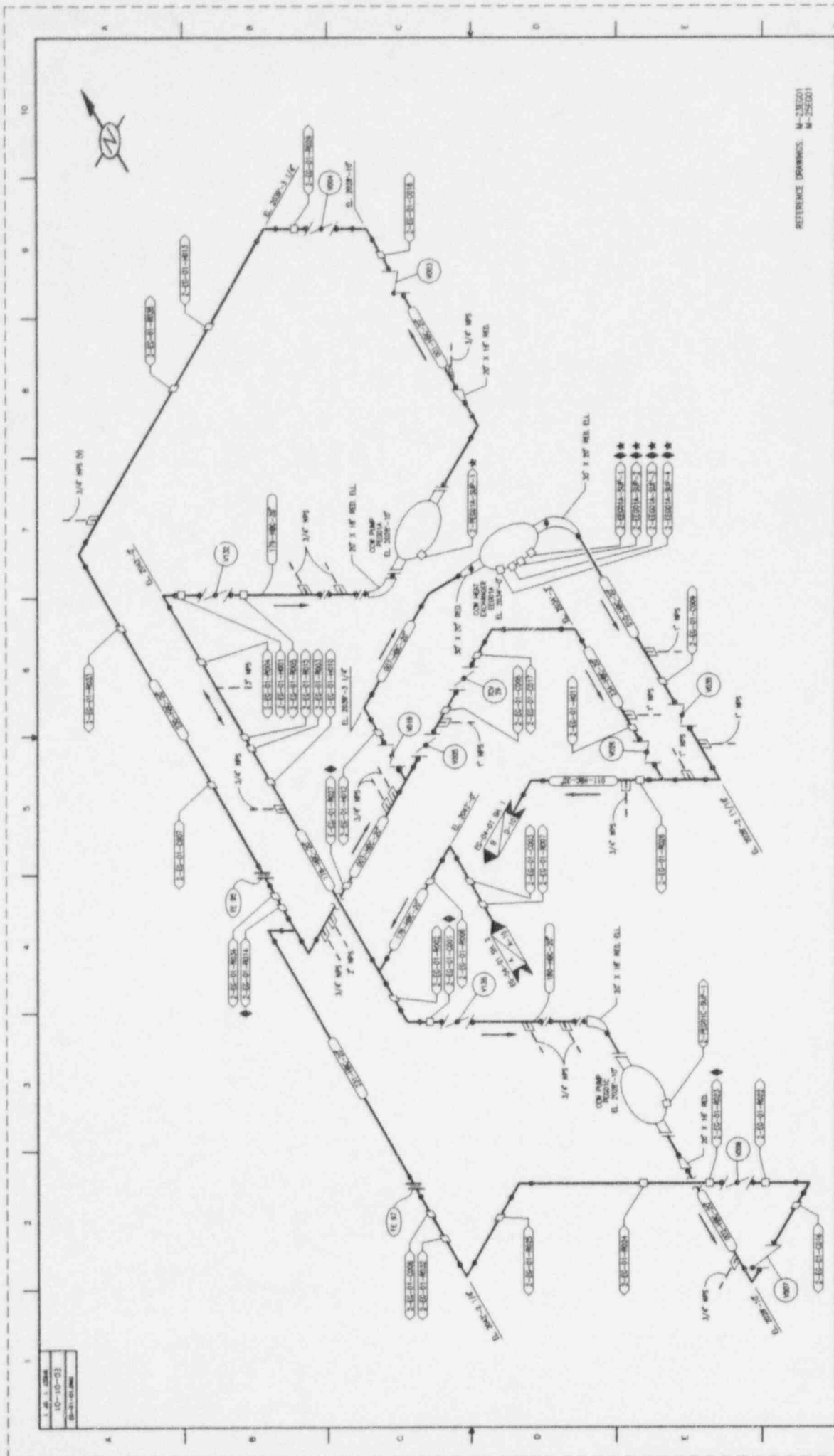


1. AS 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.
 11. 12. 13. 14. 15. 16. 17. 18. 19. 20.



REFERENCE DRAWINGS:
 M-23EF07
 M-23EF08
 M-23EF09
 M-23EF10

				ESSENTIAL SERVICE WATER "B" TRAIN RETURN CALUMNY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET 2 OF 3
1. 8/2/85 2. 8/18/84		REVISIONS TO GROUPS COMPONENTS SELECTED FOR ASSESSMENT FOR BEING PARTIAL TO PROGRAM UPDATE		1. 8/2/85 2. 8/18/84		SHEET 2 OF 3



1. A. I. 10000
 10-10-53
 10-10-53

REFERENCE DRAWINGS: M-231201
 M-251201

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	8/2/53	ISSUED TO INDUSTRY COMPONENTS SELECTED FOR DR	SM	SM	SM
2	8/20/54	ISSUED FOR SECOND REVISION, AS PROPOSED UPDATES	SM	SM	SM

DESIGNED BY	SM
CHECKED BY	SM
APPROVED BY	SM

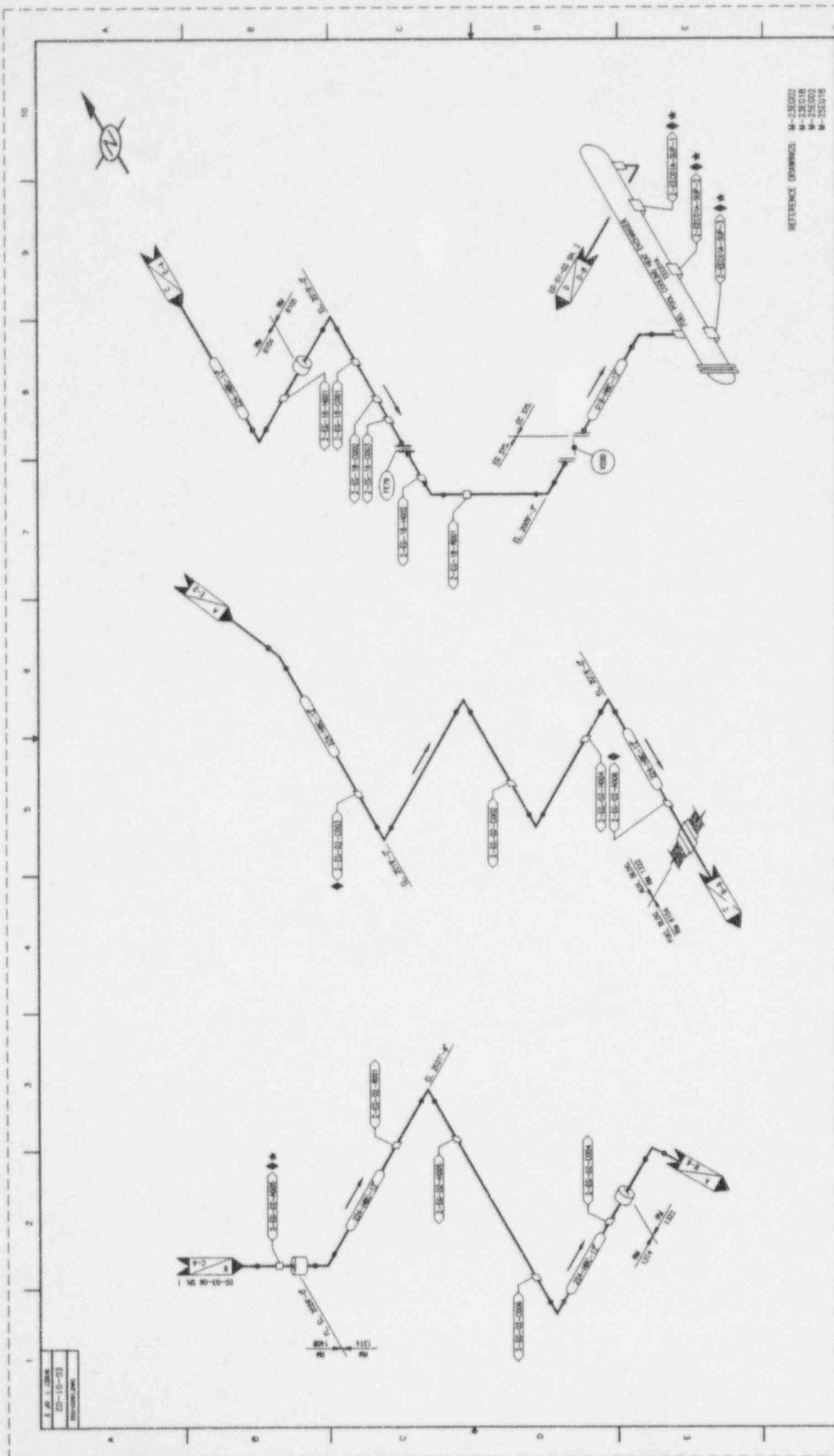
SCALE	AS SHOWN
DATE	8/2/53
DRAWN BY	SM
CHECKED BY	SM
APPROVED BY	SM

COMPONENT COOLING WATER
 "A" TRAIN COW HEAT EXCHANGER
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



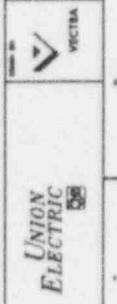
Union Electric
 ONE

SHEET 1 OF 1



REFERENCE DRAWINGS:
 M-250202
 M-250218
 M-250202
 M-250218

COMPONENT COOLING WATER
 "A" TRAIN SUPPLY
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FLAUTON, MISSOURI

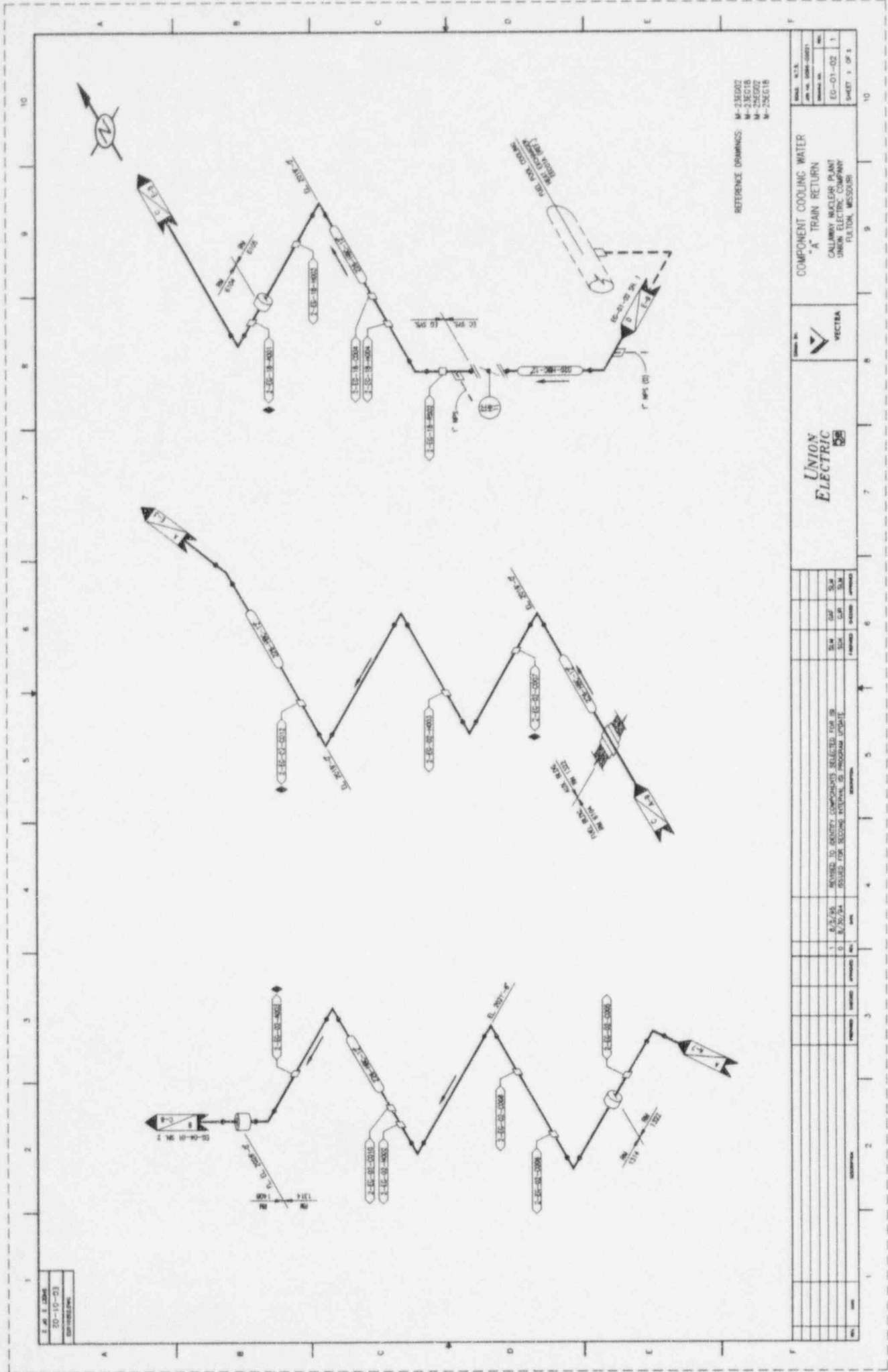


REVISIONS TO BE MADE BY DESIGNER OR ENGINEER FOR THE
 DESIGN OF THE SYSTEM. REVISIONS TO BE MADE BY THE
 DESIGNER OR ENGINEER FOR THE DESIGN OF THE SYSTEM.

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/10/53	AS SHOWN		
2	10/10/53	AS SHOWN		
3	10/10/53	AS SHOWN		
4	10/10/53	AS SHOWN		
5	10/10/53	AS SHOWN		
6	10/10/53	AS SHOWN		
7	10/10/53	AS SHOWN		
8	10/10/53	AS SHOWN		
9	10/10/53	AS SHOWN		
10	10/10/53	AS SHOWN		

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/10/53	AS SHOWN		
2	10/10/53	AS SHOWN		
3	10/10/53	AS SHOWN		
4	10/10/53	AS SHOWN		
5	10/10/53	AS SHOWN		
6	10/10/53	AS SHOWN		
7	10/10/53	AS SHOWN		
8	10/10/53	AS SHOWN		
9	10/10/53	AS SHOWN		
10	10/10/53	AS SHOWN		

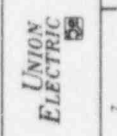
10/10/53
 10/10/53



REFERENCE DRAWINGS:
 M-25EG07
 M-25EG18
 M-25EG07
 M-25EG18

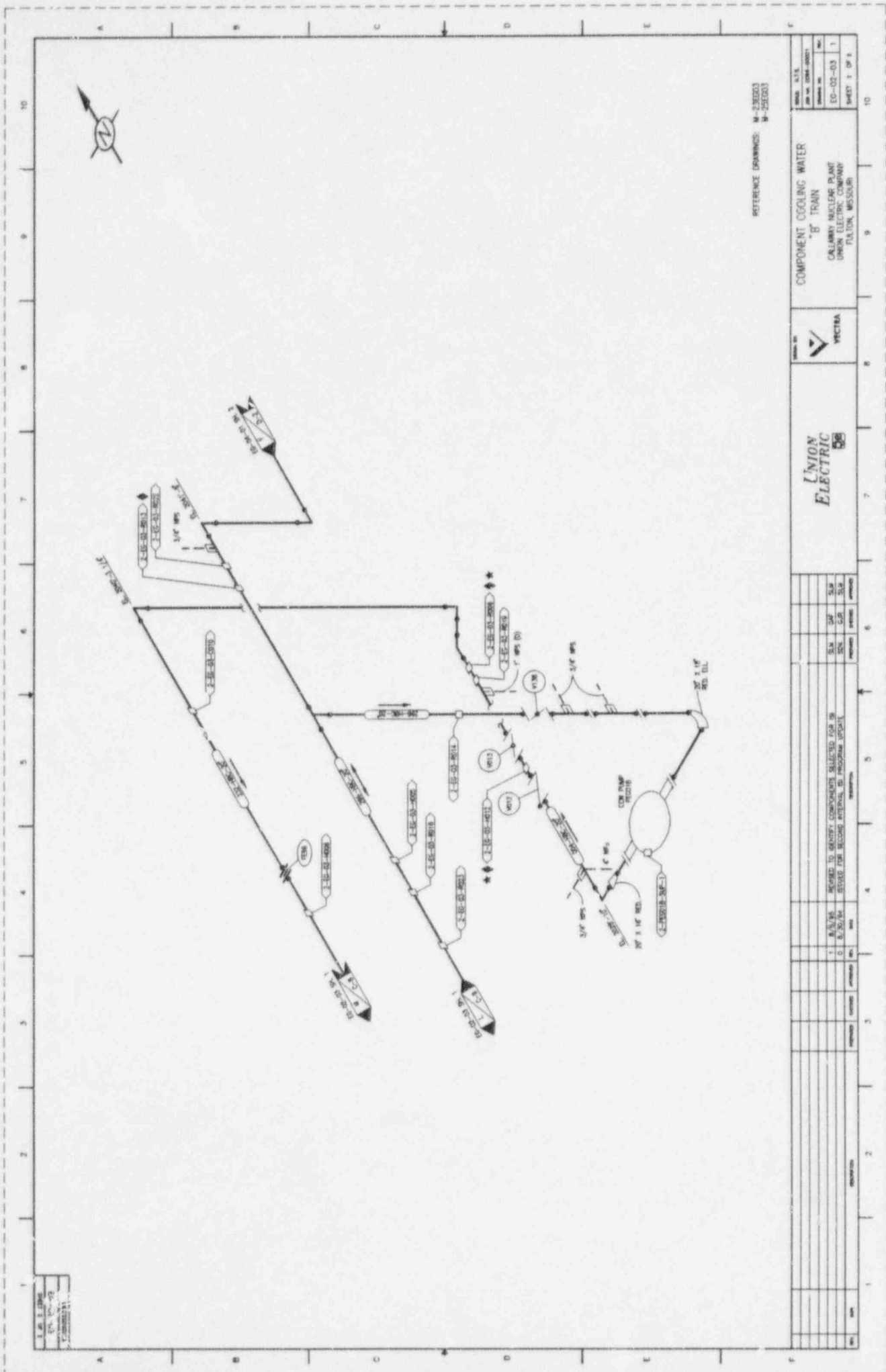
NO. 1	REV.	DATE	BY
1	EG-01-02		
SHEET 1 OF 1			

COMPONENT COOLING WATER
 "A" TRAIN RETURN
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FLUOR, MISSOURI



NO.	DATE	DESCRIPTION	BY	CHKD.
1	8/2/84	REVISED TO INDICATE COMPONENTS SELECTED FOR SB		
2	8/20/84	ISSUED FOR SECOND REVISION OF PROGRAM UPDATE		

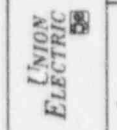
1. 1-SE-31-2001	2-SE-31-2002
3-SE-31-2003	4-SE-31-2004
5-SE-31-2005	6-SE-31-2006
7-SE-31-2007	8-SE-31-2008
9-SE-31-2009	10-SE-31-2010



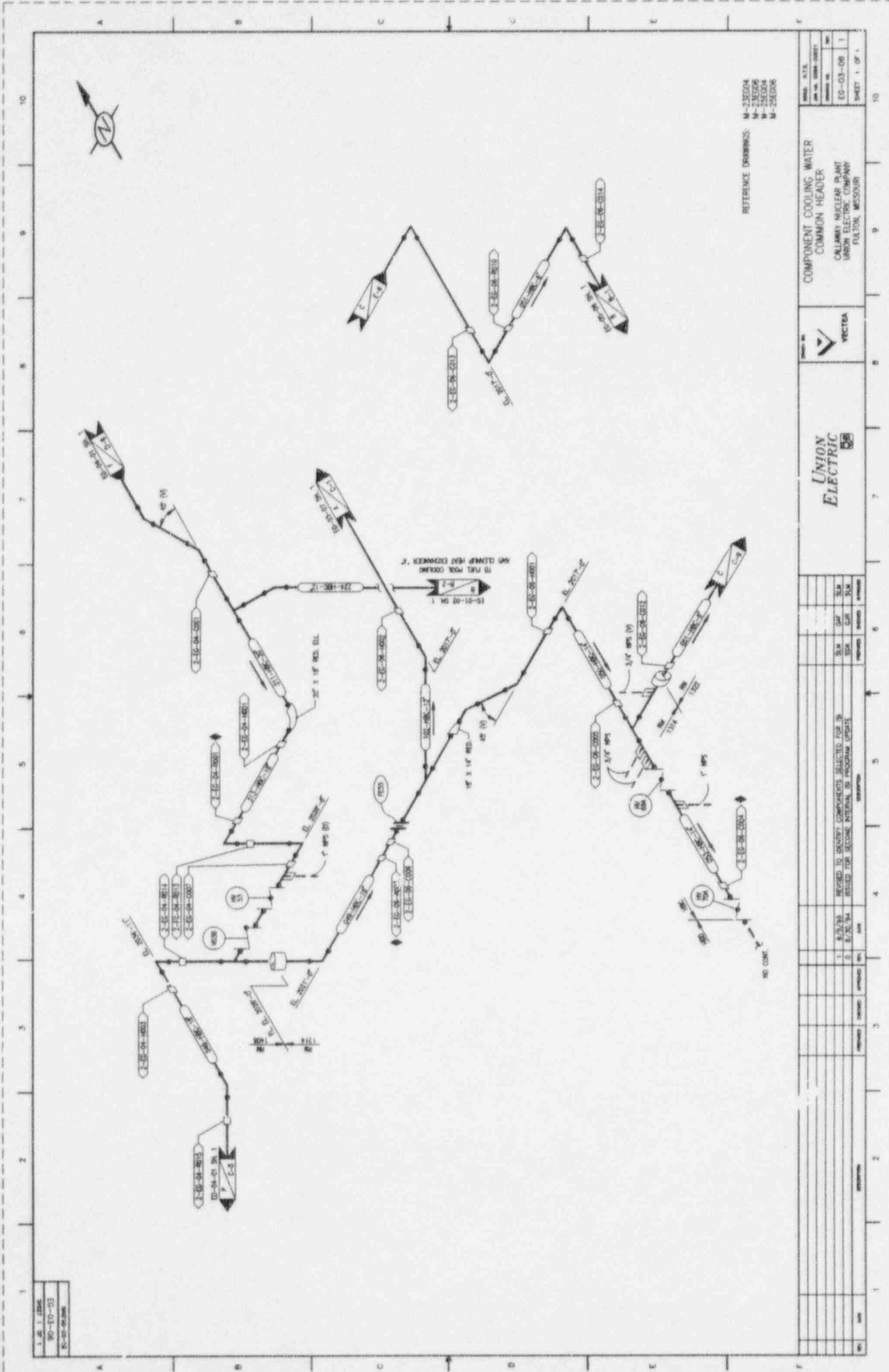
REFERENCE DRAWINGS: M-250203
M-250201

NO. OF SHEETS	10
SHEET NO.	10
DATE	
PROJECT NO.	ED-02-03
PROJECT NAME	SAFETY 1 OF 1

COMPONENT COOLING WATER
"B" TRAIN
CALLAWAY NUCLEAR PLANT
DRUG CREEK CONDENSER
FALCON, MISSOURI



NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED	REVISION	DATE	BY	DESCRIPTION
1	11/1/78	ISSUED TO SHOW COMPONENTS SELECTED FOR SA							
2	8/20/78	REVISED FOR RECORD PURPOSES TO PROPOSED UPDATES							



REFERENCE DRAWINGS:
 M-25E004
 M-25E006
 M-25E008
 M-25E010

NO.	REV.	DATE	BY
1	EC-03-08		
2	EC-03-08		
3	EC-03-08		
4	EC-03-08		
5	EC-03-08		
6	EC-03-08		
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8	EC-03-08		
9	EC-03-08		
10	EC-03-08		

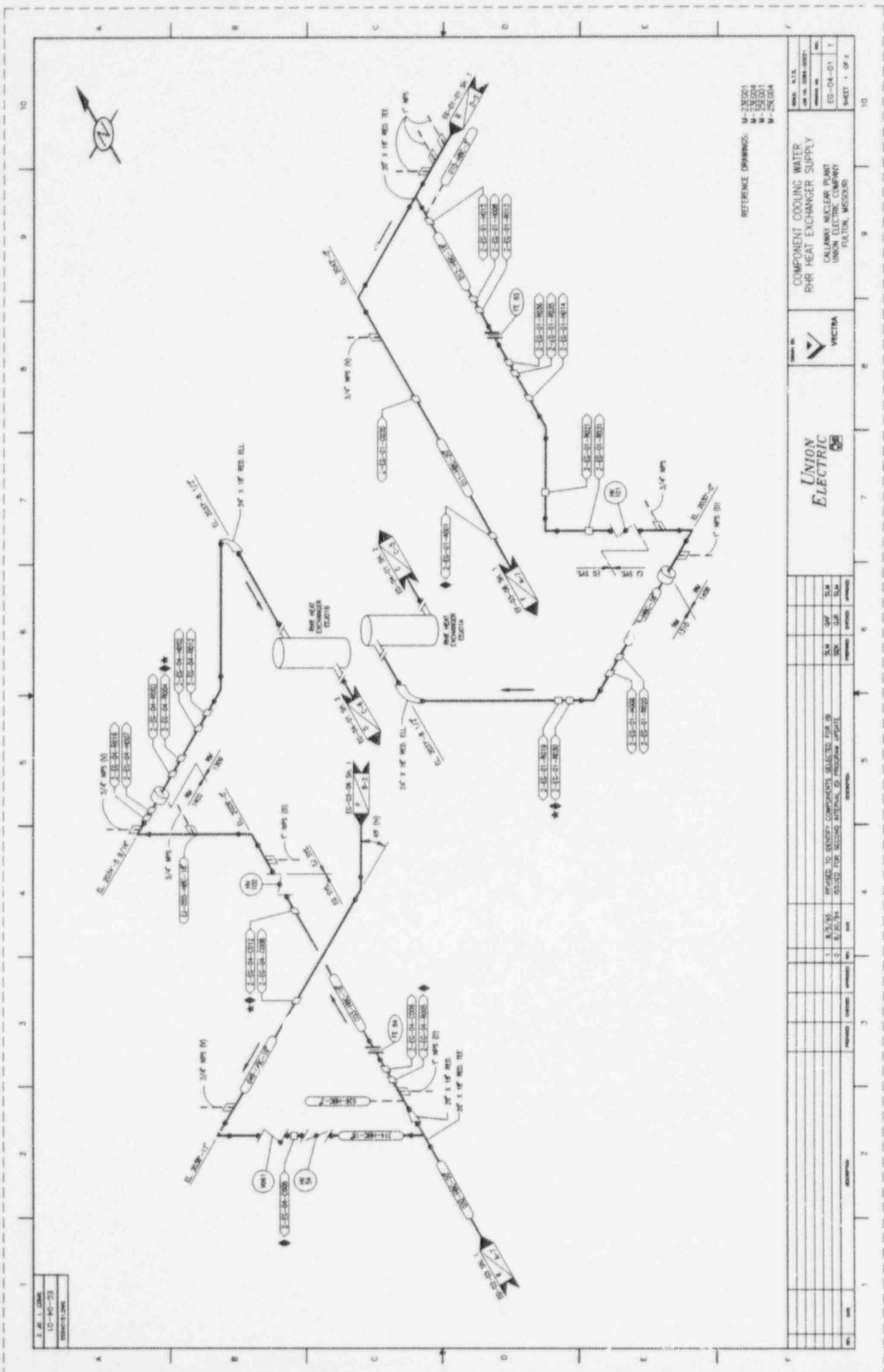
COMPONENT COOLING WATER
 COMMON HEADER
 CALVERA NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



UNION
 ELECTRIC

NO.	DATE	REVISION	BY	CHKD.	APP'D.	REVISION	BY	CHKD.	APP'D.
1	8/2/78	REVISED TO SHOW COMPONENTS SELECTED FOR 30							
2	8/2/78	BASED FOR SECOND REVIEW BY PROGRAM OFFICE							

1	8/2/78	REVISED TO SHOW COMPONENTS SELECTED FOR 30			
2	8/2/78	BASED FOR SECOND REVIEW BY PROGRAM OFFICE			



10-10-53
 10-10-53
 10-10-53

REFERENCE DRAWINGS:
 M-23001
 M-23002
 M-23003
 M-23004

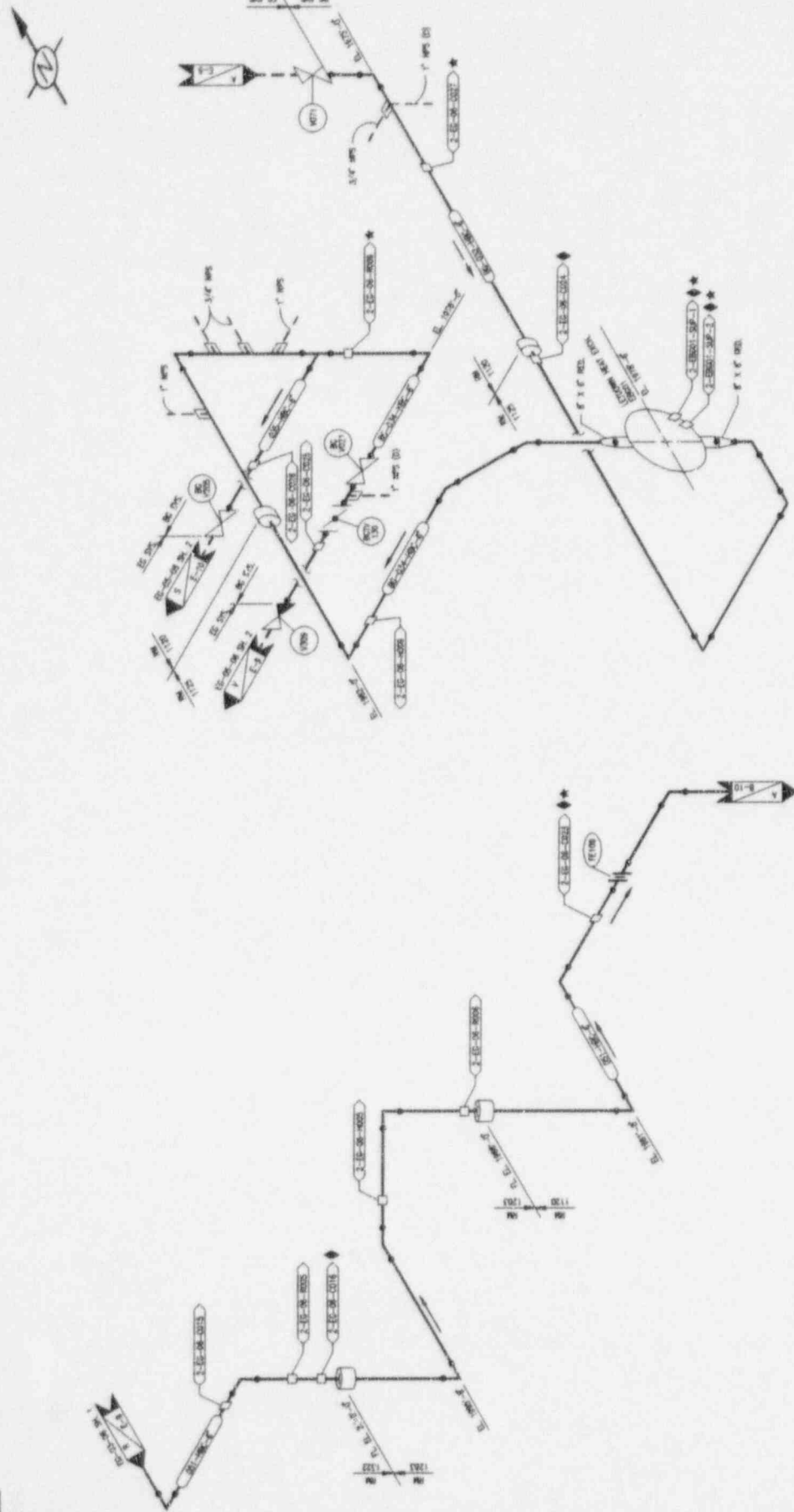
NO.	DATE	BY	CHKD.	DESCRIPTION
1	8/2/54			ISSUED TO BRIDGE COMPONENTS SELECTED FOR RHR
2	8/2/54			ISSUED FOR RECORD INTRODUCTION OF PROPOSED SUPPLY

DATE	BY	CHKD.
10-10-53		
10-10-53		
10-10-53		

Union Electric 		VICTRA
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COMPONENT COOLING WATER
 RHR HEAT EXCHANGER SUPPLY
 CALUMNY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULLTON, MISSOURI

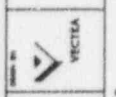
J. W. L. JONES
90-50-23
UNION ELECTRIC COMPANY



REFERENCE DRAWINGS: M-252008
M-252008

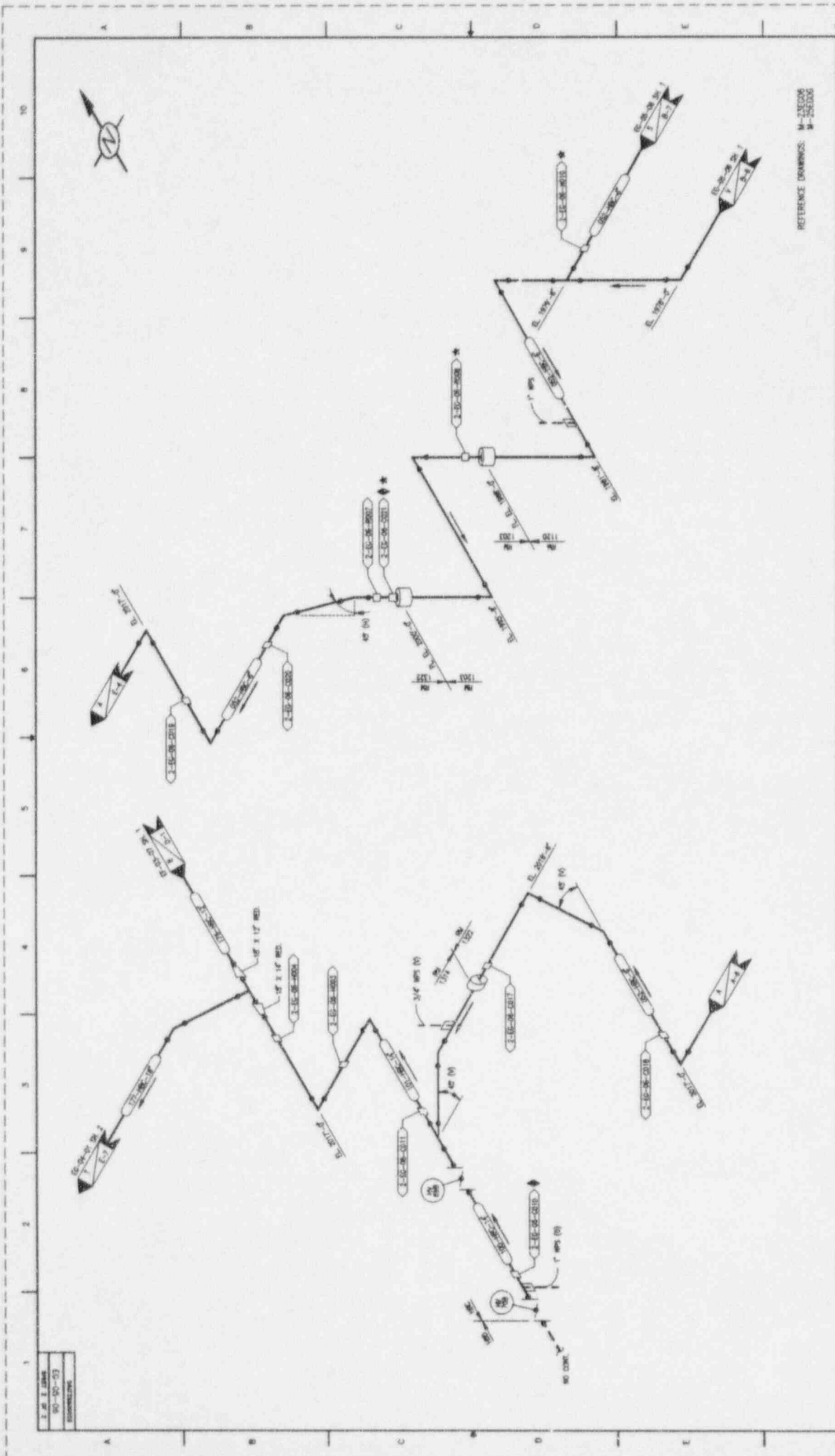
DATE: 11-11-58	BY: J. W. L. JONES
PROJECT NO: EG-05-08	NO: 1
SHEET 1 OF 2	

COMPONENT COOLING WATER
LETDOWN HEAT EXCHANGER SUPPLY
CALUMET NUCLEAR PLANT
DRUG ELECTRO-CHEMICAL
FRUITON, MISSOURI



NO.	DATE	DESCRIPTION
1	11-11-58	ISSUED FOR CONSTRUCTION
2	11-11-58	REVISIONS BASED ON FIELD CONDITIONS

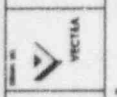
NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	11-11-58	ISSUED FOR CONSTRUCTION	J. W. L. JONES		
2	11-11-58	REVISIONS BASED ON FIELD CONDITIONS	J. W. L. JONES		



REFERENCE DRAWINGS: M-251008
M-251006

DATE: 8.15.68	BY: J. J. JONES
DESIGNED BY: J. J. JONES	CHECKED BY: J. J. JONES
PROJECT NO: EG-05-08	SHEET 3 OF 3

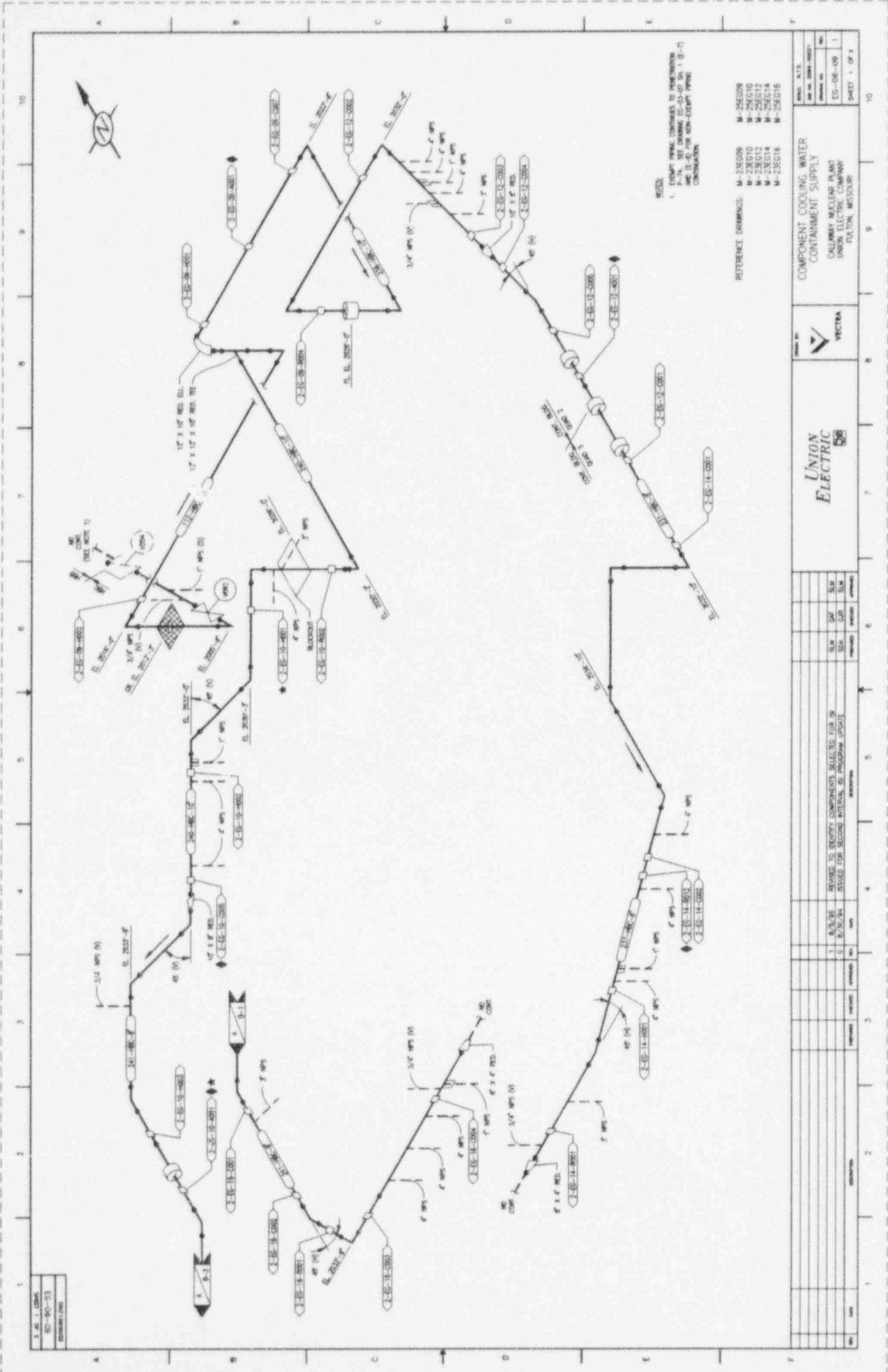
COMPONENT COOLING WATER
LETDOWN HEAT EXCHANGER RETURN
CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FALTON, MISSOURI



NO.	DATE	DESCRIPTION	BY	CHECKED
1	8.15.68	ISSUED FOR CONSTRUCTION	J. J. JONES	J. J. JONES
2	8.15.68	REVISED FOR DESIGN	J. J. JONES	J. J. JONES
3	8.15.68	REVISED FOR DESIGN	J. J. JONES	J. J. JONES

NO.	DATE	DESCRIPTION	BY	CHECKED
1	8.15.68	ISSUED FOR CONSTRUCTION	J. J. JONES	J. J. JONES
2	8.15.68	REVISED FOR DESIGN	J. J. JONES	J. J. JONES
3	8.15.68	REVISED FOR DESIGN	J. J. JONES	J. J. JONES

J. J. JONES
EG-05-08
ENGINEERING

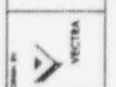


NOTES:
 1. DESIGN PRINCIPLES, DIMENSIONS, TO BE DETERMINED BY THE CONTRACTOR.
 2. THIS DRAWING IS TO BE USED FOR CONSTRUCTION PURPOSES.
 3. THIS DRAWING IS TO BE USED FOR CONSTRUCTION PURPOSES.

