PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA 19101

(215) 841-5001

SHIELDS L. DALTROFF
VICE PRESIDENT
ELECTRIC PRODUCTION

November 16, 1979

Re: Docket Nos.: 50-277
50-278

Mr. William F. Kane
Bulletins and Orders Task Force
United States Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Kane:

Attached is the remainder of the information requested by the Bulletins and Orders Task Force for preparation of the NRC staff generic report on boiling water reactors. This Peach Bottom plant specific information is provided in a form recommended by the chairman of the BWR Owners Group and supplements the generic information contained in General Electric Company Report NEDO-24708.

Should you have any questions, please do not hesitate to contact us.

Very truly yours,

S L Daltroff

Attachment

G006 S/1
CHANGE: ORB#3 BC Y4 L E
ADD: LPOR

1376 180

7911200593

PLANT Peach Bottom UNIT(S) II & III

BYPASS CAPACITY

Plant Steam Bypass Capacity, % Rated 26

1376 181

PLANT Peach Bottom II & III

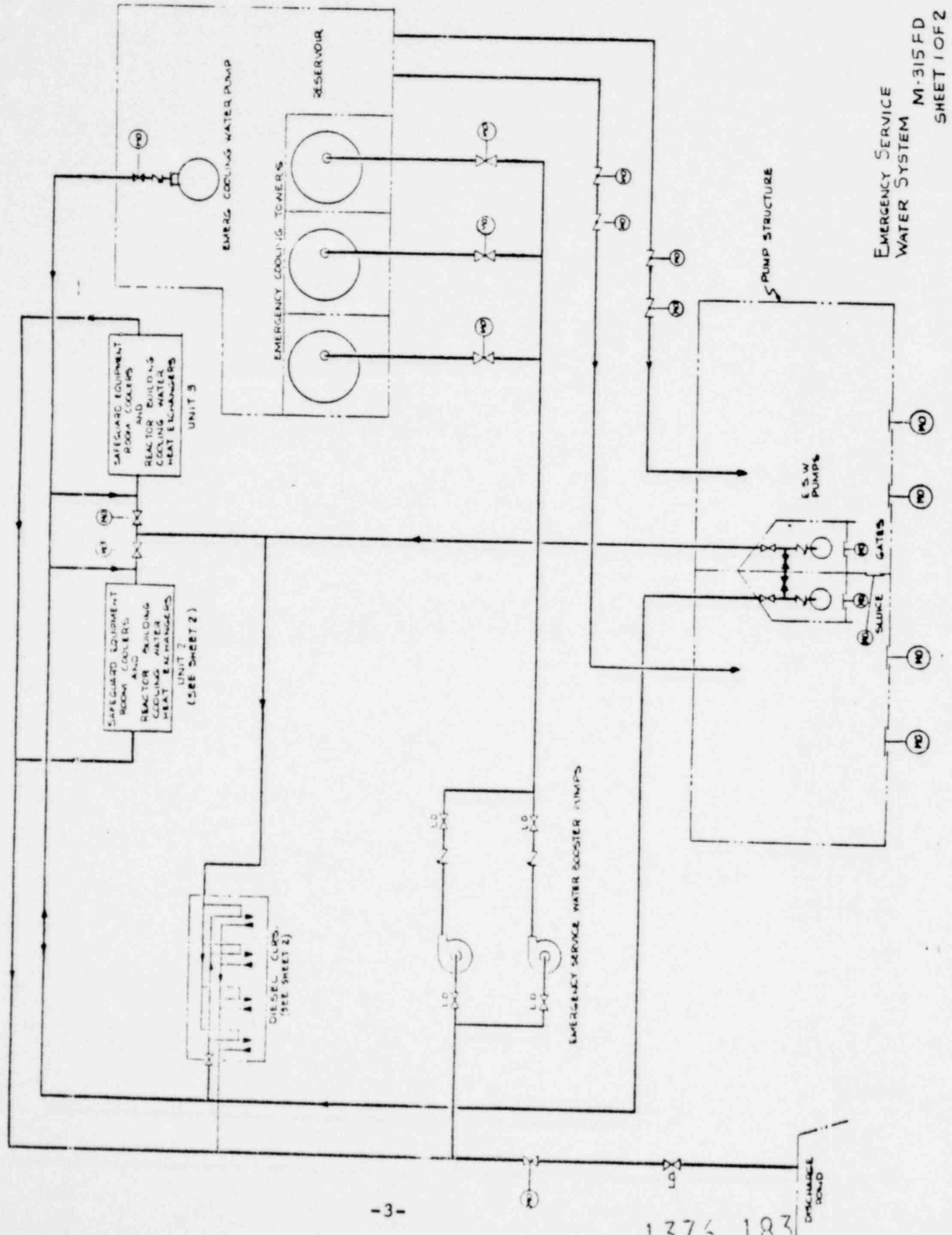
SYSTEMS AND COMPONENTS SHARED BETWEEN UNITS

PAGE 1 CONTINUED PAGE N/A

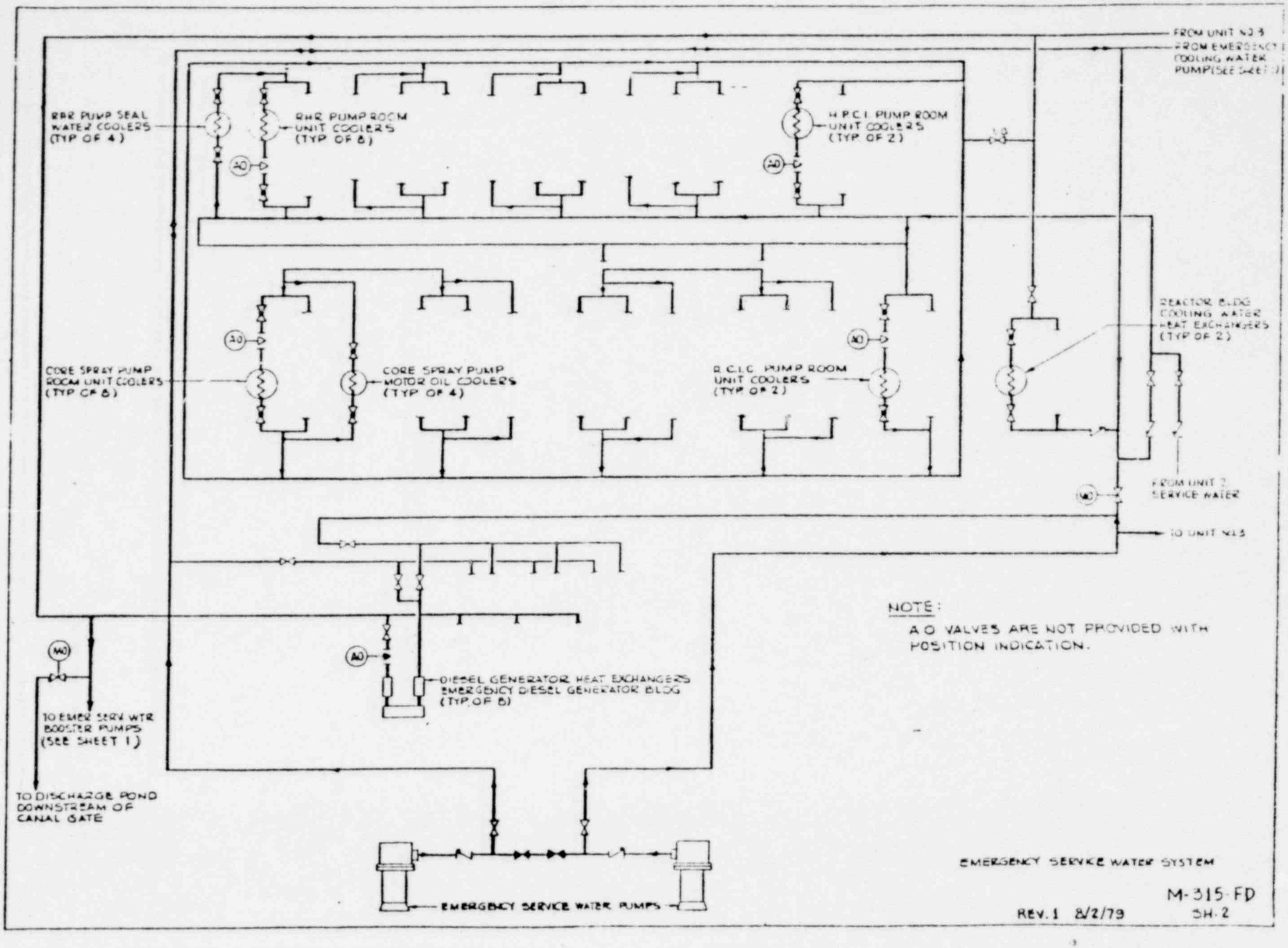
Single-unit plant check here ____ and do not complete

	System or Component	Shared Between Units Numbers
1.	The Emergency Service Water System (Shown on attached drawing M-315 FD)	II & III
2.	Condensate and refueling water transfer system. (Shown on attached drawing M-309 FD)	II & III
3.	The emergency diesel generators can be connected to buses on either unit.	II & III
5.	The high pressure service water systems share the emergency cooling tower, and their supply line to the tower is common. Neither the emergency cooling tower or the common supply line are required for normal high pressure service water system operation.	II & III

1375 182

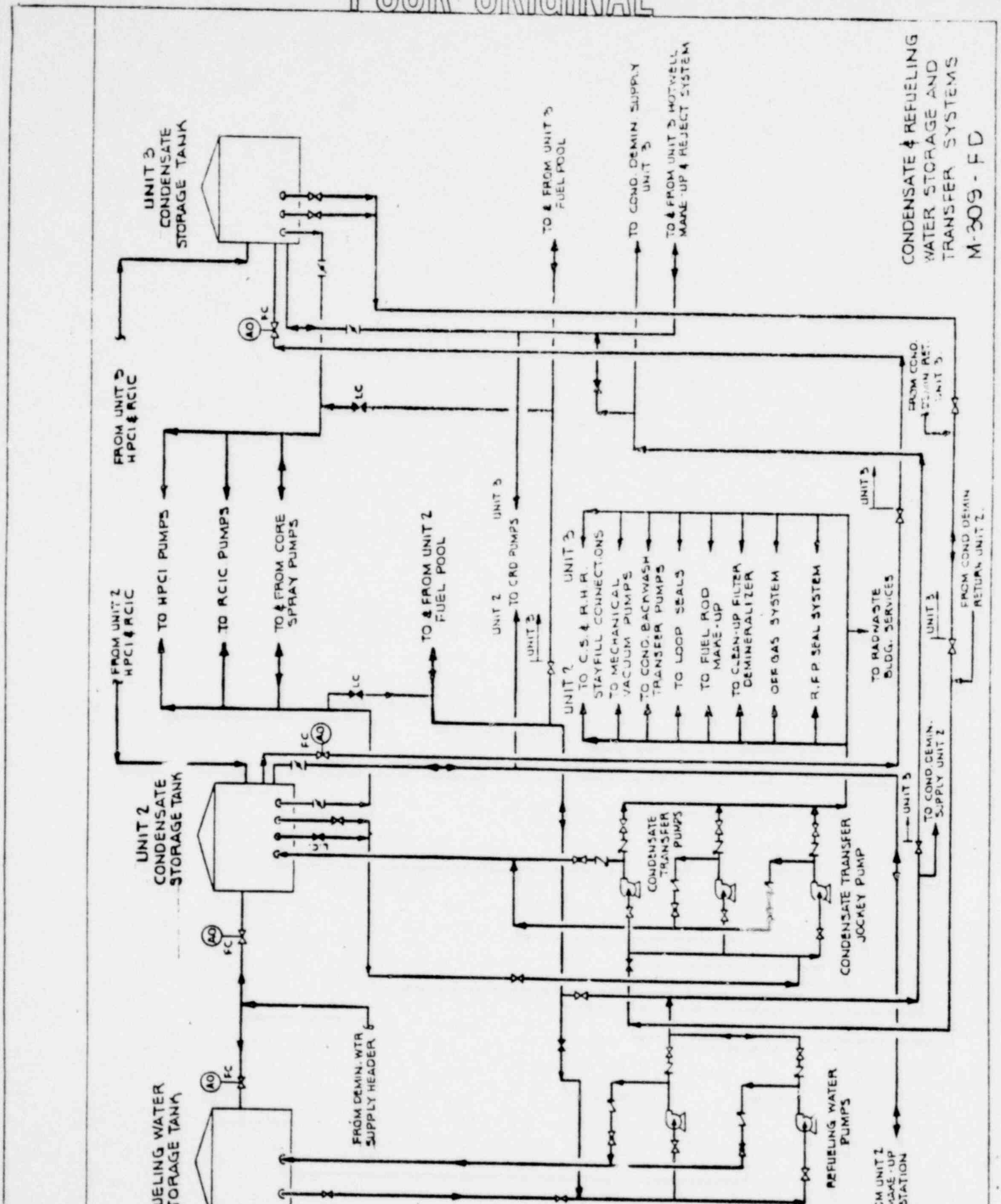

EMERGENCY SERVICE
WATER SYSTEM
M-315FD
SHEET 1 OF 2
RESERVOIR
EMERG COOLING WATER PUMP
EMERGENCY COOLING TOWERS
PUMP STRUCTURE
ESW PUMPS
GATES
SLUICE
SAFEGUARD EQUIPMENT ROOM COOLERS AND REACTOR BUILDING COOLING WATER HEAT EXCHANGERS UNIT 3
SAFEGUARD EQUIPMENT ROOM COOLERS AND REACTOR BUILDING COOLING WATER HEAT EXCHANGERS UNIT 2 (SEE SHEET 2)
DIESEL CLRS (SEE SHEET 2)
EMERGENCY SERVICE WATER BOOSTER PUMPS
LO
DISCHARGE POND

1376 183


FROM UNIT NO 3
FROM EMERGENCY COOLING WATER PUMP(SEE SHEET 1)
RHR PUMP SEAL WATER COOLERS (TYP OF 4)
RHR PUMP ROOM UNIT COOLERS (TYP OF 8)
H.P.C.I. PUMP ROOM UNIT COOLERS (TYP OF 2)
AO
CORE SPRAY PUMP ROOM UNIT COOLERS (TYP OF 8)
CORE SPRAY PUMP MOTOR OIL COOLERS (TYP OF 4)
R.C.I.C. PUMP ROOM UNIT COOLERS (TYP OF 2)
REACTOR BLDG COOLING WATER HEAT EXCHANGERS (TYP OF 2)
FROM UNIT 2 SERVICE WATER
TO UNIT NO 3
MO
DIESEL GENERATOR HEAT EXCHANGERS EMERGENCY DIESEL GENERATOR BLDG (TYP OF 8)
TO EMER SERV WTR BOOSTER PUMPS (SEE SHEET 1)
TO DISCHARGE POND DOWNSTREAM OF CANAL GATE
NOTE:
A.O VALVES ARE NOT PROVIDED WITH POSITION INDICATION.
EMERGENCY SERVICE WATER PUMPS
EMERGENCY SERVICE WATER SYSTEM
REV. 1 8/2/79
M-315-FD
SH. 2

1376 184

POOR ORIGINAL



1376 185

PLANT PEACH BOTTOM UNITS II & II

PLANT SPECIFIC SYSTEM INFORMATION

SYSTEM	GENERAL: Safety Classification (1)	GENERAL: Seismic Category	WATER SOURCES: Safety Classification	WATER SOURCES: Seismic Category	INSTRUMENTATION & CONTROL: Safety Classification [illegible]	INSTRUMENTATION & CONTROL: Seismic Category [illegible]	FREQUENCY OF SYSTEM & COMPONENT TESTS
RCIC	Group II	Class I Except as noted on M-309FD	Suppression Pool - GroupI Cond. Stor. Tank-Group III	Suppression Pool-ClassI Cond.Stor. Tank-Non Seismic	Quality Assured Equipment	Class I	See Attached Sheets
Isolation Condenser	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HPCS	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HPCI	Group II	Class I Except as noted on M-365 FD	Suppression Pool-Group I Cond.Stor. Tank-Group III	Suppression Pool-Class I Cond.Stor. Tank - Non Seismic	Quality Assured Equipment	Class I	See Attached Sheets
LPCS	Group II	Class I Except as noted on M-362FD	Suppression Pool -Group I Cond.Stor. Tank-GroupIII	Suppression Pool-Class 1 Cond.Stor. Tank - Non Seismic	Quality Assured Equipment	Class I	See Attached Sheets
LPCI	Groups I & II See M-361 FD	Class I	Suppression Pool-Group I	Suprresion Pool-ClassI	Quality Assured Equipment	Class I	See Attached Sheets
ADS	ASME III A	ASME III A	N/A	N/A	Quality Assured Equipment	Class I	See Attached Sheets
SRV	ASME III A	ASME III A	N/A	N/A	Quality Assured Equipment	Class I	See Attached Sheets
RHR (Including Shutdown Cooling, Steam Condensing, Suppression Pool Cooling, Containment Spray Modes)	Groups I,II III, See M-361 FD	Class I	Supression Pool-Group I High Pressure Service Water Group II	Suppression Pool-ClassI High Pressure Service Water-ClassI	Quality Assured Equipment	Class I	See Attached Sheets

PLANT PEACH BOTTOM UNITS II & II

PLANT SPECIFIC SYSTEM INFORMATION

SYSTEM	GENERAL Safety Classification (1)	GENERAL Seismic Category	WATER SOURCES Safety Classification	WATER SOURCES Seismic Category	INSTRUMENTATION & CONTROL Safety Classification (3)(4)	INSTRUMENTATION & CONTROL Seismic Category (5)	FREQUENCY OF SYSTEM & COMPONENT TESTS
SSV (HPSW)	Group II	Class I	Normal source is river Backup source: Emergency Cooling Tower-Group II	Normal source is river Backup source: Emergency Cooling Tower-Class I	Quality Assured Equipment	Class I	See Attached Sheets
RBCCW	Group III	Non-Seismic (2)	N/A closed Loop	N/A closed Loop	Non-Quality Assured Equipment	Non Seismic	System is normally in service No routine testing required
CRDS	Scram System Group I Remainder-Group III See M-356FD	Scram System Class I Remainder-Non Seismic See M-356FD	Condensate Sys: Group III Cond. Stor. Tank-Group III	Condensate Sys: Non-Seismic Cond. Stor. Tank - Non Seismic	Quality Assured Equipment	Class I	See Attached Sheets
CST	Group III	Non-Seismic	Group III	Non-Seismic	Non-Quality Assured Equipment	Non Seismic	No Routine Testing Performed
Feedwater	Group I-From outboard chk. vlv. to reactor Remainder-Group III	Class I-From outboard chk. vlv. to to reactor Remainder-Non-Seismic	Group III	Non-Seismic	Non-Quality Assured Equipment	Non Seismic	See Attached Sheets
Recirc. Pump/Motor Cooling	Group III	Non-Seismic (2)	N/A closed	N/A closed	Non-Quality Assured Equipment	Non-Seismic	System is normally in service No routine Testing is required.

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NOTES FOR SEISMIC/SAFETY CLASSIFICATION TABLE

1. General classification of piping and equipment pressure parts in defined as follows:

   Group I - Piping and equipment pressure parts within the reactor primary pressure boundary through the outer isolation valve, inclusive.