REFERENCE DRAWINGS:
 M-256009
 M-256010
 M-256011
 M-256012
 M-256013
 M-256014
 M-256015
 M-256016

NO.	DATE	BY	CHKD.
1	06-06-09		

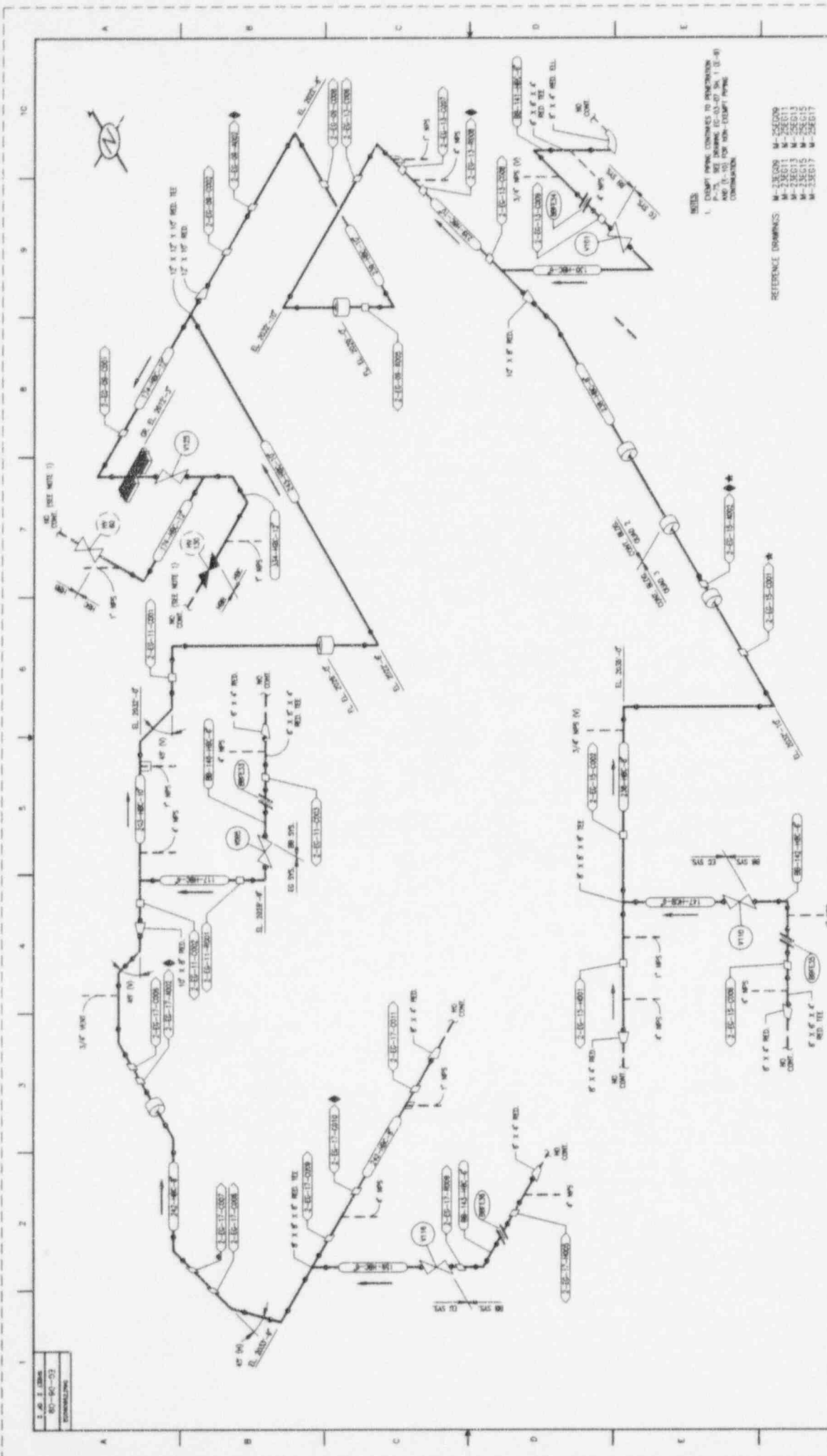
COMPONENT COOLING WATER
 CONTAINMENT SUPPLY
 CHERRY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



UNION ELECTRIC

NO.	DATE	BY	CHKD.	REVISION
1	8/2/08			REVISED TO REFLECT COMPONENTS SELECTED FOR 3P
2	8/20/08			REVISED FROM SECOND INTERNAL DESIGN REVIEW

NO.	DATE	BY	CHKD.
1	06-06-09		



NOTES
 1. CHECK PUMP CONNECTIONS TO PREVENTION OF BACKFLOW (SEE DRAWING 11-40)
 2. CHECK PUMP CONNECTIONS TO PREVENTION OF BACKFLOW (SEE DRAWING 11-40)
 3. CHECK PUMP CONNECTIONS TO PREVENTION OF BACKFLOW (SEE DRAWING 11-40)

REFERENCE DRAWINGS
 M-25610N M-25610N
 M-25611 M-25611
 M-25612 M-25612
 M-25613 M-25613
 M-25614 M-25614
 M-25615 M-25615
 M-25616 M-25616
 M-25617 M-25617

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

COMPONENT COOLING WATER
 CONTAINMENT RETURN
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FLUOR, MISSOURI



UNION
 ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

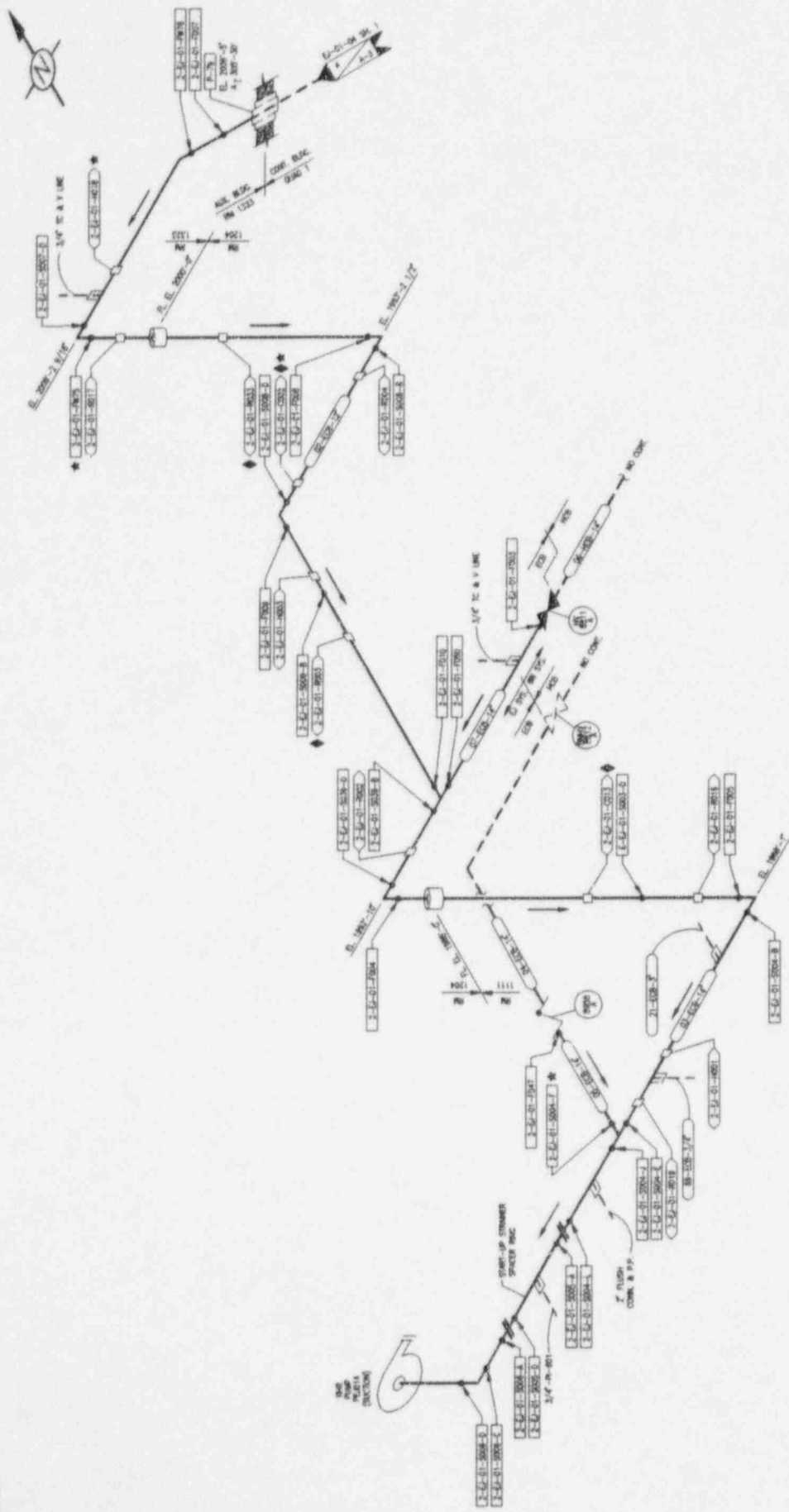
NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

NO.	DATE	DESCRIPTION	BY	CHKD.	APP'D.	REV.
1	11-15-64	ISSUED TO QUALITY CONTROL FOR REVIEW	W.A.	W.A.		1
2	11-15-64	ISSUED FOR RECORDING AND FOR PRODUCTION PURPOSES	W.A.	W.A.		2

S. J. ...
 10-10-73
 ...



REFERENCE DRAWINGS: M-25201
 M-25201

NO.	DATE	BY	CHKD.	DESCRIPTION
1	8/1/73			ISSUED AS DESIGN CONCEPTS SELECTED FOR DESIGN
2	8/1/73			ISSUED FOR DESIGN DEVELOPMENT OF PRODUCTION PLANT
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4				
5				
6				
7				
8				
9				
10				

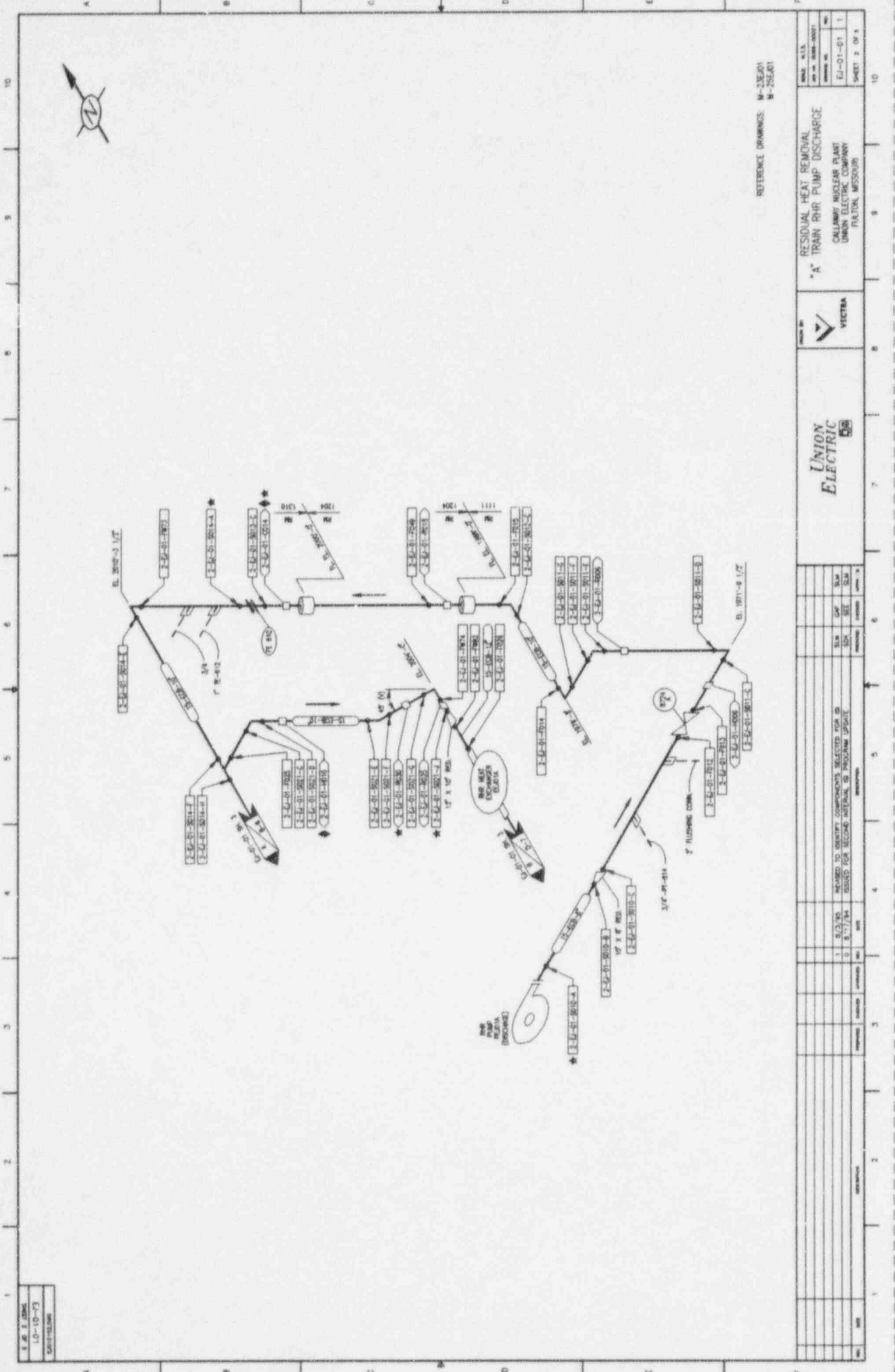
RESIDUAL HEAT REMOVAL
 "A" TRAIN RHR PUMP SUCTION



UNION
 ELECTRIC

COLUMBIAN NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI

SHEET 1 OF 5



3-22-01-2011-1
 3-22-01-2011-2
 3-22-01-2011-3

REFERENCE DRAWINGS: M-23E/01
 M-25E/01

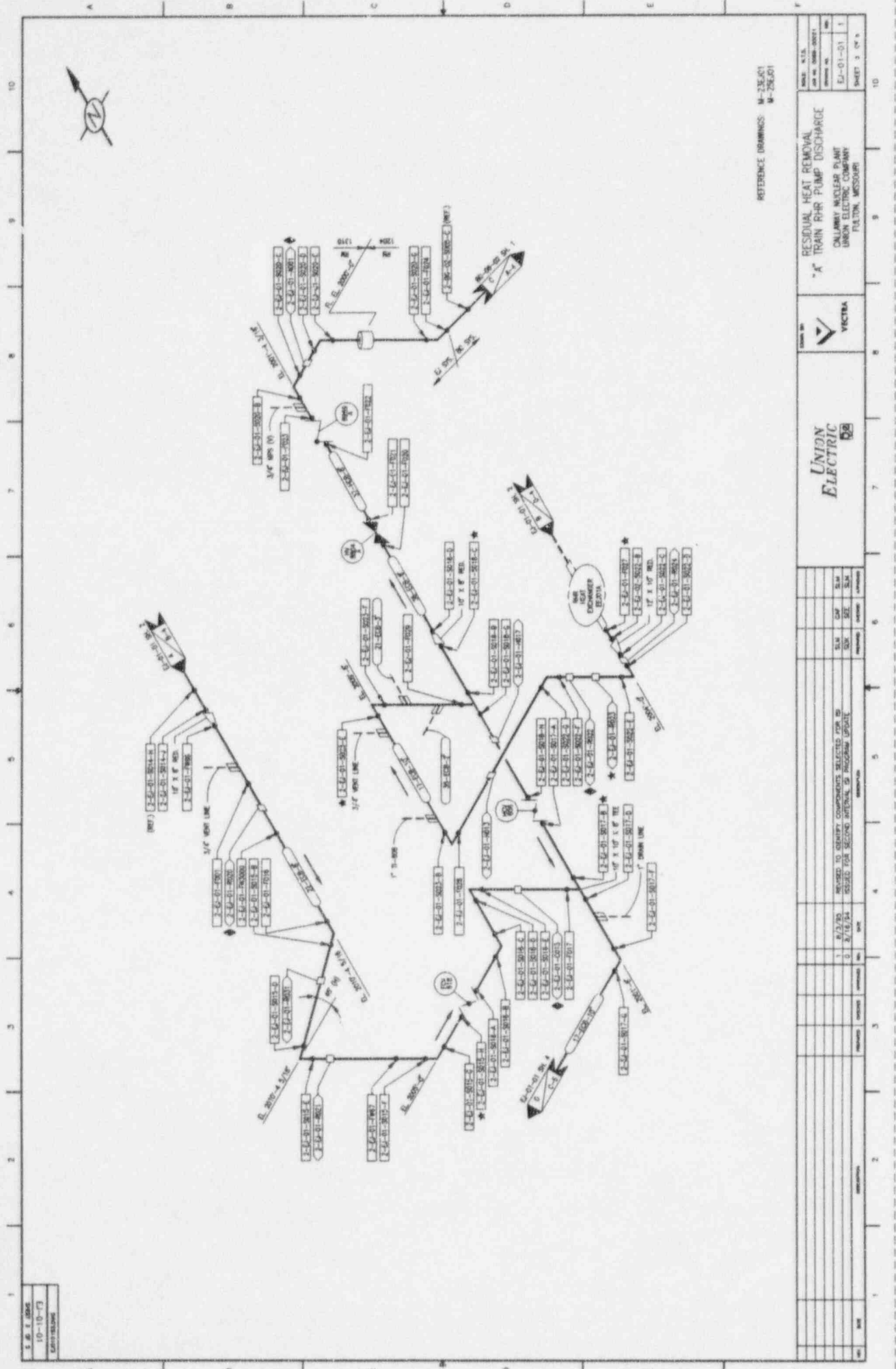
DATE	BY	CHKD
01-01-01	J. J. J.	J. J. J.
01-01-01	J. J. J.	J. J. J.
01-01-01	J. J. J.	J. J. J.

RESIDUAL HEAT REMOVAL
 "A" TRAIN RHR PUMP DISCHARGE
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FAYETTEVILLE, MISSOURI



NO.	REV.	DATE	BY	CHKD	DESCRIPTION
1	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
2	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
3	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
4	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
5	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
6	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
7	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
8	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
9	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS
10	01/01/01	J. J. J.	J. J. J.	J. J. J.	ISSUED FOR SECOND INSTALLATION OF RESIDUAL PUMPS

3. 2. 1. 2005
 EJ-01-01
 LAYOUT SHEET



REFERENCE DRAWINGS: M-25E-01
 M-25E-01

DATE	BY	CHKD
10/10/01	...	...
10/10/01	...	...

RESIDUAL HEAT REMOVAL
 TRAIN PUMP DISCHARGE

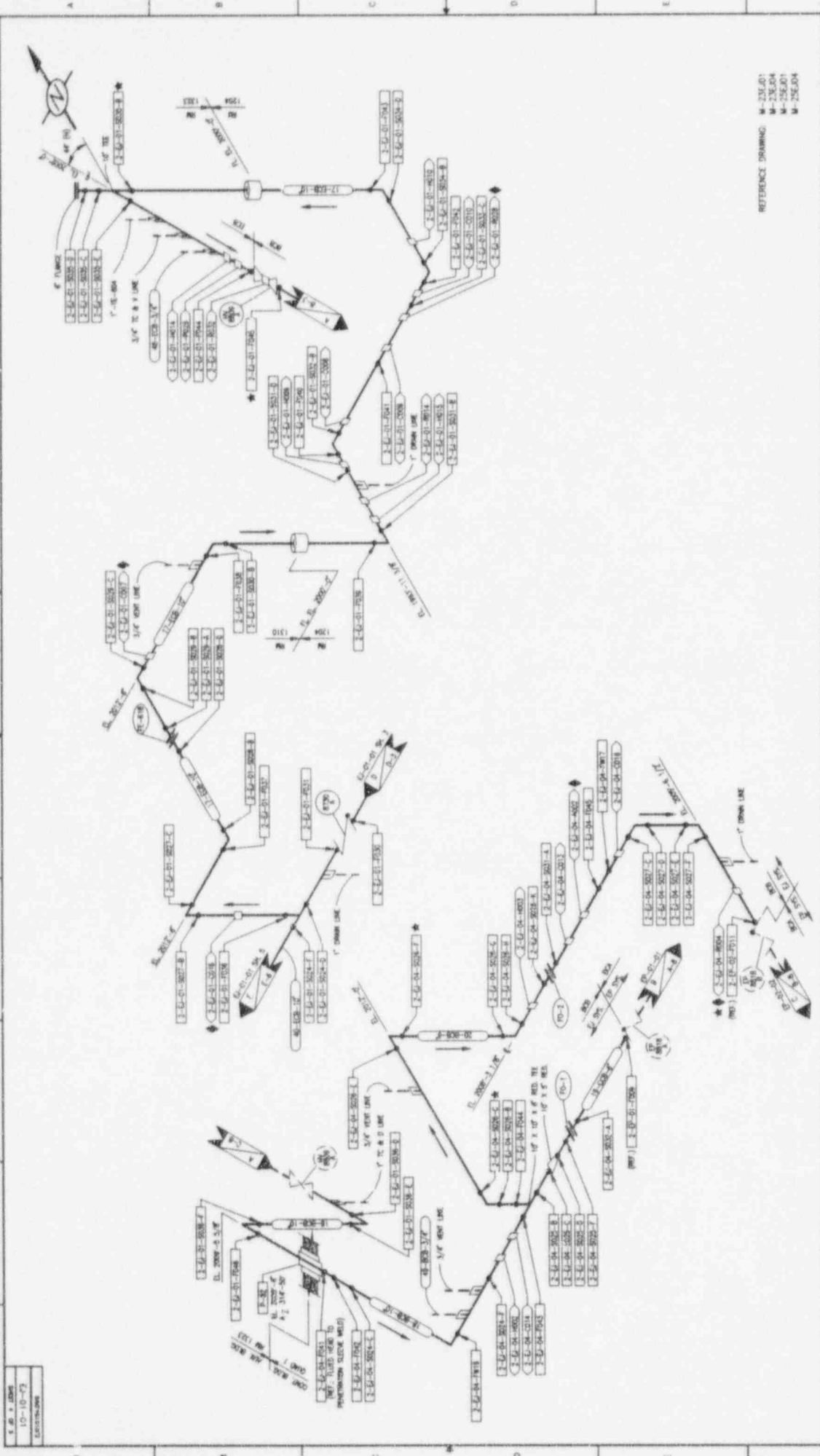
OHLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FALTON, MISSOURI



VECTRA

NO.	DATE	DESCRIPTION	BY	CHKD
1	10/10/01	ISSUED BY COMPANY ENGINEERS RELATED TO THE		
2	10/10/01	ISSUED FOR RECORD PURPOSES, NO PROGRESS UPDATE		

S. B. S. 10000
 10-10-73
 1000000000



REFERENCE DRAWING: M-235-01
 M-235-04
 M-235-01
 M-235-04

RESIDUAL HEAT REMOVAL
 TO SPAN ENVIRONMENTAL
 CONTROL SYSTEM
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



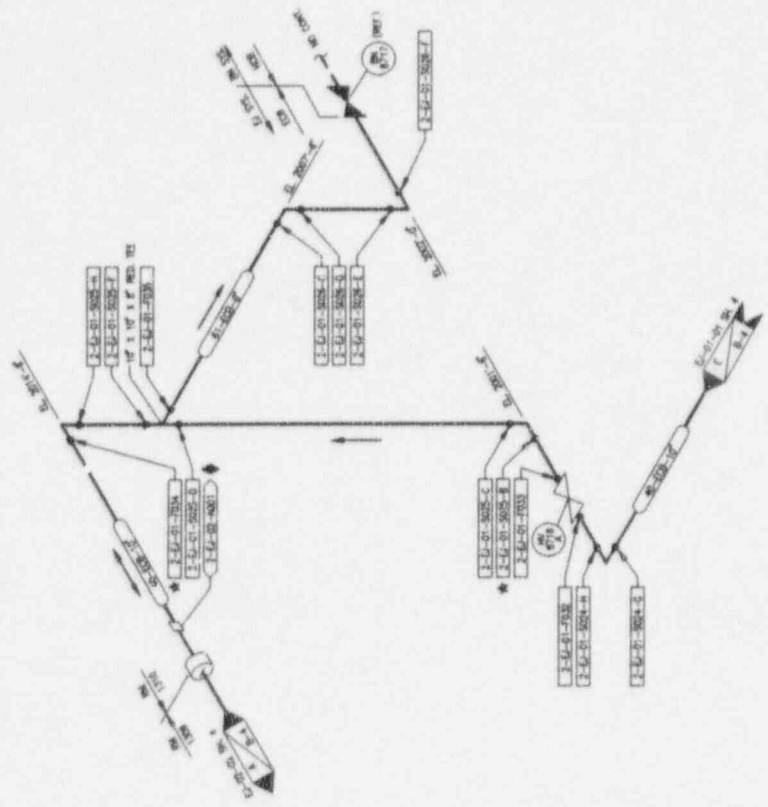
UNION ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	8/1/73	ISSUED TO IDENTIFY COMPONENTS SELECTED FOR THE			
2	8/1/73	ISSUED FOR DESIGN PURPOSES IN PROGRESSING DESIGN			
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S. J. S. 2004
 10-10-73
 ELECTRICAL

10-10-73
 ELECTRICAL

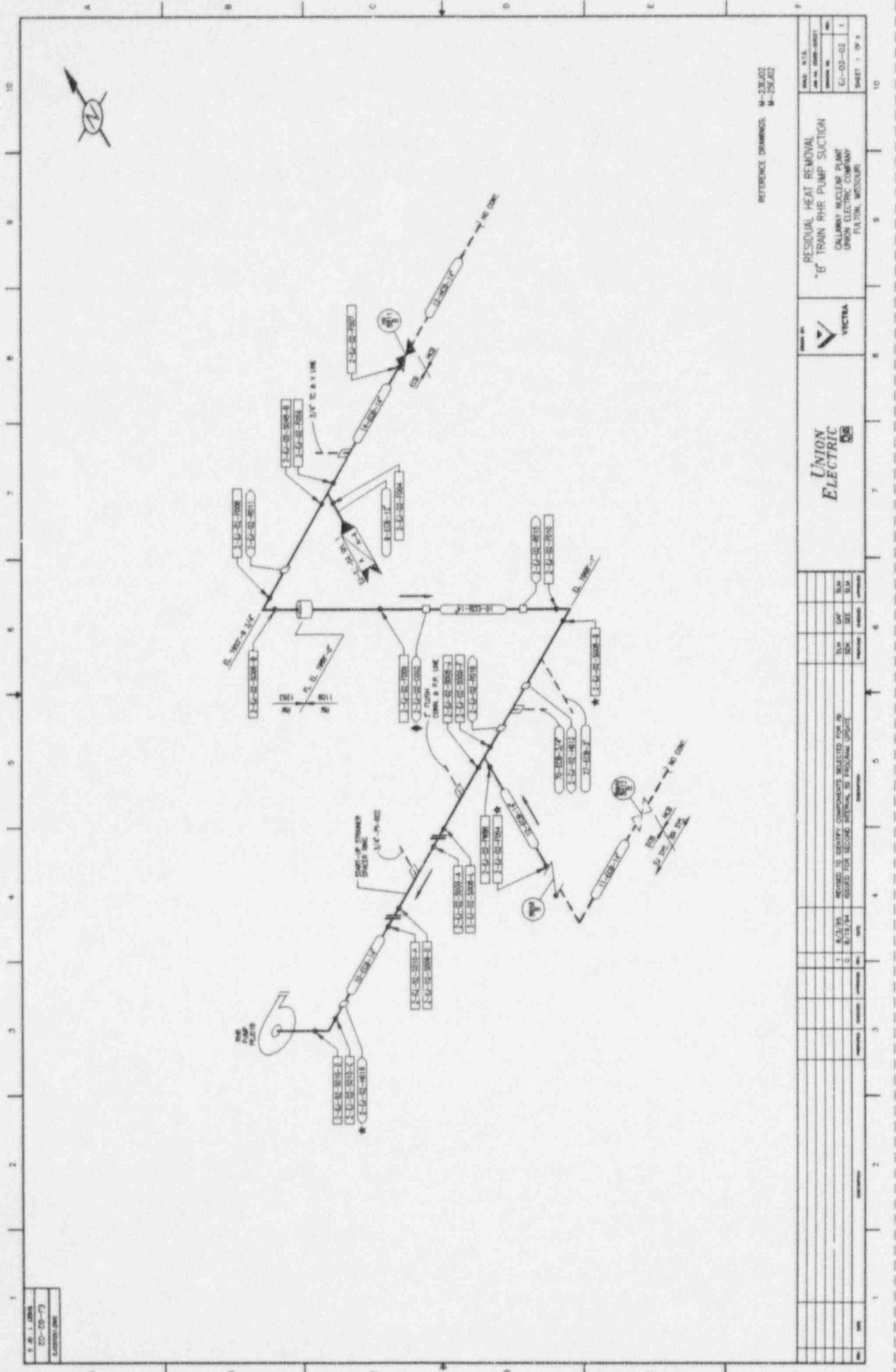
1 2 3 4 5 6 7 8 9 10



REFERENCE DRAWINGS: M-2520/01
 M-2520/01

PROJECT: RESIDUAL HEAT REMOVAL RETURN TO REFUELING WATER STORAGE POND UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET NO. OF 5	
ISSUED FOR SECOND INTERNAL TO PROGRESS UPDATE		DATE: 8/21/94	
DRAWN BY: [Blank]		CHECKED BY: [Blank]	
APPROVED BY: [Blank]		DATE: [Blank]	
REVISIONS: [Blank]		DATE: [Blank]	

1 2 3 4 5 6 7 8 9 10



REFERENCE DRAWINGS:
 M-23-001
 M-23-002

RESIDUAL HEAT REMOVAL
 "B" TRAIN RHR PUMP SUCTION
 CALUMBIUS NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FLATON, MISSOURI

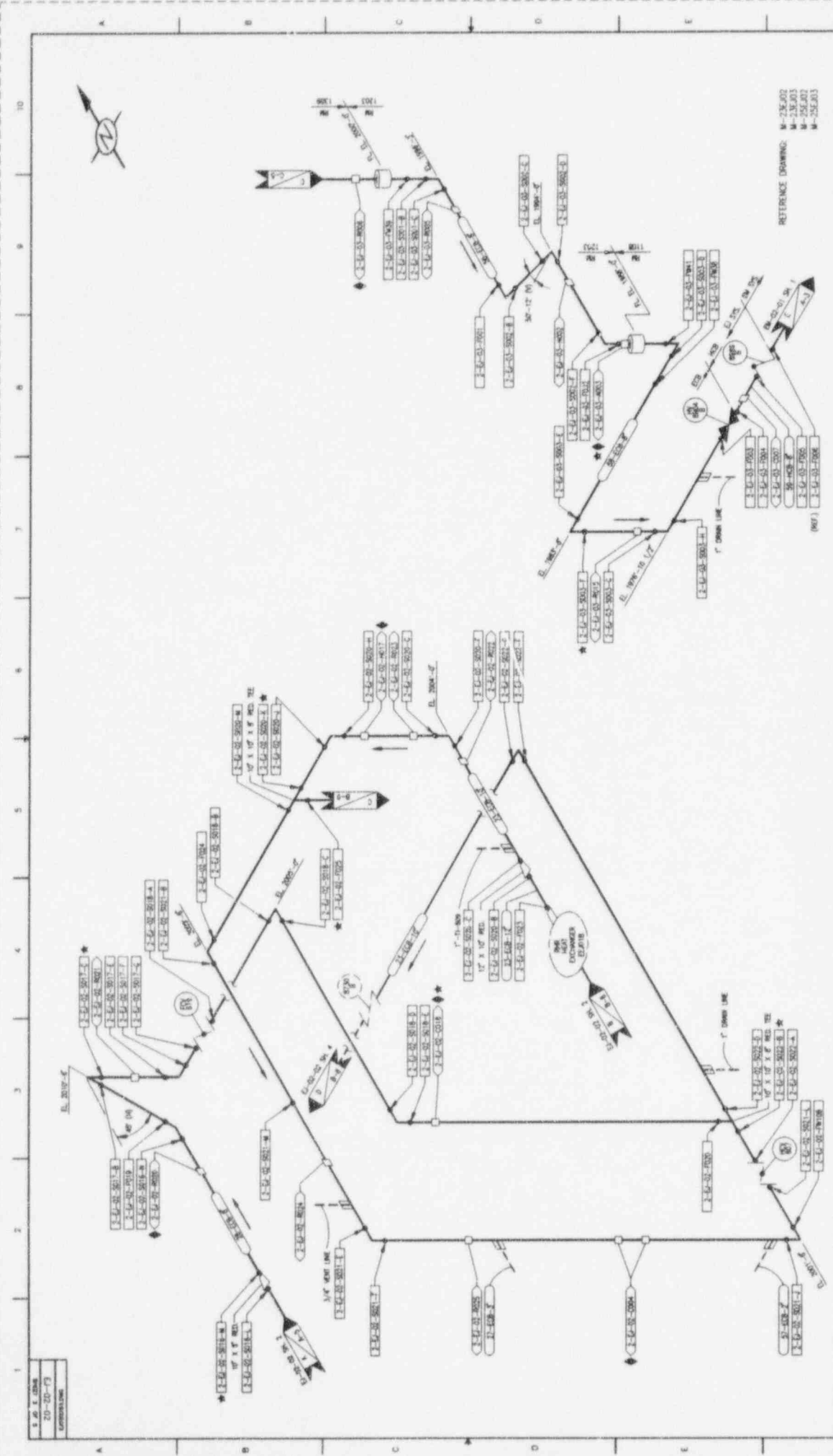


UNION
 ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHKD.