   Group II - Piping and equipment pressure parts downstream of the outer isolation valve and extensions of containment and the Core Standby Cooling Systems.

   Group III - Balance of plant piping and equipment pressure parts, including power generation systems.

   Requirements for these different groups appear in the Peach Bottom Final Safety Analysis Report Appendix A. A copy of Appendix A is included with our submittal for your convenience.

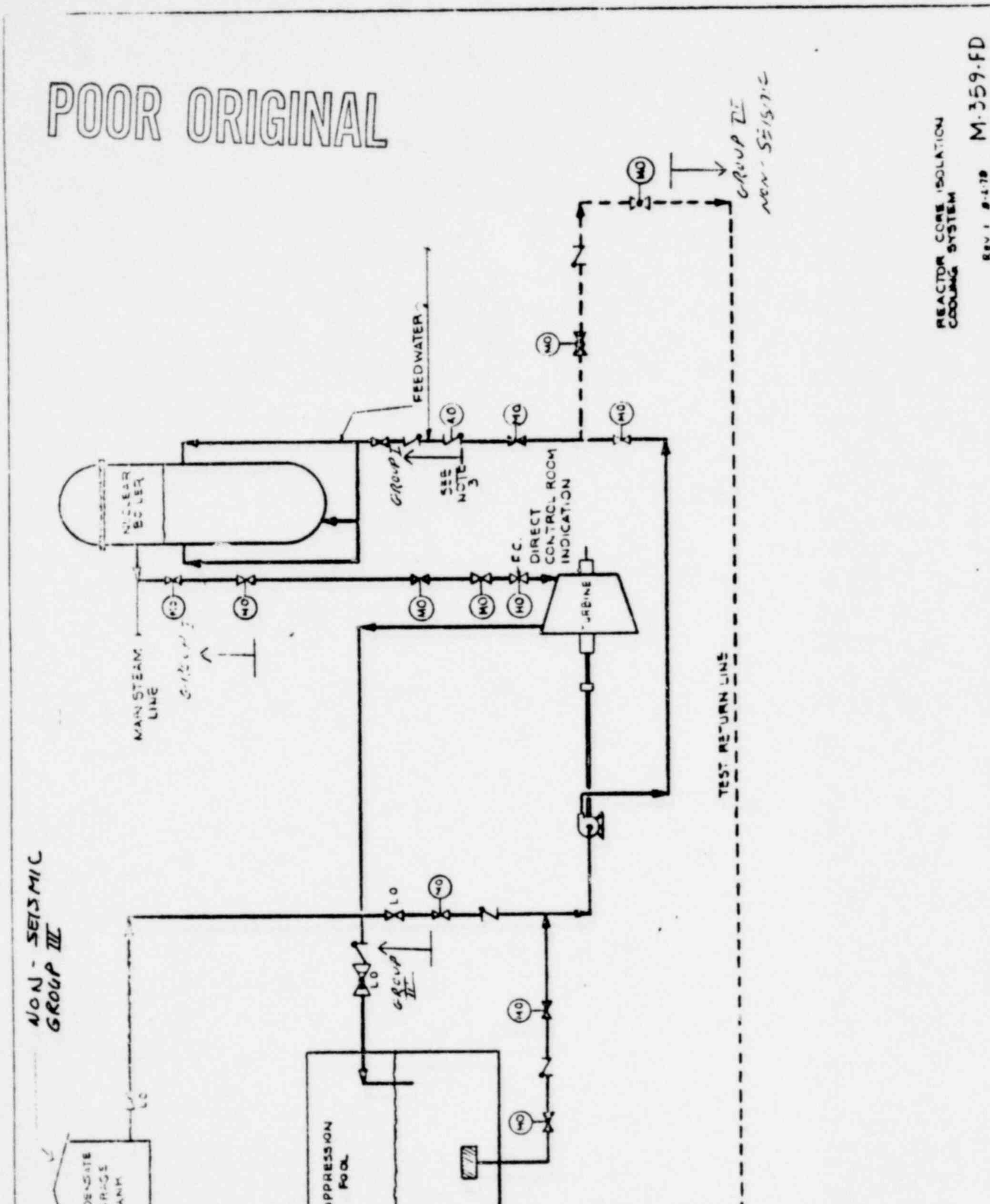
2. The RBCCW heat exchangers, Emergency Service Water interface, piping from containment penetrations through isolation valves and the isolation valves are being analyzed and/or modified to meet seismic class I requirements.

3. Safety classification and seismic category refer to essential instrumentation only.

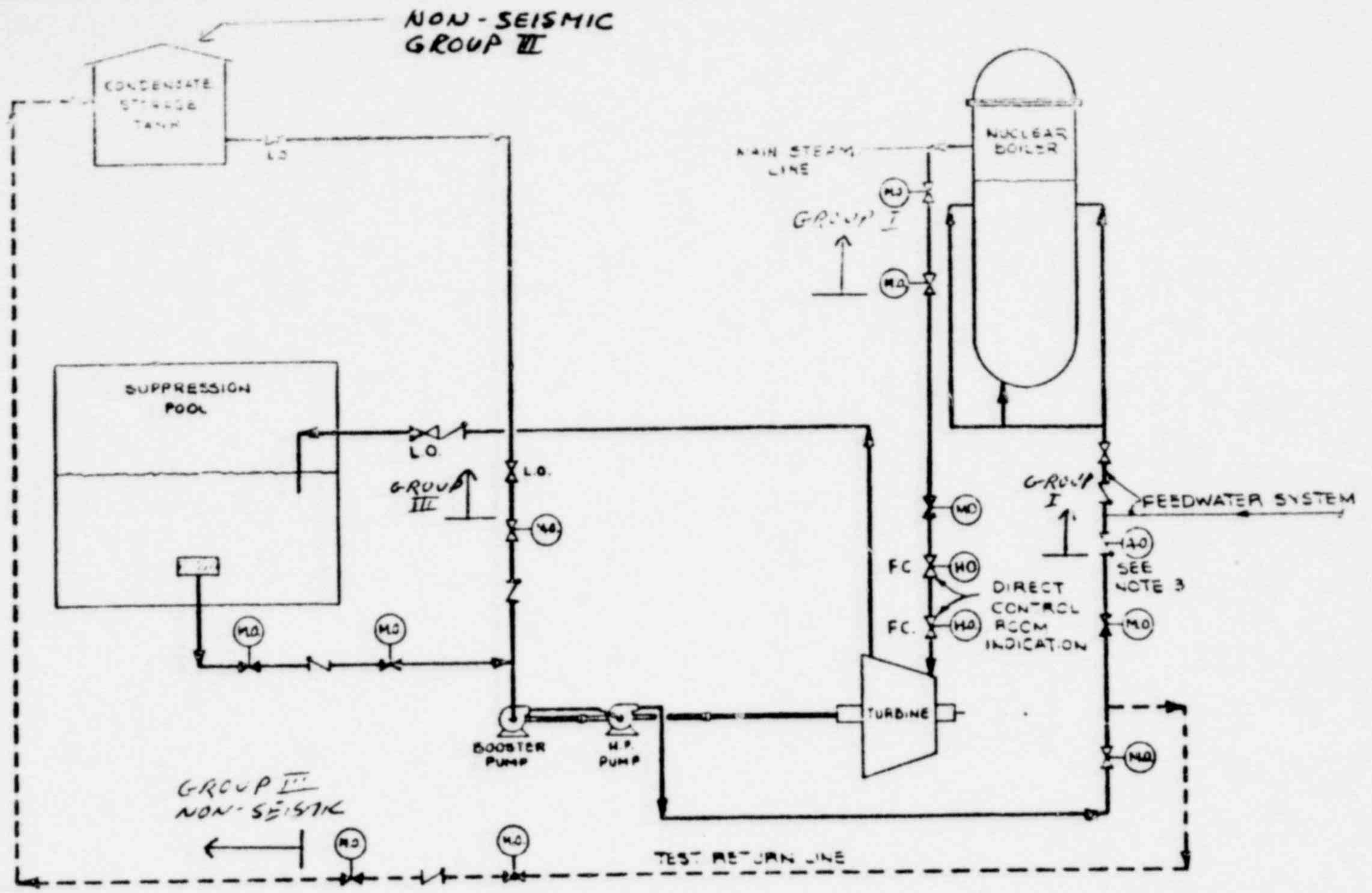
4. The Peach Bottom Quality Assurance list is the single controlling document which completely identifies the structures, systems, and components important to safety and required to assure:

   a) integrity of the reactor coolant pressure boundary
   b) capability to achieve and maintain safe shutdown
   c) capability to prevent or mitigate the consequences of an accident which could result in potential offsite exposure comparable to the guidelines of 10 CFR 100.

   Specific performance criteria must be met for all such equipment and its acceptability must be documented. Non-quality assured equipment may meet or exceed the performance criteria of quality assured equipment but its performance is not documented.


NUCLEAR BOILER
FEEDWATER
MAIN STEAM LINE
TURBINE
DIRECT CONTROL ROOM INDICATION
E.C.
SEE NOTE 3
GROUP I
MO
AO
LO
SUPPRESSION POOL
CONDENSATE STORAGE TANK
NON - SEISMIC
GROUP III
GROUP II
TEST RETURN LINE
NON - SEISMIC
REACTOR CORE ISOLATION COOLING SYSTEM
M-359-FD

1375 189

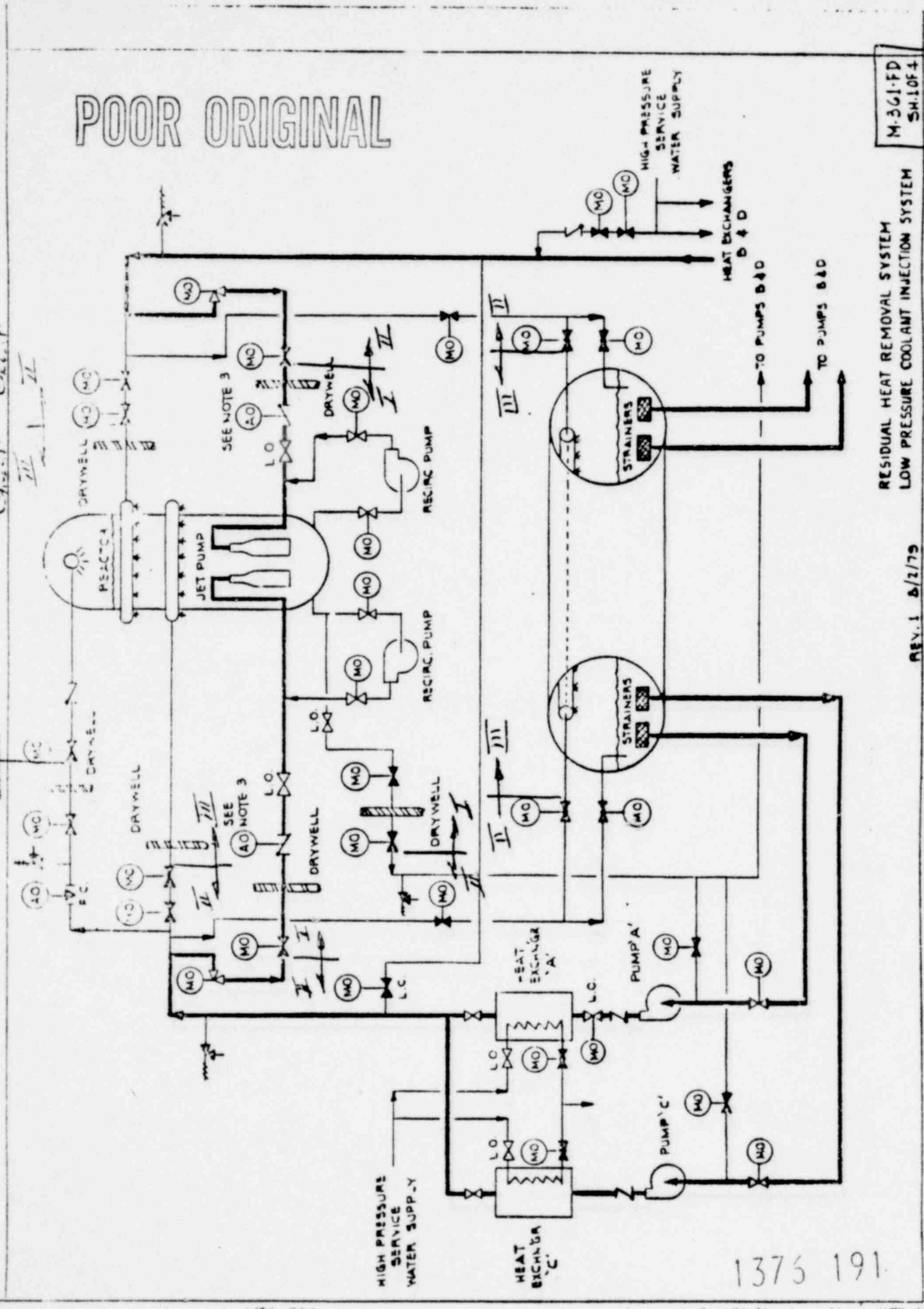


HIGH PRESSURE COOLANT
INJECTION SYSTEM
(HPCI)

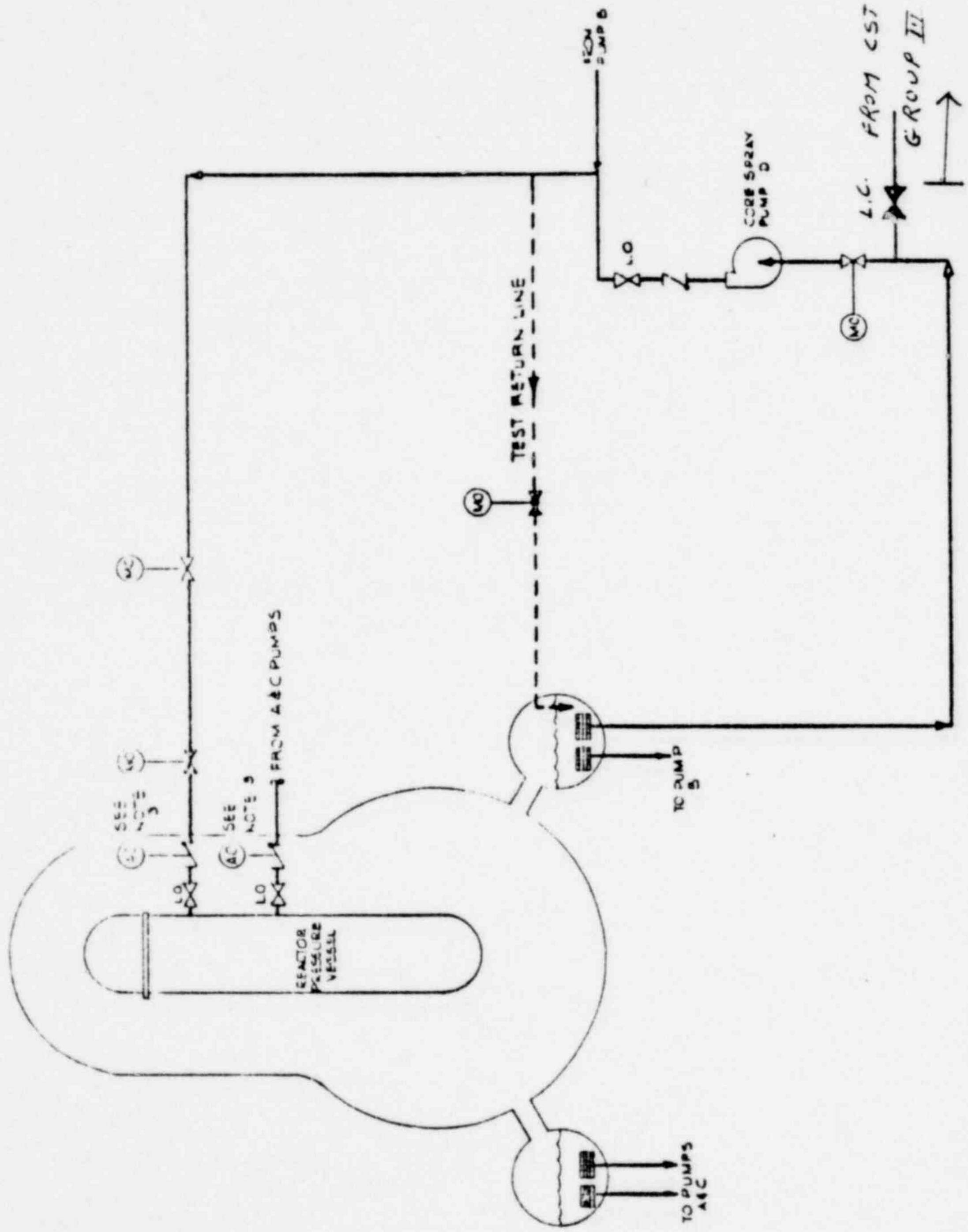
M-365-FD

1376 190

POOR ORIGINAL



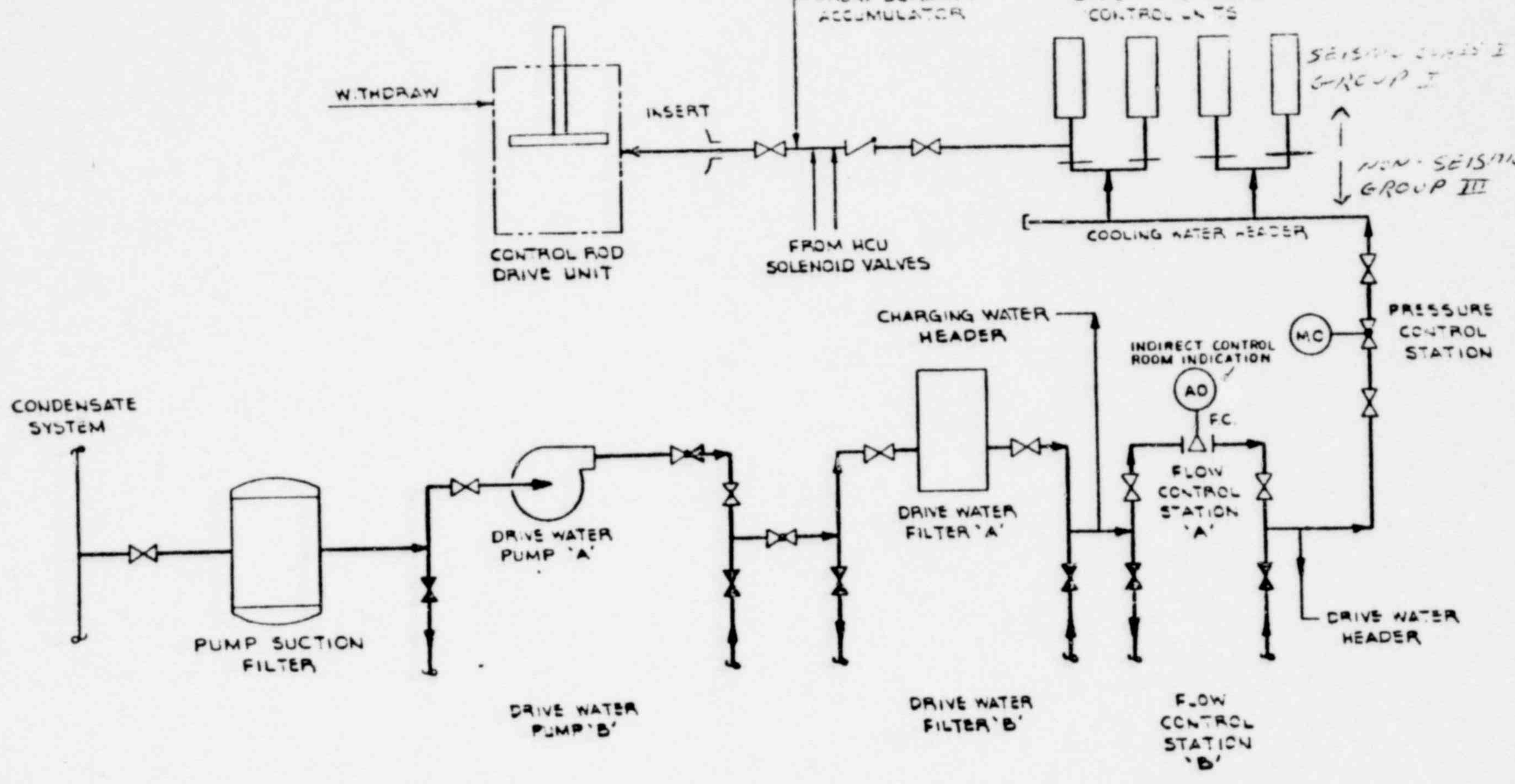
1376 191



CORE SPRAY COOLING SYSTEM

M-362-FD

1376 192



CONTROL ROD DRIVE HYDRAULIC SYSTEM

M-356-FD

1375 193

Frequency of System and Component Tests

1376 194

TEST TITLE	FREQUENCY

SYSTEM - RCIC

TEST TITLE	FREQUENCY
1. RCIC Logic System Functional Test	Once per 6 months
2. Venting of RCIC Pump Discharge Lines	Once per month if RCIC Pumps are lined up for torus suction
3. RCIC Pump, Valve, Flow and Cooler Test	Once per month
4. RCIC Pump Test	Once per operating cycle
5. RCIC Torus Suction Check Valve Operability	Once per operating cycle
6. RCIC Flow Rate at 150 psig Steam Pressure	Once per operating cycle
7. RCIC Simulated Auto Actuation Test	Once per operating cycle
8. RCIC Vacuum Relief Valve Functional Test	Quarterly
9. RCIC Turbine Governor Calibration	Each Refueling Outage
10. RCIC Steam Line High Flow Differential Pressure Switch Calibration Check	Quarterly
11. RCIC Steam Line High Flow Differential Pressure Switch Functional Test	Once per month
12. RCIC Steam Line Pressure Switch Calibration Check	Quarterly
13. RCIC Steam Line Pressure Switch Functional Test	Once per month
14. RCIC Steam Leak Detection Temperature Switch Functional Test	Once per month
15. Calibration Check of RCIC Steam Leak Detection Temperature Switch	Quarterly (accessible switches) - Once per operating cycle - (inaccessible switches)
16. Calibration Check of RCIC low level initiation transmitters/switches	Once per operating cycle.
17. Functional Test of RCIC low level initiation switches	Once per month
18. Calibration Check of:	
A. RCIC Pump Discharge Header Pressure Transmitter	Once per 2 years
B. RCIC Pump Suction Header Pressure Transmitter	

TEST TITLE	FREQUENCY
C. RCIC Turbine Steam Pressure Transmitter	
D. RCIC Turbine Exhaust Pressure Transmitter	
19. RCIC Turbine Speed Sensor Calibration Check	Once per operating
20. Calibration Check of:	
A. RCIC Pump Suction Header Pressure Switch	Once per operating
B. RCIC Pump Turbine Exhaust Pressure Switch	
C. RCIC Vacuum Tank Level Switch	

1376 196

SYSTEM - HPCI

TEST TITLE	FREQUENCY
1. HPCI Logic System Functional Test	Once per 6 months
2. Venting of HPCI Pump Discharge Lines	Once per month if HPCI pumps are lined up for torus suction
3. HPCI Pump, Valve, Flow, and Cooler Test	Once per month
4. HPCI Torus Suction Check Valve Operability	Once per operating cycle
5. HPCI Auxiliary Oil Pump Surveillance	Weekly
6. HPCI Flow Rate at 150 psig Steam Pressure	Once per operating cycle
7. HPCI Simulated Automatic Actuation Test	Once per operating cycle
8. HPCI Vacuum Relief Valve Functional Test	Quarterly
9. HPCI Turbine Governor Calibration	Once per operating cycle
10. Functional test of HPCI High Drywell Pressure Initiation Switches	Once per month
11. Calibration Check of HPCI High Drywell Pressure Initiation Switches	Once per 3 months
12. Functional Test of HPCI steam Supply Low Pressure Switches	Once per 3 months
13. Calibration Check of HPCI Steam Supply Low Pressure Switches	Once per 3 months
14. Functional Test of HPCI Steam Supply Line High Flow Differential Pressure Switches	Once per month
15. Calibration Check of HPCI Steam Supply Line High Flow Differential Pressure Switches	Once per 3 months
16. Functional Test of HPCI Area High Temperature Switches	Once per month
17. Calibration Check of HPCI Area High Temperature Switches	Once per 3 months (accessible) Once per operating cycle (inaccessible switches)
18. Calibration Check of HPCI Reactor Low Level Initiation Switches/Transmitters	Once per operating cycle
19. Functional Test of HPCI Reactor Low Level Initiation Switches	Once per month
20. Functional Test for Condensate Storage Tank Low Level Switches	Once per month

1376 197

SYSTEM - HPCI

TEST TITLE	FREQUENCY
(transfer HPCI Pump Suction to Torus)	
21. Calibration Check of Condensate Storage Tank Low Level Switches	Once per 3 months
22. Calibration Check of:	
A. HPCI Pump Discharge Pressure Transmitter	Once per 2 years
B. HPCI Turbine Steam Pressure Transmitter	
C. HPCI Turbine Exhaust Pressure Transmitter	
D. HPCI Pump Suction Pressure Transmitter	
23. Calibration Check of HPCI Flow Transmitter	Once per operating cycle
24 Calibration Check of HPCI Speed Element	Once per operating cycle
25. Calibration Check of:	
A. HPCI Pump Turbine Exhaust High Pressure Switches	Once per operating cycle
B. HPCI Pump Suction Low Pressure Switch	Once per operating cycle

1376 198

SYSTEM - LPCS

	TEST TITLE	FREQUENCY
1.	Core Spray 'A' Logic System Functional Test	Once per 6 months
2.	Core Spray 'B' Logic System Functional Test	Once per 6 months
3.	Core Spray 'A' Pump, Valve, Flow, and Cooler Test	Once per month
4.	Core Spray 'B' Pump, Valve, Flow and Cooler Test	Once per month
5.	Core Spray 'A' Pump Test	Once per operating cycle
6.	Core Spray 'B' Pump Test	Once per operating cycle
7.	Daily Core Spray System Test	Daily if one diesel, one core spray pump, or LPCI is inoperable
8.	Core Spray Simulated Automatic Actuation Test	Once per operating cycle
9.	Functional Test of Drywell High Pressure Core Spray Initiation Switches	Once per month
10.	Calibration Check of Drywell High Pressure Core Spray Initiation Switches	Once per 3 months
11.	Functional Test of Reactor Low Pressure Switches (Core Spray Permissive)	Once per month
12.	Calibration Check of Reactor Low Level Pressure Switches	Once per 3 months
13.	Calibration Check of Reactor Low Level Core Spray Initiation Switches/tramsitters	Once per operating cycle
14.	Functional Test of Reactor Low Level Core Spray Initiation Switches	Once per month
15.	Functional Test of Core Spray Stayfull Level Switches	Once per operating cycle
16.	Cali'.ation Check of:	
	A. Core Spray suction pressure indicators	Once per operating cycle
	B. Core Spray pump differential switches for pump minimum flow protection	
	C. Core Spray pump discharge pressure indicators	
	D. Core Spray Discharge Pressure Switches	
	E. Core Spray Discharge Pressure Transmitters	
	F. Core spray Loop Flow	

1376 199

SYSTEM - LPCS

TEST TITLE	FREQUENCY
Transmitters	
17. Functional Test of Core spray Sparger to Reactor Differential Pressure Switches	Once per month
18. Calibration Check of Core Spray Sparger to Reactor differential Pressure Switches	Once per 6 months

1376 200

SYSTEM: LPCI

TEST TITLE	FREQUENCY
1. RHR 'A' Logic System Functional Test	Once per 6 months
2. RHR 'B' Logic System Functional Test	Once per 6 months
3. RHR 'A' Pump, Valve, Flow and Cooler Test	Once per month
4. RHR 'B' Pump, Valve, Flow and Cooler Test	Once per month
5. RHR Pump Functional Test	Once per operating cycle
6. Daily RHR System Operability Test	Daily if one diesel or one RHR pump is inoperable
7. RHR Simulated Automatic Actuation Test	Once per Operating Cycle
8. LPCI system Valve Swing Bus Test	Bi-monthly
9. LPCI Cross Connect Valve Position	Each refueling outage
10. Functional Test for Drywell High Pressure LPCI Initiation Switches	Once per month
11. Calibration Check for Drywell High Pressure LPCI Initiation Switches	Once per 3 months
12. Functional test for Reactor Low Level LPCI Initiation Switches	Once per month
13. Calibration Check of Reactor Low Level LPCI Initiation Switches/Transmitters	Once per operating cycle
14. Functional Test for Reactor Low Pressure Switches (LPCI Permissive)	Once per month
15. Calibration Check for Reactor Low Pressure Switches	Once per 3 months
16. Functional Test of LPCI stayfull System Switches	Once per operating cycle
17. Calibration of RHR pressure, flow, transmitters & indicators and pump differential pressure switches	Once per operating cycle

1376 201

SYSTEM: ADS

	TEST TITLE	FREQUENCY
1.	ADS 'A' Logic System Functional Test	Once per 6 months
2.	ADS 'B' Logic System Functional Test	Once per 6 months
3.	ADS Simulated Automatic Actuation Test	Prior to Startup from each refueling outage
4.	ADS Relief Valve Accumulator Leak Test	Once per operating cycle
5.	Functional Test of High Drywell Pressure ADS Initiation Switches	Once per month
6.	Calibration check of High Drywell Pressure ADS Initiation Switches	Once per 3 months
7.	Functional Test for Core Spray Pump Discharge Pressure Switches (ADS Permissive)	Once per month
8.	Calibration Check of Core Spray Discharge Pressure Switches (ADS Permissive)	Once per 3 months
9.	Functional Test for LPCI Pump Discharge Pressure Switches (ADS Permissive)	Once per month
10.	Calibration Check of LPCI Pump Discharge Pressure Switches (ADS Permissive)	Once per 3 months
11.	Calibration Check of Reactor Low Level ADS Initiation Switches/transmitters	Once per operating cycle
12.	Functional Test of Reactor Low Level ADS Initiation Switches	Once per month
13.	Calibration Check of Reactor Low Level ADS Permissive Switches/Transmitters.	Once per operating
14.	Functional Test of Reactor Low Level ADS Permissive Low Level ADS Permissive Switches	Once per month

1376 202

SYSTEM: SRV

TEST TITLE	FREQUENCY
1. Relief Valve Manual Actuation	Once per operating cycle
2. Relief Valve Bellows Leak Detection Pressure Switch Functional Test	Once per operating cycle

1376 203

SYSTEM: RHR

TEST TITLE	FREQUENCY
1. RHR 'A' Logic System Functional Test	Once per 6 months
2. RHR 'B' Logic System Functicnal Test	Once per 6 months
3. RHR 'A' Pump, Valve, Flow, and Cooler Test	Once per month
4. RHR 'B' Pump, Valve, Flow, and Cooler Test	Once per month
5. RHR Pump Functional Test	Once per operating cycle
6. Daily RHR system Operability Test	Daily if one diesel or one RHR Pump is inoperable
7. RHR to Fuel Pool Vacuum Relief Valve Functional Test	Once per Operating
8. Head Spray Check Valve Functional Test	Each time lead spray is used
9. Calibration Check of Shutdown Cooling Permissive Switches (Reactor Pressure)	
10. Functional Test of Shutdown Cooling Permissive Switches (Reactor Pressure)	
11. Calibration Check of Containment Spray Reactor Level Permissive Switches/ Transmitters	Once per operating
12. Functional Test of Containment Spray Reactor Level Permissive Switches	Once per month
13. Functional Test of RHR Stayfull System Level Switches	Once per operating cycle
14. Calibration of RHR pressure & flow transmitters/ indicators and pump differential pressure switches	Once per operating cycle

1375 204

SYSTEM: SSV (HPSW)

TEST TITLE	FREQUENCY
1. HPSW Pump and Valve Operability and Flow Rate Test	Once per month
2. HPSW Pump Operability	Once per operating cycle
3. Daily HPSW System Operability and Flow Rate Test	Daily while two or more HPSW pumps, 1 diesel, or 3 containment cooling subsystem are inoperable
4. HPSW Pump Bay MUD Accumulation Measurement	Once per month
5. HPSW Pressure and Flow Loop Calibration Check	Once per operating cycle
6. HPSW Bay level indication calibration	Once per operating cycle

1376 205

SYSTEM: CRD

	TEST TITLE	FREQUENCY
1.	CRD Withdraw Stall Flow Test	Once per month
2.	CRD Check Valve ISI Functional Test	Each time CRD is used for reactor makeup. At least once per operating cycle
3.	CRD Hydraulic Control Calibration	Once per 2 years

NOTE: Additional testing on the Reactor Protection System and the Reactor Manual Control System may also involve the CRD system

1376 206

SYSTEM: FEEDWATER

TEST TITLE	FREQUENCY
1. Calibration of Feedwater Control Instruments (Reactor Pressure and Level)	Once per 6 months
2. Calibration of Feedwater Flow Loops	Once per operating cycle

1375 207

PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

Page 1

Penetration Number	Line Size	Line Description	ESF (Yes/No)	Fig. No.	Fluid	Valve Number (1)	Isolation Group (Signal) (3)	Valve Location	Valve Type (2)	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	Closure Time (Sec.) (4)	Power Source (5)	Position Indication (6)	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
N-7A to D	26"	Main Steam	No	1	Steam	AO-2-80 A to D	I(A,B,C,D & E)	Inside	GB	Inst.Gas	Spring	3 to 10	A or E	D	O	C	C	C
						AO-2-86 A to D	I(A,B,C,D & E)	Outside	GB	Inst.Air	"	3 to 10	B or F	D	O	C	C	C
N-8	3"	Main Steam	No	1	Steam Water	MO-2-74	I(A,B,C,D & E)	Inside	GT	AC Motor	Manual	15	A	D	C	O	C	as is
						MO-2-77	I(A,B,C,D & E)	Outside	GT	AC Motor	Manual	15	F	D	C	O	C	as is
N-9A	24"	Feedwater -																
		- feedwater	Yes	2	Water	2-28A	-	Inside	CK	flow	-	-	-	-	O	C	O	-
		- feedwater	No			2-96A	-	Outside	CK	flow	-	-	-	-	O	C	C	-
		- startup rec.	No			MO-2-38A	II(A,B,F)	"	GT	AC Motor	Manual	50	D	D	C	C	C	as is
		- HPCI	Yes			MO-23-19	RM	"	GT	DC Motor	"	20	F	D	C	C	O	as is
N-9B	24"	Feedwater																
		- feedwater	No	2	Water	2-28B	-	Inside	CK	flow	-	-	-	-	O	C	O	-
		- feedwater	No			2-96B	-	Outside	CK	flow	-	-	-	-	O	C	C	-
		- RCIC	No			MO-13-21	RM	"	GT	DC Motor	Manual	15	E	D	C	O	O	as is
		- RWCU	No			MO-12-68	II(A,C,D, & G)	"	GB	AC Motor	"	5	B	D	O	O	C	as is
		- startup rec.	No			MO-2-38B	II(A,B,F)	"	GT	AC Motor	"	50	B	D	C	C	C	as is
N-10	3"	Steam to RCIC Turbine	No	3	Steam	MO-13-15	IV(A,B,C)	Inside	GT	AC Motor	"	15	B	D	O	C	O	as is
						MO-13-16	IV(A,B,C)	Outside	GT	DC Motor	"	15	E	D	O	C	O	as is
N-11	10"	Steam to HPCI Turbine	Yes	3	Steam	MO-23-15	V(A,B,C)	Inside	GT	AC Motor	"	15	A	D	O	C	O	as is
						MO-23-16	V(A,B,C)	Outside	GT	DC Motor	"	15	F	D	O	C	O	as is
N-12	20"	RHR Shutdown Cooling Sucton	No	4	Water	MO-10-17	II(A,B,E)	Inside	GT	AC Motor	"	32	F	D	C	O	C	as is
						MO-10-18	II(A,B,E)	Outside	GT	DC Motor	"	32	A	D	C	O	C	as is
N-13,A,B	24"	RHR Shutdown Cooling Return	Yes	5	Water	MO-10-25A,B	II(A,B) (7)	Outside	GT	AC Motor	"	34	1	D	C	O	C	as is
		& LPCI Injection	Yes			AO-10-46 A,B	-	Inside	CK	Flow	-	-	2	D	C	O	C	-
			No			AO-10-163 A,B	RMP	"	DCV	Inst.Gas	Spring	5	3	D	C	C	C	C

1375 208

PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

Page 2

Penetration Number	Line Size	Line Description	ESF (Yes/No)	Fig. No.	Fluid	Valve Number ①	Isolation Group (Signal) ③	Valve Location	Valve Type ②	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	Closure Time (Sec.) ④	Power Source ⑤	Position Indication ⑥	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
N-14	6"	RWCU Pump Suction	NO	6	Water	Mo-12-15 Mo-12-18	II(A,C,D,G) II(A,C,D,G)	Inside Outside	GT GT	AC Motor DC Motor	Manual "	5 5	A F	D D	O O	O O	C C	as is as is
N-16 A,B	12"	Core Spray Pump Discharge	Yes	5	Water	Mo-14-12 A,B	RM	Outside	GT	AC Motor	"	12	C,D	D	C	C	O	as is
			Yes			Mo-14-13 A,B	-	Inside	CK	Flow	-	-	2	D	C	C	O	-
			NO			AD-14-15 A,B	RMP	"	DCV	Inst.Gas	Spring	5	3	D	C	C	C	C
N-17	6"	RHR Head Spray	No	7	Water	Mo-10-32 Mo-10-33	II(A,B,E) II(A,B,E)	" Outside	GT GT	AC Motor Dc Motor	Manuel "	5 5	A F	D D	C C	O O	C C	as is as is
N-18	3"	Drywell Fl.Dr. Pump Disch.	No	8	Water	AO-20-82 AO-20-83	II(A,B) II(A,B)	Outside "	DCV DCV	Inst.Air Inst.Air	Spring "	5 5	A B	D D	O O	C C	C C	C C
N-19	3"	Drywell Equip. Dr.Pump Disch.	No	8	Water	/0-20-94 AO-20-95	II(A,B) II(A,B)	" "	DCV DCV	Inst.Air Inst.Air	" "	5 5	A B	D D	O O	C C	C C	C C
N-21	1"	Service Air Supply	No	9	Air	- -	LC LC	Inside Outside	GB GB	- -	- -	- -	- -	- -	C C	C C	C C	- -
N-22	1"	Inst Gas Supply	No	10	Air	- AO-2969A	- II(A,B)	Outside Outside	CK DCV	Flow Inst.Air	- Spring	- 5	- A	- D	O O	O O	C C	- C
N-23	4"	RBCW to Recirc Pumps	NO	11	Water	MO-2373	RM	Outside	GT	AC Motor	Manuel	12	4	D	O	O	C	as is
N-24	4"	RBCW from Recirc Pumps	No	11	Water	MO-2374	RM	Outside	GT	AC Motor	"	12	4	D	O	O	C	as is
N-25 &205B	18" 20"	Drywell and Torus Purge Supply	No	12	Air	AO-2505	III	"	B	Inst. Air	Spring	5	B	D	C	O	C	C
						AO-2519 AO-2520 AO-2521A AO-2521B	III III III III	" " " "	B B B B	" " " "	" " " "	5 5 5 5	B A B B	D D D D	C C C C	C O O O	C C C C	C C C C