REVISED TO REFLECT COMPONENTS SELECTED FOR 10
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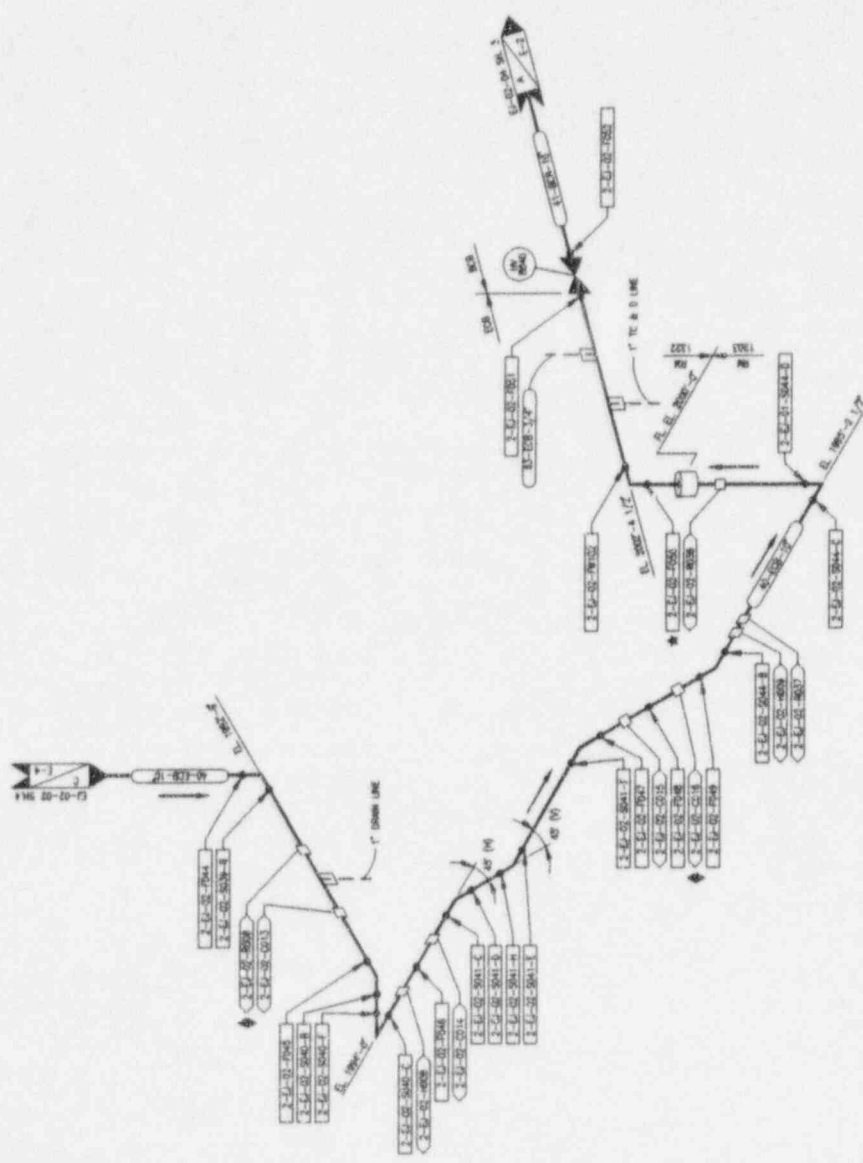
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REFERENCE DRAWING:
 M-25.002
 M-25.003
 M-25.004
 M-25.005

RESIDUAL HEAT REMOVAL "B" TRAIN RHM PUMP DISCHARGE CALLAWAY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET 3 OF 3	
UNION ELECTRIC		VECTRA	
NO.	DATE	BY	CHKD
1	8/3/88	REVISION TO DESIGN COMPONENTS SELECTED FOR USE	
2	8/17/94	REVISED FROM ORIGINAL MATERIAL TO PROPOSED MATERIAL	

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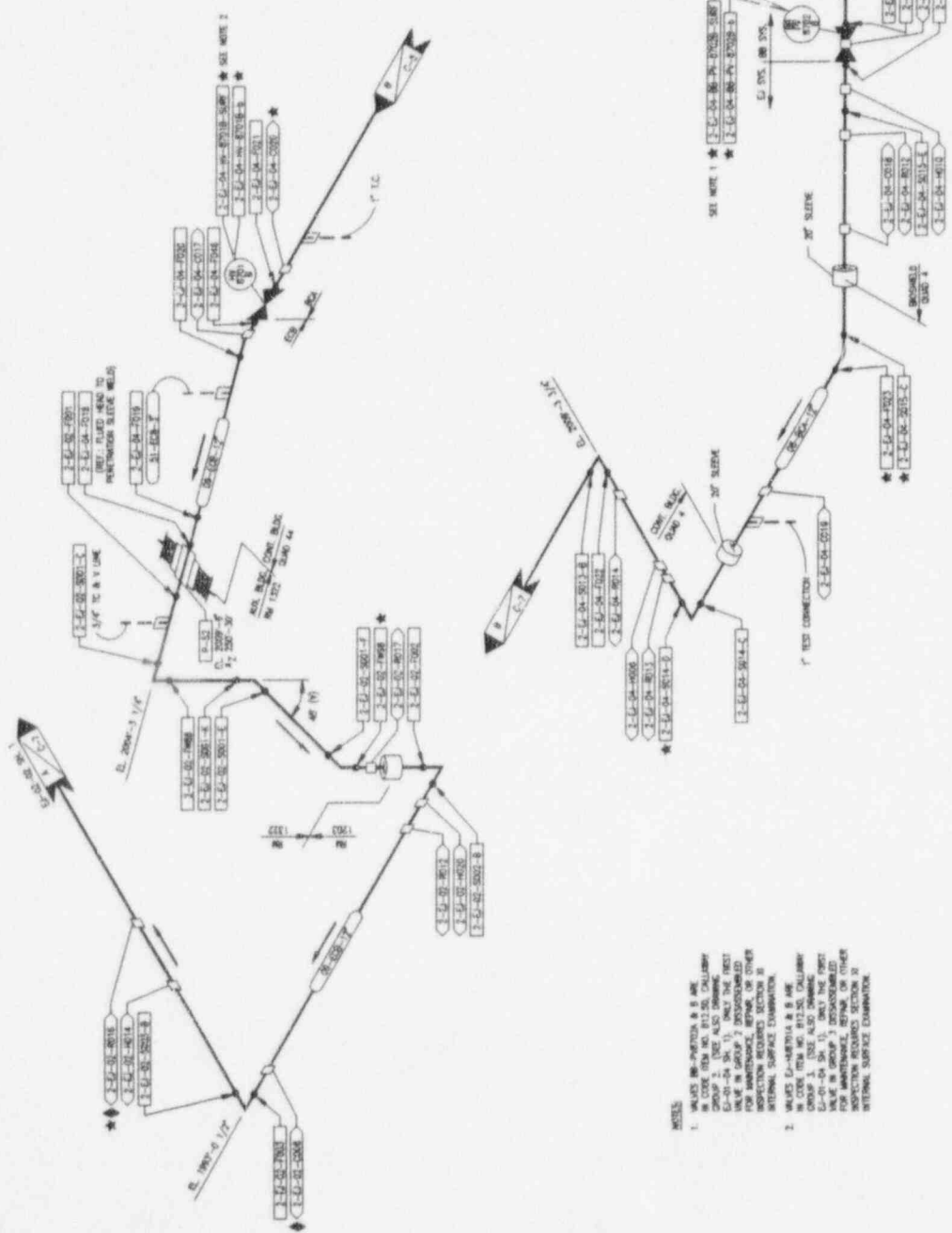
REFERENCE DRAWINGS: M-21E-02
 M-25E-02

DATE	BY	CHKD.
10-10-68	J. L. BROWN	J. L. BROWN
10-10-68	J. L. BROWN	J. L. BROWN
10-10-68	J. L. BROWN	J. L. BROWN

RESIDUAL HEAT REMOVAL
 PUMP DISCHARGE
 TO SAFETY INTERLOCK
 CONTROL SYSTEM
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



NO.	REV.	DESCRIPTION	DATE	BY	CHKD.	APPROVED	REVISIONS
1	1	AS SHOWN	10-10-68	J. L. BROWN	J. L. BROWN		
2	2	REVISED TO SHOW COMPONENTS SELECTED FOR THE SAFETY INTERLOCK CONTROL SYSTEM	10-10-68	J. L. BROWN	J. L. BROWN		

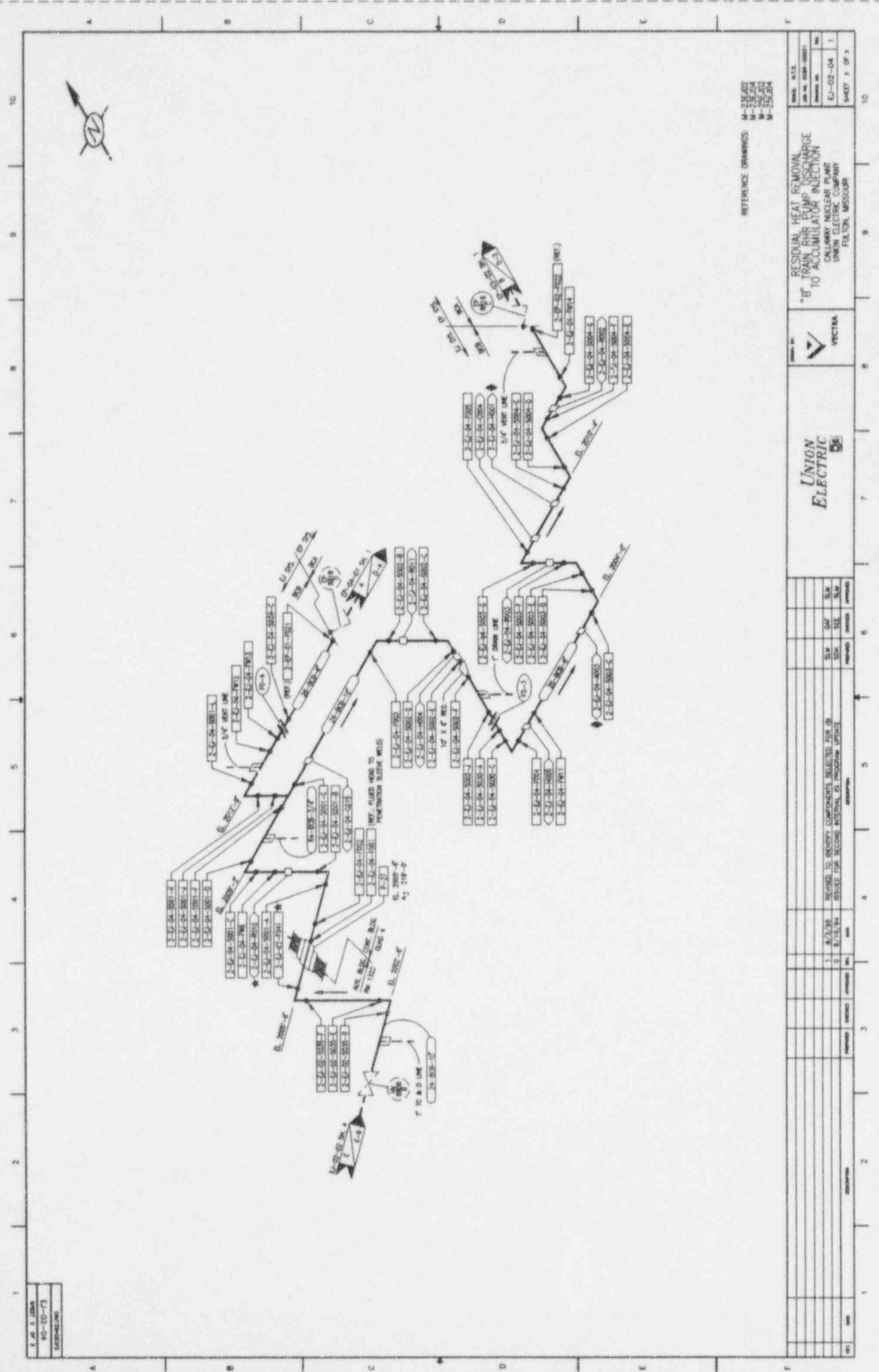


NOTES:
 1. WAGS INSPECTIONS & R & I ARE IN CODE ITEM NO. 817.05, CALLUARY GROUP 1. THEY ALSO DRAWING NO. 817.05-1, 817.05-2, 817.05-3, 817.05-4, 817.05-5, 817.05-6, 817.05-7, 817.05-8, 817.05-9, 817.05-10, 817.05-11, 817.05-12, 817.05-13, 817.05-14, 817.05-15, 817.05-16, 817.05-17, 817.05-18, 817.05-19, 817.05-20, 817.05-21, 817.05-22, 817.05-23, 817.05-24, 817.05-25, 817.05-26, 817.05-27, 817.05-28, 817.05-29, 817.05-30, 817.05-31, 817.05-32, 817.05-33, 817.05-34, 817.05-35, 817.05-36, 817.05-37, 817.05-38, 817.05-39, 817.05-40, 817.05-41, 817.05-42, 817.05-43, 817.05-44, 817.05-45, 817.05-46, 817.05-47, 817.05-48, 817.05-49, 817.05-50, 817.05-51, 817.05-52, 817.05-53, 817.05-54, 817.05-55, 817.05-56, 817.05-57, 817.05-58, 817.05-59, 817.05-60, 817.05-61, 817.05-62, 817.05-63, 817.05-64, 817.05-65, 817.05-66, 817.05-67, 817.05-68, 817.05-69, 817.05-70, 817.05-71, 817.05-72, 817.05-73, 817.05-74, 817.05-75, 817.05-76, 817.05-77, 817.05-78, 817.05-79, 817.05-80, 817.05-81, 817.05-82, 817.05-83, 817.05-84, 817.05-85, 817.05-86, 817.05-87, 817.05-88, 817.05-89, 817.05-90, 817.05-91, 817.05-92, 817.05-93, 817.05-94, 817.05-95, 817.05-96, 817.05-97, 817.05-98, 817.05-99, 817.05-100.

REFERENCE DRAWINGS:
 M-25E-622
 M-25E-623
 M-25E-624

TITLE: RESIDUAL HEAT REMOVAL "B" TRAIN RHR PUMP SUCTION CALLUARY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET NO. 1 OF 3		
PROJECT NO. 817.05 DRAWING NO. 817.05-1		DATE: 10-1-68		
DESIGNED BY: [Blank] CHECKED BY: [Blank]		DRAWN BY: [Blank]		
APPROVED BY: [Blank]		SCALE: [Blank]		
REVISIONS TO DRAWING COMPONENTS SELECTED FOR R & I ISSUED FOR RECORD INTERNAL TO PROGRAMING UNIT		REVISIONS: [Blank]		
NO.	DATE	DESCRIPTION	BY	CHKD
1	8/17/68			
2	8/17/68			

817.05-1-0000
 817.05-1-0001
 817.05-1-0002



REFERENCE DRAWINGS:
 M-232,000
 M-232,001
 M-232,002
 M-232,003

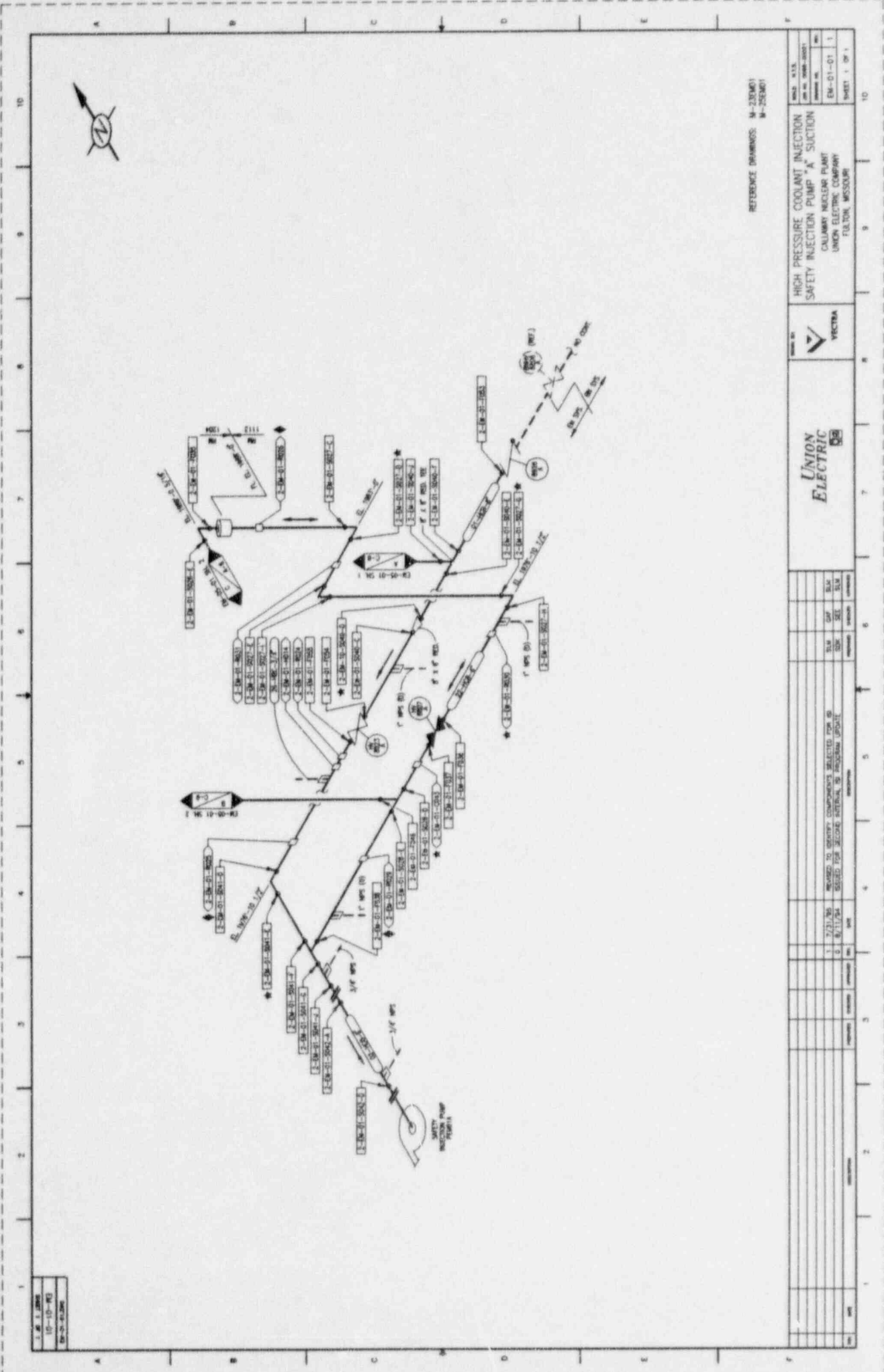
DATE	REV.
04-02-04	1
SHEET 3 OF 3	

RESIDUAL HEAT REMOVAL
 "B" TRAIN PWR PUMP DISCHARGE
 TO ACCUMULATOR INJECTION
 CALADAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



REV.	DATE	DESCRIPTION	BY	CHK	APP'D
1	8/13/04	REQUIRED TO VERIFY COMPONENTS SELECTED FOR B			
0	8/13/04	ISSUED FOR SECOND INTERNAL IS PRODUCTION SUPPORT			

1	04-02-04	1
UNION ELECTRIC COMPANY		



1. 2-38-01-3001-1
 10-10-83
 2-38-01-3001-1

REFERENCE DRAWINGS: M-231M01
 M-252M01

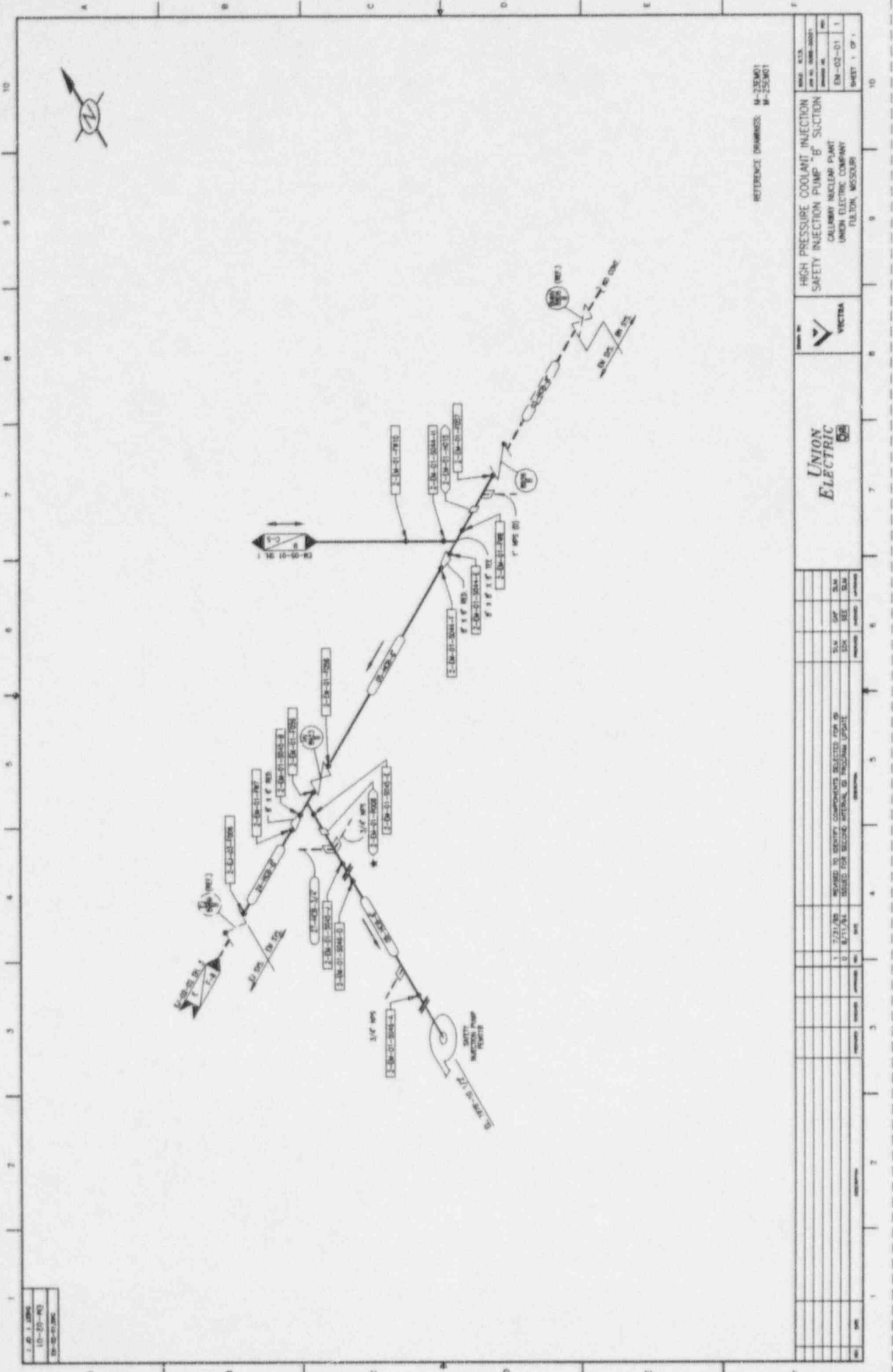
UNION ELECTRIC
 CALUMET NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



HIGH PRESSURE COOLANT INJECTION
 SAFETY INJECTION PUMP "A" SUCTION

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10-10-83	ISSUED TO INDUSTRY ENGINEERS SELECTED FOR USE		
2	8-17-84	REVISED FOR SECOND REVISION TO PROVISIONS POINT		
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NO.	DATE	DESCRIPTION	BY	CHKD.
1	10-10-83	ISSUED TO INDUSTRY ENGINEERS SELECTED FOR USE		
2	8-17-84	REVISED FOR SECOND REVISION TO PROVISIONS POINT		
3				
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1	2-38-01-2008-1
2	2-38-01-2008-2
3	2-38-01-2008-3

REFERENCE DRAWINGS: M-235M01
M-235M01

DATE	REV.
10-01-60	1
10-01-60	1
10-01-60	1
10-01-60	1

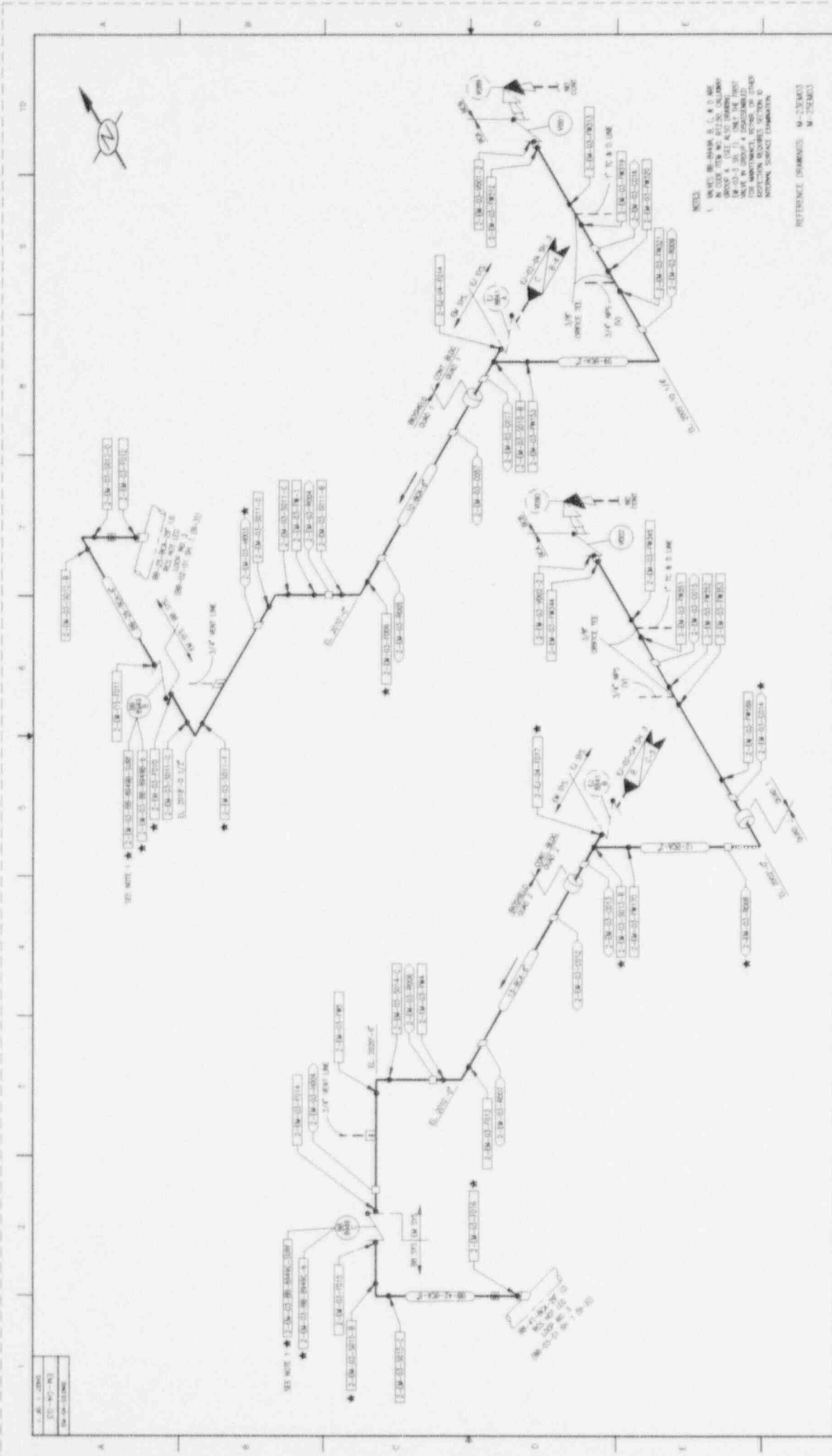
HIGH PRESSURE COOLANT INJECTION
SAFETY INJECTION PUMP "B" SUCTION
CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



UNION ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHECKED
1	10-01-60	ISSUED FOR DESIGN CONSTRUCTION RECORDS FOR NO. 2		
2	10-01-60	ISSUED FOR RECORD INTERNAL TO MISSOURI PLANT		

NO.	DATE	DESCRIPTION	BY	CHECKED
1	10-01-60	ISSUED FOR DESIGN CONSTRUCTION RECORDS FOR NO. 2		
2	10-01-60	ISSUED FOR RECORD INTERNAL TO MISSOURI PLANT		



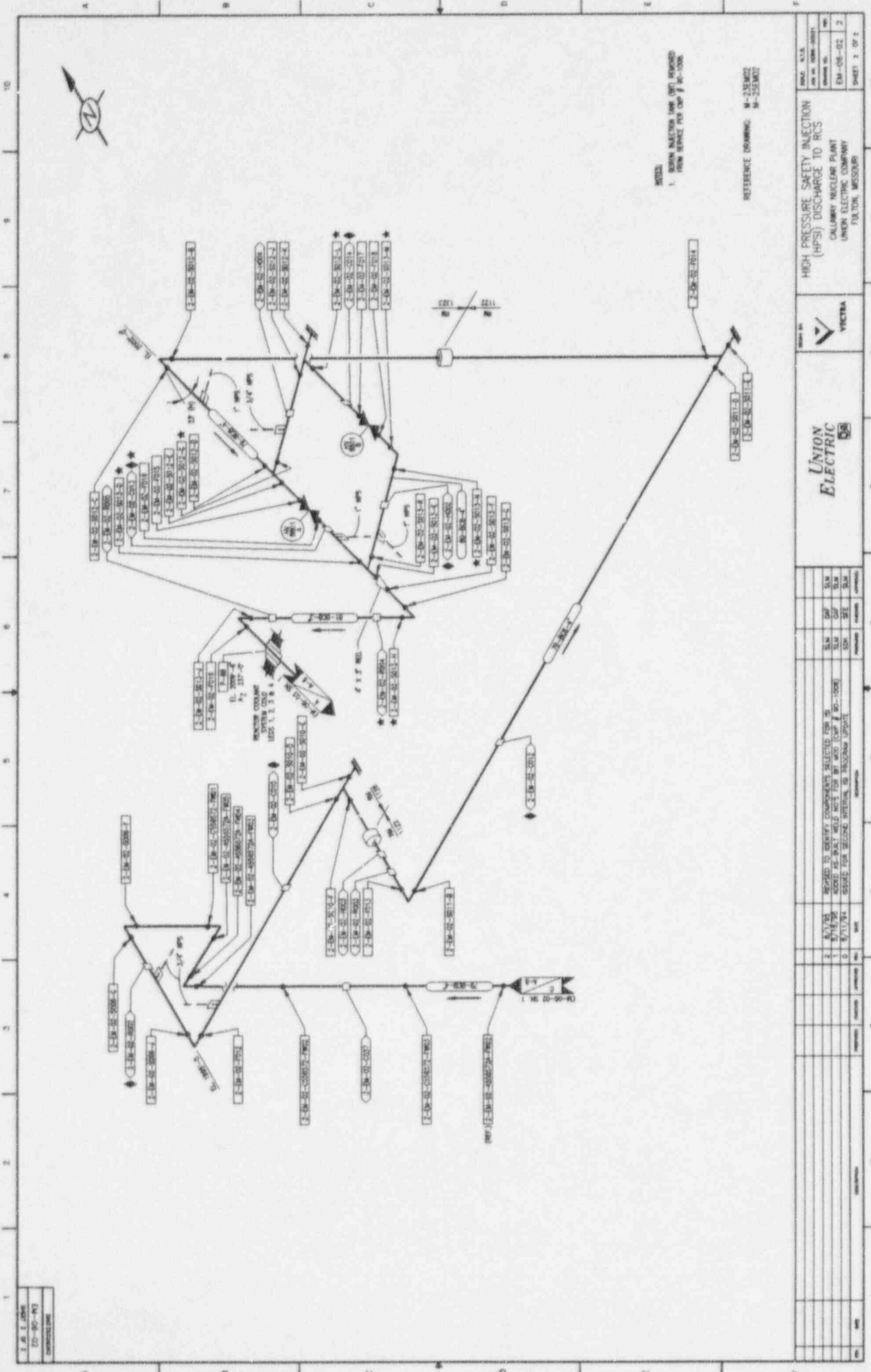
NOTES:
 1. SEE THE DRAWING FOR THE LOCATION OF THE SAFETY INJECTION PUMPS.
 2. THE SAFETY INJECTION PUMPS ARE TO BE OPERATED BY THE SAFETY INJECTION SYSTEM.
 3. THE SAFETY INJECTION PUMPS ARE TO BE OPERATED BY THE SAFETY INJECTION SYSTEM.
 4. THE SAFETY INJECTION PUMPS ARE TO BE OPERATED BY THE SAFETY INJECTION SYSTEM.

REFERENCE DRAWINGS:
 M-12345
 M-12346

DATE	DESCRIPTION
10/10/2023	ISSUED FOR REVIEW
10/11/2023	REVISED FOR DESIGN
10/12/2023	REVISED FOR MATERIAL

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	10/10/2023	ISSUED FOR REVIEW	J. SMITH	M. JONES	
2	10/11/2023	REVISED FOR DESIGN	J. SMITH	M. JONES	
3	10/12/2023	REVISED FOR MATERIAL	J. SMITH	M. JONES	

HIGH PRESSURE SECONDARY INJECTION SAFETY INJECTION PUMPS	
UNION ELECTRIC COMPANY	
EASTON, MISSISSIPPI	
PROJECT NO.	EM-04-03
SHEET NO.	1 OF 1



NOTES:
 1. HPSI SYSTEM SELECTED FOR HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.

REFERENCE DRAWING: M-231402
 M-231402

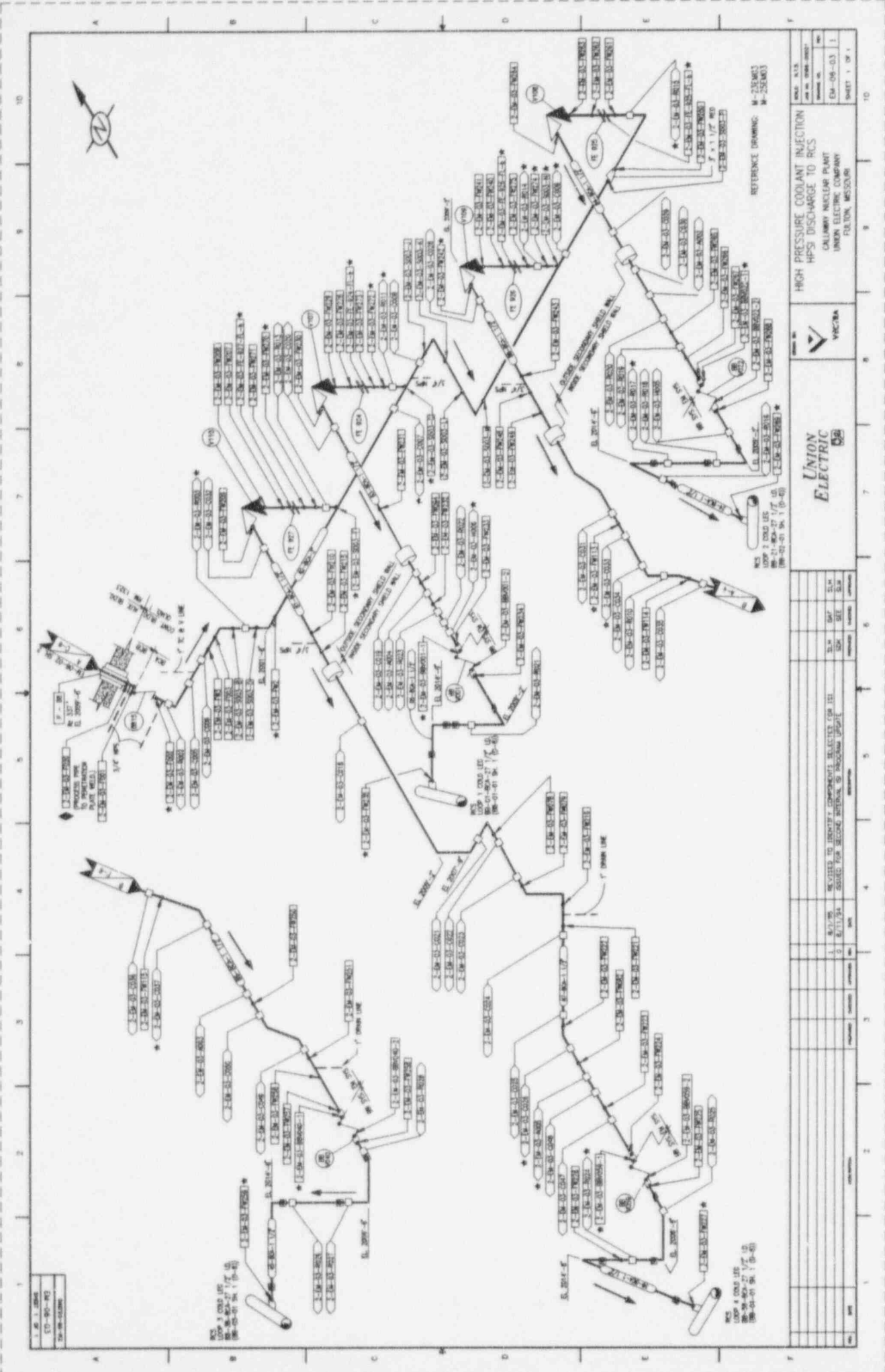
2. M. L. JONES
 10-10-74
 ENGINEERING

NO.	DATE	DESCRIPTION	BY	CHECKED	APPROVED
1	10/10/74	ISSUED TO VERIFY COMPONENTS SELECTED FOR HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
2	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
3	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
4	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
5	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
6	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
7	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
8	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
9	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		
10	10/10/74	ISSUED TO VERIFY HPSI DISCHARGE FROM REACTOR FOR SUPPLY TO HPSI.	J.M.		

HIGH PRESSURE SAFETY INJECTION
 (HPSI) DISCHARGE TO RCS
 CALUMBY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



Union
 ELECTRIC



REFERENCE DRAWING: H-252403
 H-252403

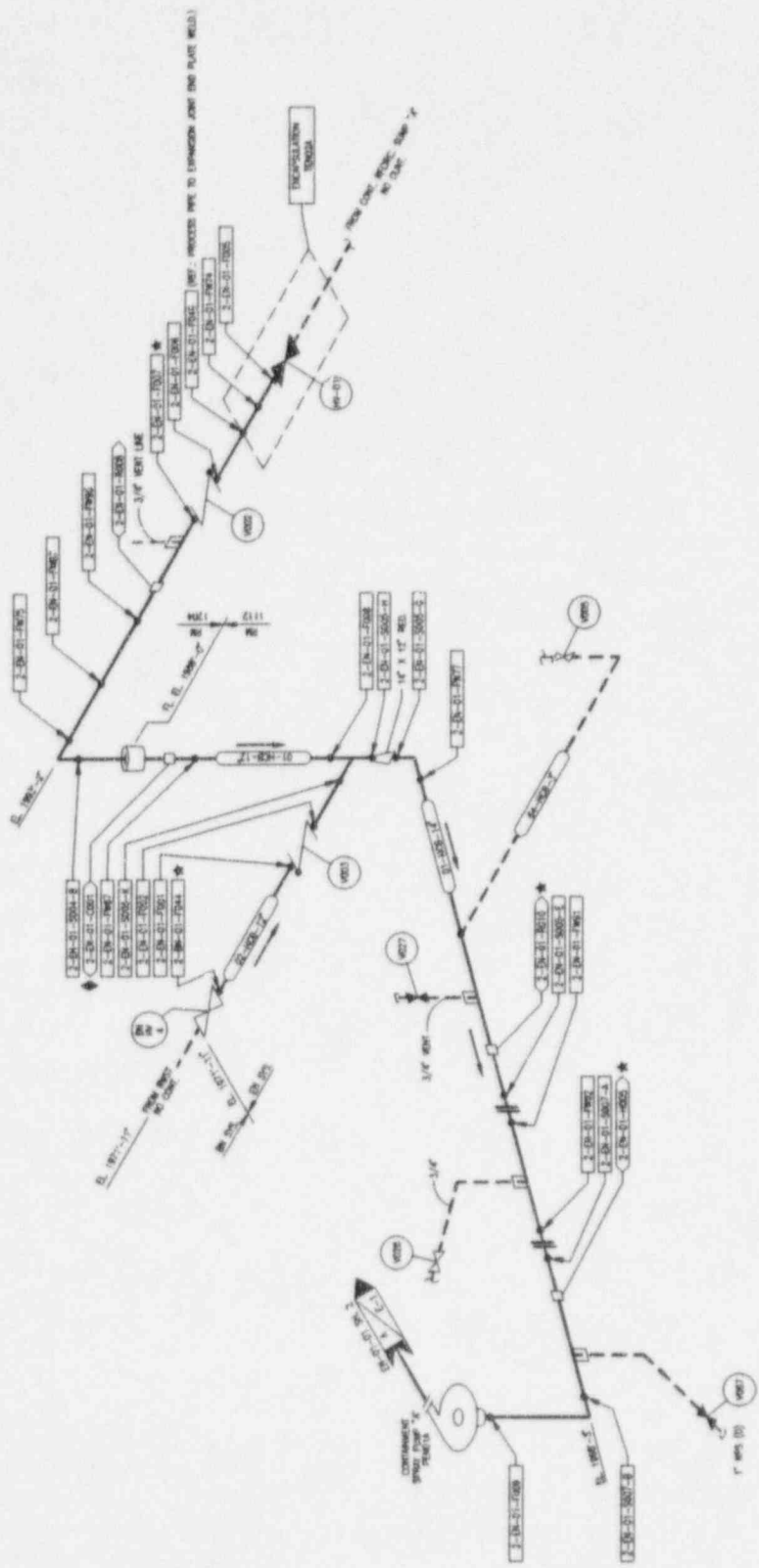
UNION ELECTRIC
 HIGH PRESSURE COOLANT INJECTION
 HPCI DISCHARGE TO RCS
 CALUMET NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULLON, MISSOURI

NO.	REV.	DATE	BY	CHKD.

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION

UNION ELECTRIC
 SHEET 1 OF 1

10 9 8 7 6 5 4 3 2 1

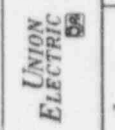


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REFERENCE DRAWINGS: M-230001
M-230001

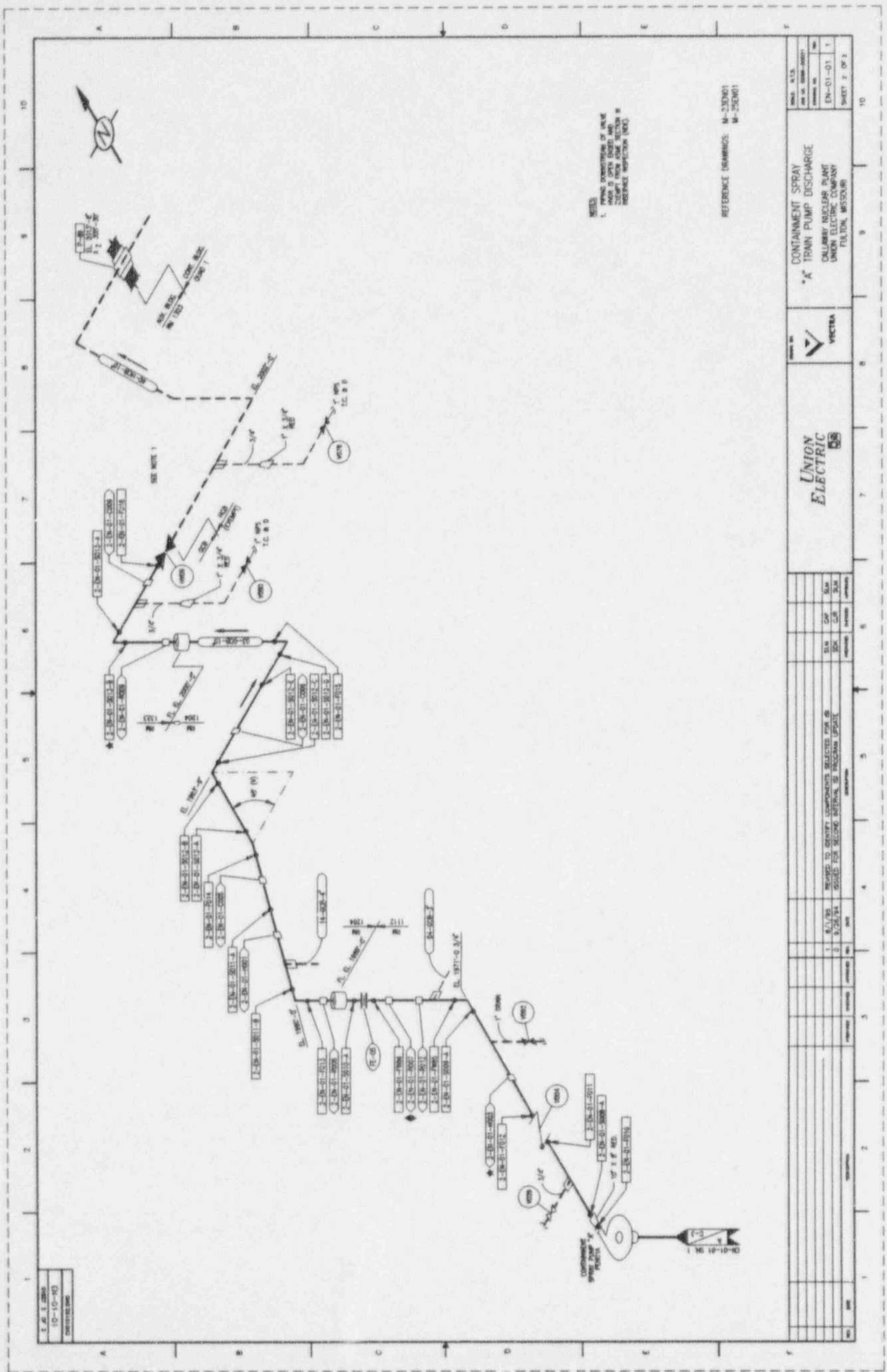
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02-10-88	53
03-10-88	54
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08-10-88	59
09-10-88	60
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12-10-88	63
01-10-89	64
02-10-89	65
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06-10-89	69
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09-10-89	72
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03-10-90	78
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07-10-90	82
08-10-90	83
09-10-90	84
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04-10-91	91
05-10-91	92
06-10-91	93
07-10-91	94
08-10-91	95
09-10-91	96
10-10-91	97
11-10-91	98
12-10-91	99
01-10-92	100

CONTAINMENT SPRAY
"A" TRAIN PUMP SUCTION
CALVERT NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



NO.	DATE	DESCRIPTION	BY	CHKD
1	10/10/83	ISSUED TO VERIFY COMPONENTS SELECTED FOR B		
2	11/10/83	ISSUED FOR DESIGN APPROVAL OF MODIFIED DESIGN		
3	12/10/83			
4	01/10/84			
5	02/10/84			
6	03/10/84			
7	04/10/84			
8	05/10/84			
9	06/10/84			
10	07/10/84			
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12	09/10/84			
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98	11/10/91			
99	12/10/91			
100	01/10/92			


NO.	DATE	DESCRIPTION	BY	CHKD
1	10/10/83	ISSUED TO VERIFY COMPONENTS SELECTED FOR B		
2	11/10/83	ISSUED FOR DESIGN APPROVAL OF MODIFIED DESIGN		
3	12/10/83			
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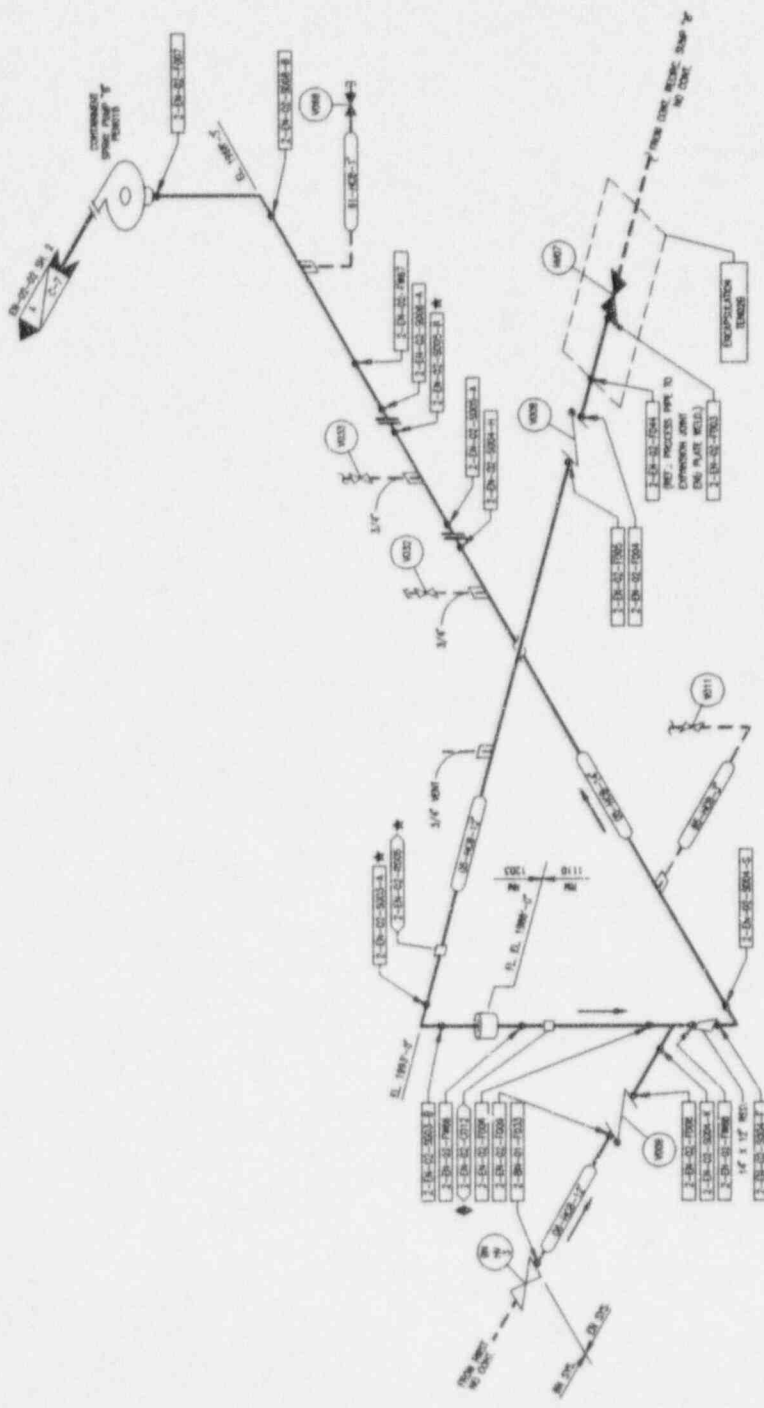


NOTES:
 1. VERIFY DIMENSIONS OF LINE AND FITTINGS WITH CONTRACTOR AND CHECK WITH THE SECTION ENGINEER BEFORE WORKING (M.C.).

REFERENCE DRAWINGS: M-230601
 M-252001

U. S. E. COMPANY
 10-10-10
 CONTAINMENT SPRAY

DATE: U.S.A. REV. NO. 1000-00001					
EN-01-01	1				
SHEET 2 OF 3					
					
					
CONTAINMENT SPRAY "A" TRAIN PUMP DISCHARGE OLLAHBY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI					
NO.	DATE	BY	CHKD.	APPROVED	REVISION
1	8/1/78				ISSUED TO GROUPY ENGINEERS SELECTED FOR 8
2	1/20/74				ISSUED FOR RECORD PURPOSES TO MISSOURI POWER
3					
4					
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7					
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REFERENCE DRAWING: M-25802Z
M-25802Y

DATE	REV.	BY	CHKD.
05/17/84	1
05/17/84	2

CONTAINMENT SPRAY
"B" TRAIN PUMP SUCTION
CALVERT NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



NO.	DATE	DESCRIPTION	BY	CHKD.
1	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...
2	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...

REVISIONS TO DETAIL COMPONENTS SELECTED FOR DESIGN REVIEW FOR DESIGN REVIEW OF PRELIMINARY DRAFT

NO.	DATE	DESCRIPTION	BY	CHKD.
1	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...
2	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...

NO.	DATE	DESCRIPTION	BY	CHKD.
1	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...
2	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...

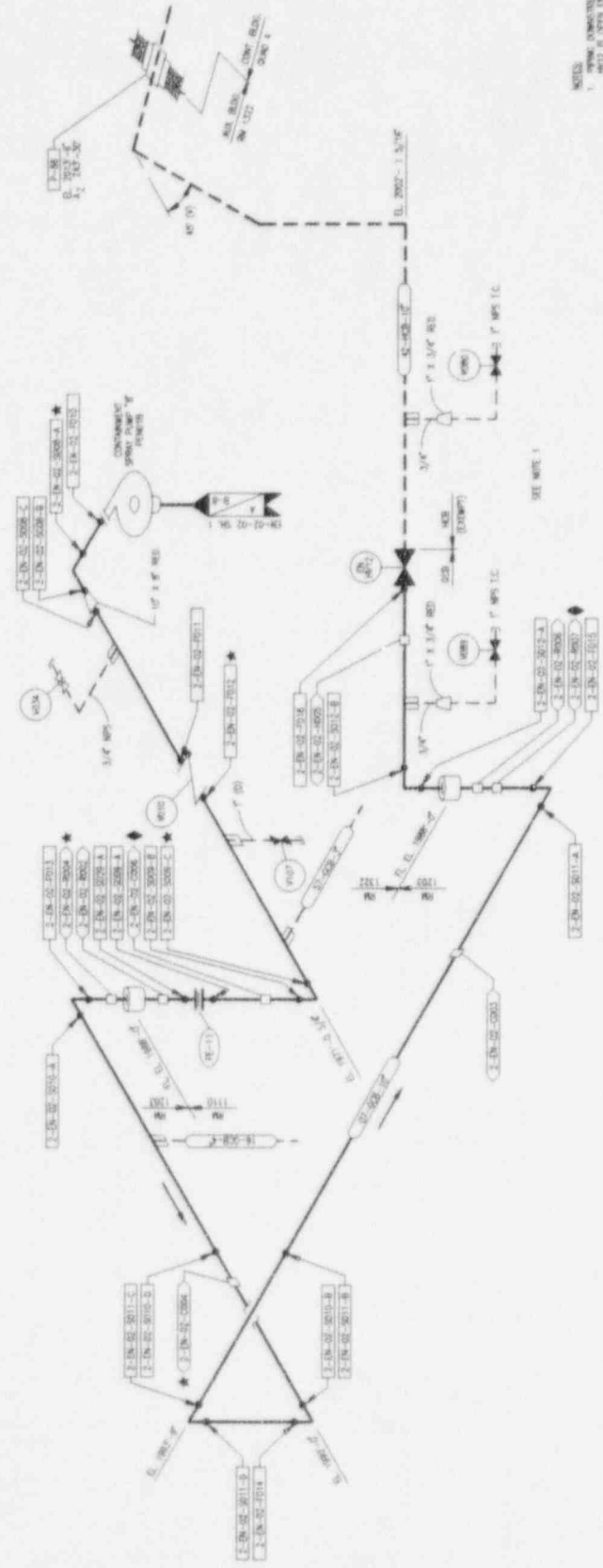
NO.	DATE	DESCRIPTION	BY	CHKD.
1	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...
2	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...

NO.	DATE	DESCRIPTION	BY	CHKD.
1	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT	...	...
2	5/17/84	ISSUED FOR DESIGN REVIEW OF PRELIMINARY DRAFT

UNION ELECTRIC COMPANY
FULTON, MISSOURI

1	2	3	4	5	6	7	8	9	10
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1. J. J. JONES
 10-02-02
 CONTAINMENT SYSTEM



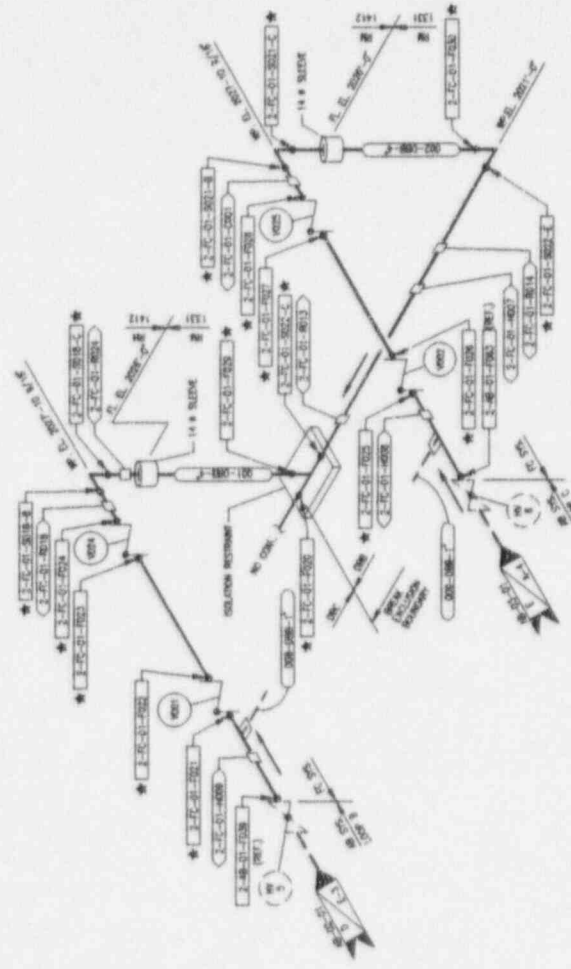
NOTES
 1. THIS CONTAINMENT SYSTEM IS TO BE USED TO DELIVER WATER TO THE CONTAINMENT SPRAY TRAIN PUMP DISCHARGE IN THE EVENT OF A CONTAINMENT SYSTEM FAILURE.

REFERENCE DRAWINGS: M-22602
 M-22602

DATE: 10/13/02		DRAWN BY: J. J. JONES		CHECKED BY: J. J. JONES		APPROVED BY: J. J. JONES		PROJECT: CONTAINMENT SYSTEM	
PROJECT: CONTAINMENT SYSTEM		SHEET: 2 OF 2		UNION ELECTRIC COMPANY		FULTON, MISSOURI		VICTRIA	
UNION ELECTRIC COMPANY		FULTON, MISSOURI		VICTRIA		CONTAINMENT SPRAY TRAIN PUMP DISCHARGE		UNION ELECTRIC COMPANY	
UNION ELECTRIC COMPANY		FULTON, MISSOURI		VICTRIA		CONTAINMENT SPRAY TRAIN PUMP DISCHARGE		UNION ELECTRIC COMPANY	

NO.	DATE	DESCRIPTION	BY	CHKD	APPD
1	8/1/02	ISSUED FOR REVIEW	J. J. JONES		
2	9/24/02	ISSUED FOR REVIEW	J. J. JONES		

10 9 8 7 6 5 4 3 2 1



NOTES
 1. SUPPORTS TO BE SHOWN ONLY ON DRAWING FOR ASSISTANCE ONLY. THESE SUPPORTS DO NOT REQUIRE ASME SECTION III INSPECTION NOTIFICATION.

REFERENCE DRAWINGS: M-307001
 M-257001

AUXILIARY TURBINES
AUXILIARY FEEDWATER PUMP TURBINE
STEAM SUPPLY PIPING
STEAM SUPPLY PIPING
UNION ELECTRIC COMPANY
 FULTON, MISSOURI

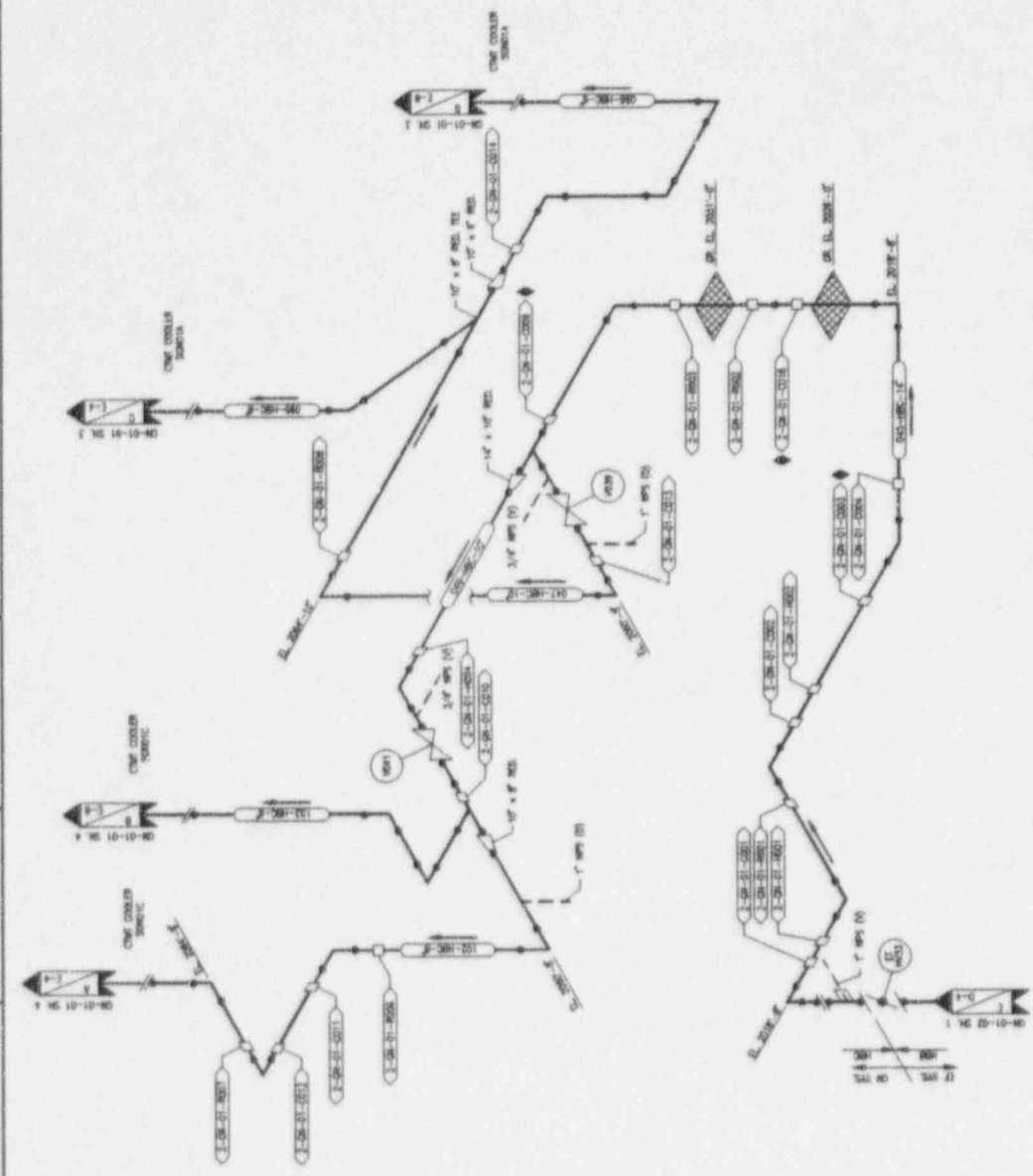


UNION ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHK	APP	REV	DATE	BY	CHK	APP
1	8/17/84	ISSUED FOR SECOND ITERATION OF PROGRAM UPDATE								

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

A B C D E F

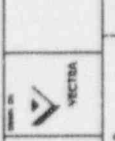


NOTES:
 1. SEE DRAWING NUMBER FOR
 INTERLOCKS ONLY. GROUP C
 VALVES ARE NOT SUBJECT TO
 INSPECTOR INSPECTION (NOC).

REFERENCE DRAWING: M-330001
 M-250001

DATE: 8/1/81	BY: J. J. LARSON
DATE: 08-01-01	BY: J. J. LARSON
PAGE: 1 OF 4	

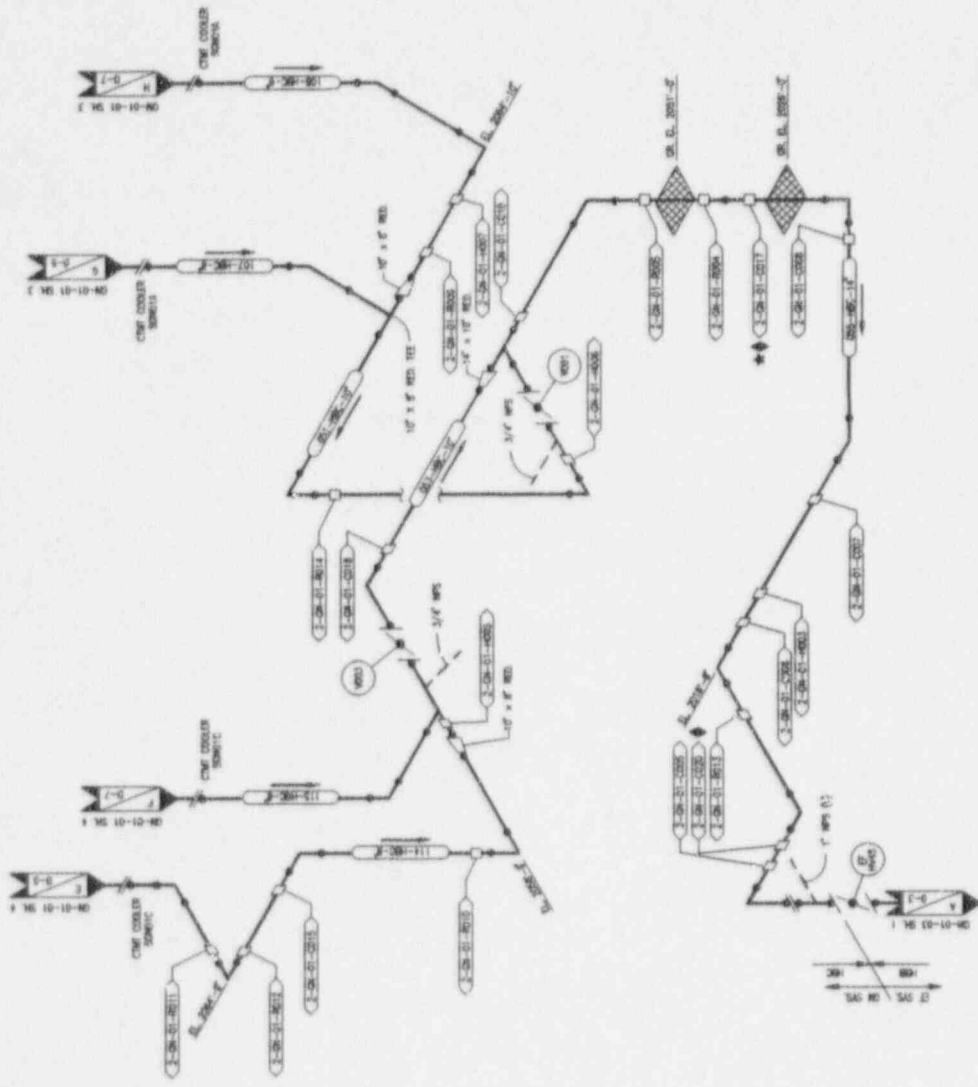
CONTAINMENT COOLING
 AT TRAIN SUPPLY
 CALLAWAY NUCLEAR PLANT
 UNDER ELECTRIC COMPANY
 FULTON, MISSOURI



NO.	DATE	DESCRIPTION	BY
1	8/1/81	ISSUED AS DESIGN COMPONENTS RELATED TO B	J. J. LARSON
2	8/25/81	REVISED FOR DESIGN PURPOSES, SEE PROGRAM PURPOSE	J. J. LARSON

J. J. LARSON
 10-10-80

10 9 8 7 6 5 4 3 2 1



NOTES:
 1. ALL LOCATIONS SHOWN FOR REFERENCE ONLY. VERIFY ALL INFORMATION WITH THE DESIGN ENGINEER.
 2. VERIFY ALL INFORMATION WITH THE DESIGN ENGINEER.

REFERENCE DRAWINGS: M-130801
 M-130801

DATE	BY	CHKD
01-10-10	...	...
01-10-10	...	...
01-10-10	...	...

CONFINEMENT COOLING TRAIN RETURN
 DALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



UNION ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHKD

REVISION FOR SECOND PARTIAL IS PROGRESS UPDATE

NO.	DATE	DESCRIPTION	BY	CHKD

REVISION FOR SECOND PARTIAL IS PROGRESS UPDATE

NO.	DATE	DESCRIPTION	BY	CHKD

REVISION FOR SECOND PARTIAL IS PROGRESS UPDATE

NO.	DATE	DESCRIPTION	BY	CHKD

REVISION FOR SECOND PARTIAL IS PROGRESS UPDATE

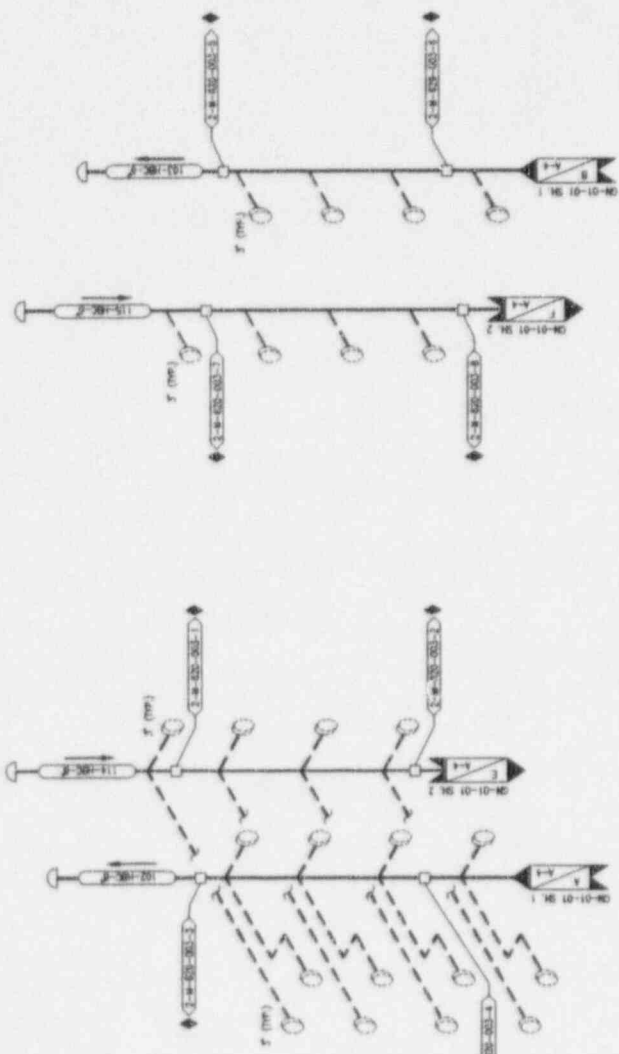
NO.	DATE	DESCRIPTION	BY	CHKD

REVISION FOR SECOND PARTIAL IS PROGRESS UPDATE

NO.	DATE	DESCRIPTION	BY	CHKD

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10 9 8 7 6 5 4 3 2 1



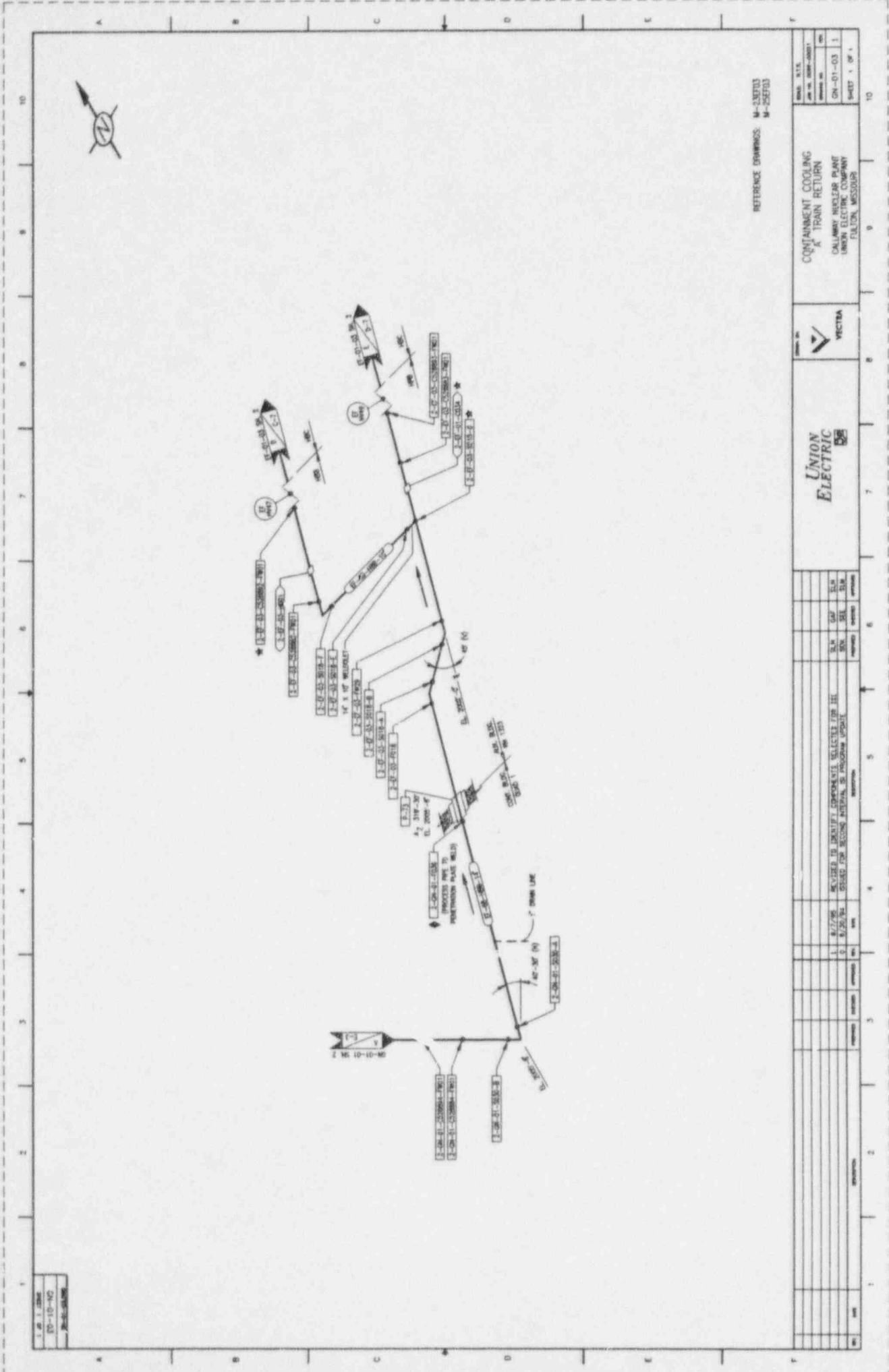
CONTAINMENT COOLER SCHEMATIC

NOTES:
1. F FLANGE CONNECTIONS ARE TO COOLER COILS

REFERENCE DRAWINGS:
M-2326001
M-2526001
M-420-00002
M-620-00008

10-10-NC
10-10-NC

CONTAINMENT COOLING TRAIN COOLER SUPPLY AND RETURN HEADERS		CALLAWAY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET NO. 10 OF 10
				SHEET NO. 10 OF 10
NO.	DATE	DESCRIPTION	BY	CHKD.
1	8.30/84	ISSUED FOR SECOND REVISION OF PROVISION UPDATE		



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1. OF 1. 20000
 10-10-NO
 10-10-NO

REFERENCE DRAWINGS: M-25E103
 M-25E103

DATE: 11/11/00	BY: J. L. [unclear]
PROJECT NO: 10000-0000	REV: 1
DATE: 01-03-01	REV: 1
SHEET 1 OF 1	

CONTAINMENT COOLING
 AT TRAIN RETURN
 CALUMET NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULLON, MISSOURI



UNION
 ELECTRIC

NO.	DATE	DESCRIPTION	BY	CHKD
1	11/11/00	ISSUED FOR CONSTRUCTION	J. L. [unclear]	[unclear]
2	01/03/01	REVISION	J. L. [unclear]	[unclear]

NOTES TO BE OBSERVED BY THE CONTRACTOR:
 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 2. ALL MATERIALS SHALL BE APPROVED BY THE ENGINEER.

NO.	DATE	DESCRIPTION	BY	CHKD
1	11/11/00	ISSUED FOR CONSTRUCTION	J. L. [unclear]	[unclear]
2	01/03/01	REVISION	J. L. [unclear]	[unclear]

NOTES TO BE OBSERVED BY THE CONTRACTOR:
 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 2. ALL MATERIALS SHALL BE APPROVED BY THE ENGINEER.

NO.	DATE	DESCRIPTION	BY	CHKD
1	11/11/00	ISSUED FOR CONSTRUCTION	J. L. [unclear]	[unclear]
2	01/03/01	REVISION	J. L. [unclear]	[unclear]

NOTES TO BE OBSERVED BY THE CONTRACTOR:
 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 2. ALL MATERIALS SHALL BE APPROVED BY THE ENGINEER.