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PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

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Penetration Number	Line Size	Line Description	ESF (Yes/No)	Fig. No.	Fluid	① Valve Number	③ Isolation Group (Signal)	Valve Location	② Valve Type	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	④ Closure Time (Sec.)	⑤ Power Source	⑥ Position Indication	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
						AO-2523	III	Outside	DCV	Inst.Air	Spring	5	A	D	C	C	C	C
						-	-	"	CK(2)	Flow	-	-	-	-	C	C	C	-
						AO-2502A	RM	"	B	Inst.Air	Spring	5	3	D	C	C	C	O
						9-26A	-	"	VB	Flow	-	-	-	-	C	C	C	-
						-	-	"	GB	Manual	-	-	-	-	O	O	O	-
N-26	18"	Drywell Purge																
		Exhaust -CAD	Yes	13	Air	AO-2509	III	Outside	DCV	Inst.Air	Spring	5	A	D	O	O	O	C
		-CAD	Yes			AO-2510	III	"	DCV	"	"	5	B	D	C	C	O	C
		-purge	No			AO-2506	III	"	B	"	"	5	A	D	C	O	C	C
		-purge	No			AO-2507	III	"	B	"	"	5	B	D	C	O	C	C
		-inst. gas	No			AO-4235	III	"	DCV	"	"	5	B	D	O	O	C	C
		-CACS sample	No			SV-2671G	III	"	SV	AC Coil	-	-	A	I	O	O	C	C
		-CACS sample	No			SV-2978G	III	"	SV	DC Coil	-	-	B	I	O	O	C	C
		-CAD sample	Yes			SV-4960B	RM	"	SV	AC Coil	-	-	D	N	C	C	O	C
		-CAD sample	Yes			SV-4961B	RM	"	SV	AC coil	-	-	D	N	C	C	O	C
		-Rad. gas sample	No			SV-4966B	RM	"	SV	AC coil	-	-	3	N	C	C	O	C
		-Inst.(press)	-			-		"	GB									
N-27E,F	1"	Inst.Lines-Core Plate Pressure	-	16	Water	-		Inside	RD									
						2517		Outside	XF-CV									
N-28A,B C,E,F	1"	Inst. Lines RPV Level & Pressure	-	16	Water /steam	-		Inside	RD									
						17A,19A, 11 13A,15A		Outside	XFCV									
N-28D	1"	Inst.Line - RPV Head Pressure	-	16	Steam	-		Inside	RO									
						23		Outside	XF CV									
N-29A D,E,F	1"	Inst. Lines - RPV Level & Pressure	-	16	Water/ Steam	-		Inside	RO									
						17B,19B, 13B,15B		outside	XFCV									
N-30A, B,C,D,	1"	Inst.Lines- Main Stm. Pressure	-	16	Steam	-		Inside	RO									
						73A,C,E,G		Outside	XFCV									
N-30E,F	1"	Inst. Lines - Recirc Loop B Flow	-	16	Water	-		Inside	RO									
						64 C,D		Outside	XFCV									

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PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

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Penetration Number	Line Size	Line Description	ESP (Yes/No)	Fig. No.	Fluid	(1) Valve Number	(3) Isolation Group (Signal)	Valve Location	(2) Valve Type	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	(4) Closure Time (Sec.)	(5) Power Source	(6) Position Indication	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
N-31 A to D	1"	Inst. Lines - Recirc Pump Seal Pressure	-	17	Water	7A,B 8A,B		Outside Outside	XFC V XFC V									
N-32A, B	1"	Inst lines - Recirc loop A Flow	-	16	Water	- 63A,B		Inside Outside	RO XFC V									
N-32C,D	3/4"	ILRT Connections	No.	18	Air	-		Outside	GB(2)						C	C	C	-
N-32E,F	1"	Inst Lines - C.S.Inj. Press.	-	16	Water	- 30 A,B		Inside Outside	RO XFCV									
N-33A, B,C,D,	1"	Inst.Lines - Recirc Pump ΔP	-	16	Water	- 62A,B,C,D		Inside Outside	RO XFCV									
N-33F	1"	Inst.Line - Drywell Press.	-	19	Air	-		Outside	GB									
N-34A to D	1"	Inst. Lines Main stm.Press.	-	16	Steam	- 73,B,D,F,H		Inside Outside	RO XFC V									
N-34E,F	1"	Inst Lines - HPCI Stm Press.	-	16	Steam	- 37A,B		Inside Outside	RO XFC V									
N-35 A to E	3/8"	Tip Drives	No	20	Air	- -	II(A,B) RM	Outside Outside	BL XV	AC Coil DC Squib	Spring -	- -	5 5	D I	O O	C O	C C	C C
N-35F	1"	Tip Purge	No	14	Air	-	-	Outside	CK	Flow	-	-	-	-	O	C	C	-
						7-113	II(A.B.)	Outside	5 V	AC Coil	-	-	5	I	C	C	C	C
N-36	4"	CRD Return (8)	No	21	Water	3-113 3-110	- -	Inside Outside	CK CK	Flow Flow	- -	- -	- -	- -	C C	C C	C C	- -
N-37 A to D	1"	CRD Insert	Yes	22	Water	-	-	Inside Outside	CK HCU	Flow AC Coils/ Int.Air	- -/ Spring	-	- N	- I	C C	C C	C C	C C

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PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

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Penetration Number	Line Size	Line Description	ESF (Yes/No)	Fig. No.	Fluid	Valve Number (1)	Isolation Group (Signal) (3)	Valve Location	Valve Type (2)	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	Closure Time (Sec.) (4)	Power Source (5)	Position Indication (6)	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
N-38 A to D	1"	CRD Withdrawal	Yes	22	Water	-	-	Outside	HCU	AC Coils/ Inst.Air	-/ Spring	-	N	I	C	C	C/O	C/O
N-39A,B	14"	RHR Containment Spray-RHR	Yes	23	Water/ air	MO-10-31A,B	VII	Outside	GT	AC Motor	Manual	11	C,D	D	C	C	O	as is
		-RHR	Yes			MO-10-26A,B	VII	Outside	GT	AC Motor	Manual	11	C,D	D	C	C	O	as is
		-CAD	Yes			SV-4948A, B	RM	Outside	SV	AC Coil	-	-	C,D	N	C	C	O	C
		-CAD	Yes			SV-4949A, B	RM	Outside	SV	AC Coil	-	-	C,D	N	C	C	O	C
		-CAD	Yes			-	-	Outside	CK	Flow	-	-	-	-	C	C	O	-
N-40 A to D	1"	InstLines - Jet Pumps	-	14	Water	-	-	Inside Outside	RO XFCV									
N-41	3/4"	Recirc Loop Sample	No	24	Water	AO-2-39	I(A,B,C,D, E)	Inside	DCV	Inst Gas	Spring	5	A	D	C	C	C	C
						AO-2-40	I(A,B,C,D, E)	Outside	DCV	Inst Air	Spring	5	B	D	C	C	C	C
N-42	1½"	Standby Liquid Control	No	25	Sodium Pentaborate Solution	11-16 11-17	- -	Outside Inside	CK CK	Flow Flow	- -	- -	- -	- -	C C	C C	C C	- -
N-46A,B	1"	Inst Lines-Unit 3,Drywell Press.	Yes	19	Air	10-53A,C	-	Outside	GB									
						10-60A,C	-	Outside	GB									
N-49B,C	1"	Inst Lines-Unit 3,Drywell Press.	Yes	19	Air	10-53B,D 10-60B,D		Outside Outside	GB GB									
N-49E,F	1"	Inst Lines-Unit 2 Drywell Press.	Yes	19	Air	10-53A,C 10-60A.C.		Outside Outside	GB GB									
N-50A	1"	Inst Lines -Recirc - Suction Press.		16	Water	- 305A		Inside Outside	RO XFCV									
N-50B,C	1"	Inst Lines -RCIC Steam Press.	-	16	Steam	54 A,B 125A,B		Inside Outside	RO XFCV									
N-50 D,E	1"	Inst.Lines RWCU Pump Suct.		6	Water	66F ,B		Inside Outside	RO XFCV									
N-51A,B	1"	CACS Sample Lines	No	26	Air	SV-2671E, D	III	Outside	SV	AC Coil	-	-	A,A	I	O	O	C	C
						SV-2978E, D	III	Outside	SV	DC Coil	-	-	B,B	I	O	O	C	C

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PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

Penetration Number	Line Size	Line Description	ESP (Yes/No)	Fig. No.	Fluid	Valve Number ①	Isolation Group (Signal) ③	Valve Location	Valve Type ②	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	Closure Time (Sec.) ④	Power Source ⑤	Position Indication ⑥	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
N-51C	1"	CACS Sample Line																
		-CACS	NO	27	Air	SV-2671C	III	Outside	SV	AC Coil	-	-	A	I	O	O	C	C
		-CACS	"			SV-2978C	III	Outside	SV	DC Coil	-	-	B	I	O	O	C	C
		-CAD	Yes			SV-4960C	RM	Outside	SV	AC Coil	-	-	C	N	C	C	O	C
		-CAD	Yes			SV-4961C	RM	Outside	SV	AC Coil	-	-	C	N	C	C	O	C
		-Rad Gas	No			SV-4966C	RM	Outside	SV	AC Coil	-	-	3	N	C	C	C	C
N-51D	1"	CACS Sample Return	No	28	Air	-	-	Outside	CK	Flow	-	-	-	-	O	O	C	-
						SV-2980	III	Outside	SV	DC Coil	-	-	B	I	O	O	C	C
N-51E	1"	Inst Line - Recirc Suction pressure	-	16	Water	-	-	Inside	RO									
						305B		Outside	XFCV									
N-52E	1"	Inst Line - Core Plate Pressure	-	16	Water	-		Inside	RO									
						33		Outside	XFCV									
N-52F	1"	Inst Gas Supply	No	10	Air	-	-	Outside	CK	Flow	-	-	-	-	O	O	C	-
						AO-2969B	II(A,B)	Outside	DCV	Inst Air	Spring	5	B	D	O	O	C	C
N-53	8"	Chilled Wtr. from Drywell coolers loop A	NO	29	Water	MO-2201B	RM	Outside	GT	AC Motor	Manual	42	3	D	O	O	C	as is
N-54	8"	Chilled water from drywell coolers, Loop B	NO	29	Water	Mo-2200B	RM	Outside	GT	AC Motor	Manual	42	3	D	O	O	C	as is
N-55	8"	Chilled wtr. from drywell coolers Loop B	No	29	Water	Mo-2200A	RM	Outside	GT	AC Motor	Manual	42	3	D	O	O	C	as is
N-56	8"	Chilled wtr to Drywell coolers Loop A	No	29	Water	Mo-2201A	RM	Outside	GT	AC Motor	Manual	42	3	D	O	O	C	as is
N-57	3/4"	Main stm. line "D" sample	No	24	Steam	AO-2316	I(A,B,C,D,E)	Inside	DCV	Inst Gas	Spring	5	A	D	C	C	C	C
						AO-2-317	I(A,B,C,D,E)	Outside	DCV	Inst Air	Spring	5	B	D	C	C	C	C

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PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

Penetration Number	Line Size	Line Description	ESP (Yes/No)	Fig. No.	Fluid	Valve Number ①	Isolation Group (Signal) ③	Valve Location	Valve Type ②	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	Closure Time (Sec.) ④	Power Source ⑤	Position Indication ⑥	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
N-102B	1"	Inst.Line -Unit 2 Drywell Press	Yes	19	Air	53B,D		Outside	GB									
						60B,D		Outside	GB									
N-203	1"	CACS &CAD Sample Line - CACS	No	27	Air	SV-2671B	III	Outside	SV	AC Coil	Spring	-	A	I	O	O	C	C
		-CACS	No			SV-2978B	III	Outside	SV	DC Coil	"	-	B	I	O	O	C	C
		- CAD	Yes			SV-4960D	RM	Outside	SV	AC Coil	"	-	D	N	C	C	O	C
		- Rad Gas	No			SV-4966D	RM	Outside	SV	AC Coil	"	-	3	N	C	C	C	C
		- Inst	Yes			-		Outside	GB	-	-							
		- CAD	Yes			SV- 4961D	RM	Outside	SV	AC Coil	Spring		D	N	C	C	O	C
N-205A	20"	Torus Vacuum Breaker	Yes	30	Air	AO-2502B	RM	Outside	B	Inst. Air	Spring	5	3	D	C	C	C	O
						9-26B	-	Outside	VB	Flow	-	-	-	-	C	C	C	-
						-		Outside	GB	-	-							
N-206A,B	2"	Inst Lines - Torus Level	Yes	15	Air/ water	-		Outside	GB									
N-210A, B	18"	RHR Test & Pool cooling return	Yes	31	Water	MO-10-34 A,B	VII	Outside	GB	AC Motor	Manual	24	C,D	D	C	C	C	as is
						10-19A,B,C, D	-	Outside	CK	Flow	-	-	-	-	C	O	O	-
N-211A, B	6"	RHR Torus Spray -RHR	Yes	31	Water	MO-10-38 A,B	VII	Outside	GB	AC Motor	Manual	30	C,D	D	C	C	C	as is
		-RHR				MO-10-39 A,B	VII	Outside	GT	AC Motor	Manual	112	C,D	D	C	C	C	as is
		-RHR				MO-10-34 A,B	VII	Outside	GB	AC Motor	Manual	24	C,D	D	C	C	C	as is
		-CAD				SV-4950 A,B	RM	Outside	SV	AC Coil	-	-	C,D	N	C	C	O	C
		-CAD				SV-4951 A,B	RM	Outside	SV	AC Coil	-	-	C,D	N	C	C	O	C
		-CAD				-	-	Outside	CK	Flow	-	-	-	-	C	C	O	-
N-212, 214, 217B	12"	HPCI & RCIC Turbine Exhaust -RCIC	No	33	Steam	13-9	-	Outside	SCK	Flow	-	-	-	-	O	O	O	-
		-RCIC	No			13-50	-	Outside	CK	Flow	-	-	-	-	O	O	O	-
		-RCIC	NO			RO-4240	TT	Outside	DCV	Inst Air	Spring	5	6	D	O	O	O	C
		-RCIC	No			AO-4241	TT	Outside	DCV	Inst Air	Spring	5	6	D	O	O	O	C
	24"	-HPCI	Yes		Steam	23-12	-	Outside	SCK	Flow	-	-	-	-	O	O	O	-
		-HPCI	Yes			23-65	-	Outside	CK	Flow	-	-	-	-	O	O	O	-
		-HPCI	Yes			AO-4247	TT	Outside	DCV	Inst air	Spring	5	6	D	O	O	O	C

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Penetration Number	Line Size	Line Description	ESF (Yes/No)	Fig. No.	Fluid	Valve Number (1)	Isolation Group (Signal) (3)	Valve Location	Valve Type (2)	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	Closure Time (Sec.) (4)	Power Source (5)	Position Indication (6)	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
		-HPCI	Yes			AO-4248	TT	Outside	DCV	Inst Aid	Spring	5	6	D	O	O	O	C
	2"	-Vac relief	No		Air	MO-4244	IV(C,D,E)	Outside	GT	DC Motor	Manual	15	E	D	O	O	C	as is
		-Vac relief	Yes			MO-4244A	IV(C,D,E)	Outside	GT	DC Motor	Manual	15	F	D	O	O	C	as is
N-213A	1"	Torus Drain (with level inst)	-	15	Water	-		Outside	GB									
N-215	1"	Inst Line -Unit 2 Torus level	-	15	Air	-		Outside	GB									
N-216	4"	HPCI Min. Flow	Yes	32	Water	23-62	-	Outside	CK	Flow	-	-	-	-	C	C	C	-
N-218A	1"	Inst. Gas Supply	No	10	Air	-	-	Outside	CK	Flow	-	-	-	-	O	O	C	-
						AO-2468	II(A,B)	Outside	DCV	Inst Air	Spring	5	B	D	O	O	C	C
N-218B	1"	CACS Sample Line	No	26	Air	SV-2671A	III	Outside	SV	AC Coil	-	-	A	I	O	O	C	C
						SV-2978A	III	Outside	SV	DC Coil	-	-	B	I	O	O	C	C
N-218C	3/4"	ILRT Connection	No	18	Air	-	LC	Outside	GBC	Manual	-	-	-	-	C	C	C	-
N-219	18"	Torus Purge																
		Exhaust -CACS	No	34	Air	AO-2511	III	Outside	B	Int Air	Spring	5	A	D	C	O	C	C
		-CACS	No			AO-2512	III	Outside	B	Int Air	Spring	5	B	D	C	O	C	C
		-CAD	Yes			AO-2513	III	Outside	DCV	Int Air	Spring	5	A	D	C	C	O	C
		-CAD	Yes			AO-2514	III	Outside	DCV	Int Air	Spring	5	B	D	C	C	O	C
		-CACS anal	No			SV-2671F	III	Outside	SV	AC Coil	-	-	A	I	O	O	C	C
		-CACS ANAL	No			SV-2978F	III	Outside	SV	DC Coil	-	-	B	I	O	O	C	C
		-CAD anal	Yes			SV-4960A	RM	Outside	SV	AC Coil	-	-	C	N	C	C	O	C
		-CAD anal	Yes			SV-4961A	RM	Outside	SV	AC Coil	-	-	C	N	C	C	O	C
		-Rad Gas	No			SV-4966A	RM	Outside	SV	AC Coil	-	-	3	N	C	C	C	C
N-221	2"	RCIC Vacuum Pump Disch	No	35	Air	13-10	-	Outside	SCK	Flow	-	-	-	-	O	O	O	-
						13-38	-	Outside	CK	Flow	-	-	-	-	C	C	O	-
N-223	2"	HPCI Turbine Drain	Yes	35	Water	23-13	-	Outside	SCK	Flow	-	-	-	-	O	O	O	-
						23-56	-	Outside	CK	Flow	-	-	-	-	C	C	O	-
N-224	10"	Core Spray test Line-Unit 2	Yes	36	Water	MO [illegible]4-26A	VI	Outside	GE	AC Motor	Manual	1	C	C	C	C	C	as is