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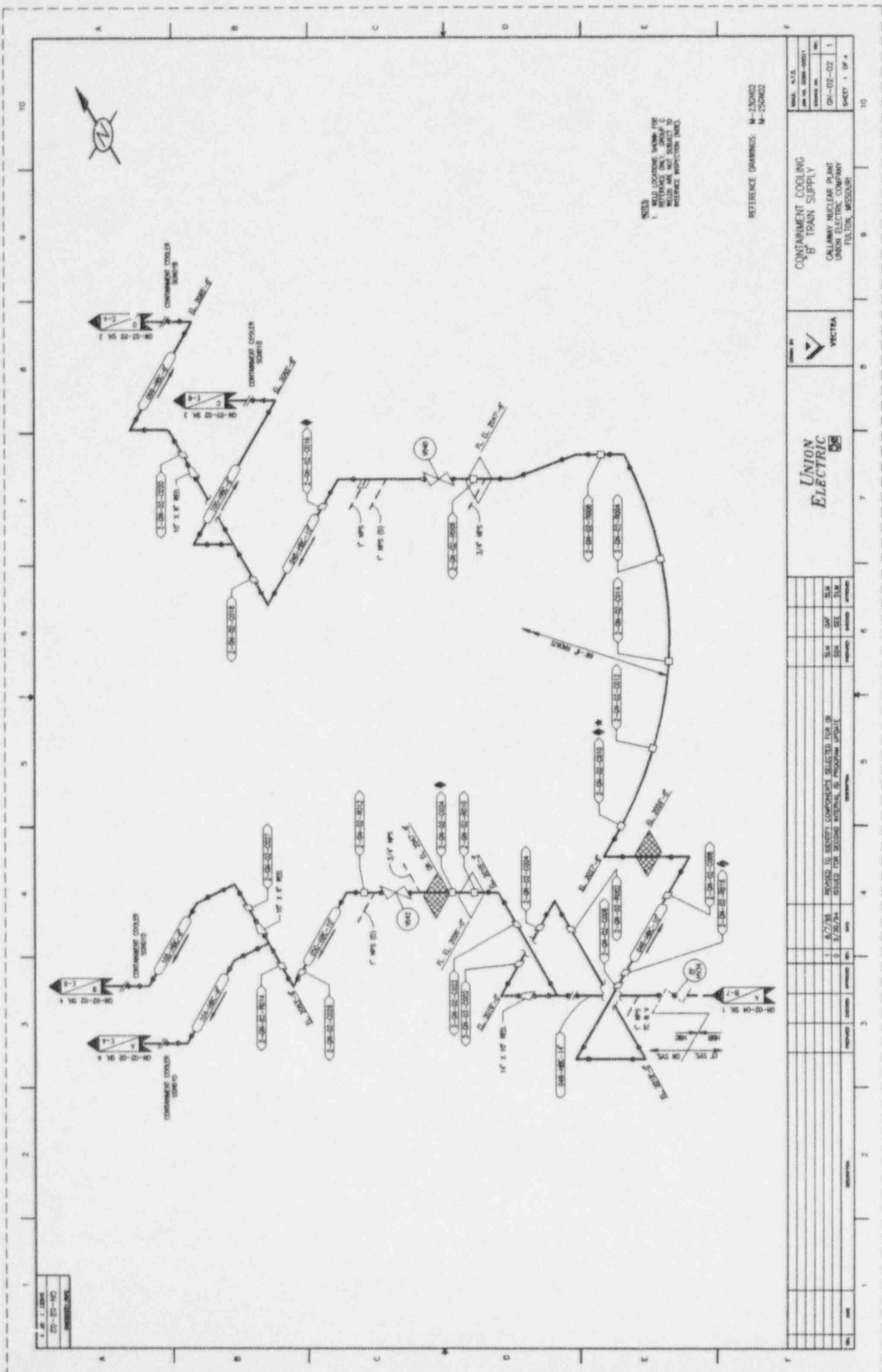
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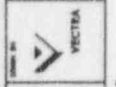


NOTES:
 1. ALL COOLING WATER AND
 2. ALL ELECTRICAL WIRING AND
 3. ALL PIPING AND VALVES ARE TO
 BE SUBJECT TO
 INSPECTION (SEE)

REFERENCE DRAWINGS: M-250402
 M-250403

DATE: 8/1/78	BY: [Signature]
DESIGNED BY: [Signature]	CHECKED BY: [Signature]
DATE: 8/1/78	BY: [Signature]
DESIGNED BY: [Signature]	CHECKED BY: [Signature]

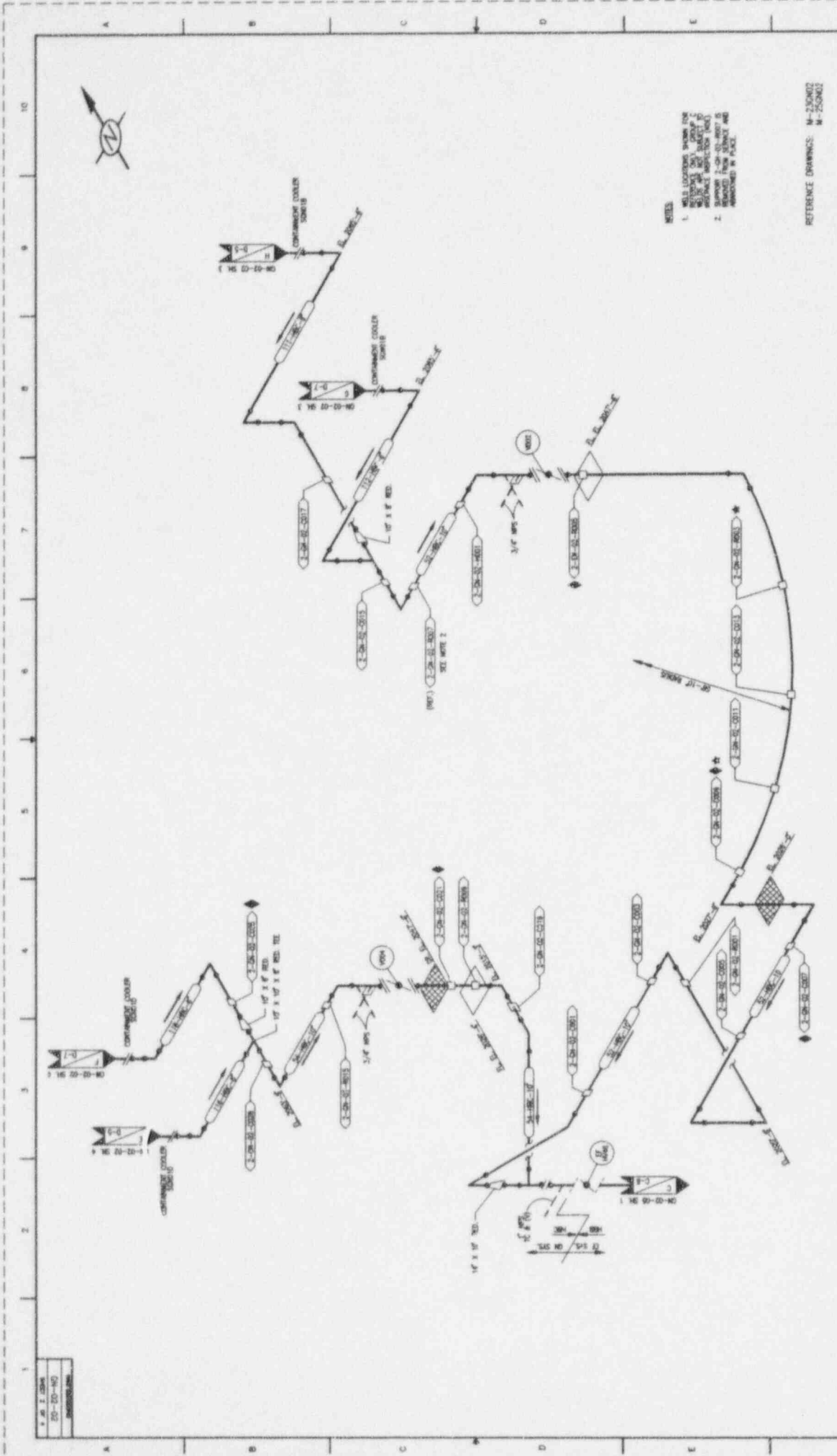
CONTAINMENT COOLING
 TRAIN SUPPLY
 CALLAWAY NUCLEAR PLANT
 UNION ELECTRIC COMPANY
 FULTON, MISSOURI



Union
 Electric

NO.	DATE	DESCRIPTION	BY	CHKD
1	8/7/78	ISSUED FOR CONSTRUCTION	[Signature]	[Signature]
2	8/28/78	ISSUED FOR PROGRAM UPGRADE	[Signature]	[Signature]

DATE: 8/1/78	BY: [Signature]
DESIGNED BY: [Signature]	CHECKED BY: [Signature]



- NOTES
1. WELL LOCATIONS SHOWN FOR REFERENCE ONLY. ALL WELL LOCATIONS ARE TO BE VERIFIED BY THE CONTRACTOR BEFORE ANY WORK IS PERFORMED.
 2. SUPPORT PIPING TO BE INSTALLED AND ANCHORED IN PLACE.

REFERENCE DRAWINGS: M-250002
M-250003

DATE	BY	CHKD
08-07-02	J. W. B.	J. W. B.
SHEET 1 OF 4		

CONTAINMENT COOLING
OF TRAIN RETURN
CALLAWAY NUCLEAR PLANT
UNION ELECTRIC COMPANY
FULTON, MISSOURI



NO.	DATE	DESCRIPTION	REVISIONS		APPROVALS	
			BY	CHKD	BY	CHKD
1	8/7/02	REVISED TO REFLECT COMPONENTS SELECTED FOR USE	J. W. B.	J. W. B.		
2	8/28/02	REVISED FOR RECORD PURPOSES OF PROVISION UPDATES	J. W. B.	J. W. B.		

BY: J. W. B.
08-07-02
UNION ELECTRIC

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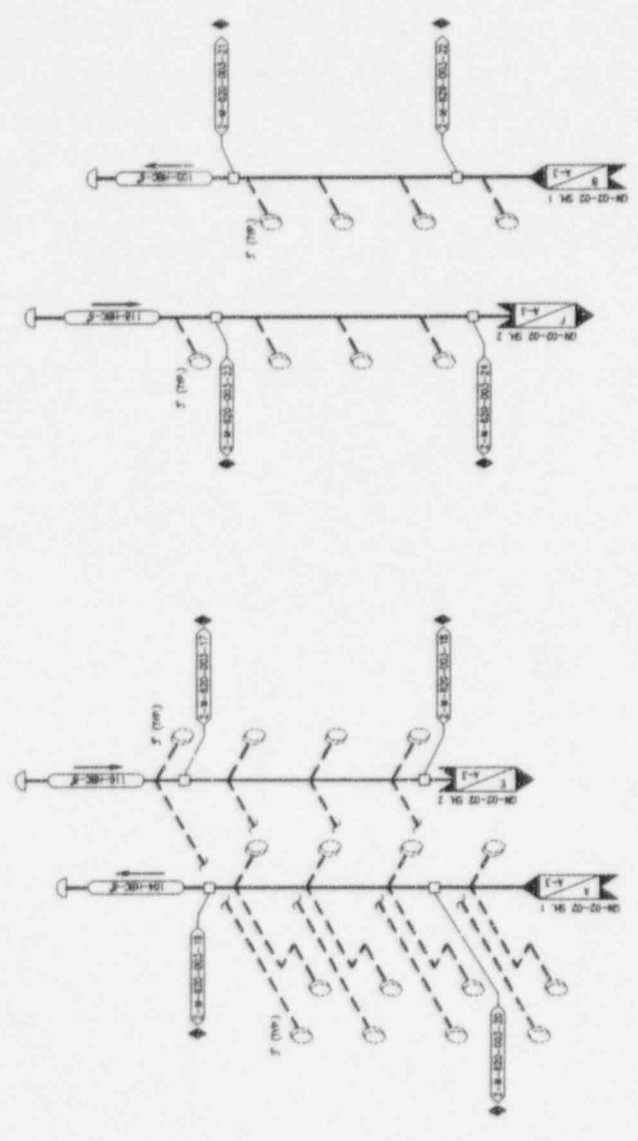
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20-00-10
UNION ELECTRIC



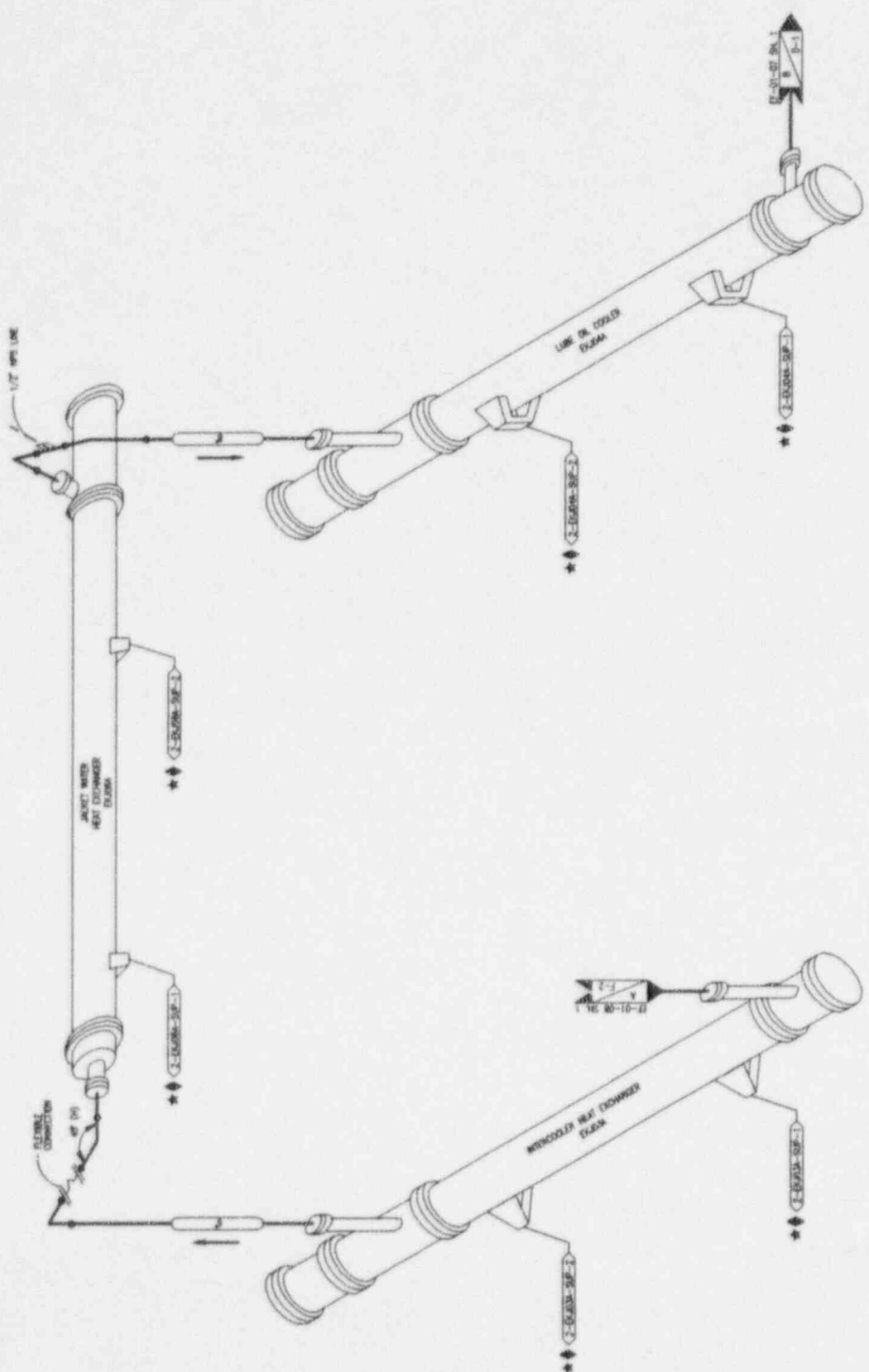
CONTAINMENT COOLER SONDID

NOTES:
 1. F FLANGE CONNECTIONS ARE TO COOLER COILS

REFERENCE DRAWINGS:
 M-230602
 M-255002
 M-410-00025
 M-420-00028

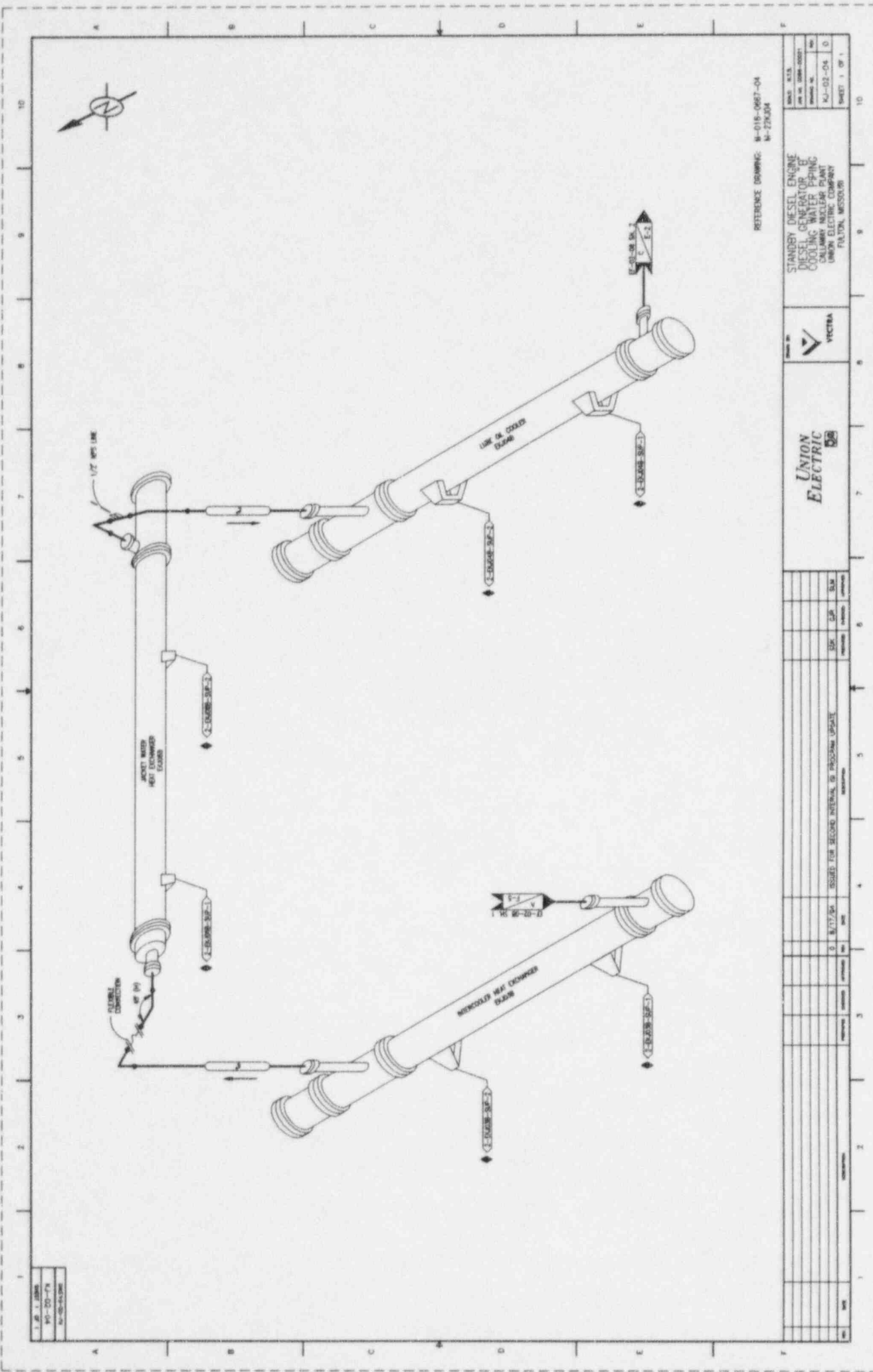
CONTAINMENT COOLING TRAIN COOLER SUPPLY AND RETURN HEADERS				UNION ELECTRIC		CALLAWAY NUCLEAR PLANT UNION ELECTRIC COMPANY FULTON, MISSOURI		SHEET 4 OF 4	
NO.	DATE	BY	CHKD.	APP'D.	REV.	DESCRIPTION	DATE	BY	CHKD.
1	8/20/74					ISSUED FOR SECOND NATIONAL SB PROGRAM UPDATE			

1. 10-10-73
 10-10-73
 10-10-73



REFERENCE DRAWING: M-018-0867-04
 M-228-011

UNION ELECTRIC 		DRAWN BY: DATE: 10-10-73 CHECKED BY: DATE: 10-10-73 PROJECT: 1 OF 1	
PROJECT: 10-10-73 SHEET: 1 OF 1		STANDER DIESEL ENGINE DIESEL GENERATOR COOLING WATER PIPING WINDSOR HEAT EXCHANGER UNION ELECTRIC COMPANY FULTON, MISSOURI	
NO.	DATE	REVISION	BY
1	8/17/74	DESIGN FOR RECORD WITHIN 61 PROCEEDING UPDATE	WJG



1	1	1	1
1	1	1	1
1	1	1	1

REFERENCE DRAWING: M-018-0067-04
M-279004

STANDBY DIESEL ENGINE DIESEL GENERATOR COOLING WATER PIPING CALUMET NUCLEAR PLANT UNION ELECTRIC COMPANY FALTON, MISSOURI		UNION ELECTRIC		VICTRA		SCALE: AS SHOWN		DATE: 8/17/54		ISSUE FOR SECOND INTERNAL IS PROGRAM UPDATE		DRAWN: []		CHECKED: []		APPROVED: []		DATE: 8/17/54		ISSUE FOR SECOND INTERNAL IS PROGRAM UPDATE		DRAWN: []		CHECKED: []		APPROVED: []		DATE: 8/17/54	
UNION ELECTRIC COMPANY		VICTRA		SCALE: AS SHOWN		DATE: 8/17/54		ISSUE FOR SECOND INTERNAL IS PROGRAM UPDATE		DRAWN: []		CHECKED: []		APPROVED: []		DATE: 8/17/54		ISSUE FOR SECOND INTERNAL IS PROGRAM UPDATE		DRAWN: []		CHECKED: []		APPROVED: []		DATE: 8/17/54			

August 11, 1995

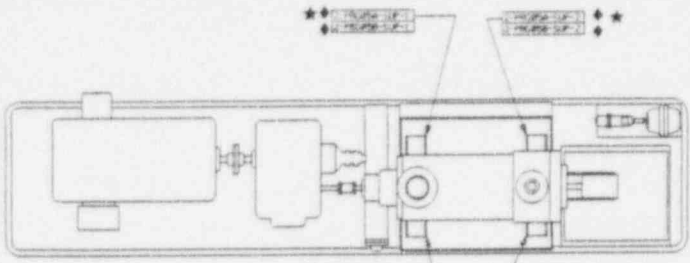
**ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
CALLAWAY NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-483**

ATTACHMENT B-3

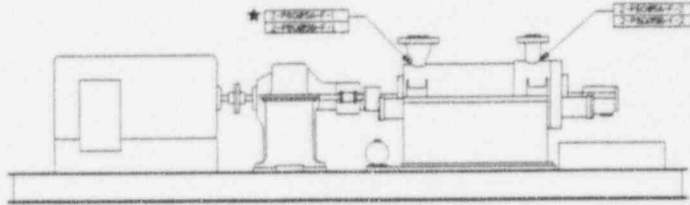
EQUIPMENT DETAIL DRAWINGS

11MS 5dM1d-151

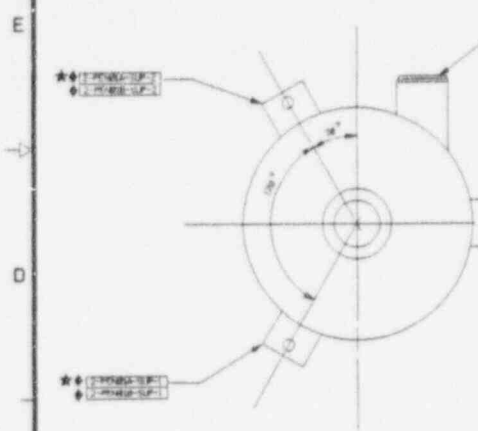
H
G
F
E
D
C
B
A



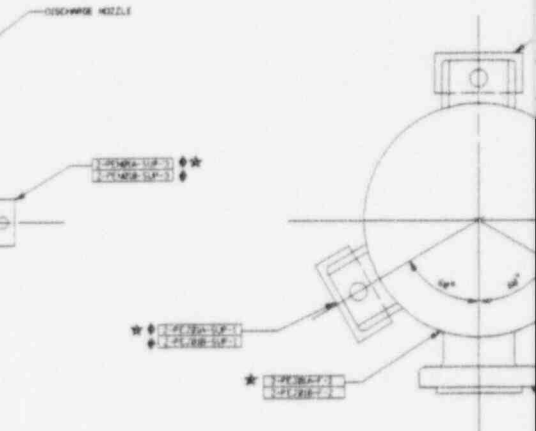
PG05A & PG05B
PUMP ASSEMBLY
PLAN WITH PLANT EAST TO RIGHT



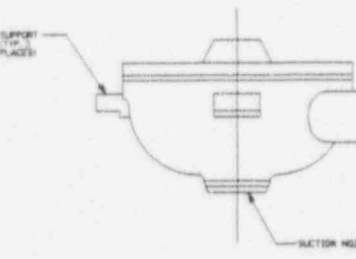
PG05A & PG05B
PUMP ASSEMBLY
ELEVATION LOOKING PLANT NORTH



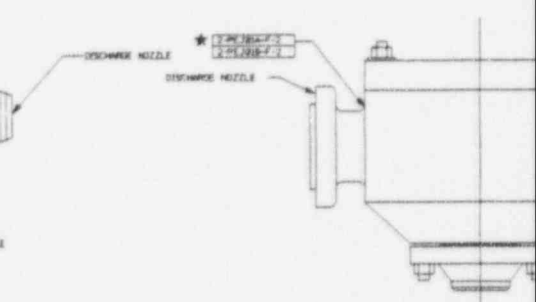
PEN05A & PEN05B
PUMP ASSEMBLY
USE NOTE 5 FOR PUMP ORIENTATION



PEJ05A & PEJ05B
PUMP ASSEMBLY
PLAN WITH PLANT NORTH



PEN05A & PEN05B
PUMP ASSEMBLY
ELEVATION
USE NOTE 5 FOR PUMP ORIENTATION



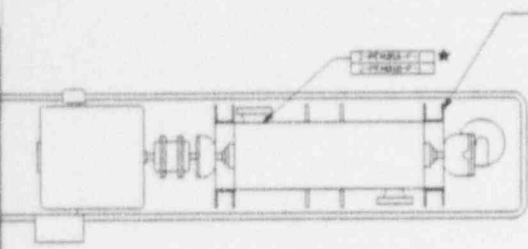
PEJ05A & PEJ05B
PUMP ASSEMBLY
ELEVATION LOOKING PLANT NORTH

8

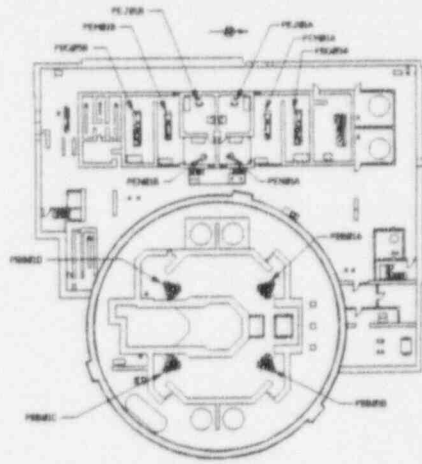
7

6

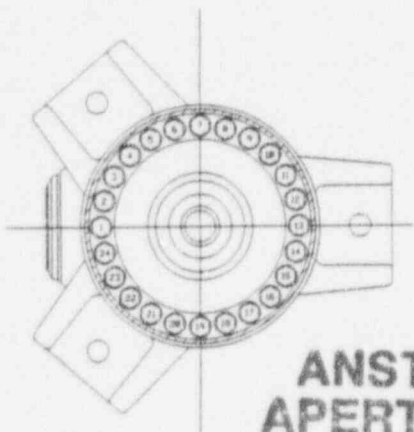
REV. DATE DRAWN BY
 1 11/20/60 J.S.
 2 01/10/61 J.S.
 3 02/10/61 J.S.
 4 03/10/61 J.S.
 5 04/10/61 J.S.



PEM01A & PEM01B
 PUMP ASSEMBLY
 PLAN WITH PLANT EAST TO RIGHT



LOCATION PLAN
 2000 REACTOR BUILDING



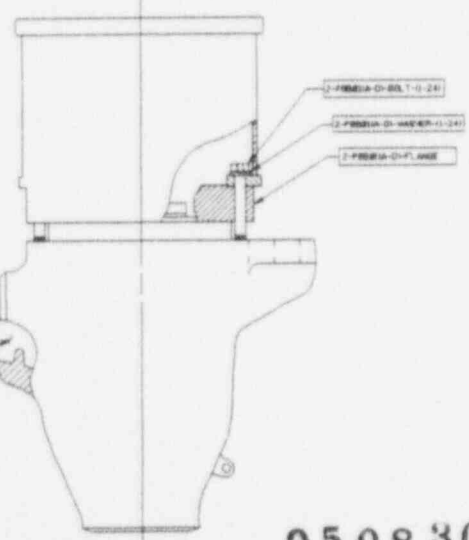
ANSTEC APERTURE CARD

PEM01A, B, C & D
 PUMP ASSEMBLY

Also Available on
 Aperture Card

DEVELOPED WELD LENGTHS			
WELD NUMBER	WELD LENGTH	WELD NUMBER	WELD LENGTH
2-PEM01A-F-1	26.83		
2-PEM01A-F-2	14.18		
2-PEM01A-F-3	14.18		
2-PEM01A-F-4	26.83		
2-PEM01A-F-5	27.49		
2-PEM01A-F-6	27.49		
2-PEM01A-F-7	26.83		
2-PEM01A-F-8	14.18		
2-PEM01A-F-9	14.18		
2-PEM01A-F-10	26.83		
2-PEM01A-F-11	14.18		
2-PEM01A-F-12	14.18		

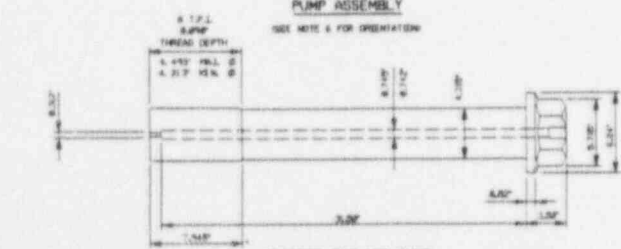
- NOTES:
1. WELD LENGTHS ARE CALCULATED AS MEASURED ALONG CENTERLINE OF WELD OR OUTER SURFACE OF PUMP.
 2. ALL DIMENSIONS ARE IN INCHES.
 3. R DENOTES WELD OR COMPONENTS WHICH HAVE BEEN SELECTED FOR SERVICE INSPECTION.
 4. Ø DENOTES INTERNALLY WELDED ATTACHMENT.
 5. PEM01A DISCHARGE NOZZLE IS ORIENTED 33° WEST OF PLANT NORTH. PEM01B DISCHARGE NOZZLE IS ORIENTED DIRECTLY PLANT WEST.
 6. PEM01C DISCHARGE NOZZLE IS ORIENTED 47° WEST OF PLANT NORTH. PEM01D DISCHARGE NOZZLE IS ORIENTED 45° WEST OF PLANT NORTH. PEM01E DISCHARGE NOZZLE IS ORIENTED 130° EAST OF PLANT NORTH. PEM01F DISCHARGE NOZZLE IS ORIENTED 130° WEST OF PLANT NORTH.
 7. THE FIRST PUMP DISASSEMBLED FOR MAINTENANCE, REPAIR, OR OTHER INSPECTION MUST BE SECTION 17 INTERNAL SURFACE EXAMINATION.



REACTOR COOLANT PUMPS INNER SURFACE, BOLTS, WASHERS AND BOLT HOLE LIGAMENTS	
BOLTS	2-PEM01A-BOLT-1-1-24
	2-PEM01B-BOLT-1-1-24
	2-PEM01C-BOLT-1-1-24
	2-PEM01D-BOLT-1-1-24
WASHERS	2-PEM01A-WASHER-1-1-24
	2-PEM01B-WASHER-1-1-24
	2-PEM01C-WASHER-1-1-24
	2-PEM01D-WASHER-1-1-24
PUMP FLANGE	2-PEM01A-FL-ANCE
	2-PEM01B-FL-ANCE
	2-PEM01C-FL-ANCE
	2-PEM01D-FL-ANCE
INNER SURFACE	2-PEM01A-SLIP
	2-PEM01B-SLIP
	2-PEM01C-SLIP
	2-PEM01D-SLIP

9508300247-60

PEM01A, B, C & D
 PUMP ASSEMBLY



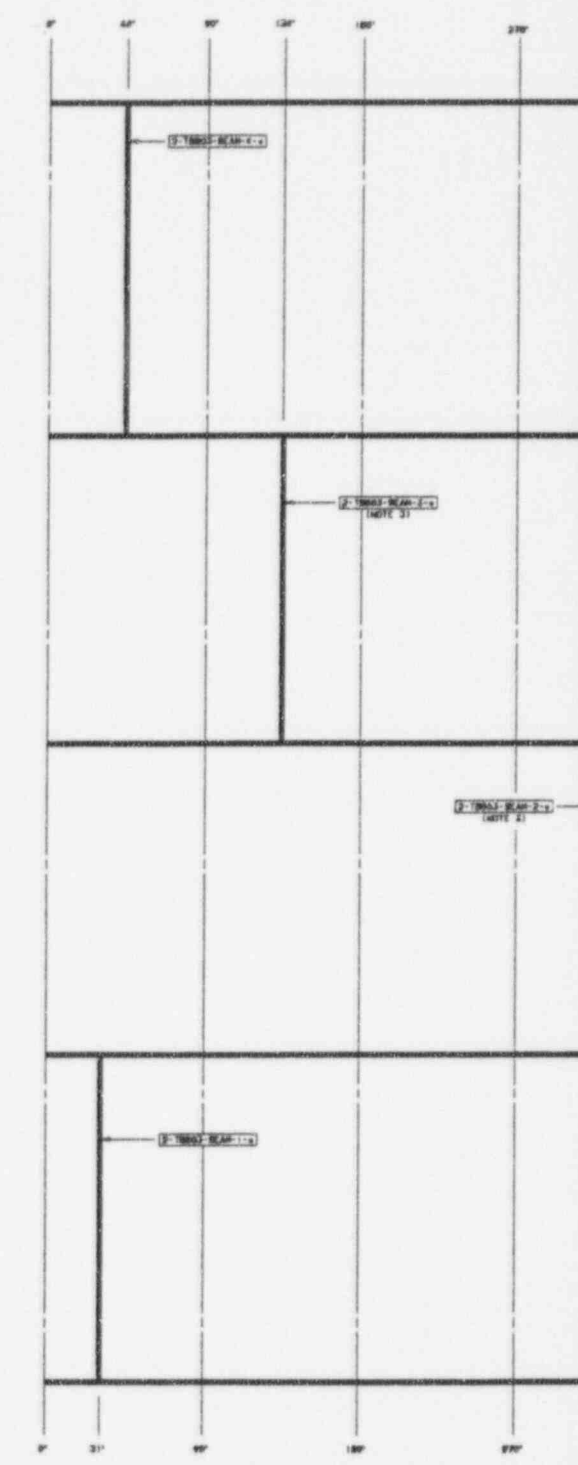
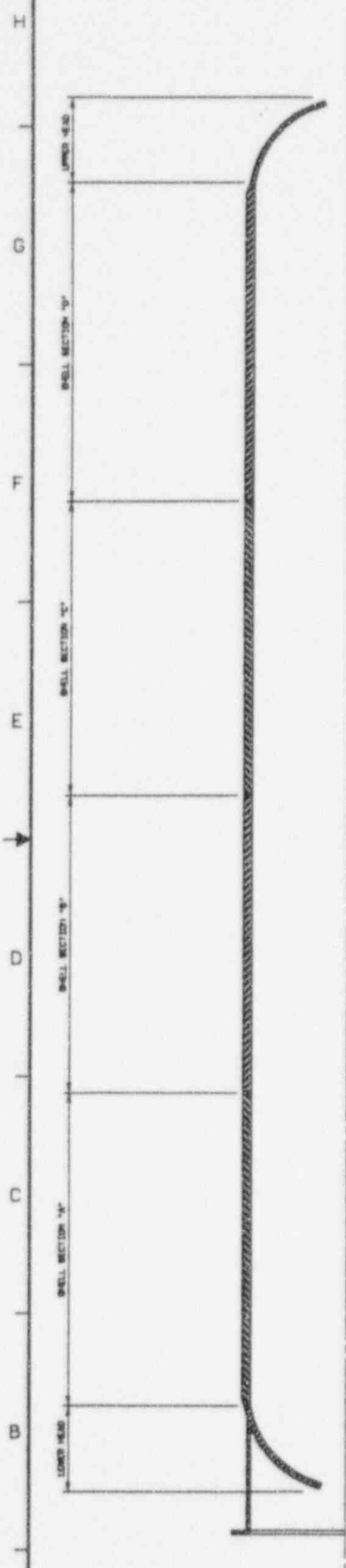
REACTOR COOLANT PUMP
 MAIN FLANGE BOLT DETAIL

REFERENCE DRAWINGS:

- 4-800-00000
- 4-800-00001
- 4-800-00002
- 4-800-00003
- 4-800-00004
- 4-800-00005
- 4-800-00006
- 4-800-00007
- 4-800-00008
- 4-800-00009
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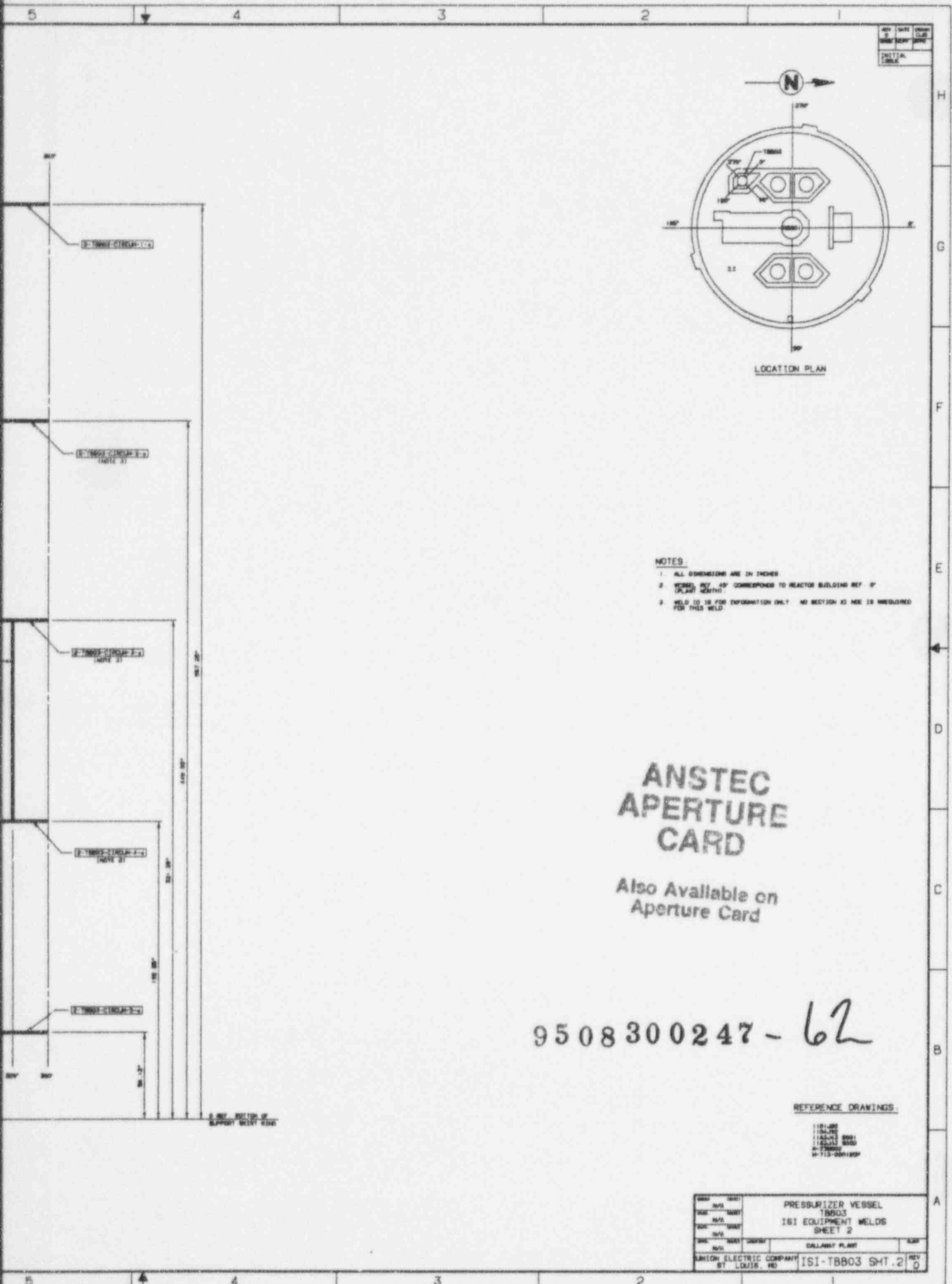
MISCELLANEOUS PUMPS ISI EQUIPMENT WELDS SHEET 1	
DATE	11/20/60
DRAWN BY	J.S.
CHECKED BY	J.S.
APP. NAME	J.S.
APP. SIGN	J.S.
DATE	11/20/60
SCALE	AS SHOWN
DESIGN	CALLAWAY PLANT
WORKS	UNION ELECTRIC COMPANY
ST. LOUIS, MO	ISI-PUMPS SHT1
REV	1

8 7 6
2' LHS FORB1-1S1

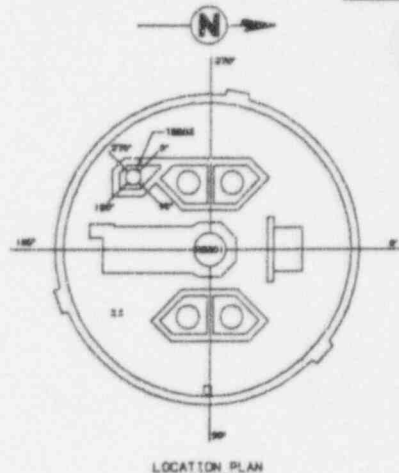


PRESSURIZER VESSEL I.D. ROLL-OUT

8 7 6



REV	DATE	BY	CHKD
INITIAL	DATE	NAME	NAME



LOCATION PLAN

- NOTES**
1. ALL DIMENSIONS ARE IN INCHES.
 2. WELD REF. IS CORRESPOND TO REACTOR BUILDING REF. OF 12,227 (22711).
 3. WELD IS TO BE FOR INFORMATION ONLY. NO SECTION IS TO BE WELDED FOR THIS WELD.