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PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

Penetration Number	Line Size	Line Description	ESF (Yes/No)	Fig. No.	Fluid	① Valve Number	③ Isolation Group (Signal)	Valve Location	② Valve Type	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	④ Closure Time (Sec.)	⑤ Power Source	⑥ Position Indication	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
			No		water	-	-	Outside	CKC	Flow	-	-	-	-	C	C	C	-
			Yes			14-66A,C	-	Outside	CKC	Flow	-	-	-	-	C	C	C	-
N-225	6"	RCIC & Torus Water Clearup Suct.	No	37	Water	MO-13-41	RM	Outside	GT	DC Motor	Manual	33	E	D	C	C	O	as is
			No			MO-14-70	II(A,B)	Outside	GT	AC Motor	Manual	20	E	D	C	C	C	as is
			No			Mo-14-71	II(A,B)	Outside	GT	D C Motor	Manual	20	A	D	C	C	C	as is
N-226A to D	24"	RHR Pump Suction	Yes	38	Water	MO-10-13 A to D	RM	Outside	GT	AC Motor	Manual	30	A.B.C.D.	D	O	O	O	as is
						RV-10-72 A to D	-	Outside	RV	Flow	-	-	-	-	C	C	C	-
N-227	16"	HPCI Pump Suction	Yes	39	Water	MO-23-58	IV(A,B,C)	Outside	GT	DC Motor	Manual	5	?	D	C	C	O	as is
N-228 A to D	16"	Core Spray Pump suction	Yes	40	water	Mo-14-7 A to D	RM	Outside	GT	AC Motor	Manual	80	A,B,C,D,	D	O	O	O	as is
N-229	4"	Core spray pump Min Flow - Unit 2	Yes	41	Water	14-66B,D	-	Outside	CK	Flow	-	-	-	-	O	O	O	-
						-	-	Outside	CK	Flow	-	-	-	-	C	C	C	-
N-230	2"	RCIC Pump Min Flow	No	42	Water	13-29	-	Outside	CK	Flow	-	-	-	-	C	C	C	-
N-233	4"	HPCI Test Line-Unit 2	Yes	43	Water	MO-23-31	V(D,F)	Outside	GT	DC Motor	Manual	15	F	D	C	C	C	as is
N-234	10"	Core spray test Line -Unit 2	Yes	44	Water	MO-14-26B	VI	Outside	GB	AC Motor	Manual	14	D	D	C	C	C	as is
						-	-	Outside	CK	Flow	-	-	-	-	C	C	C	-
N-234A	10"	Core Spray test Line - Unit 3	Yes	44	Water	MO-14-26B	VI	Outside	CB	AC Motor	Manual	14	D	D	C	C	C	as is
								Outside	CK	Flow	-			-	C	C	C	-
N-234B	10"	Core Spray Test Line - Unit 3	Yes	44	Water	Mo-14-26A	VI	Outside	GB	AC Motor	Manual	14	C	D	C	C	C	as is
						-	-	Outside	CK(2)		Flow	-	-	-	C	C	C	-
N-235	4"	HPCI Test Line Unit 3	Yes	43	Water	MO-23-31	V(DF)	Outside	GT	DC Motor	Manual	15	F	D	C	C	C	as is
N-236A	4"	Core Spray Pump Min. Flow - Unit 3	Yes	45	Water	14-66B,D	-	Outside	CK	Flow	-	-	-	-	O	O	O	-
N-236B	4"	Core Spray Pump Min Flow - Unit 3	Yes	41	Water	14-66-A,C	-	Outside	CK	Flow	-	-	-	-	O	O	O	-
			No			=		"	CK	Flow	-	-	-	-	C	C	C	-

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PLANT Peach Bottom UNIT(S) II & III

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

Page 10

Penetration Number	Line Size	Line Description	ESF (Yes/No)	Fig. No.	Fluid	Valve Number (1)	Isolation Group (Signal) (3)	Valve Location	Valve Type (2)	Mode of Actuation: Primary Actuation	Mode of Actuation: Secondary Actuation	Closure Time (Sec.) (4)	Power Source (5)	Position Indication (6)	Valve Position: Normal	Valve Position: Shutdown	Valve Position: Post-Accident	Valve Position: Power Failure
N-250	1"	Inst.Line - Unit 3, Torus Level	No	15	Air	-		Outside	GB									

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PEACH BOTTOM ATOMIC POWER STATION
Containment Isolation Valves

NOTES:

1. Valve Numbering: All valve numbers apply to both units, except 4 digit numbers. For those valves, the first digit designates the unit: 2 or 4 - Unit 2; 3 or 5 - Unit 3.

2. Valve Types:

GB	- Globe	DCV	- Diaphram Control Valve
GT	- Gate	VB	- Vacuum Breaker
CK	- Check	XV	- Explosive Valve
BL	- Ball	RO	- Restricting Orifice
B	- Butterfly	BCK	- Ball Check
SV	- Solenoid	HCU	- Hydraulic Control Unit
RV	- Relief	XFCV	- Excess Flow Check Valve
SCK	- Stop Check		

3. Isolation Signals:

Group I
- A. Reactor Low Water Level (-48")
- B. High Steam Line Flow (140%)
- C. High Steam Tunnel Temp. (200°F)
- D. Low Steam Line Pressure (850 psi in Run mode)
- E. High Steam Line Radiation (3 x normal)

Group II
- A. Reactor Low Water Level (o")
- B. High Drywell Pressure (2 psig)
- C. RWCU High Flow (300%)
- D. RWCU non-regen. heat exch. high temp. (200°F)*
- E. High Reactor Pressure (shutdown cooling - 75 psig)
- F. High Reactor Pressure (600 psig)
- G. Standby Liquid Control System Operation*

Group III
- A. Reactor Low water Level (0")
- B. High Drywell Pressure (2 psig)
- C. Reactor Bldg. High Radiation (16 mr/hr)
- D. Refueling Floor High Rad. (16 mr/hr)

Group IV
- A. RCIC Steam Line High Flow (300%)
- B. RCIC Steam Tunnel High Temp. 200°F)
- C. RCIC Steam Line Low Pressure (50 psig)*
- D. High Drywell Pressure (2 psig)
- E. RCIC Steam Line Isolated

Group V
- A. HPCI Stm. Line High Flow (300%)

B. HPCI Stm. Tunnel High Temp. 200▲F)
C. HPCI Stm. Line Low Pressure (100 psig)*
D. High Drywell Pressure (2 psig)
E. HPCI Stm. Line Isolated
F. Reactor Low Water Level (-48")

Group VI - Reactor Low Water Level (-144")
- High Drywell Pressure (2 psig)

Group VII LPCI Initiation:

- Reactor Low Water Level (-144")
- High Drywell Pressure (2 psig) & Reactor Low Pressure (450 psig)

RM - Remote Manual
M - Manual (local only)
LC - Locked Closed
TT - Turbine Trip*
RMP - Push Bottom, momentary contact opens valve for test

* Process Signals

2. Valve control cables are not presently assigned to a safeguard channel. Modification in progress to supply valve with correct designation, diverse isolation signal, and proper reset logic.

4. "S" indicates standard closing time. The standard minimum closing rate for automatic isolation valves is based on a nominal line size of 12 inches. Using the standard closing rate, a 12-inch line is isolated in 60 seconds. Conversion to closing time can be made on this basis using the actual size of the line in which the valve is installed.

5. The power supplies for the valves are identified as one of the following:

A - safeguard AC channel A (onsite emergency diesel buses)
B - safeguard AC channel B (onsite emergency diesel buses)
C - safeguard AC channel C (onsite emergency diesel buses)
D - safeguard AC channel D (onsite emergency diesel buses)
E - safeguard DC channel A (onsite emergency diesel buses)
F - safeguard DC channel B (onsite emergency diesel buses)
N - non-safeguard

For cable routing purposes, channels A&C - AC and A-DC are assigned to Division I and channels B&D - AC and B-DC are assigned to Division II.

The following special notes apply:

1. The power for valve 10-25A automatically transfers between A and C depending upon availability. The controls are assigned to safeguard channel A. The power for valve 10-25B automatically transfers between B and D depending upon availability. The controls are assigned to safeguard channel C.

2. Testable check valve, power and controls do not affect isolation function.

3. Valve control cables are not presently assigned to a safeguard channel. Modification in progress to supply valves with correct designations.

4. Valves are not powered from onsite supplies and control cables are not assigned to safeguard raceways. Modification in progress to correct concern.

5. Controls for the TIP ball, shear and purge valves are not separated and are not assigned to safeguard channels.

6. Valve control cables are not presently assigned to a safeguard channel. Modification in progress to supply valve with correct designation, diverse isolation signal, and proper reset logic.

6. Position indication for the valves is identified as follows:

D. direct indication from position switches at the valve.

I. indirect indication - usually light is electrically parallel to solenoid.

N. no indication as to valve position.

Position is indicated in the control room.

7. Isolate only if in shutdown cooling mode.

8. Modification in progress to cap this line.

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PBAPS

CONTAINMENT ISOLATION VALVE ARRG'T.

LEGEND

LETTERS	DESCRIPTION
AO	AIR OPERATED VALVE
MO	MOTOR OPERATED VALVE
TC	TEST CONNECTION
RCS	REACTOR COOLANT SYSTEM
TCK	TESTABLE CHECK VALVE
SV	SOLENOID OPERATED VALVE
RO	FLOW RESTRICTING ORIFICE
LC	VALVE LOCKED CLOSED
CV	CONTROL VALVE
XV	EXPLOSIVE VALVE

SYMBOLS

- BALL VALVE
- FLOW LIMITING (OR EXCESS FLOW CHECK VLV.)
- CHECK VALVE
- GLOBE VALVE
- GATE VALVE
- DIAPHRAM ACTUATED VALVE
- STOP CHECK VALVE
- BUTTERFLY VALVE
- DIAPHRAM ACTUATED CONTROL VALVE
- MOTOR ACTUATED VALVE
- SOLENOID ACTUATED VALVE
- FLOW RESTRICTING ORIFICE
- EXPLOSIVE VALVE
- NORMALLY OPEN
- NORMALLY CLOSED
- STRAINER

NOTES:

VALVES ARE SHOWN IN POSITION CORRESPONDING TO NORMAL POWER OPERATION.

DOTTED VLV'S DO NOT NORMALLY PERFORM A CONTAINMENT ISOL. FUNCTIO

PBAPS
CONTAINMENT ISOLATION VALVE ARRG'T.

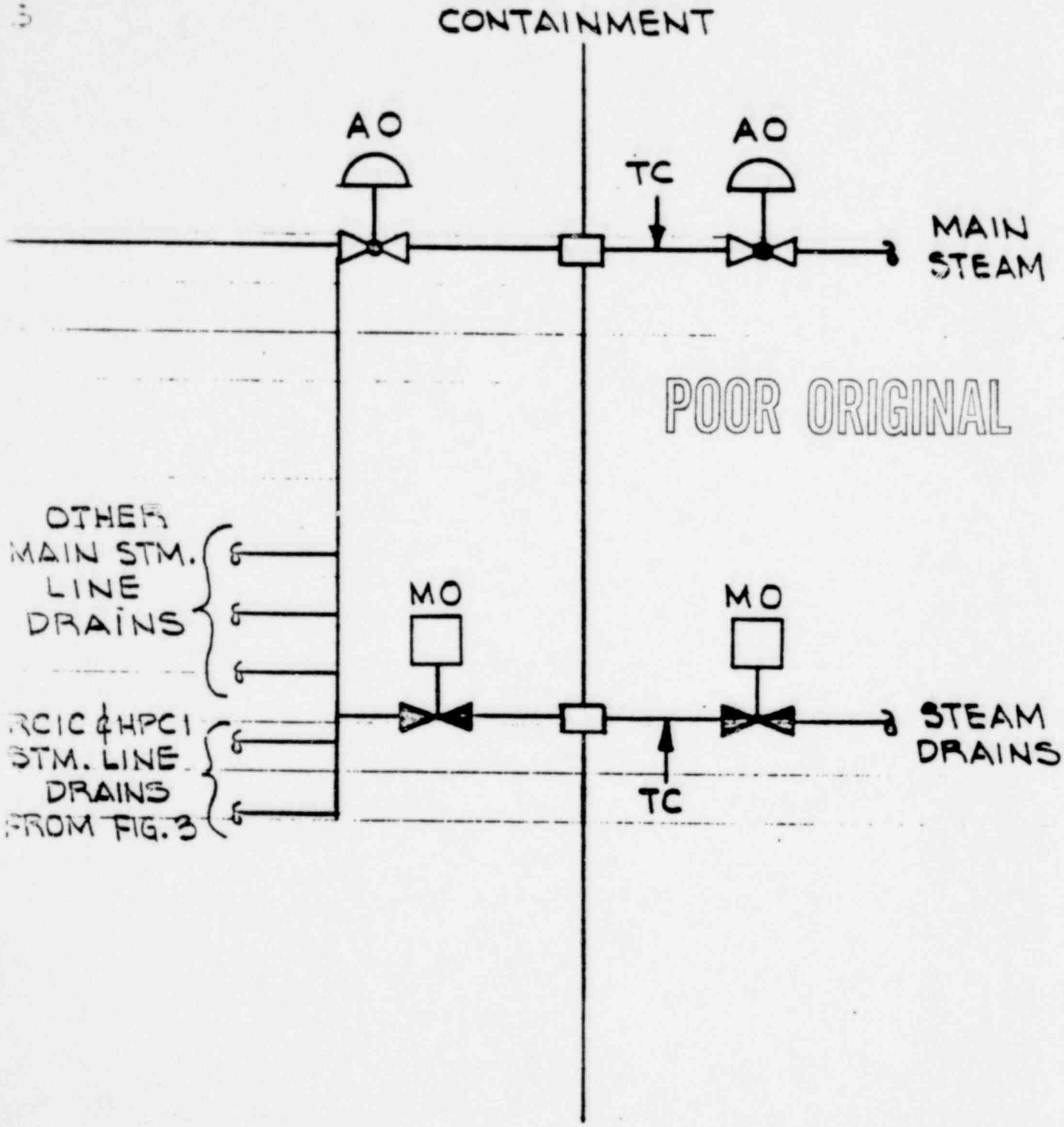

FIG. 1 MAIN STEAM LINE (N-7A TO D)
STEAM DRAINS (N-8)

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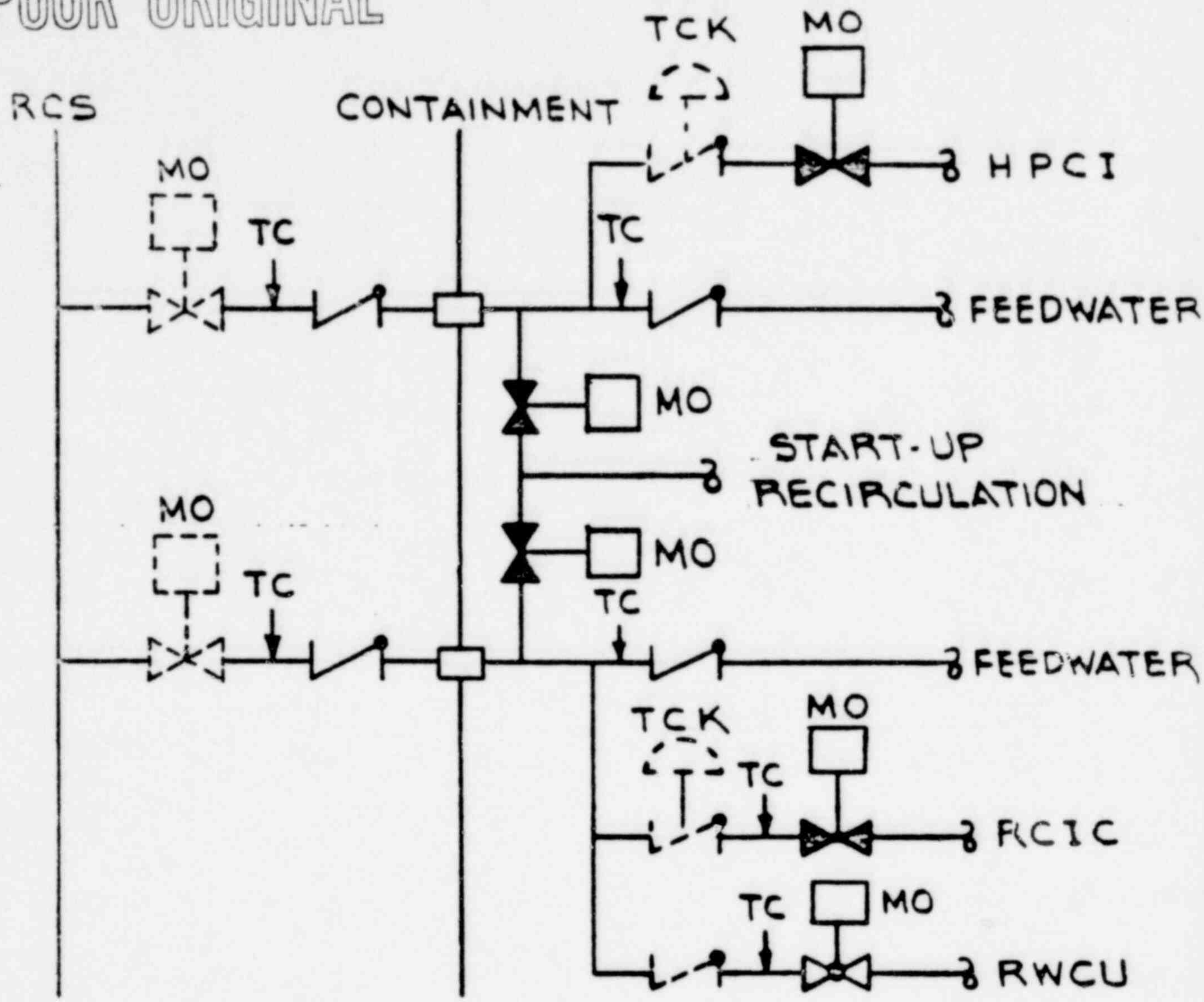
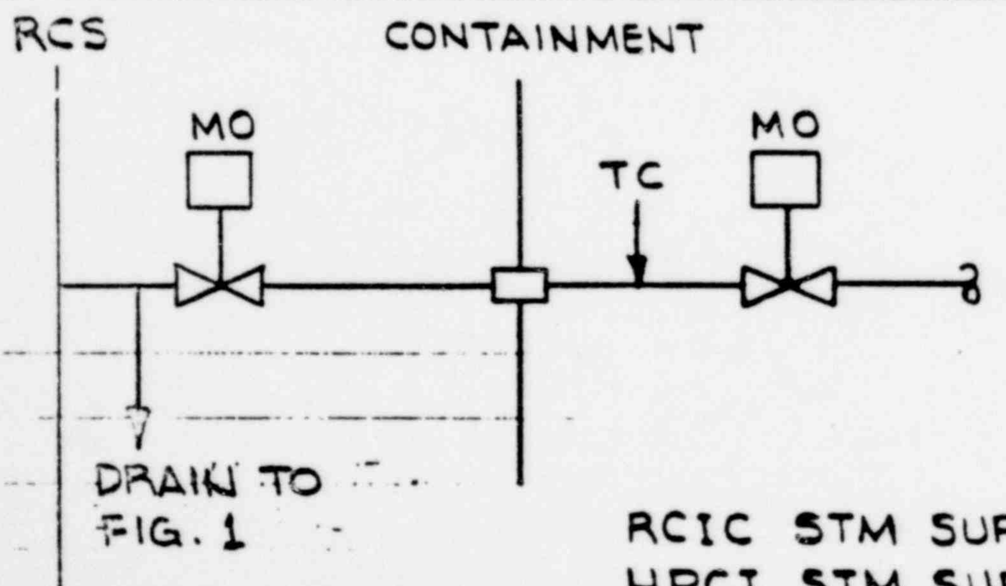