ANSTEC APERTURE CARD

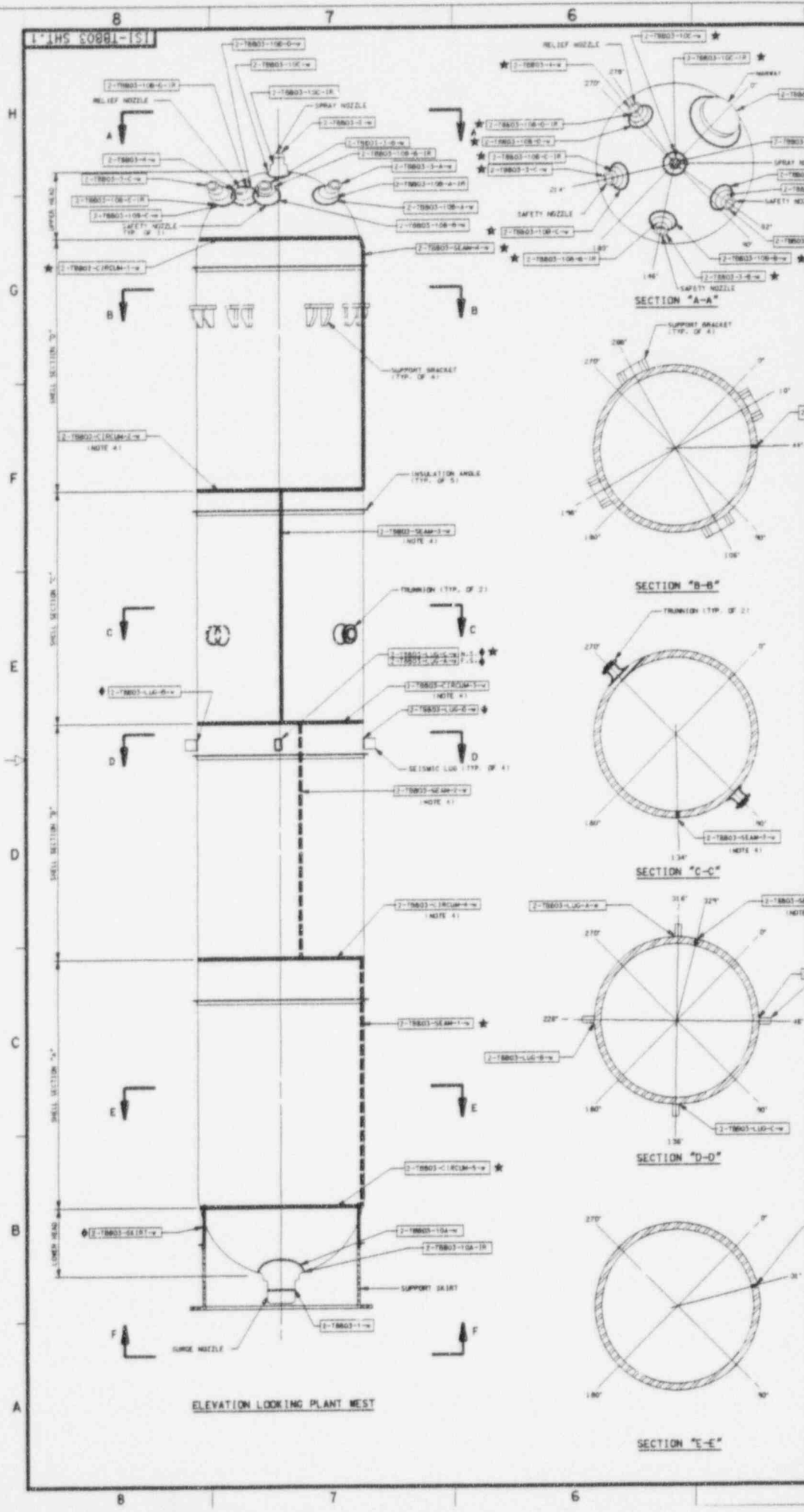
Also Available on
Aperture Card

9508300247-62

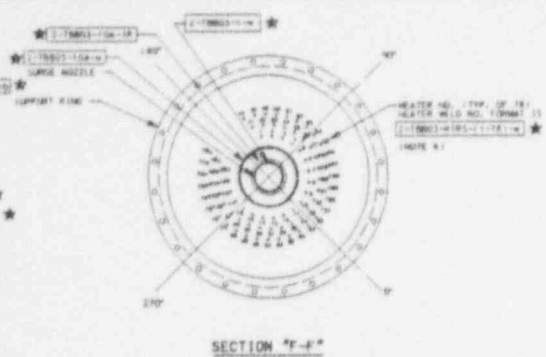
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- 101-000
- 104-000
- 104-010 0001
- 104-010 0002
- 104-010 0003
- 104-010 0004

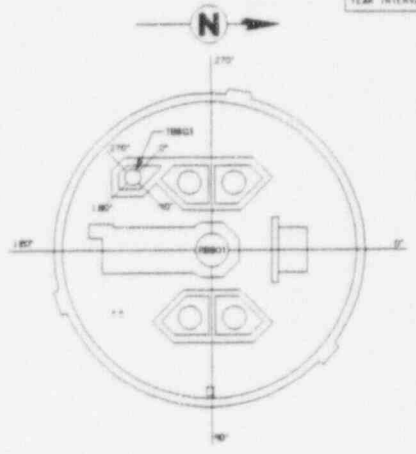
REV		DATE		BY		CHKD	
INITIAL		DATE		NAME		NAME	
PRESSURIZER VESSEL T8B03 ISI EQUIPMENT WELDS SHEET 2				DALLAWY PLAN			
ANSON ELECTRIC COMPANY ST. LOUIS, MO				ISI-T8B03 SHT. 2			



REV. 10/15/1984
 TBB03
 151 EQUIPMENT WELDS
 SHEET 1 OF 1
 ISSUED FOR
 DESIGN OF A
 YEAR INTERVAL



SECTION "F-F"



LOCATION PLAN

DEVELOPED WELD LENGTHS			
WELD NUMBER	WELD LENGTH	WELD NUMBER	WELD LENGTH
2-TBB03-CIRCUM-1-w	287.48	2-TBB03-SEAM-1-w	138.25
2-TBB03-CIRCUM-2-w	287.48	2-TBB03-SEAM-2-w	273.32
2-TBB03-CIRCUM-3-w	287.48	2-TBB03-SEAM-3-w	46.34
2-TBB03-CIRCUM-4-w	287.48	2-TBB03-SEAM-4-w	15.96
2-TBB03-CIRCUM-5-w	287.48	2-TBB03-SEAM-5-w	22.62
2-TBB03-TRIS-11 (TYP) TRIS-1-w	5.50	2-TBB03-SEAM-6-w	22.75
2-TBB03-LUG-A-w	18.84	2-TBB03-SEAM-7-w	25.29
2-TBB03-LUG-B-w	18.00	2-TBB03-SEAM-8-w	22.62
2-TBB03-LUG-C-w	18.00	2-TBB03-SEAM-9-w	76.97
2-TBB03-LUG-D-w	18.84	2-TBB03-SEAM-10-w	47.12
2-TBB03-SEAM-1-w	56.12	2-TBB03-SEAM-11-w	47.12
2-TBB03-SEAM-2-w	225.13	2-TBB03-SEAM-12-w	47.12
2-TBB03-SEAM-3-w	127.62	2-TBB03-SEAM-13-w	47.12

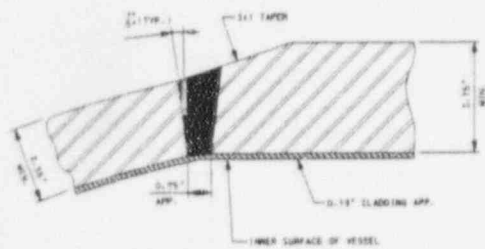
NOTES:

1. WELD LENGTHS ARE CALCULATED AS MEASURED ALONG CENTERLINE OF WELD FROM CENTERLINE TO CENTERLINE OF ADJACENT WELDS ON OUTER SURFACE OF VESSEL.
2. ALL DIMENSIONS ARE IN INCHES.
3. VESSEL REF. 45° CORRESPONDS TO REACTOR BUILDING REF. 0° (PLANT NORTH).
4. WELD ID. IS FOR INFORMATION ONLY. NO SECTION XI AND II REQUIRED FOR INSPECT WELDS.
5. WELDS OR COMPONENTS WHICH HAVE BEEN SELECTED FOR INSERVICE INSPECTION.
6. A MINIMUM OF 100% OF THE HEATER PENETRATION WELDS REQUIRE INSERVICE INSPECTION.
7. ⊙ DENOTES INTERNALLY WELDED ATTACHMENTS.

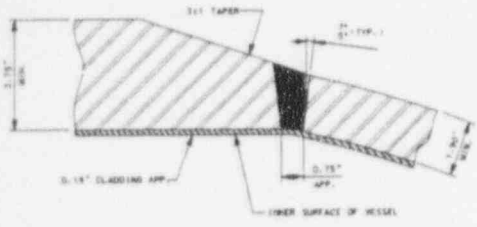
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- 1104-243
- 1181-413 1001
- 1181-413 1002
- W-1181-2002
- W-113-000/20P

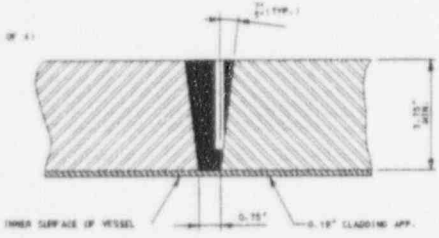
9508300247 - 63



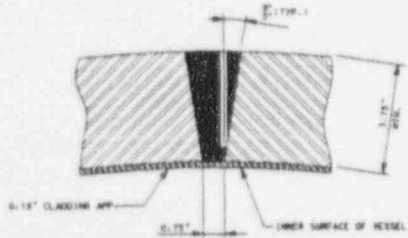
DETAIL OF LOWER HEAD TO SHELL CIRCUMFERENTIAL WELD (2-TBB03-CIRCUM-5-w)



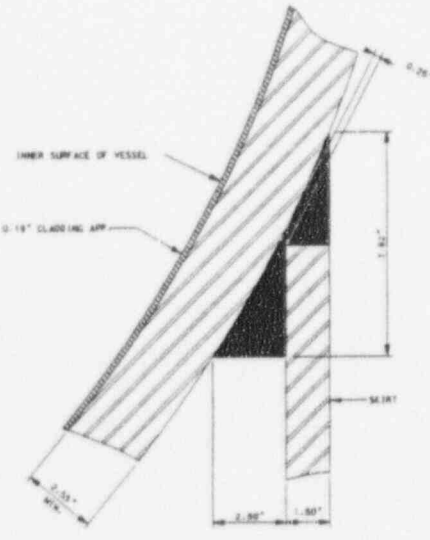
DETAIL OF UPPER HEAD TO SHELL CIRCUMFERENTIAL WELD (2-TBB03-CIRCUM-1-w)



DETAIL OF CIRCUMFERENTIAL SHELL WELD (TYP. FOR 2-TBB03-CIRCUM-2-w, 2-TBB03-CIRCUM-3-w & 2-TBB03-CIRCUM-4-w) (NOTE 4)



DETAIL OF LONGITUDINAL SHELL WELD (TYP. FOR 2-TBB03-SEAM-1-w, 2-TBB03-SEAM-2-w, 2-TBB03-SEAM-3-w & 2-TBB03-SEAM-4-w)



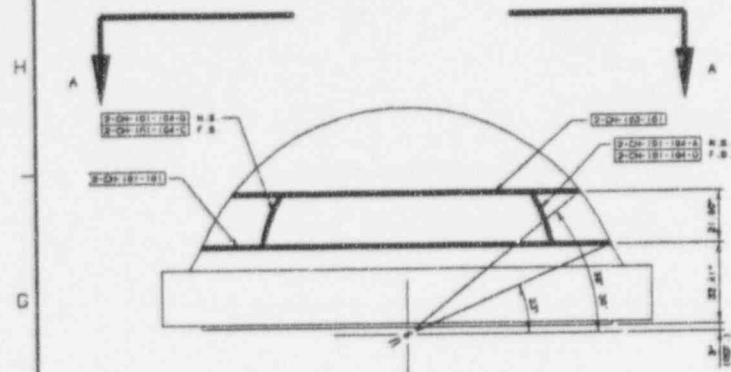
DETAIL OF SKIRT TO VESSEL WELD (2-TBB03-SKIRT-w)

ANSTEC APERTURE CARD

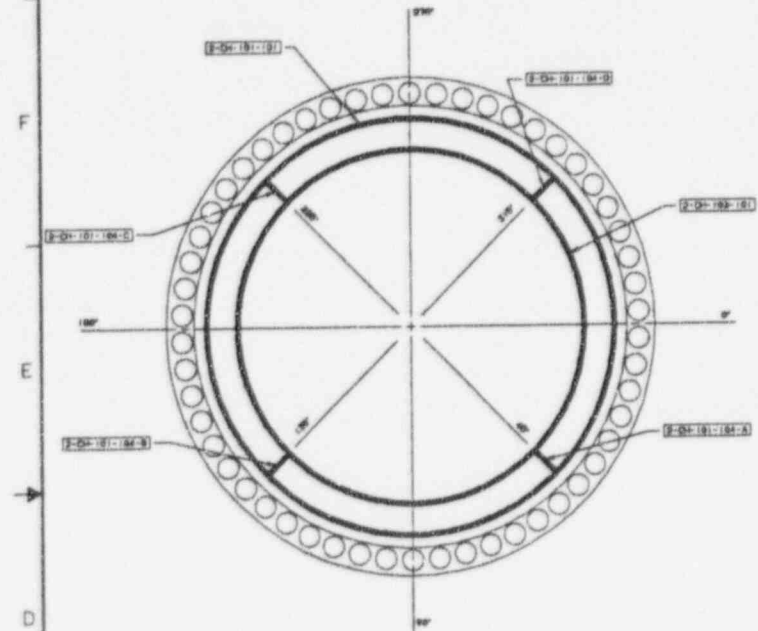
Also Available on Aperture Card

PRESSURIZER VESSEL		TBB03	
151 EQUIPMENT WELDS		SHEET 1	
DATE	BY	DATE	BY
10/15/84	WJG	10/15/84	WJG
CALLAWAY PLANT		CALLAWAY PLANT	
SANTON ELECTRIC COMPANY		SANTON ELECTRIC COMPANY	
ST. LOUIS, MO		ST. LOUIS, MO	
151-TBB03 SHT.1		151-TBB03 SHT.1	

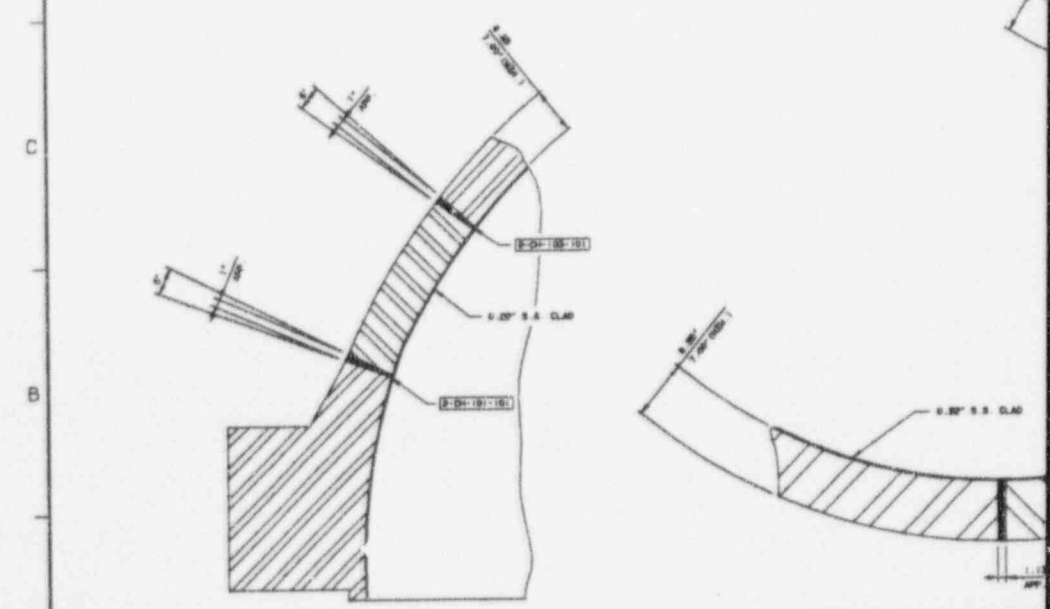
8 7 6
P.LHS 10999-151



ELEVATION OF REACTOR VESSEL CLOSURE HEAD



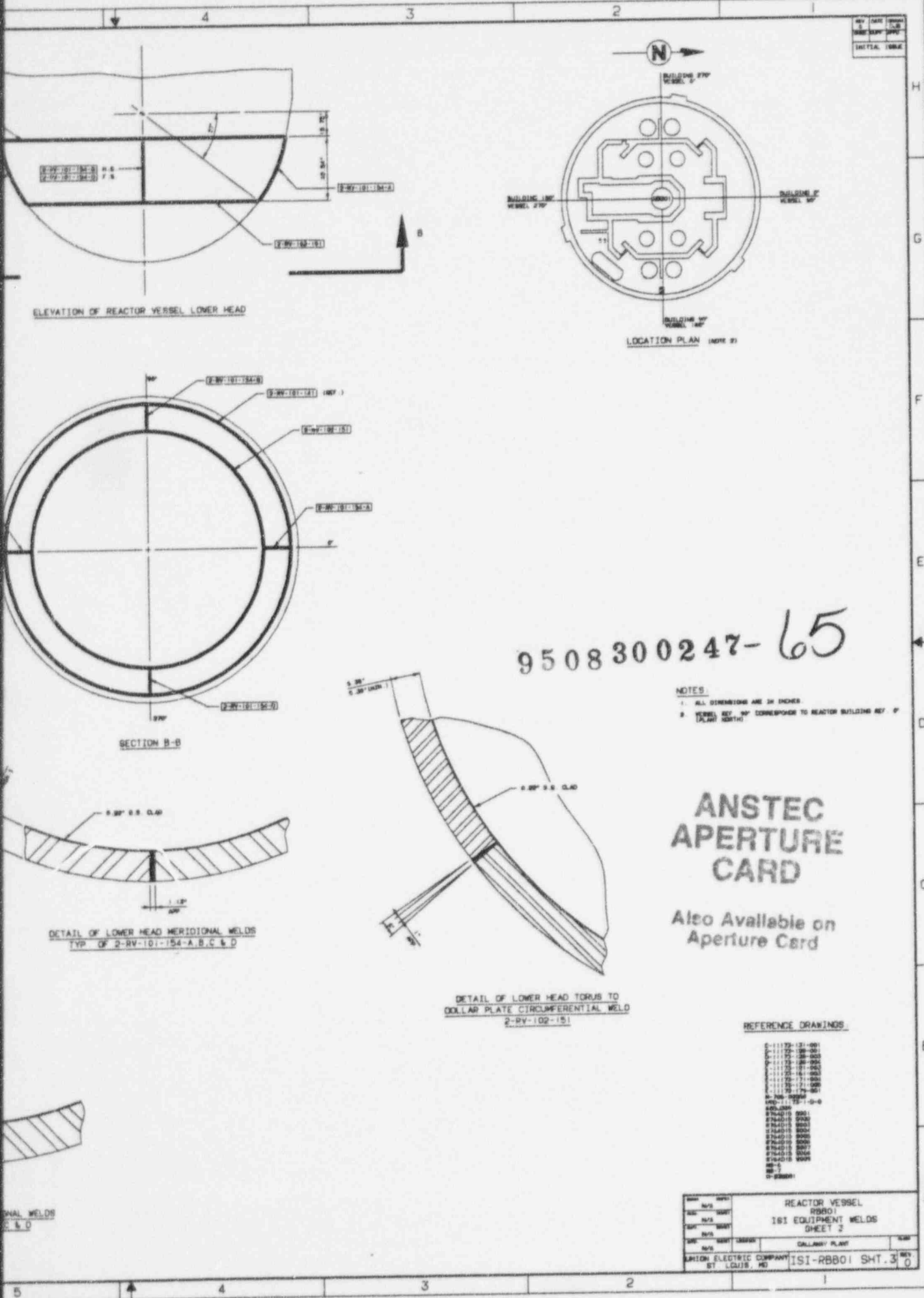
SECTION A-A



DETAIL OF CLOSURE HEAD CIRCUMFERENTIAL WELDS
2-CH-101-101 & 2-CH-101-104

DETAIL OF CLOSURE HEAD MERIDIONAL WELD
TYP OF 2-CH-101-104-A

8 7 6



REV	DATE	BY	CHKD
1	10/15/54	W.P.	W.P.
INITIALS: W.P.			

ELEVATION OF REACTOR VESSEL LOWER HEAD

LOCATION PLAN (NOTE 2)

SECTION B-B

DETAIL OF LOWER HEAD MERIDIONAL WELDS
TYP. OF 2-RV-101-154-A, B, C & D

DETAIL OF LOWER HEAD TORUS TO
COLLAR PLATE CIRCUMFERENTIAL WELD
2-RV-102-151

9508300247-65

- NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
 2. VESSEL REF. NO. CORRESPOND TO REACTOR BUILDING REF. # (PLAN NORTH)

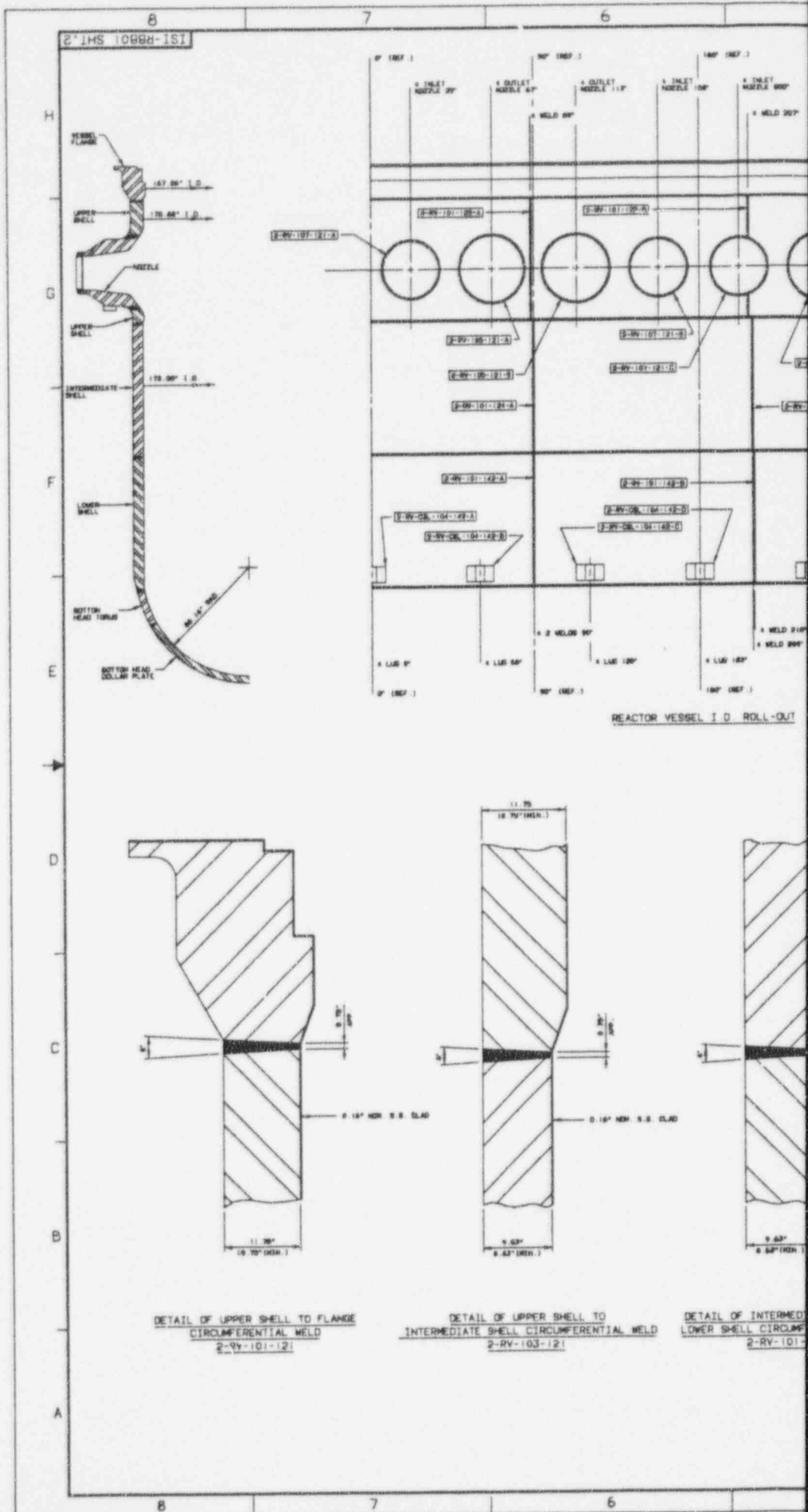
**ANSTEC
APERTURE
CARD**

Also Available on
Aperture Card

REFERENCE DRAWINGS

- 0-11170-131-001
- 0-11170-131-002
- 0-11170-131-003
- 0-11170-131-004
- 0-11170-131-005
- 0-11170-131-006
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REV	DATE	BY	CHKD
1	10/15/54	W.P.	W.P.
INITIALS: W.P.			
REACTOR VESSEL RBB01 151 EQUIPMENT WELDS SHEET 2			
REV	DATE	BY	CHKD
1	10/15/54	W.P.	W.P.
CALLAWAY PLANT			
UNION ELECTRIC COMPANY ST. LOUIS, MO			151-RBB01 SHT. 3 REV. 0



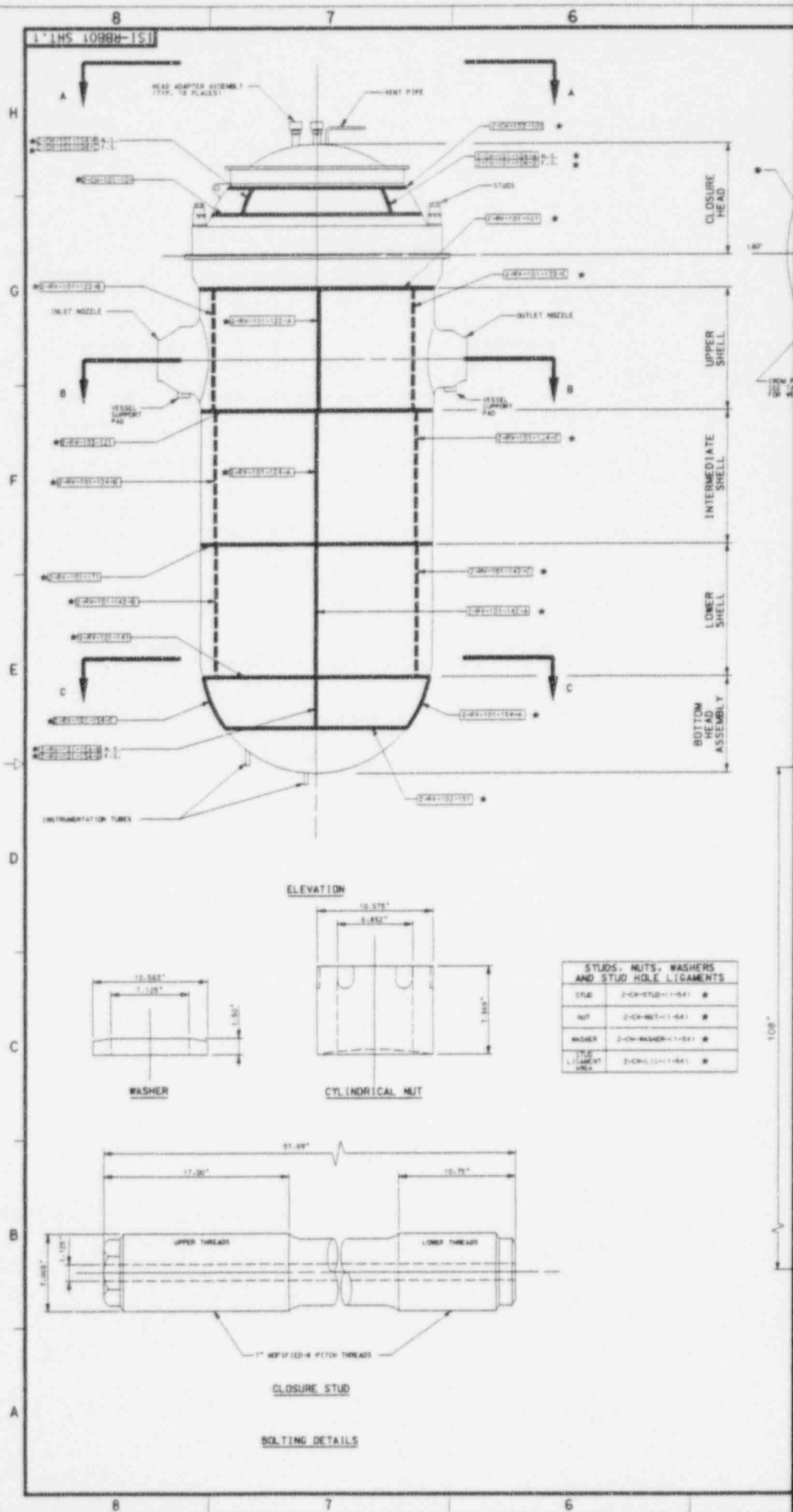
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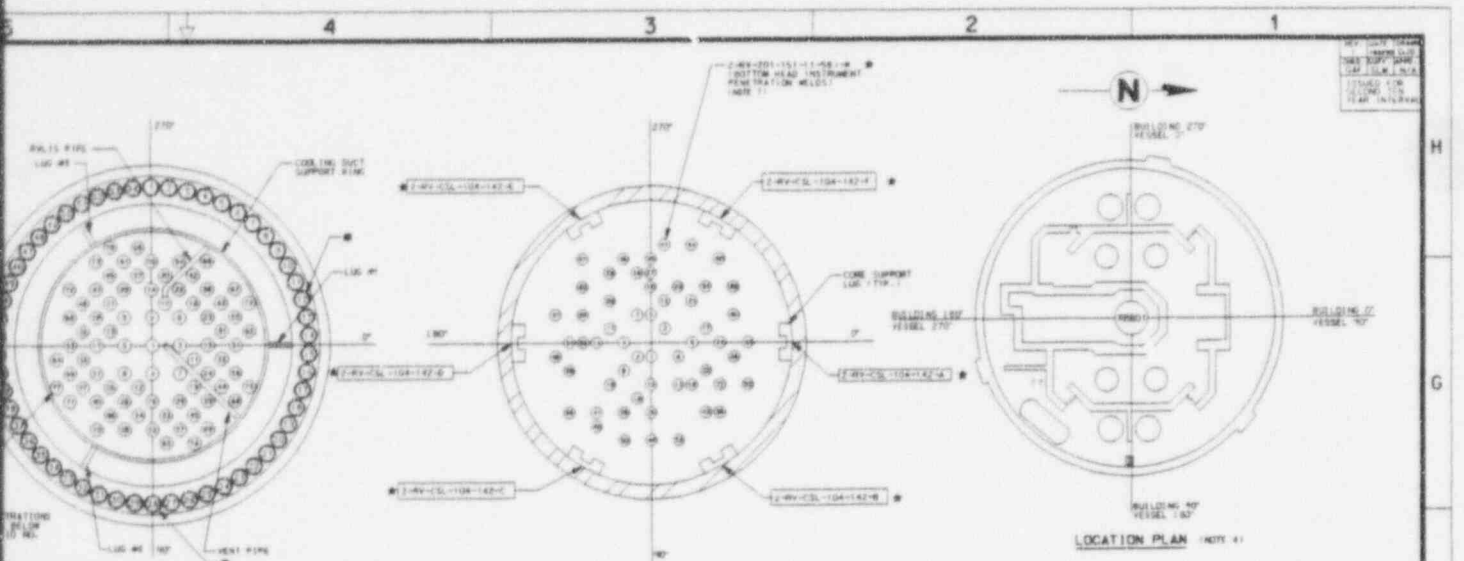
REACTOR VESSEL I.D. ROLL-OUT

DETAIL OF UPPER SHELL TO FLANGE
CIRCUMFERENTIAL WELD
2-RV-101-12

DETAIL OF UPPER SHELL TO
INTERMEDIATE SHELL CIRCUMFERENTIAL WELD
2-RV-103-12

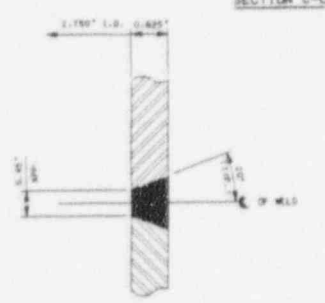
DETAIL OF INTERMED
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2-RV-101-10





CROWN WELDS

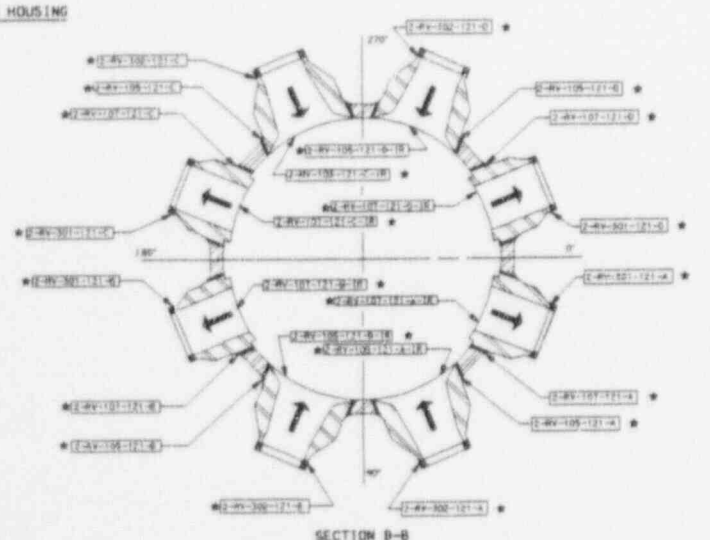
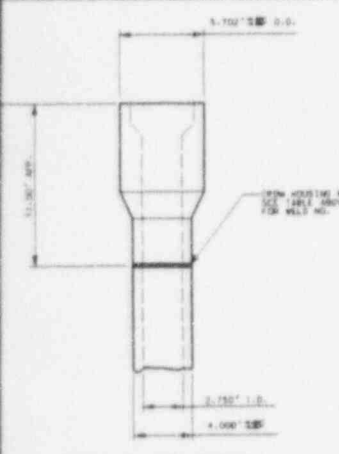
WELD NO.	WELD DESCRIPTION	WELD LENGTH (IN)	WELD DESCRIPTION	WELD LENGTH (IN)
1	2-CW-101-121	536.84	2-CW-101-112	536.84
2	2-CW-101-122	536.84	2-CW-101-113	536.84
3	2-CW-101-123	536.84	2-CW-101-114	536.84
4	2-CW-101-124	536.84	2-CW-101-115	536.84
5	2-CW-101-125	536.84	2-CW-101-116	536.84
6	2-CW-101-126	536.84	2-CW-101-117	536.84
7	2-CW-101-127	536.84	2-CW-101-118	536.84
8	2-CW-101-128	536.84	2-CW-101-119	536.84
9	2-CW-101-129	536.84	2-CW-101-120	536.84
10	2-CW-101-130	536.84	2-CW-101-121	536.84
11	2-CW-101-131	536.84	2-CW-101-122	536.84
12	2-CW-101-132	536.84	2-CW-101-123	536.84
13	2-CW-101-133	536.84	2-CW-101-124	536.84
14	2-CW-101-134	536.84	2-CW-101-125	536.84
15	2-CW-101-135	536.84	2-CW-101-126	536.84
16	2-CW-101-136	536.84	2-CW-101-127	536.84
17	2-CW-101-137	536.84	2-CW-101-128	536.84
18	2-CW-101-138	536.84	2-CW-101-129	536.84
19	2-CW-101-139	536.84	2-CW-101-130	536.84
20	2-CW-101-140	536.84	2-CW-101-131	536.84



DEVELOPED WELD LENGTHS

WELD NUMBER	WELD LENGTH	WELD NUMBER	WELD LENGTH
2-CW-101-101	496.48	2-WV-103-121	536.84
2-CW-101-104-A	23.20	2-WV-104-142-A	71.50
2-CW-101-104-B	23.20	2-WV-104-142-B	71.50
2-CW-101-104-C	23.20	2-WV-104-142-C	71.50
2-CW-101-104-D	23.20	2-WV-104-142-D	71.50
2-WV-101-121	536.84	2-WV-104-142-E	71.50
2-WV-101-122-A	88.08	2-WV-104-142-F	71.50
2-WV-101-122-B	88.08	2-WV-104-142-G	71.50
2-WV-101-122-C	88.08	2-WV-104-142-H	71.50
2-WV-101-122-D	88.08	2-WV-104-142-I	71.50
2-WV-101-122-E	88.08	2-WV-104-142-J	71.50
2-WV-101-122-F	88.08	2-WV-104-142-K	71.50
2-WV-101-122-G	88.08	2-WV-104-142-L	71.50
2-WV-101-122-H	88.08	2-WV-104-142-M	71.50
2-WV-101-122-I	88.08	2-WV-104-142-N	71.50
2-WV-101-122-J	88.08	2-WV-104-142-O	71.50
2-WV-101-122-K	88.08	2-WV-104-142-P	71.50
2-WV-101-122-L	88.08	2-WV-104-142-Q	71.50
2-WV-101-122-M	88.08	2-WV-104-142-R	71.50
2-WV-101-122-N	88.08	2-WV-104-142-S	71.50
2-WV-101-122-O	88.08	2-WV-104-142-T	71.50
2-WV-101-122-P	88.08	2-WV-104-142-U	71.50
2-WV-101-122-Q	88.08	2-WV-104-142-V	71.50
2-WV-101-122-R	88.08	2-WV-104-142-W	71.50
2-WV-101-122-S	88.08	2-WV-104-142-X	71.50
2-WV-101-122-T	88.08	2-WV-104-142-Y	71.50
2-WV-101-122-U	88.08	2-WV-104-142-Z	71.50

- NOTES:**
- WELD LENGTHS ARE CALCULATED AS MEASURED ALONG CENTERLINE OF WELD FROM CENTERLINE TO CENTERLINE OF ADJACENT WELDS ON INNER SURFACE OF VESSEL.
 - A INDICATES WELDS WHICH ARE INTERRUPTED. FORMAT OF DIMENSION IS UPPER LENGTH/LOWER LENGTH.
 - ALL DIMENSIONS ARE IN INCHES.
 - VESSEL REF. NO. CORRESPONDS TO REACTOR BUILDING REF. 0" (76.203" NOMINAL).
 - W SHOWS WELDS OR COMPONENTS WHICH HAVE BEEN SELECTED FOR INSERVICE INSPECTION.
 - PERIPHERAL CROWN HOUSING WELDS ARE LOCATED AT PENETRATIONS 38, 39, 40, 41, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. CROWN HOUSING WELDS SELECTED FOR INSERVICE INSPECTION ARE LOCATED AT PENETRATIONS 87, 71, 74 & 77.
 - A MINIMUM OF 20% OF THE CROWN PENETRATION WELDS AND 75% OF THE BOTTOM HEAD PENETRATION WELDS REQUIRE INSERVICE INSPECTION.



9508300247-67

REFERENCE DRAWINGS:

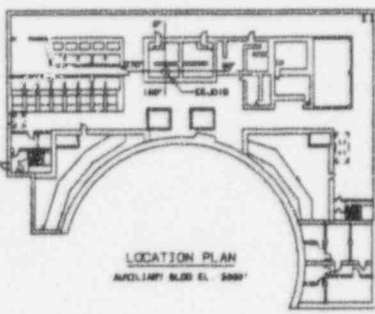
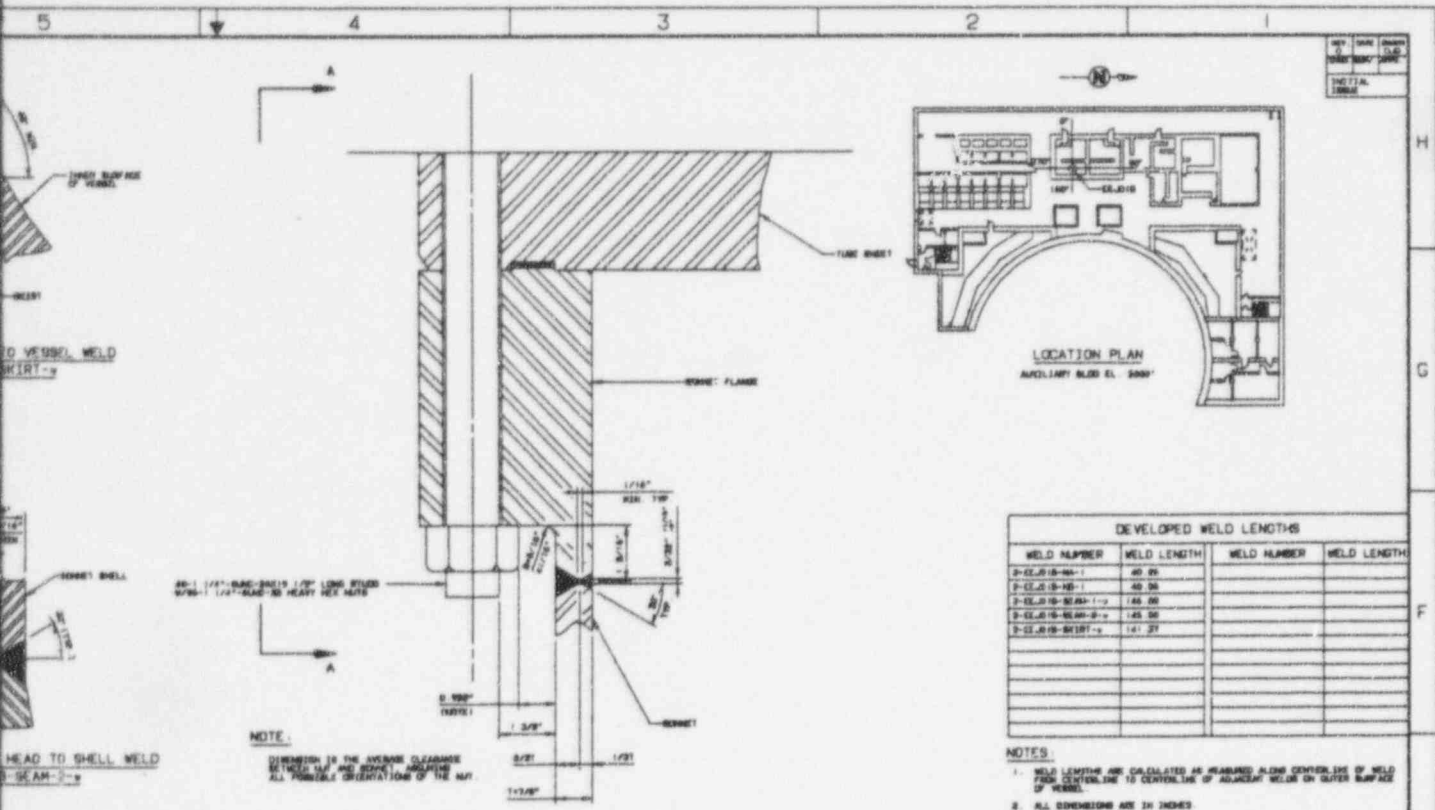
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- E-11175-11-099
- E-11175-11-100

ANSTEC APERTURE CARD

Also Available on Aperture Card

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REV. DATE DRAWN BY
 1007 08/02/78 JMS
 INITIAL
 1008

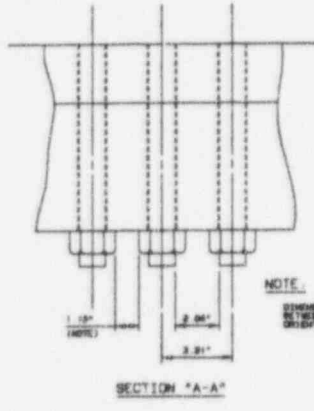
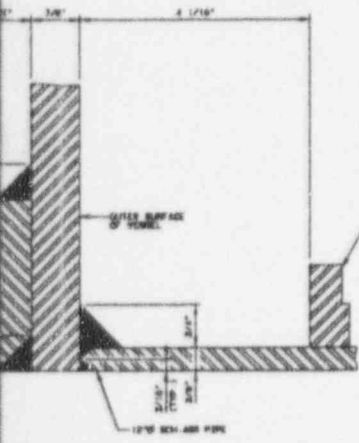


DEVELOPED WELD LENGTHS

WELD NUMBER	WELD LENGTH	WELD NUMBER	WELD LENGTH
2-EEJ01B-NB-1	40.00		
2-EEJ01B-NB-1	40.00		
2-EEJ01B-SEAM-1	145.00		
2-EEJ01B-SEAM-2	145.00		
2-EEJ01B-SHIRT-1	141.27		

NOTES:
 1. WELD LENGTHS ARE CALCULATED AS MEASURED ALONG CENTERLINE OF WELD FROM CENTERLINE TO CENTERLINE OF ADJACENT WELDS ON OUTER SURFACE OF VESSEL.
 2. ALL DIMENSIONS ARE IN INCHES

DETAIL OF FLANGE TO TUBE SHEET WELDING AND BONNET TO BONNET FLANGE WELD
 2-EEJ01B-SEAM-1



ANSTEC APERTURE CARD

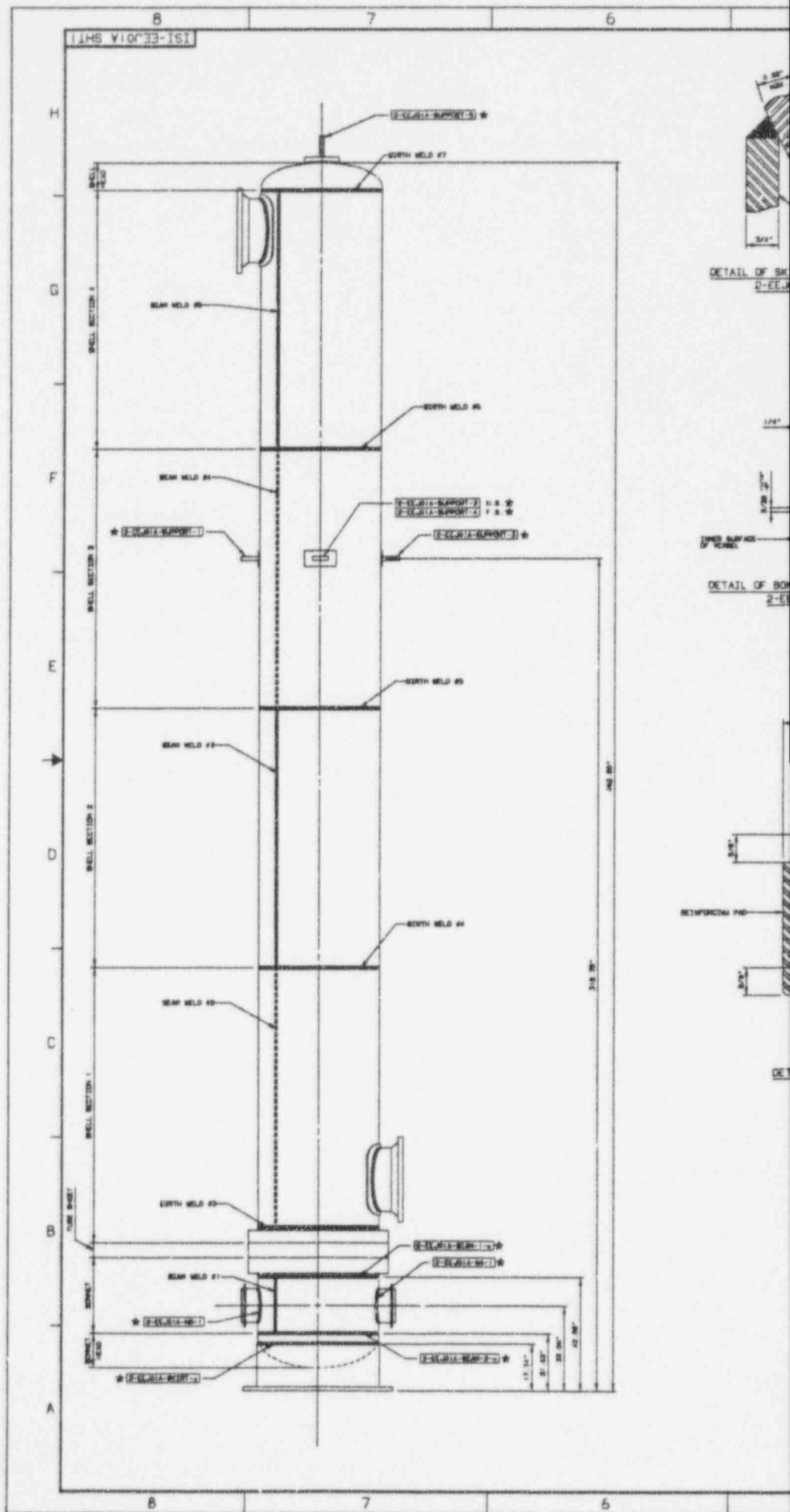
Also Available on Aperture Card

9508300247 - 68

REFERENCE DRAWINGS

- 2-EEJ01
- 2-EEJ01-NB-1
- 2-EEJ01-NB-2
- 2-EEJ01-SEAM-1
- 2-EEJ01-SEAM-2
- 2-EEJ01-SHIRT-1

NO.	DATE	BY	CHKD.	REV.	DATE	BY	CHKD.
1007	08/02/78	JMS		1			
HWR HEAT EXCHANGER "B" EEJ01B 191 EQUIPMENT WELDS SHEET 1							
GALLWAY PLANT							
ANSON ELECTRIC COMPANY ST. LOUIS, MO							
191-EEJ01B SHT 1							

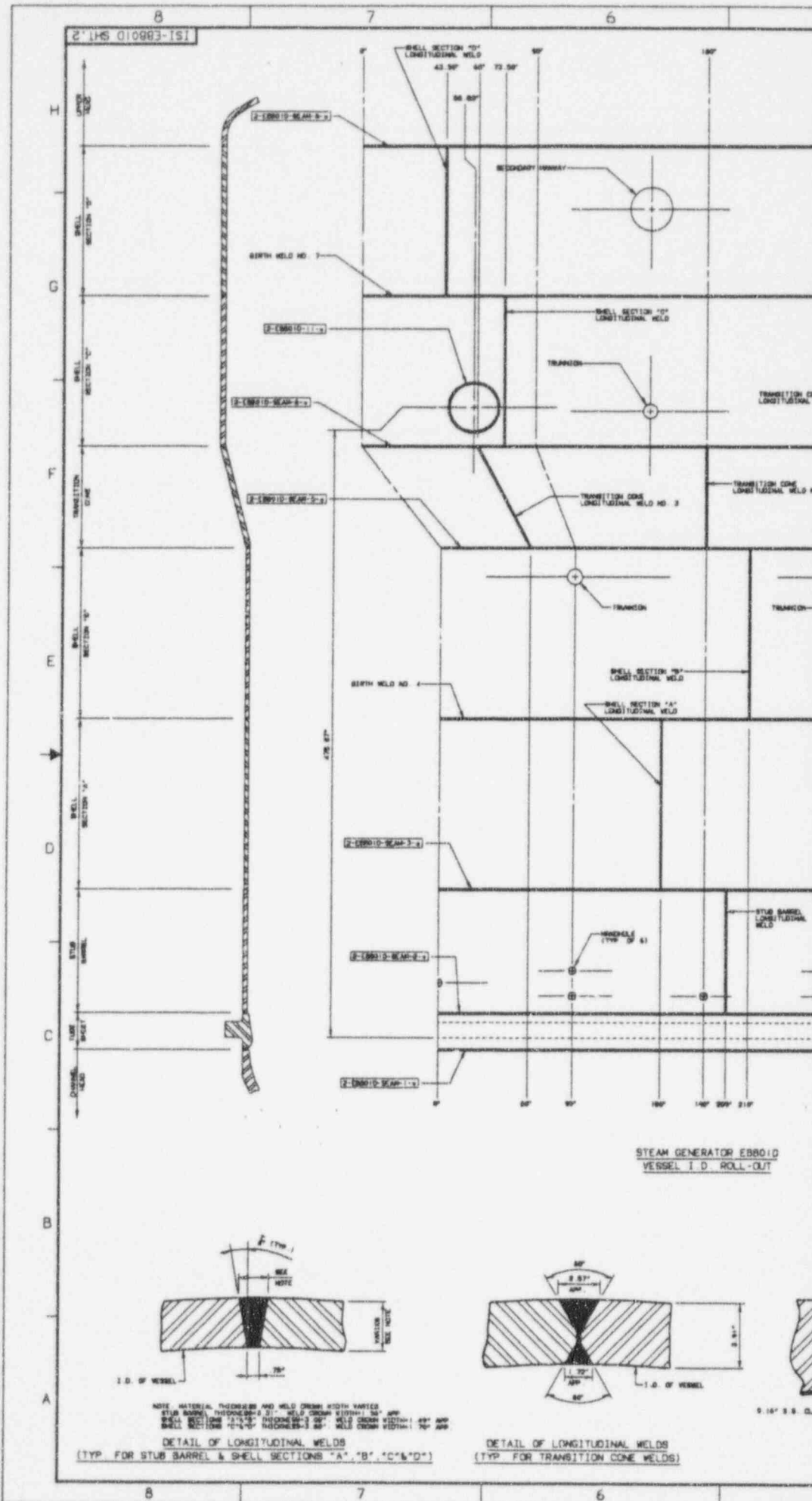


DETAIL OF SK
2-EE

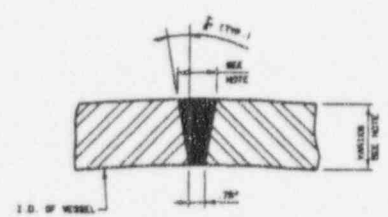
DETAIL OF BO
2-EE

REINFORCEMENT PAD

DE

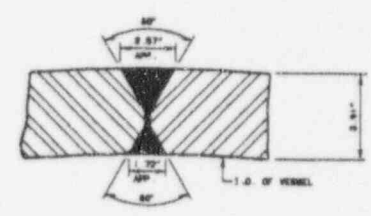


STEAM GENERATOR EBROID
VESSEL I.D. ROLL-OUT



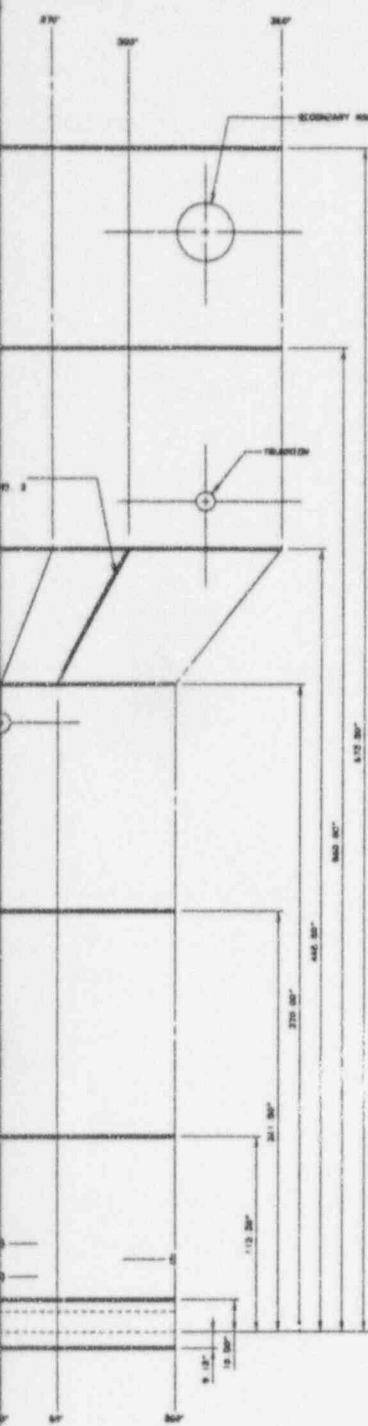
NOTE: MATERIAL THICKNESS AND WELD CROWN WIDTH VARIES
 STUB BARREL THICKNESS=2.31" WELD CROWN WIDTH=1.54" WID
 SHELL SECTIONS 7'-5" THICKNESS=3.00" WELD CROWN WIDTH=1.49" WID
 SHELL SECTIONS 10'-4" THICKNESS=3.86" WELD CROWN WIDTH=1.70" WID

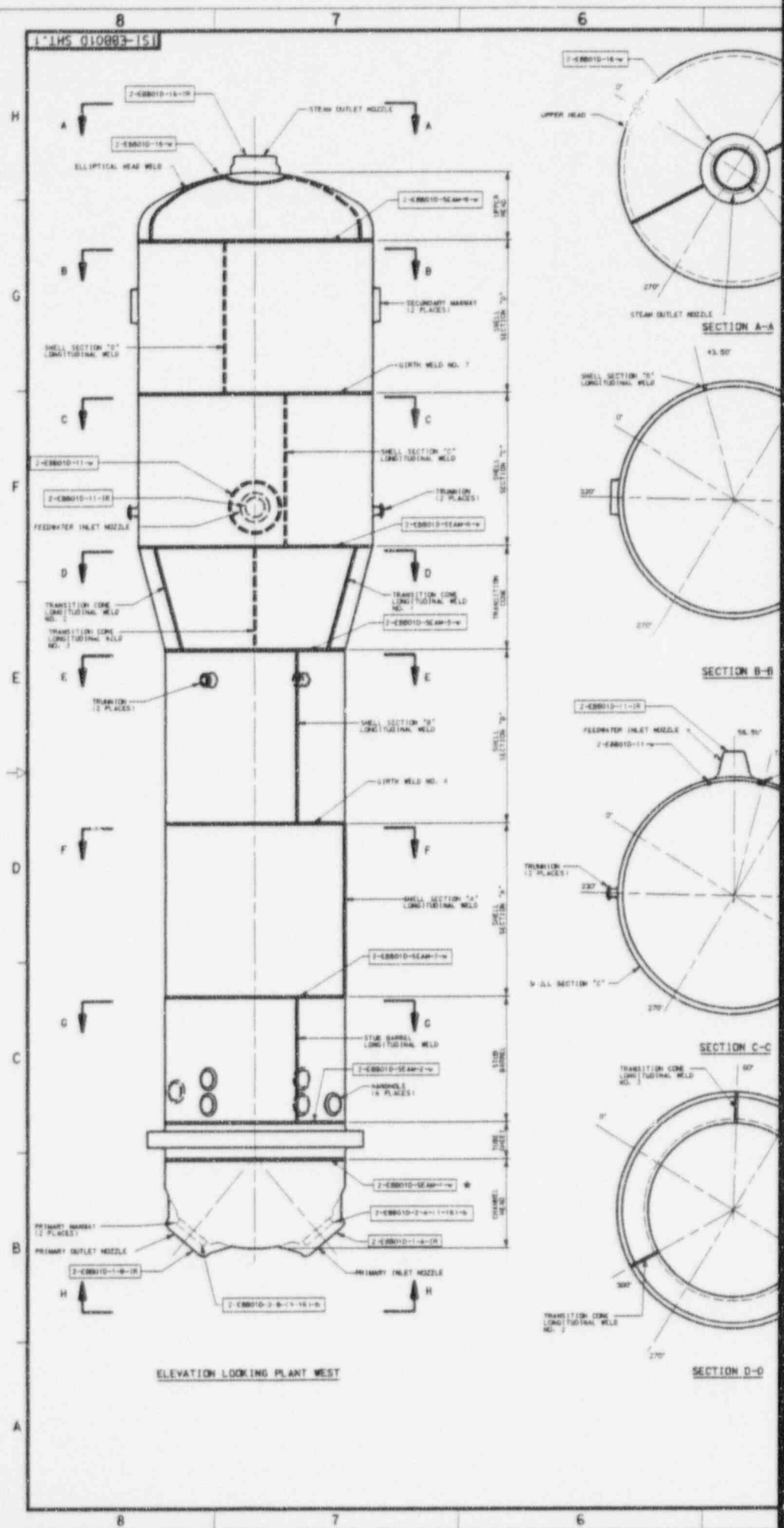
DETAIL OF LONGITUDINAL WELDS
(TYP FOR STUB BARREL & SHELL SECTIONS "A", "B", "C" & "D")

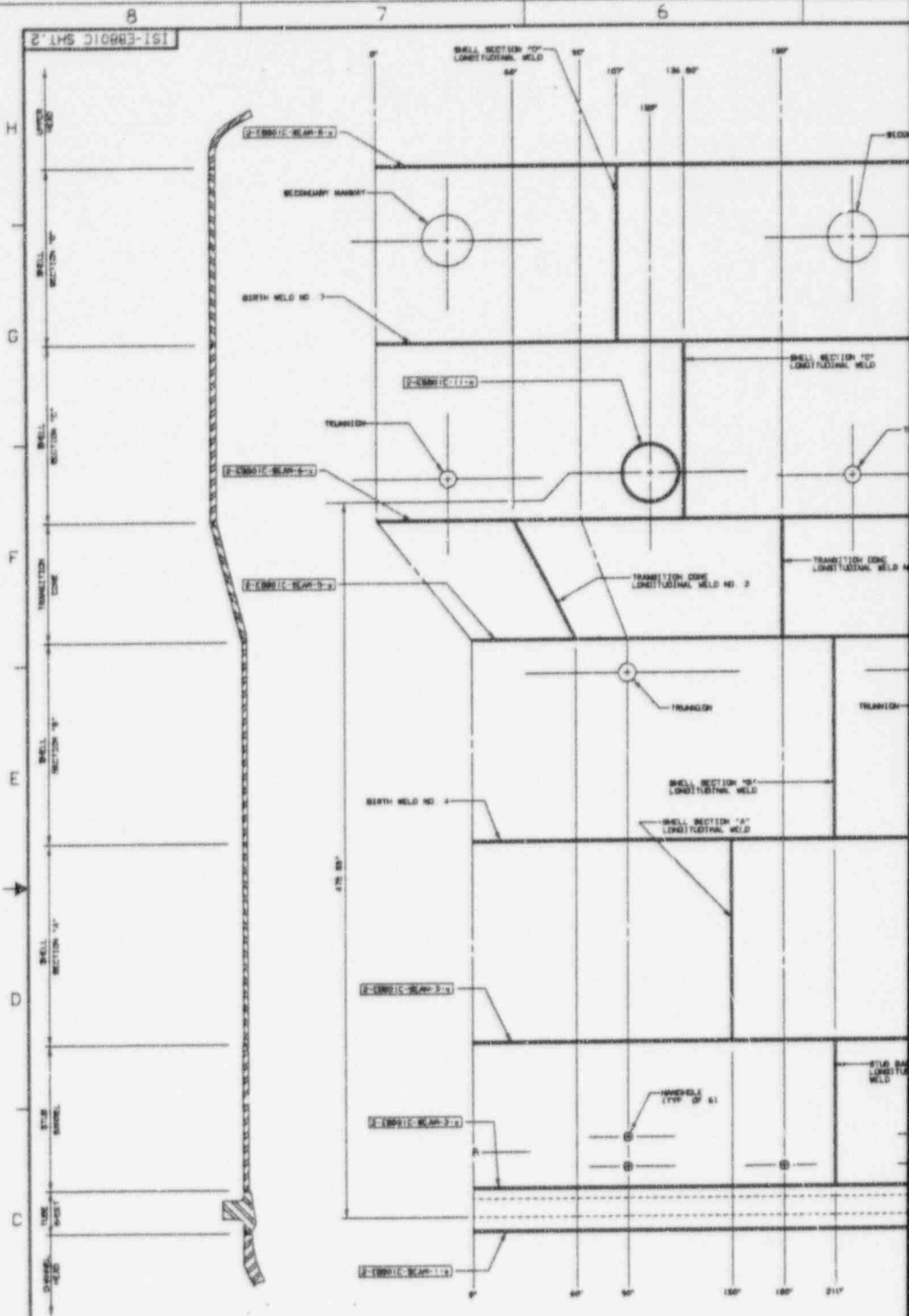


DETAIL OF LONGITUDINAL WELDS
(TYP FOR TRANSITION CONE WELDS)

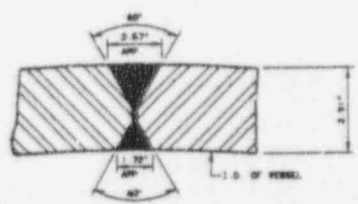
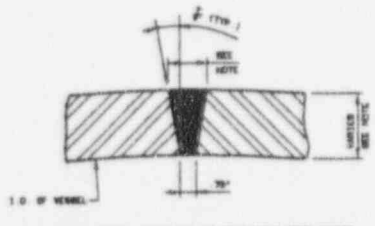
9.14" 2.8. 0.4







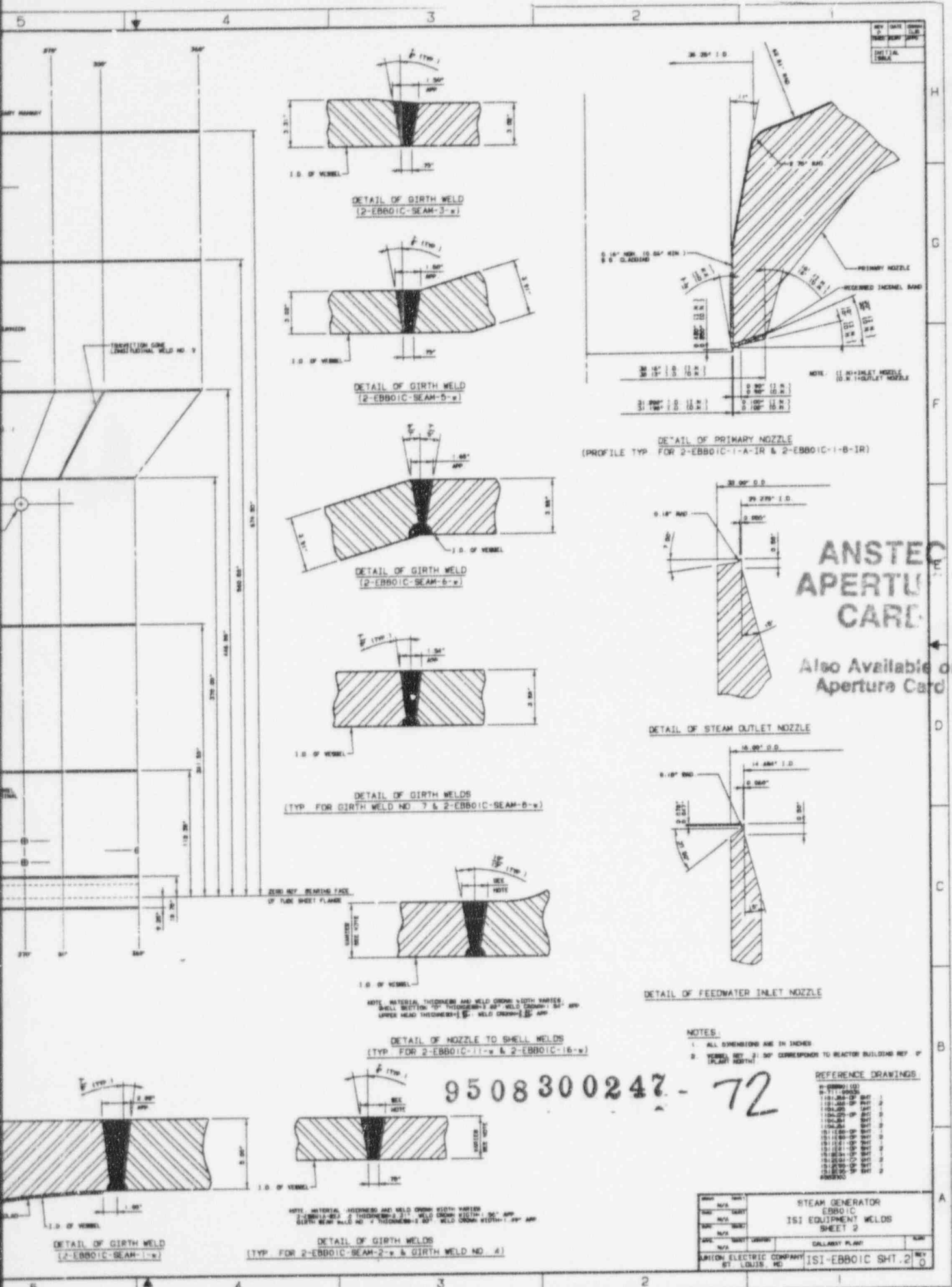
STEAM GENERATOR EBBCIC
VESSEL I D ROLL-OUT



NOTE: MATERIAL THICKNESS AND WELD CROWN WIDTH VALUES
 STUD BARREL THICKNESS=3.31" WELD CROWN WIDTH=1.84"
 SHELL SECTION "A" THICKNESS=3.00" WELD CROWN WIDTH=1.40"
 SHELL SECTION "C" THICKNESS=3.00" WELD CROWN WIDTH=1.40"
 SHELL SECTION "D" THICKNESS=3.00" WELD CROWN WIDTH=1.40"
 DETAIL OF LONGITUDINAL WELDS
 (TYP FOR STUD BARREL & SHELL SECTIONS "A", "B", "C" & "D")

DETAIL OF LONGITUDINAL WELDS
 (TYP FOR TRANSITION CONE WELDS)

8.14" 8.8



REV	DATE	BY	CHKD
1	10/15/72	...	...
2	10/15/72	...	...
3	10/15/72	...	...
4	10/15/72	...	...
5	10/15/72	...	...