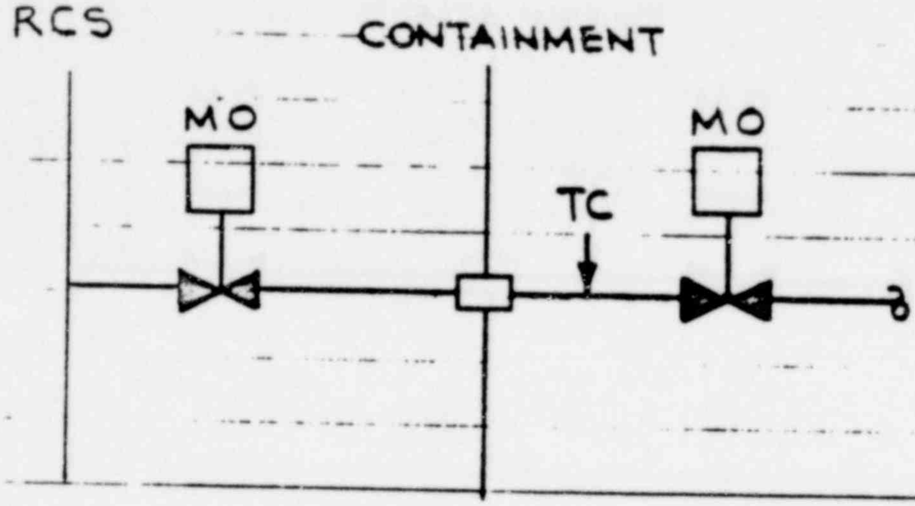
G. 2 FEEDWATER (N9A & B)



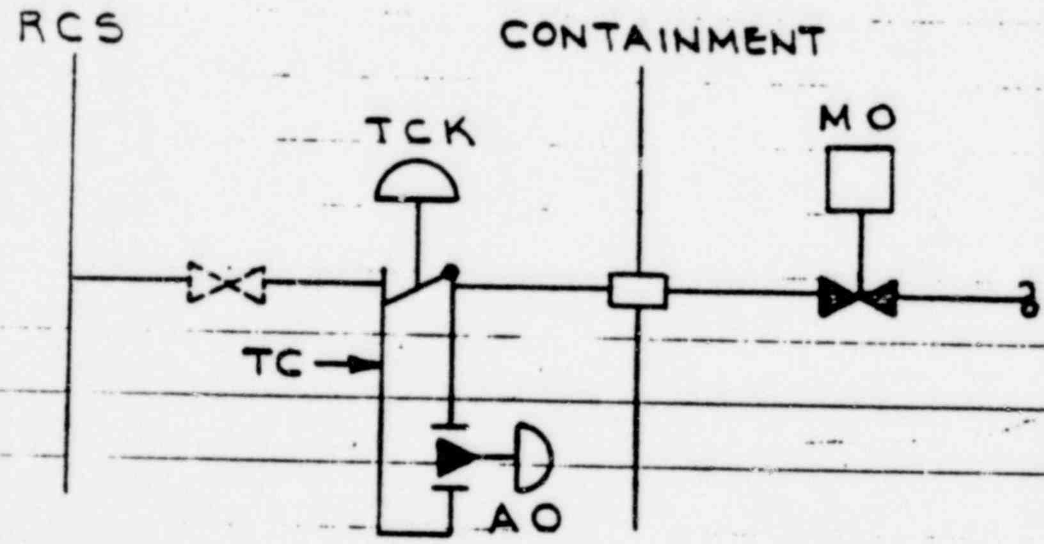
1375 223

G. 3 RCIC STM SUPPLY (N 10)
HPCI STM SUPPLY (N 11)

POOR ORIGINAL

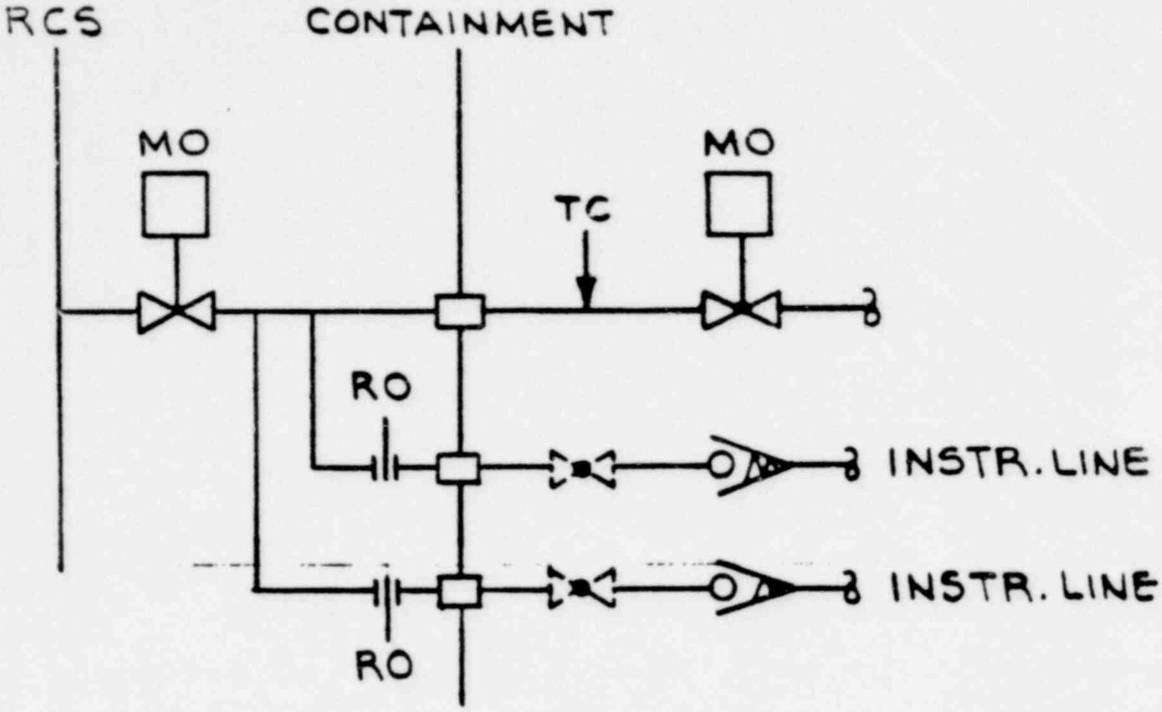


. 4 RHR SHUTDOWN COOLING SUCTION (N-1?



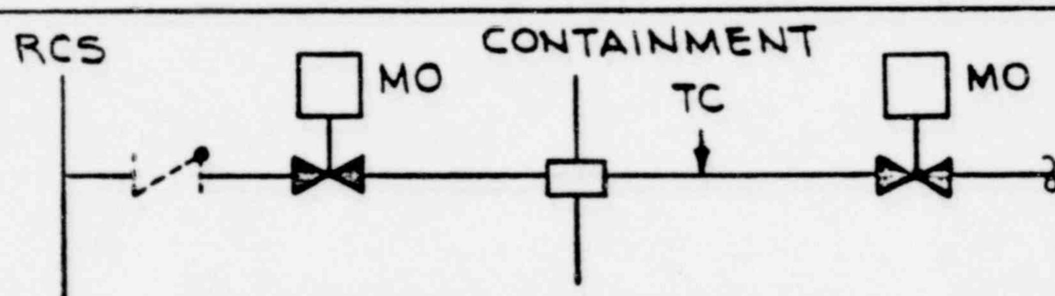
FI . 5 RHR SHUTDOWN COOLING RETURN (N-13 A & B)
CORE SPRAY DISCHARGE (N-16 A & B)

1376 224

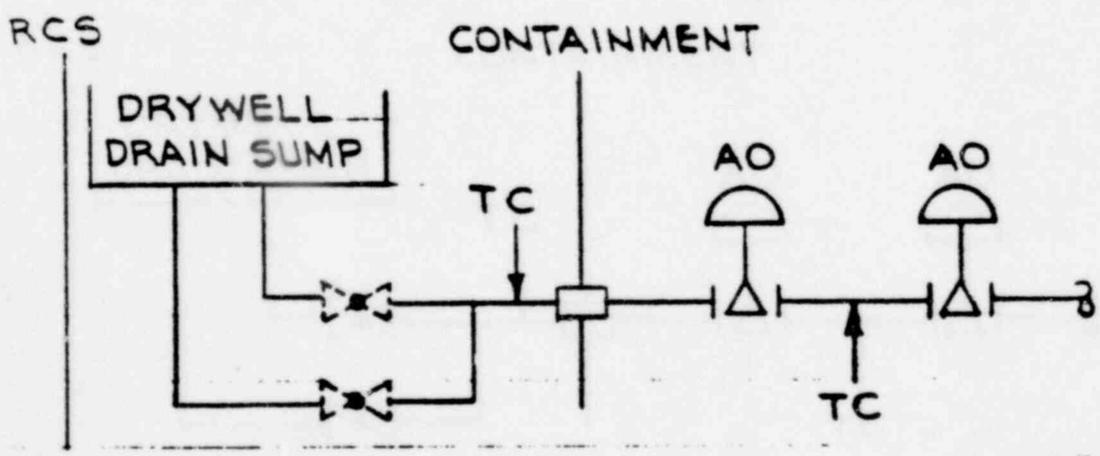


RWCU PUMP SUCTION (N-14)

. 6 INSTRUMENT LINE (N-50D,E)



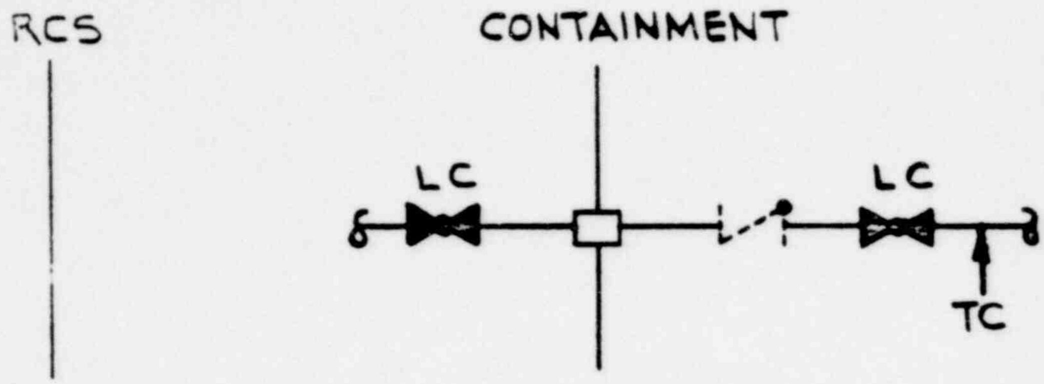
. 7 RHR HEAD SPRAY (N-17)



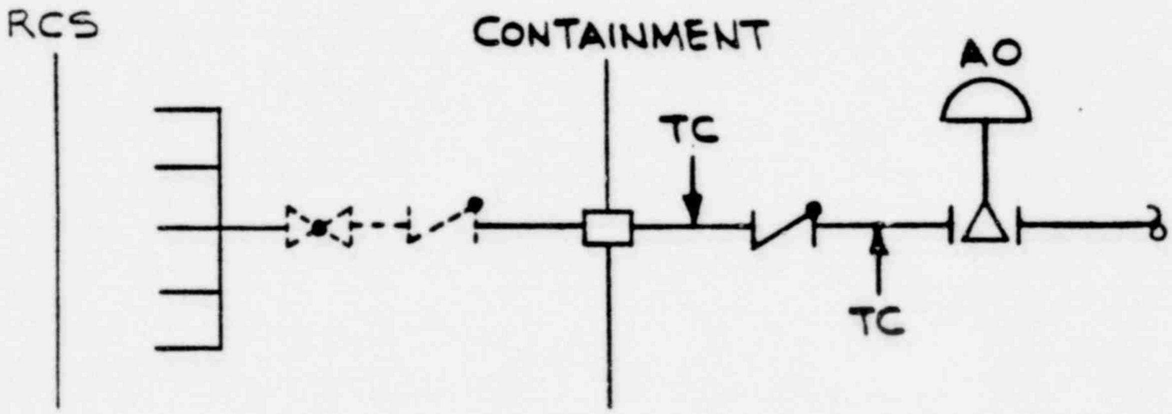
1376 225

DRYWELL EQUIP. DRN. SUMP DISCH. (N-18)

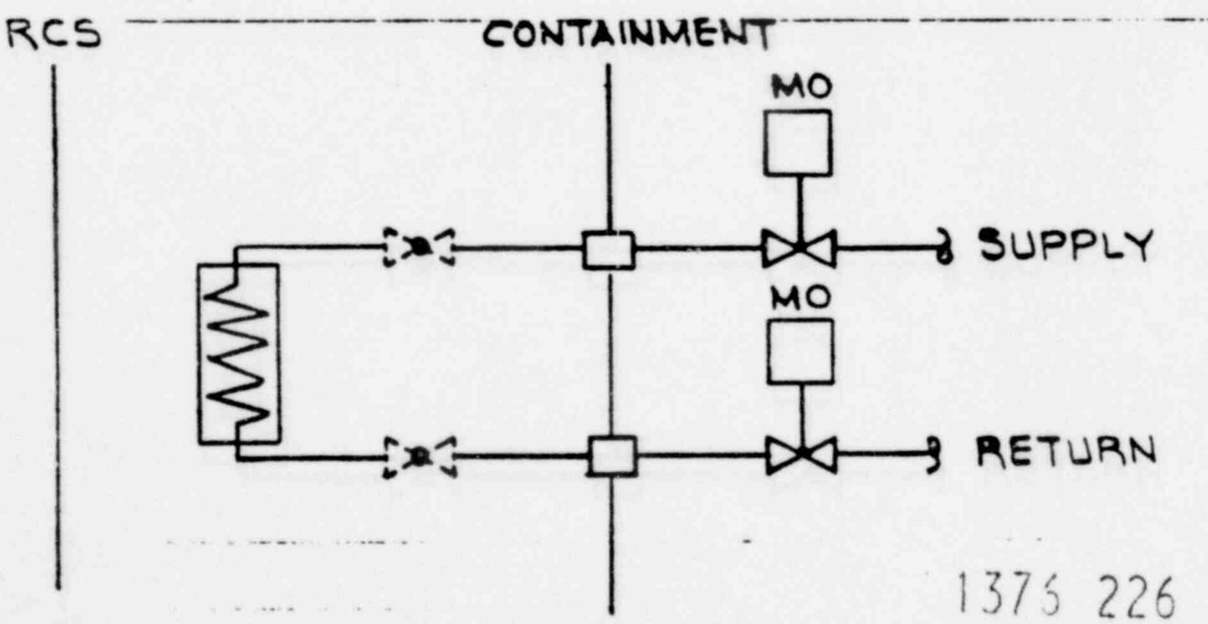
. 8 DRYWELL FLOOR DRN. SUMP DISCH. (N-19)



.9 SERVICE AIR SUPPLY (N-21)

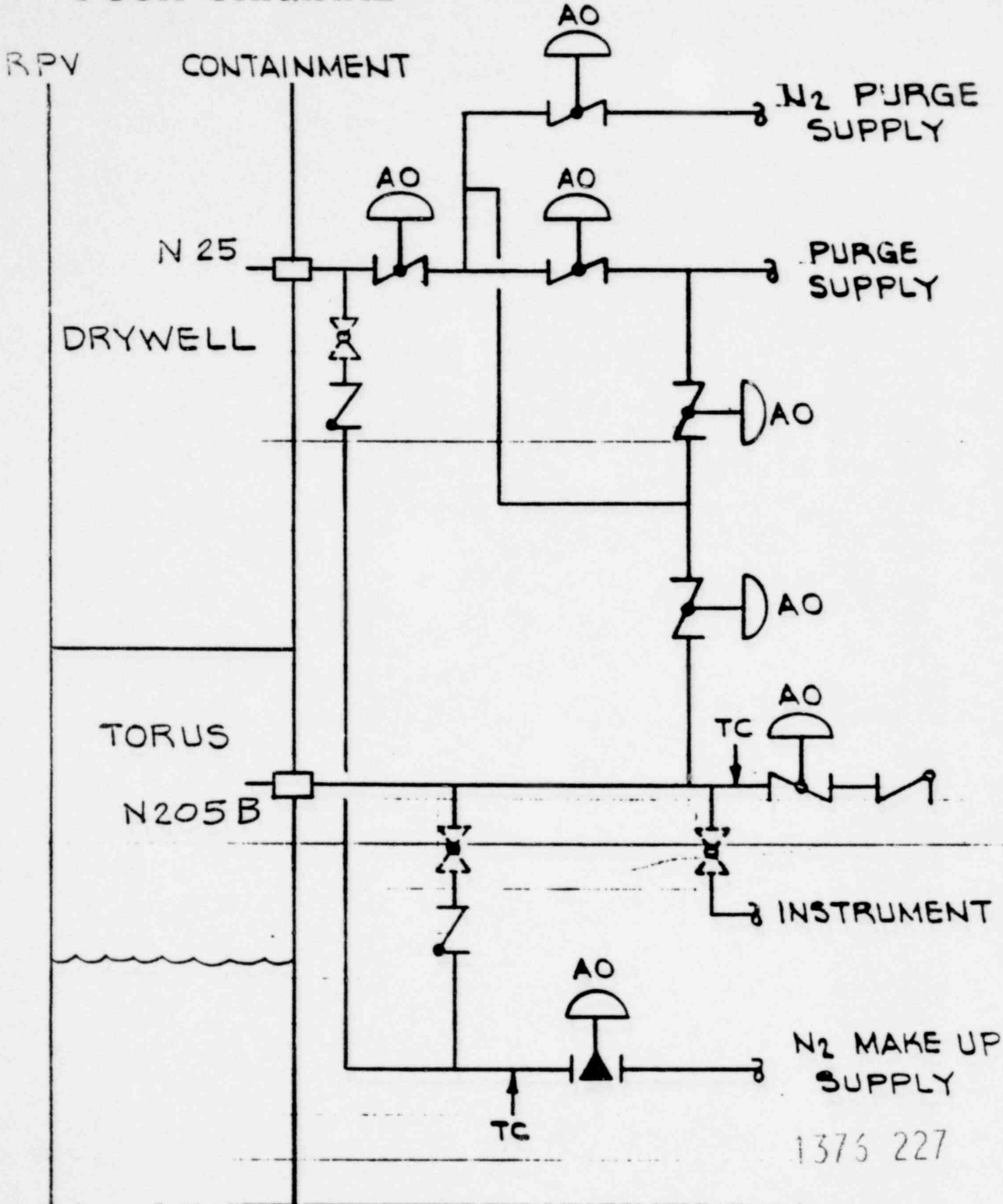


.10 INST. GAS SUPPLY (N-22, N-52F, N-218A)