ANSTEEL APERTURE CARD
 Also Available on Aperture Card

9508300247-72

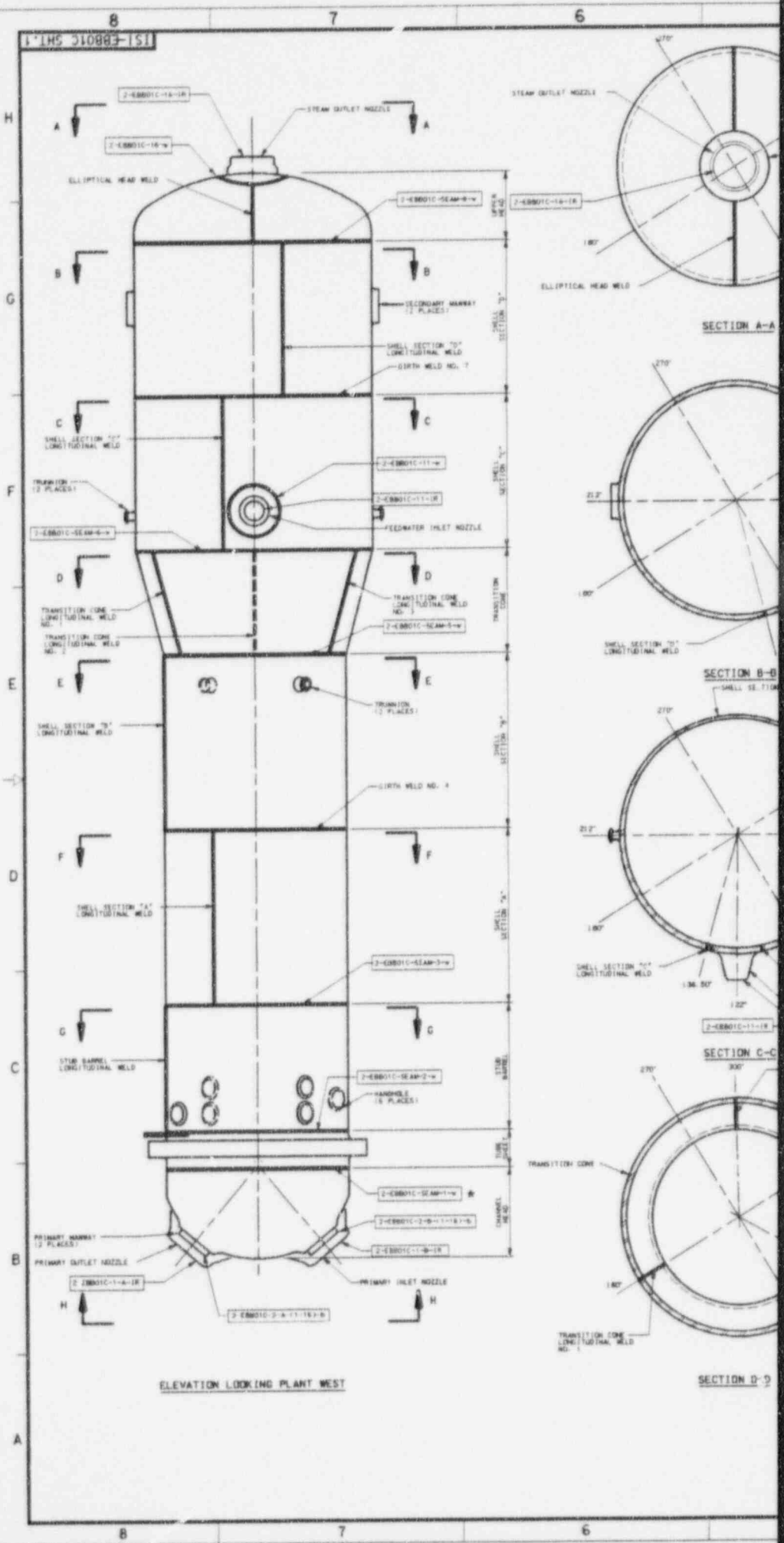
- NOTES:**
- ALL DIMENSIONS ARE IN INCHES
 - VERM. REF. 2: 00" CORRESPOND TO REACTOR BUILDING REF. 0" (PLAN NORTH)

REFERENCE DRAWINGS:

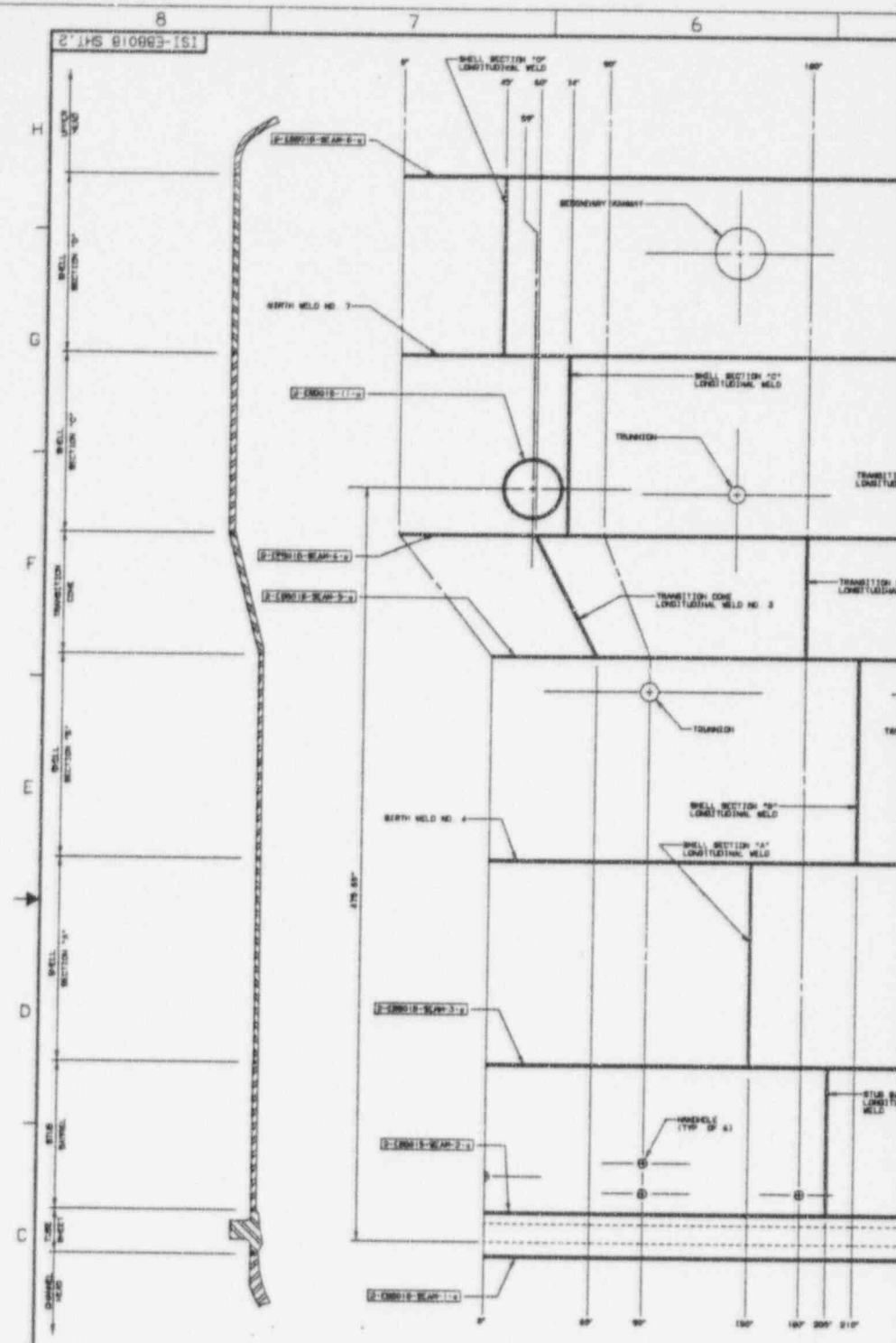
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DATE	REV	BY	CHKD	APP	DESCRIPTION
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10/15/72	2
10/15/72	3
10/15/72	4
10/15/72	5

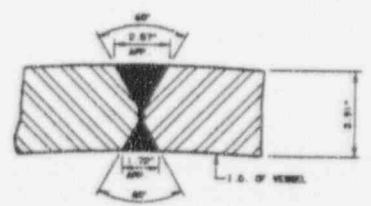
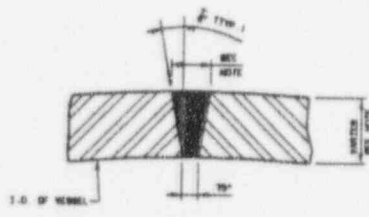
STEAM GENERATOR
 EBBOIC
 ISI EQUIPMENT WELDS
 SHEET 2
 CALLAWAY PLANT
 WESTINGHOUSE ELECTRIC COMPANY
 PITTSBURGH, PA.
 ISI-EBBOIC SHT. 2



2. IHS 810008 SH. 2



STEAM GENERATOR EBB018
VESSEL I D ROLL-OUT

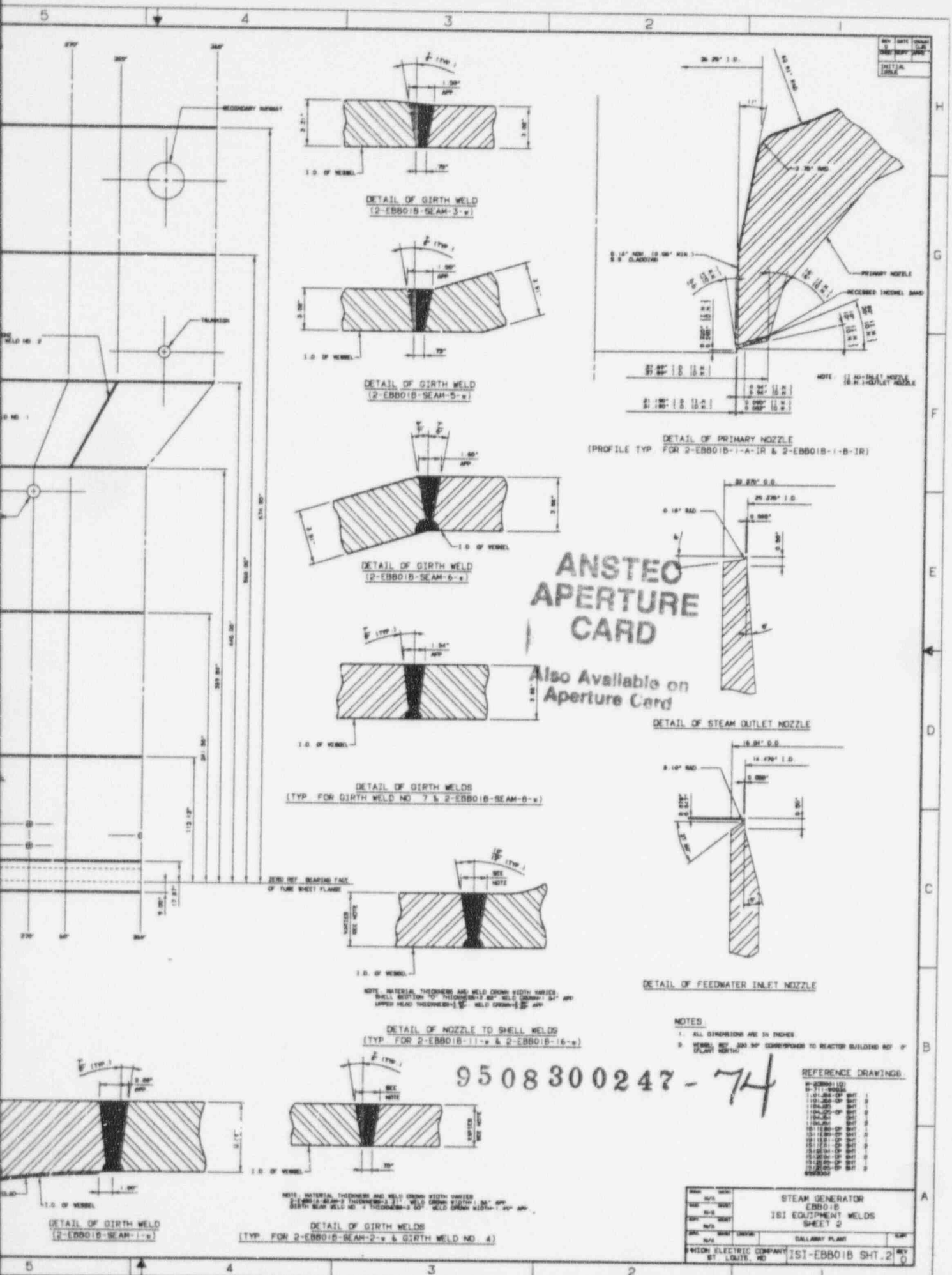


NOTE: MATERIAL THICKNESS AND WELD CROWN WIDTH VARIES.
 STUD BARREL: THICKNESS=3.31" WELD CROWN WIDTH=1.80" AND
 SHELL SECTIONS "A" & "B": THICKNESS=3.00" WELD CROWN WIDTH=1.40" AND
 SHELL SECTIONS "C" & "D": THICKNESS=3.80" WELD CROWN WIDTH=1.80" AND

DETAIL OF LONGITUDINAL WELDS
(TYP FOR STUD BARREL & SHELL SECTIONS "A", "B", "C" & "D")

DETAIL OF LONGITUDINAL WELDS
(TYP FOR TRANSITION CONE WELDS)

8 7 6



DETAIL OF GIRTH WELD
(2-EBBO1B-SEAM-3-w)

DETAIL OF GIRTH WELD
(2-EBBO1B-SEAM-5-w)

DETAIL OF GIRTH WELD
(2-EBBO1B-SEAM-6-w)

DETAIL OF GIRTH WELDS
(TYP FOR GIRTH WELD NO 7 & 2-EBBO1B-SEAM-8-w)

DETAIL OF NOZZLE TO SHELL WELDS
(TYP FOR 2-EBBO1B-11-w & 2-EBBO1B-16-w)

DETAIL OF GIRTH WELD
(2-EBBO1B-SEAM-1-w)

DETAIL OF GIRTH WELDS
(TYP FOR 2-EBBO1B-SEAM-2-w & GIRTH WELD NO. 4)

DETAIL OF PRIMARY NOZZLE
(PROFILE TYP FOR 2-EBBO1B-1-A-IR & 2-EBBO1B-1-B-IR)

DETAIL OF STEAM OUTLET NOZZLE

DETAIL OF FEEDWATER INLET NOZZLE

ANSTEO APERTURE CARD
Also Available on Aperture Card

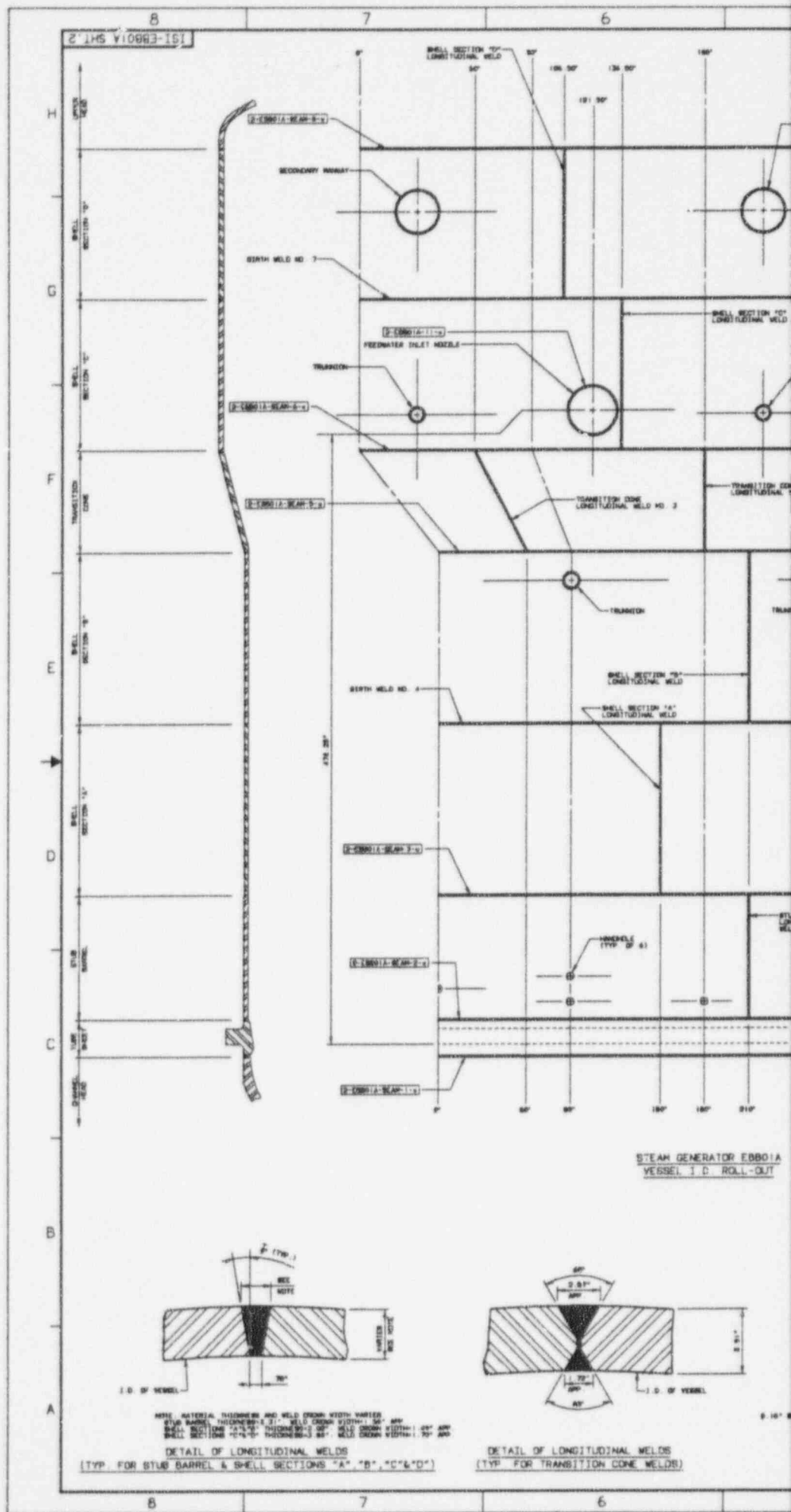
- NOTES
1. ALL DIMENSIONS ARE IN INCHES
 2. VESSEL NET 243 IN" CORRESPOND TO REACTOR BUILDING NET 24" PLANT NORTH

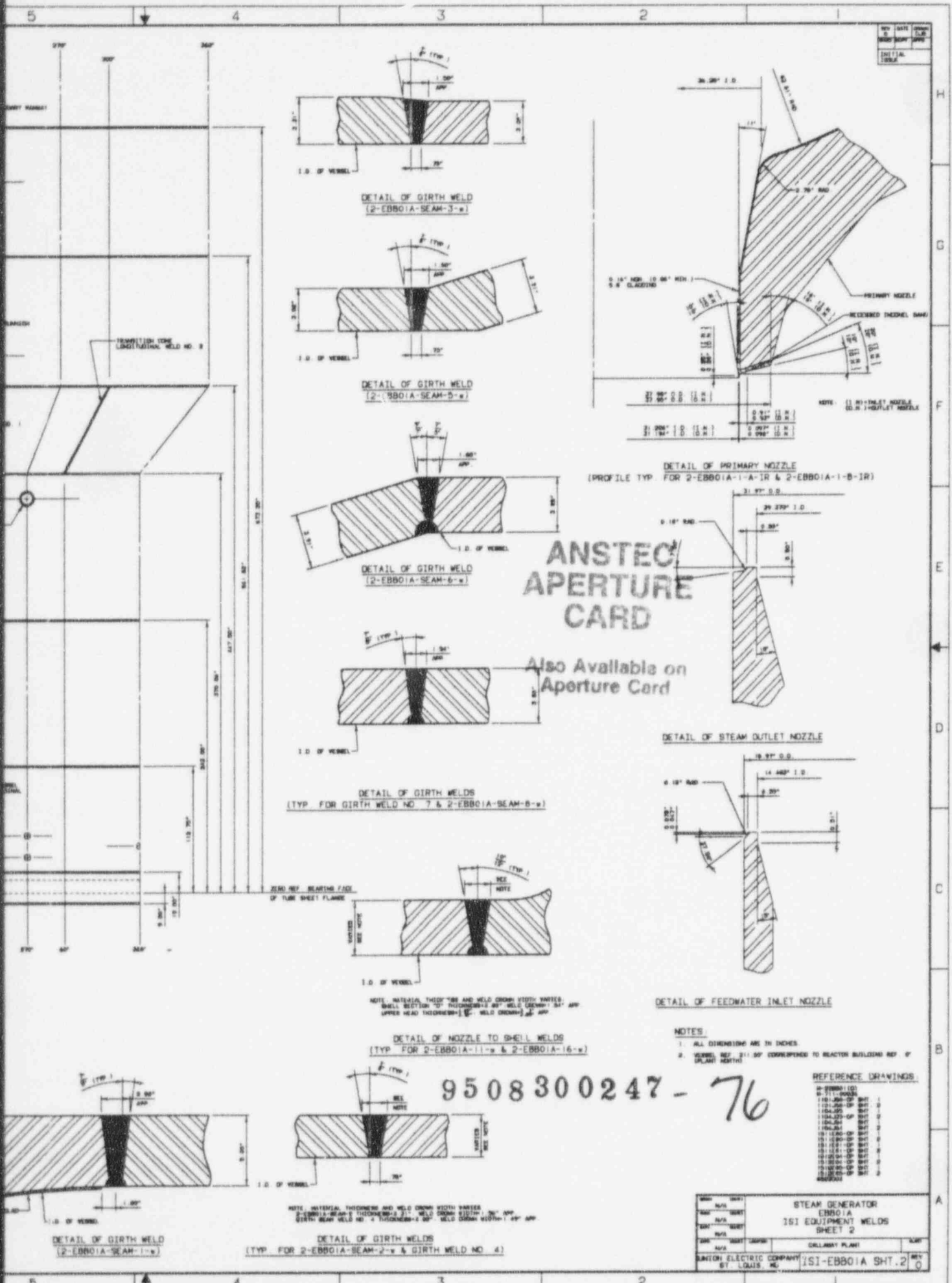
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REV	DATE	BY	CHKD	APP'D
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003	08/11/74	WJH	WJH	WJH
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100	08/11/74	WJH	WJH	WJH

9508300247-74





REV	DATE	BY	CHKD
INITIAL			
100%			

ANSTEC APERTURE CARD

Also Available on Aperture Card

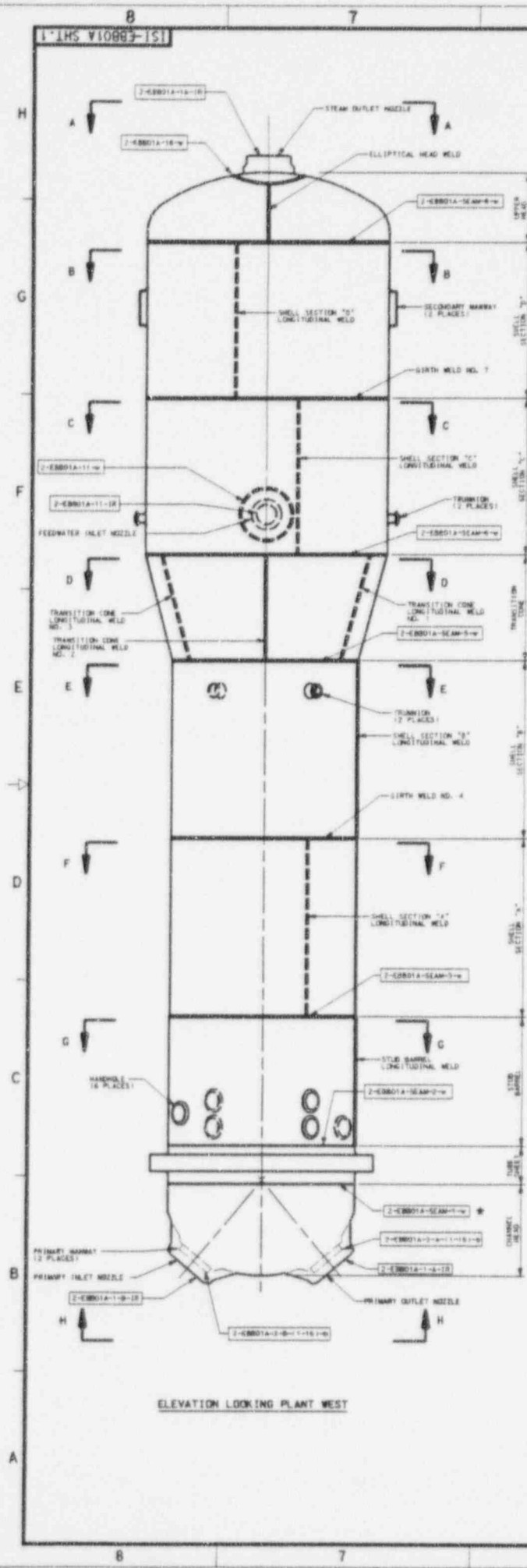
- NOTES**
1. ALL DIMENSIONS ARE IN INCHES
 2. VESSEL REF. 311-00P CORRESPONDS TO REACTOR BUILDING REF. 07 (PLANT NORTH)

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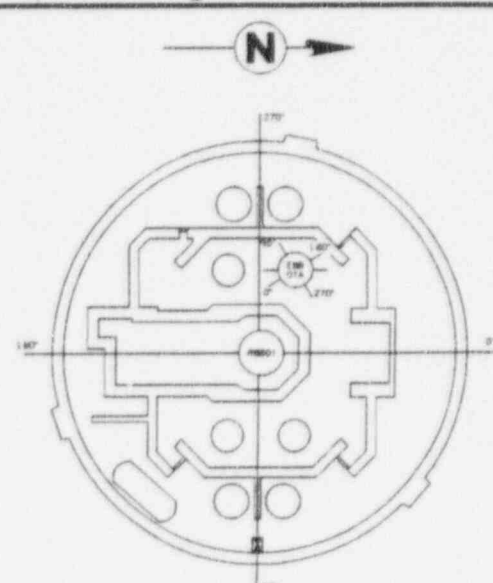
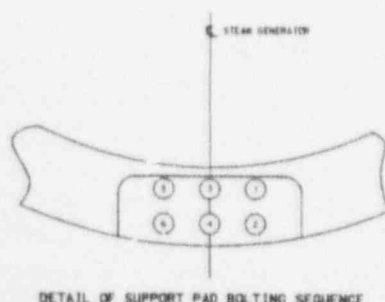
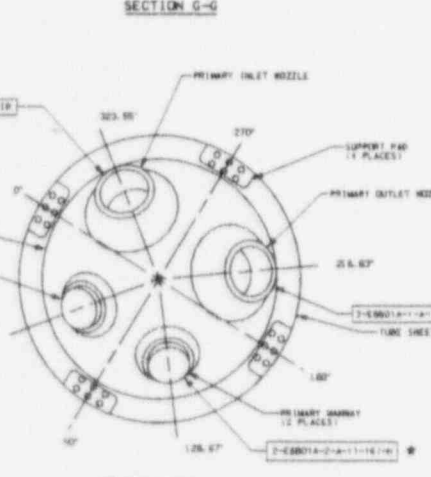
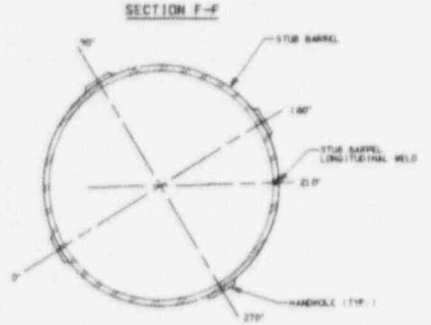
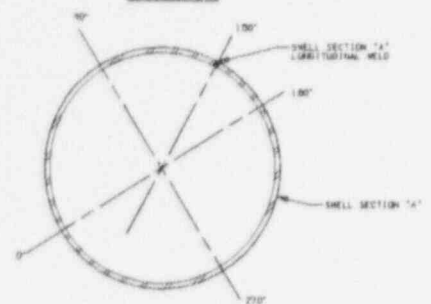
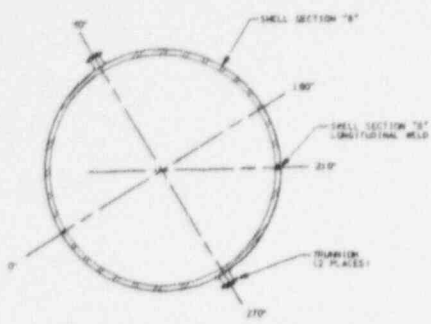
9508300247-76

STEAM GENERATOR			
EBBO1A			
ISI EQUIPMENT WELDS			
SHEET 2			
DATE	ISSUED	DESIGNED	CHECKED
SUNDT ELECTRIC COMPANY		SUNDT ELECTRIC COMPANY	
ST. LOUIS, MO.		SUNDT ELECTRIC COMPANY	
		SHEET 2 OF 2	



ELEVATION LOOKING PLANT WEST

REV. DATE
 10/15/77
 10/15/77
 10/15/77
 10/15/77
 10/15/77



LOCATION PLAN

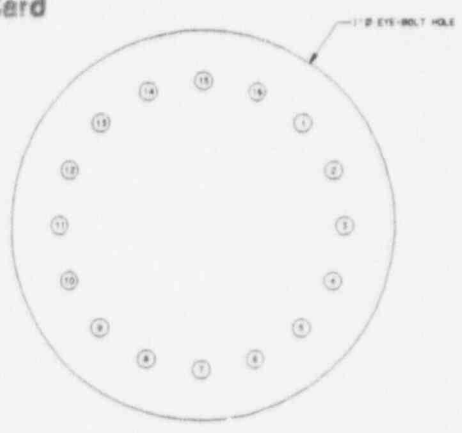
DEVELOPED WELD LENGTHS			
WELD NUMBER	WELD LENGTH	WELD NUMBER	WELD LENGTH
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2-EBB01A-2-A-1-16	428.43		
2-EBB01A-2-A-1-16	553.74		
2-EBB01A-2-A-1-16	553.74		
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2-EBB01A-1-B-1-R	98.24		
2-EBB01A-1-B-1-R	45.43		
2-EBB01A-1-B-1-R	92.27		
2-EBB01A-1-1-W	117.31		
2-EBB01A-1-B-W	140.90		

ANSTEC APERTURE CARD

Also Available on Aperture Card

NOTES:

1. WELD LENGTHS ARE CALCULATED AS MEASURED ALONG CENTERLINE OF WELD AND ADJUSTED TO CENTERLINE OF ADJACENT WELDS ON OUTER SURFACE OF VESSEL.
2. ALL DIMENSIONS ARE IN INCHES.
3. YES (NO, NEG, 211, 507) CORRESPONDS TO REACTOR BUILDING REF. 07 (PLANT) REF (W).
4. WELDED WELDS OF COMPONENTS WHICH HAVE BEEN SELECTED FOR INSERVICE INSPECTION.



DETAIL OF PRIMARY MANWAY BOLTING SEQUENCE
 (TYP. FOR 2-EBB01A-2-A-1-16)-b & 2-EBB01A-B-(1-16)-b)

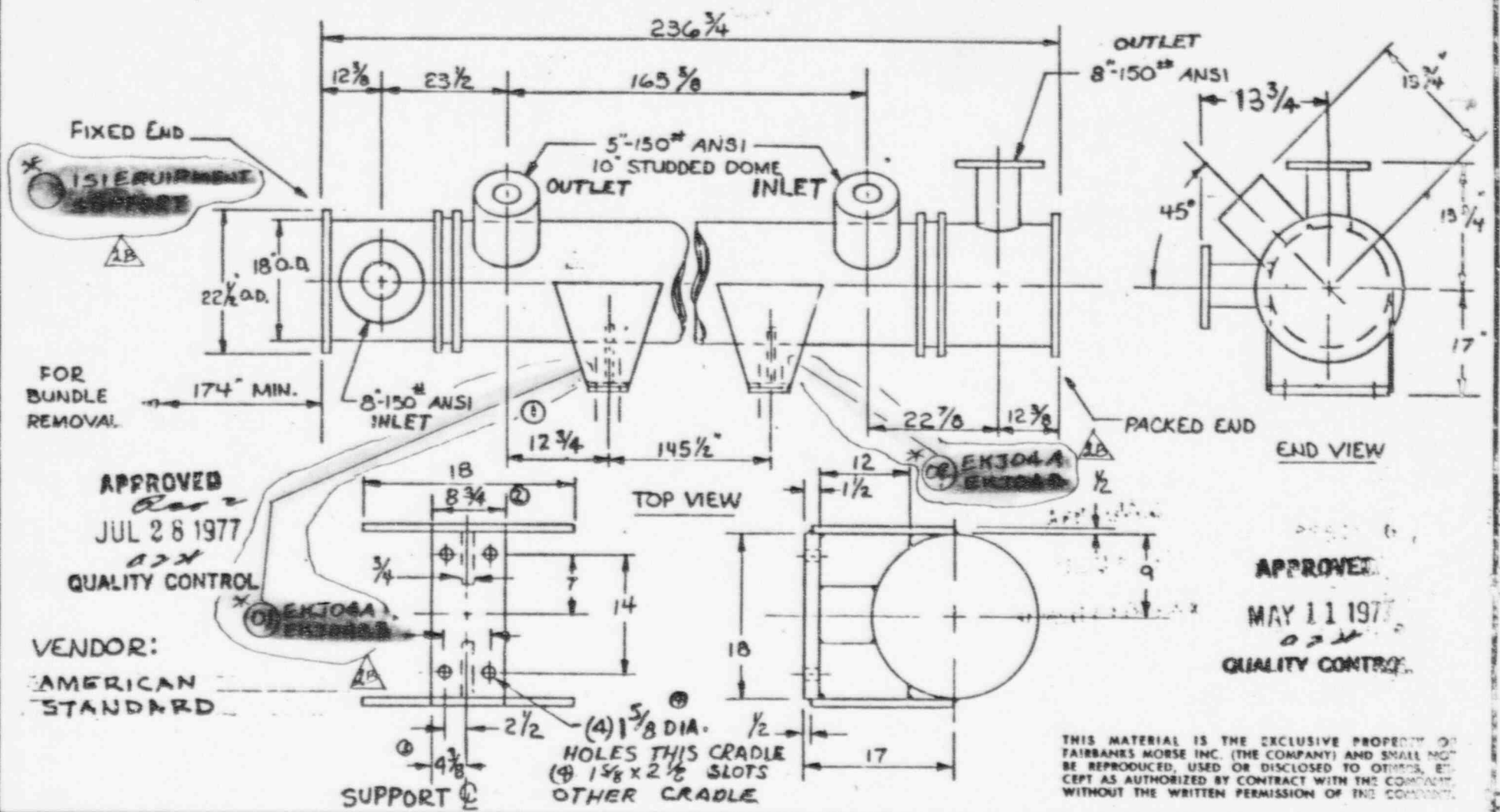
9508300247-77

REFERENCE DRAWINGS:

2-EBB01A-1	SHT. 1
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2-EBB01A-1	SHT. 4
2-EBB01A-1	SHT. 5
2-EBB01A-1	SHT. 6
2-EBB01A-1	SHT. 7
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2-EBB01A-1	SHT. 49
2-EBB01A-1	SHT. 50

NO.	REV.	DATE	BY	CHECKED	DESCRIPTION
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11908662



COLT INDUSTRIES
 FAIRBANKS, ALASKA
 JAN 1 1979
 11908662

REV. NO.	CHANGE ORDER NO.	DATE	DESCRIPTION	CHK'D. BY
5	P8148	1/29 79	① WAS 3% ② WAS 1 5/8 DIA ① WAS 15 1/8 ② WAS 7	J.H. PE
4	P7951	6/20 78	ADD NOTES REGARDING REVISION LEVELS ④	J.H. PE
3	P7738	3/24 78	SEE SWEETS 3,4,5&6	J.H. PE
2	P7193	8/4 77	SEE PG 2	R.N. H.V.
1	P7034	5/18 77	REDRAWN	PE R.N.

TITLE
**HEAT EXCHANGER
 LUBE OIL
 ASME SECT. III CL. 3**

TOLERANCES
 (Unless Otherwise Specified)
 FRACTIONAL MACHINING ± 1/64
 TOOL DESIGN ± .002
 FLAME CUTTING, SHEARING, NIBBLING,
 FORMING AND WELDING ± .060
 DECIMAL MACHINING TOLERANCES
 0 ± .060 0.0 ± .030 0.00 ± .010

Colt Industries Fairbanks Morse Engine Division

REL. NO.	1 / 1	ASSY. OR LO.
DR. BY	Peon	512 77 SCALE X
CHK'D. BY	1 / 1	HEAT TR.
MAT'L		
APPV.	CAST.	MAT'L
	MACH.	ENG. J.B.
	WELD.	
SHEET NO. A	DWG. NO. 11908662	SHEET NO. 100

INFORMATION ONLY

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August 11, 1995

**ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
CALLAWAY NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-483**

ATTACHMENT B-4

COMPONENT/EQUIPMENT SUPPORT DRAWINGS

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**ADDITIONAL INFORMATION
SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION PLAN
CALLAWAY NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-483**

ATTACHMENT C

**REACTOR VESSEL SUPPORT DETAIL DRAWINGS
(REFERENCE RELIEF REQUEST ISI-03)**

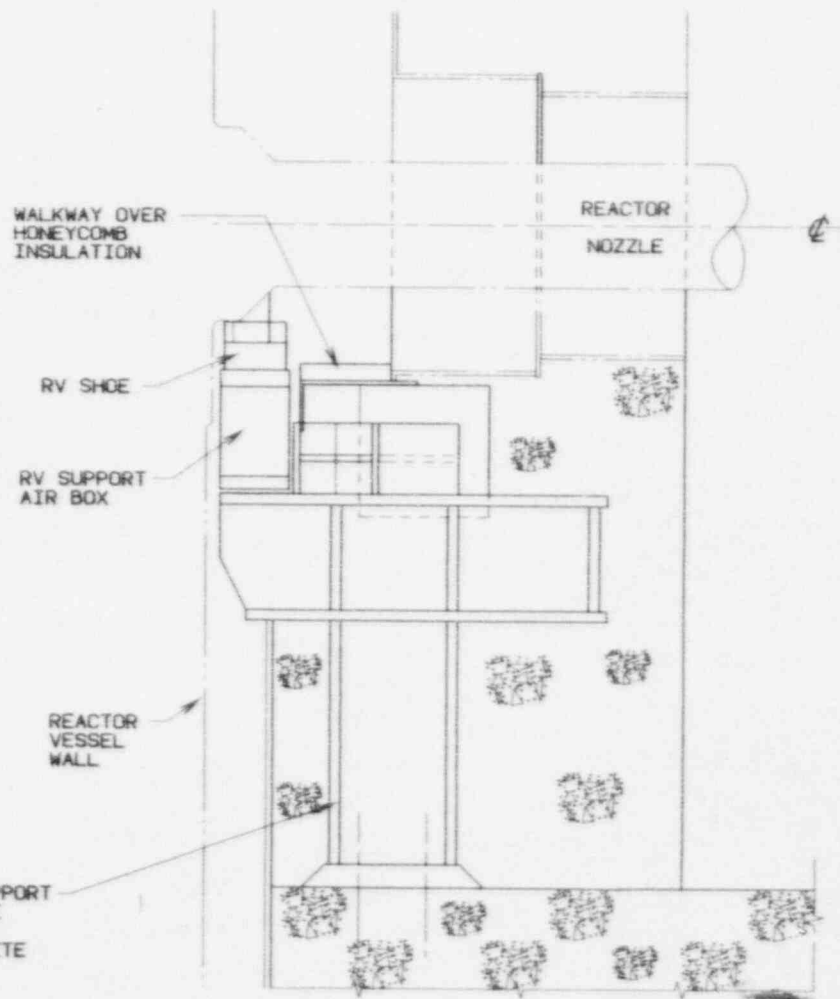
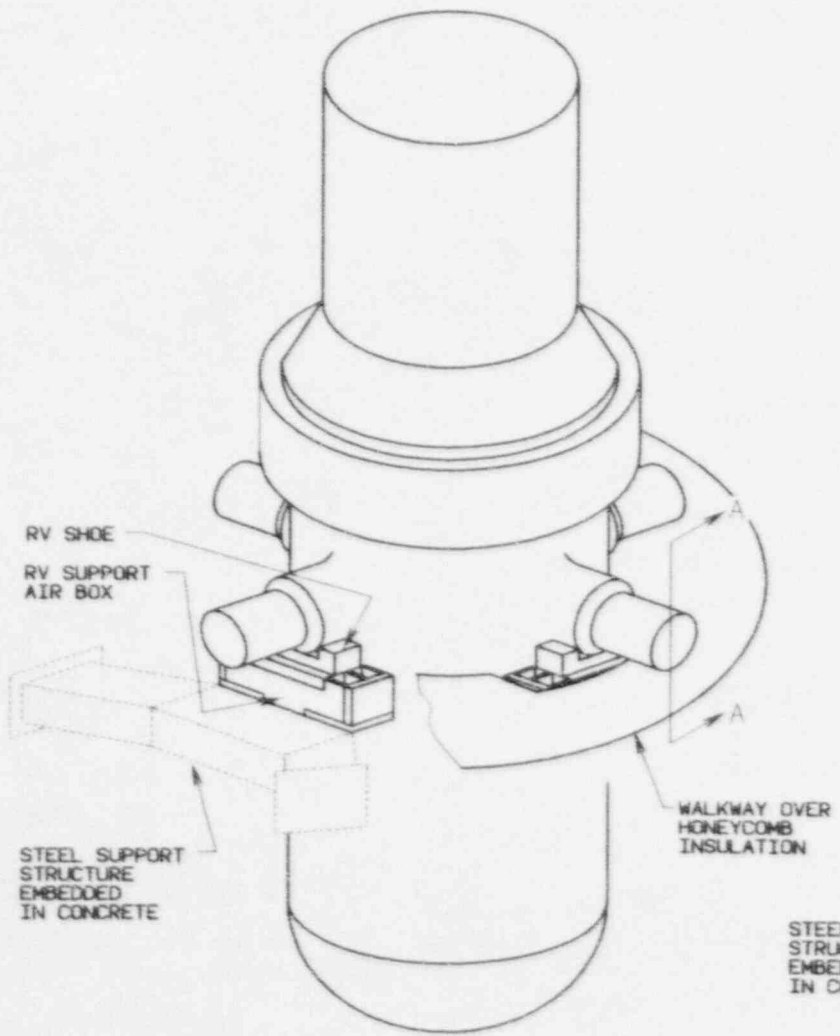
August 11, 1995

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CALLAWAY NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-483

ATTACHMENT B-4

COMPONENT/EQUIPMENT SUPPORT DRAWINGS

4.4-8



SECTION A-A

RELIEF REQUEST NUMBER, ISI-03
(PAGE 3 OF 3)

CALLAWAY PLANT 2ND INTERVAL
INSERVICE INSPECTION PLAN