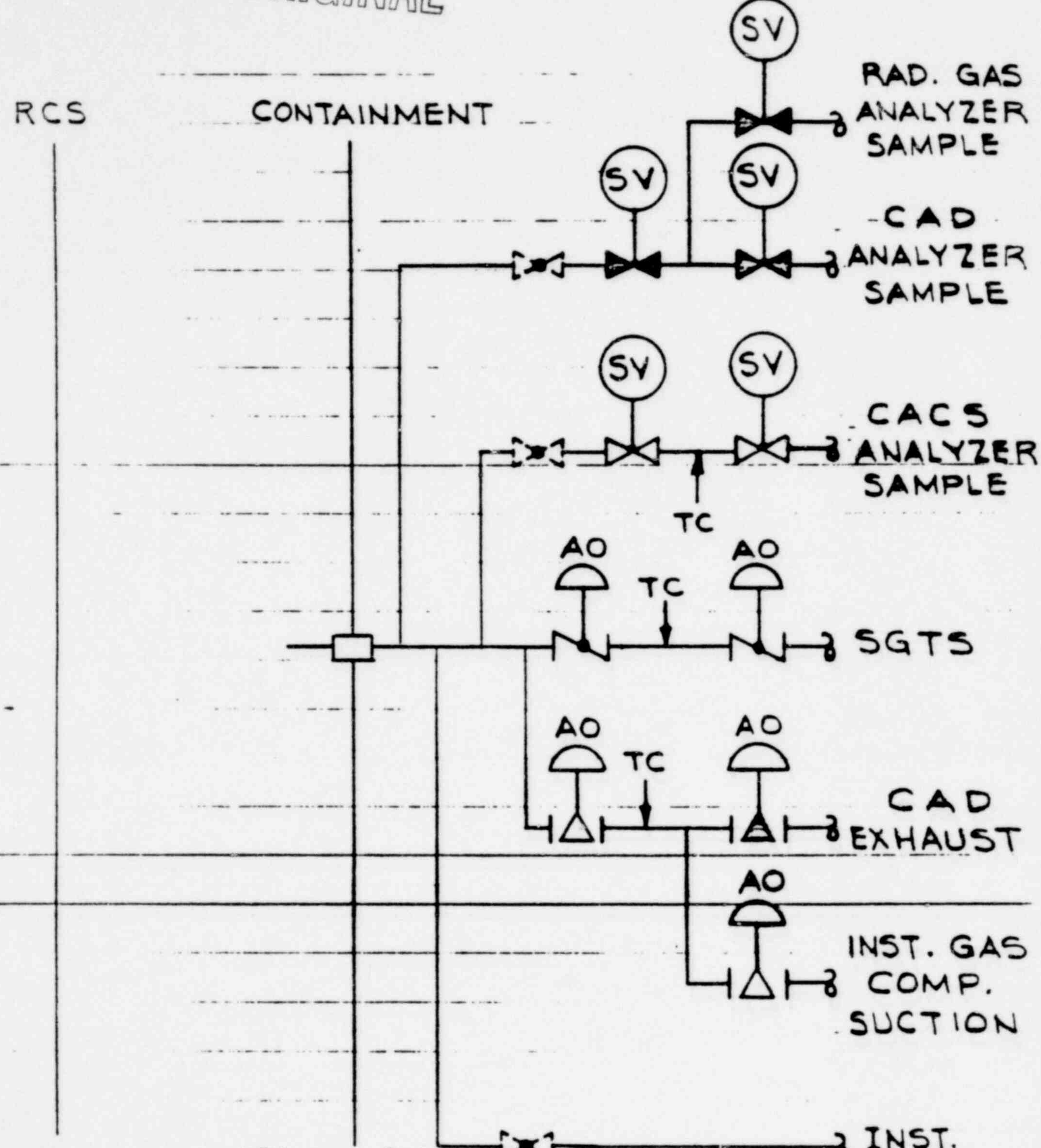
1376 226

.11 RBCW (N-23 & N-24)



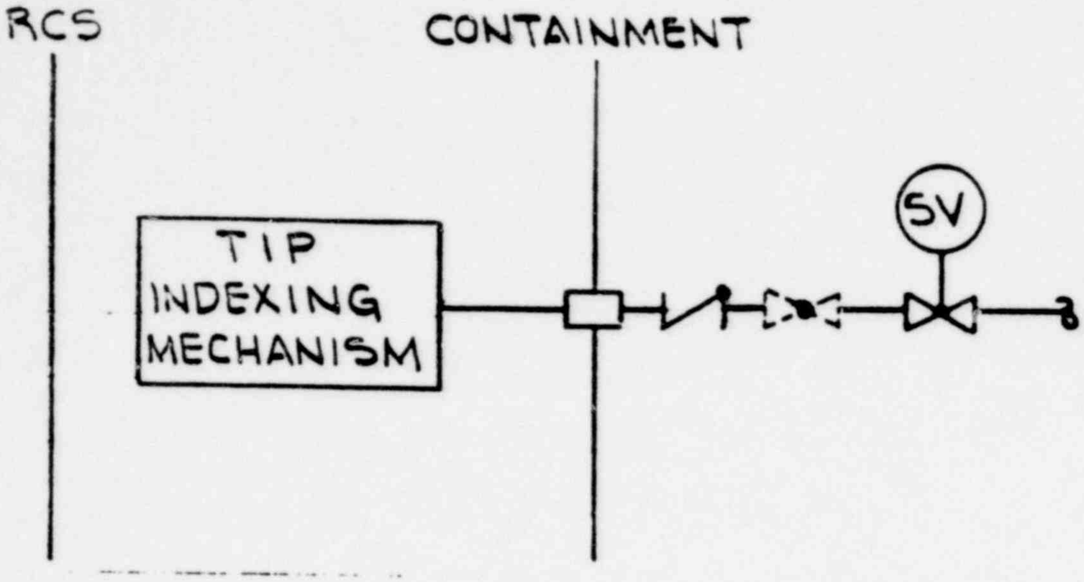
DRYWELL & TORUS PURGE SUPPLIES (N-25 & N-205B)

...G. 12

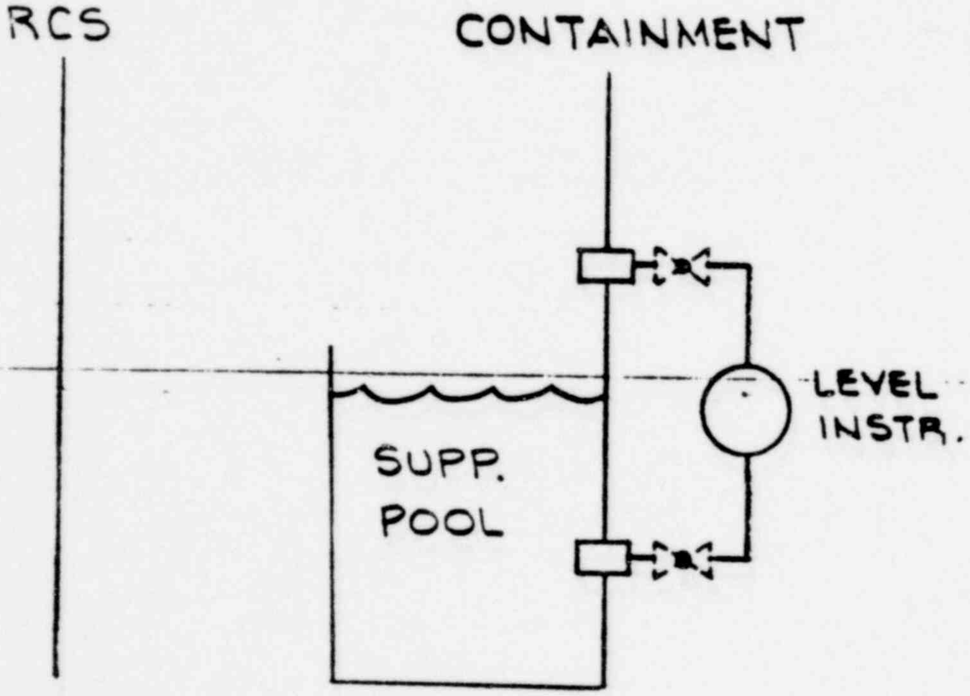


1376 228

G. 13 DRYWELL PURGE EXHAUST (N-26)

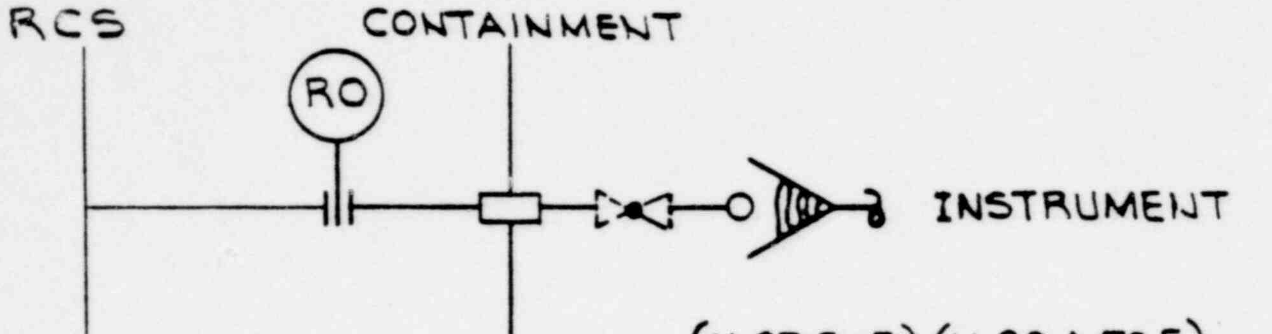


. 14 TIP PURGE (N-35F)



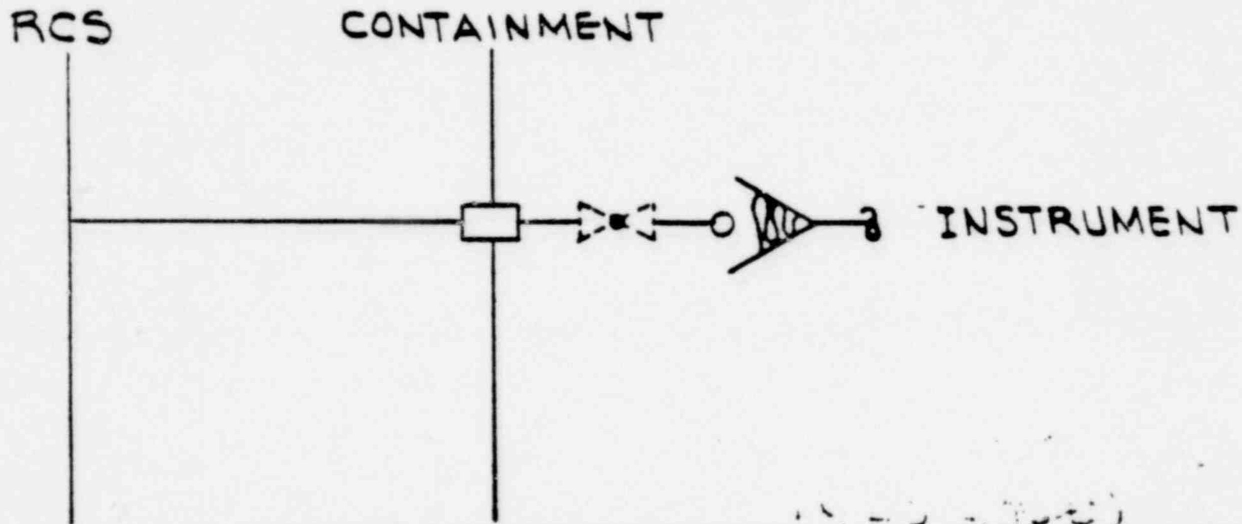
. 15 INSTRUMENT LINES (N-206A,B)(N-215) (N-213A) (N-250)

1376 229

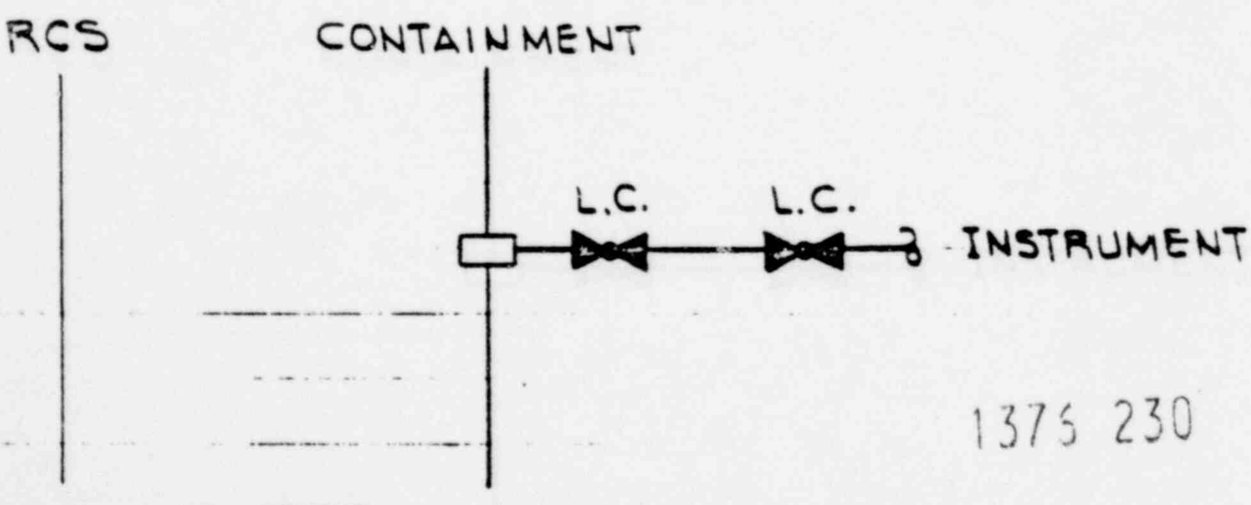


(N-27 E, F) (N-28 A TO F)
(N-29 A.D. E & F) (N-30 A TO F)
(N-32A,B, E & F) (N-33 A TO D) (N-34 A TO F)

16 INSTRUMENT LINES (N-40 A TO D) (N-50A,B,C) (N-51E) (N-52E)



17 INSTRUMENT LINES (N-31 A TO D)



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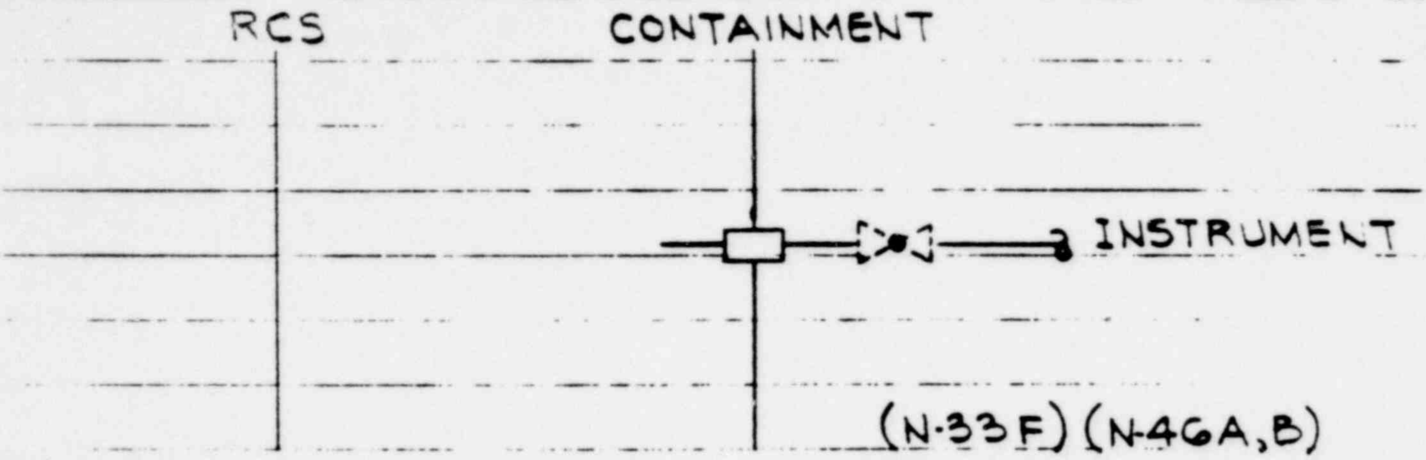
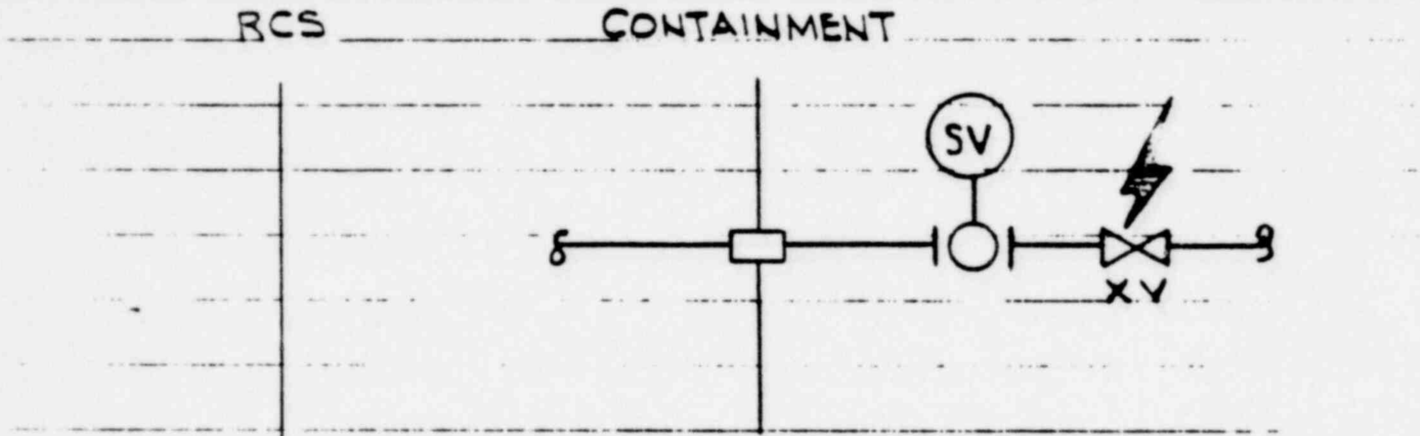
18 ILRT CONNECTIONS (N-32 C,D) (N-218 C)

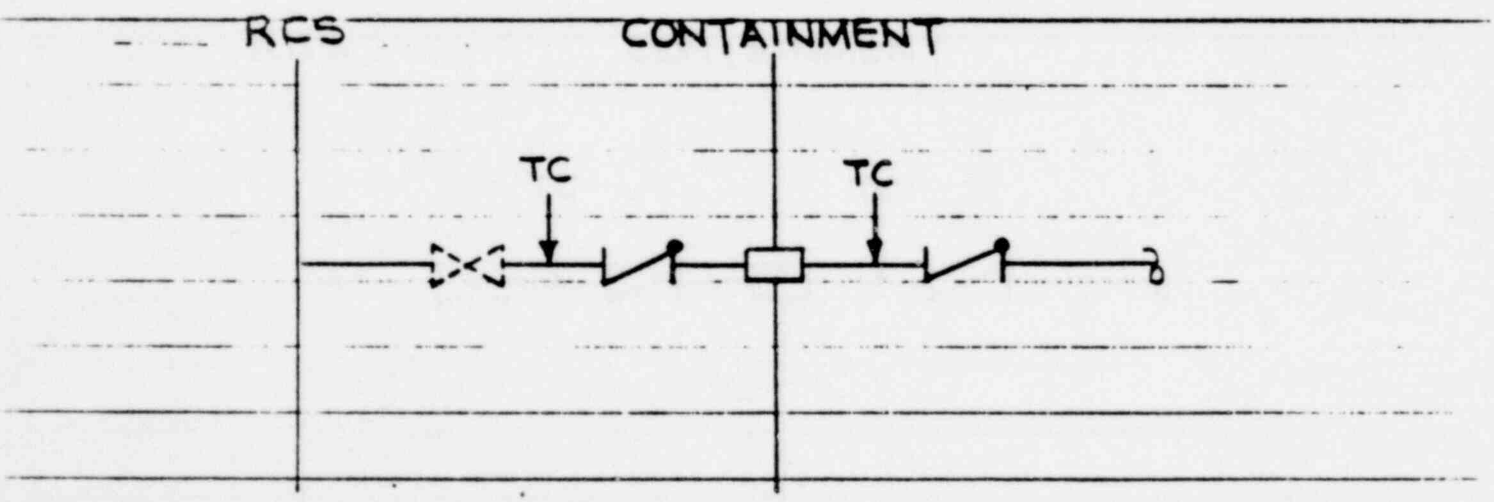


(N-33F) (N-46A,B)

.19 INSTRUMENT LINE (N-49B,C,E&F)(N-102B)

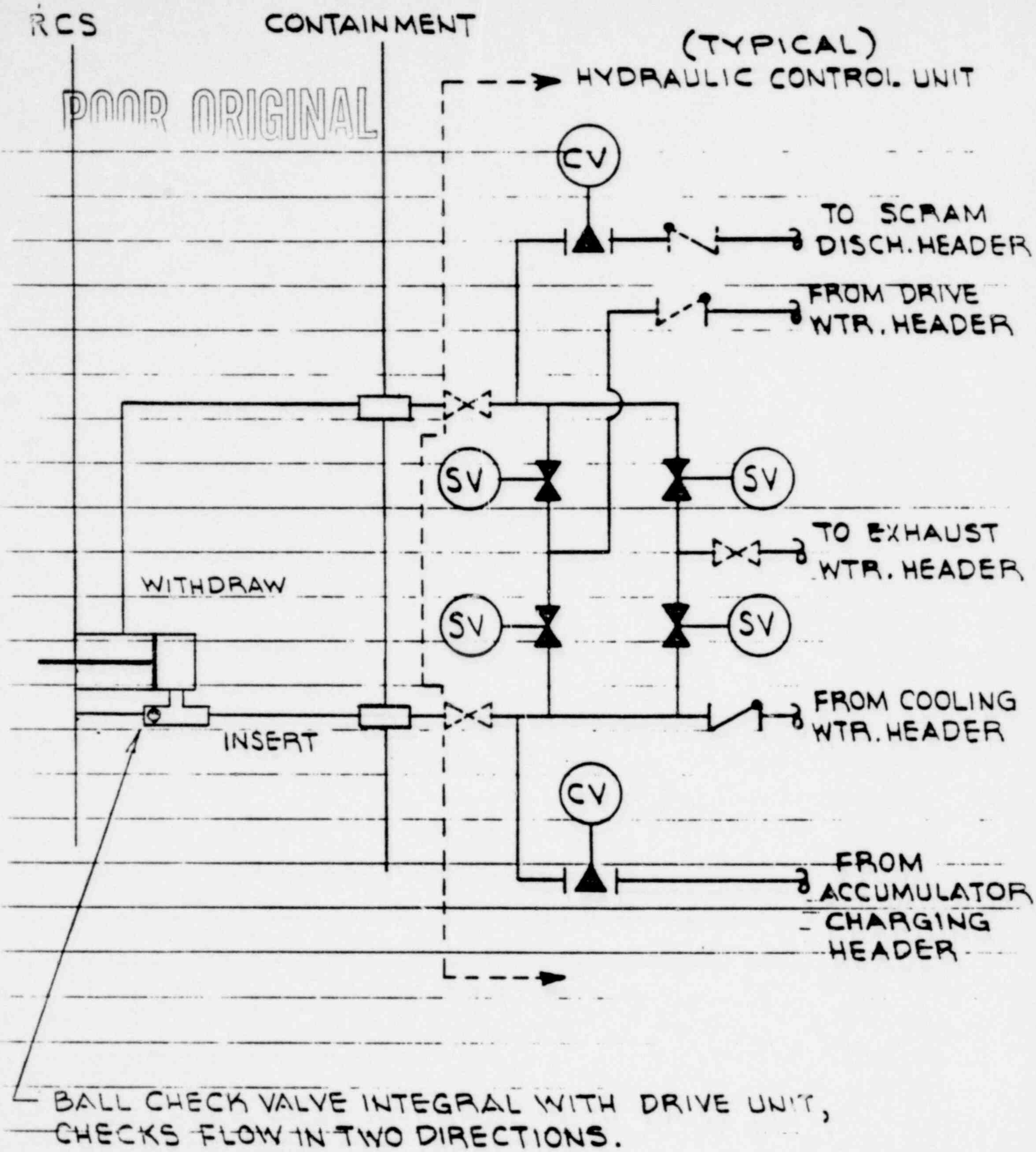


.20 TIP DRIVES (N-35 A TO E)

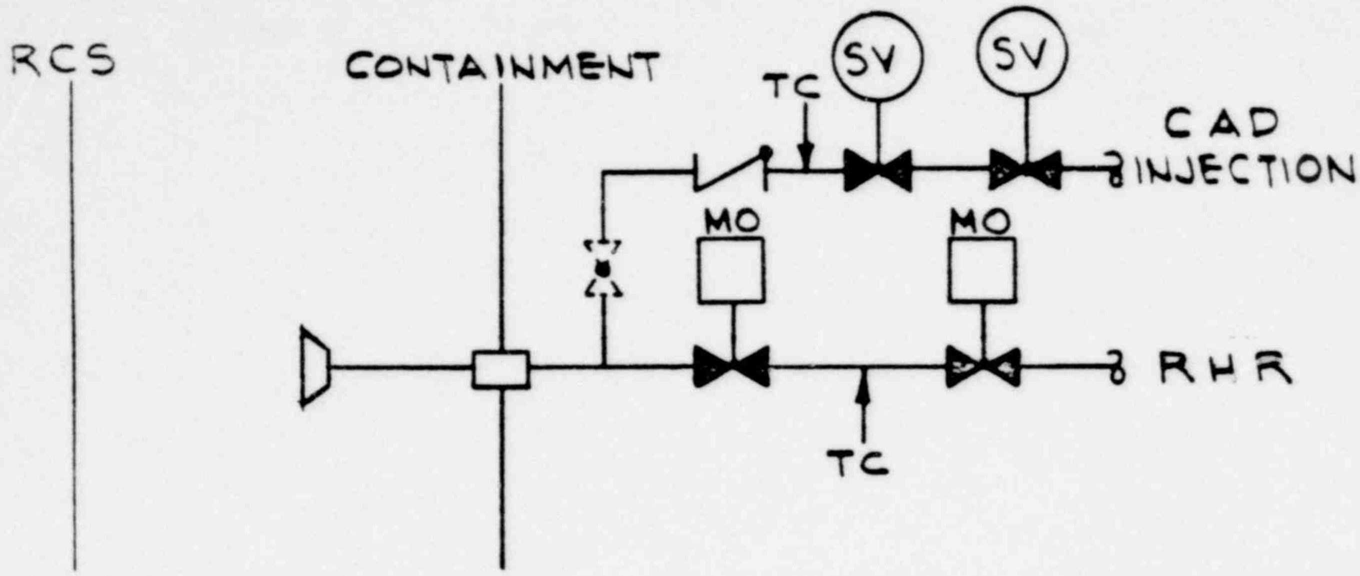


.21 CRD RETURN (N-36)

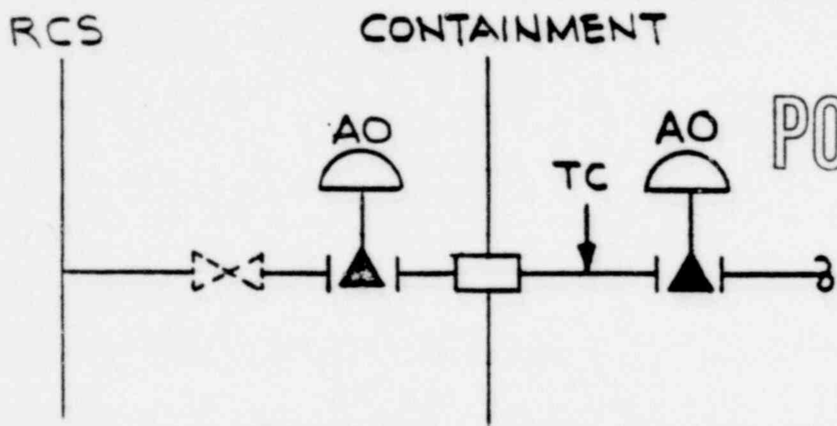
1376 231



22 CRD INSERT & WITHDRAWAL (N 37 A TO D) (N 38 A TO D)

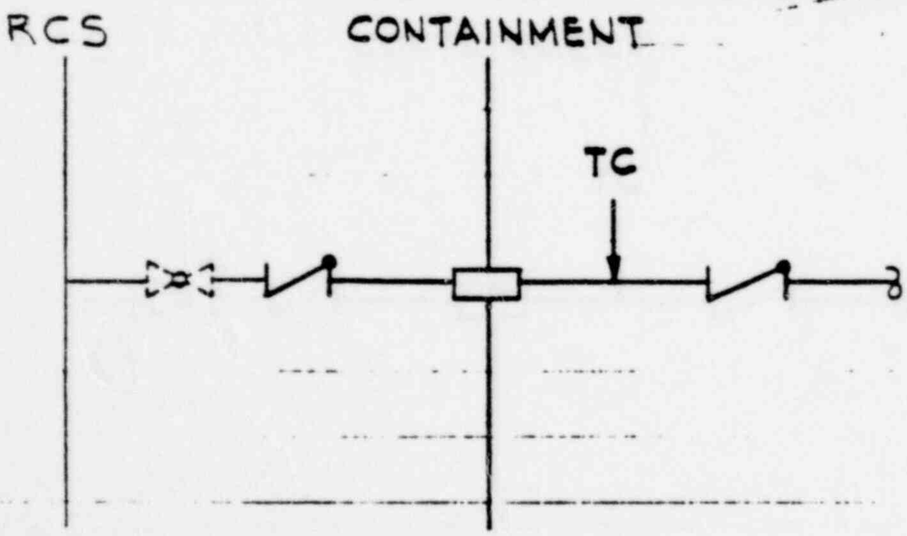


. 23 RHR CONTAINMENT SPRAY (N-39A, B)



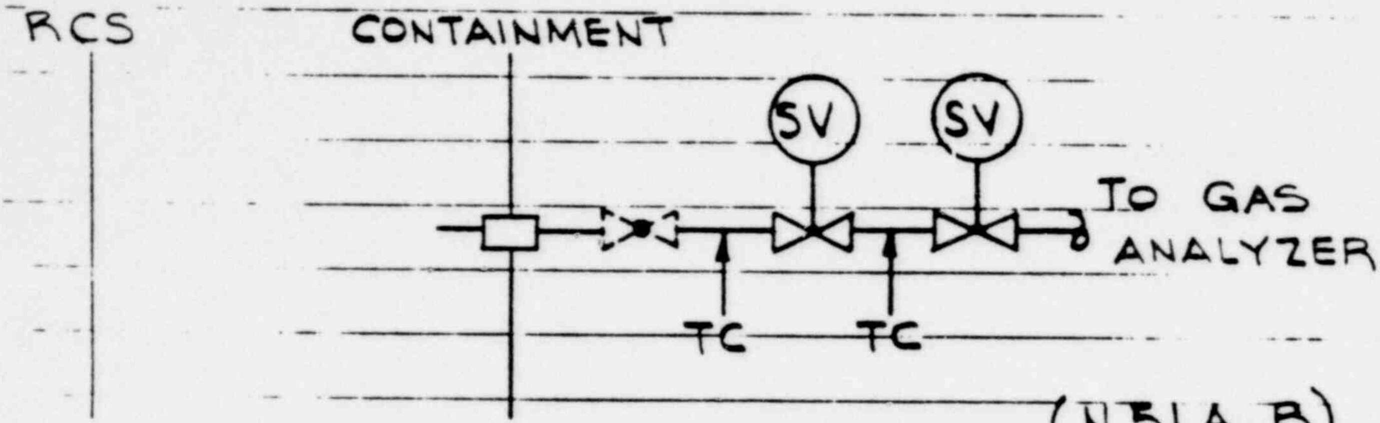
RECIRC LOOP SAMPLE (N-41)

. 24 MAIN STEAM SAMPLE (N-57)

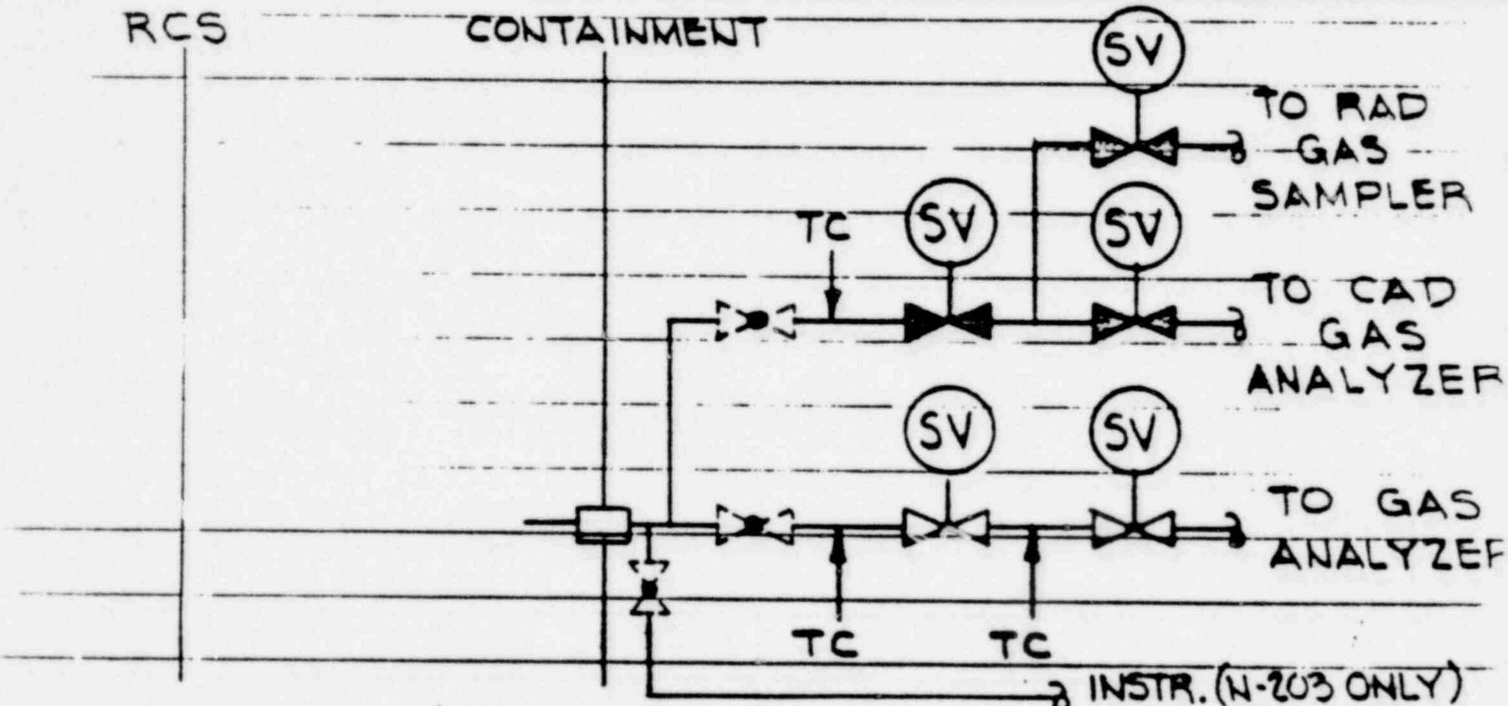


1376 233

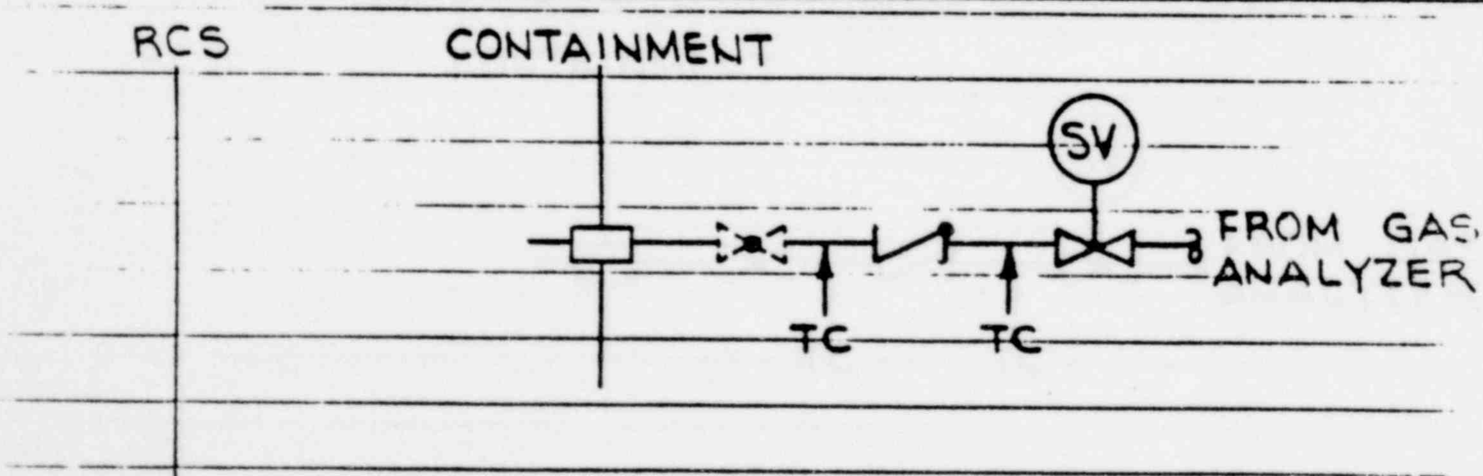
. 25 STAND-BY LIQUID CONTROL (N-42)



. 26 CACS SAMPLE LINES (N51A,B) (N218B)

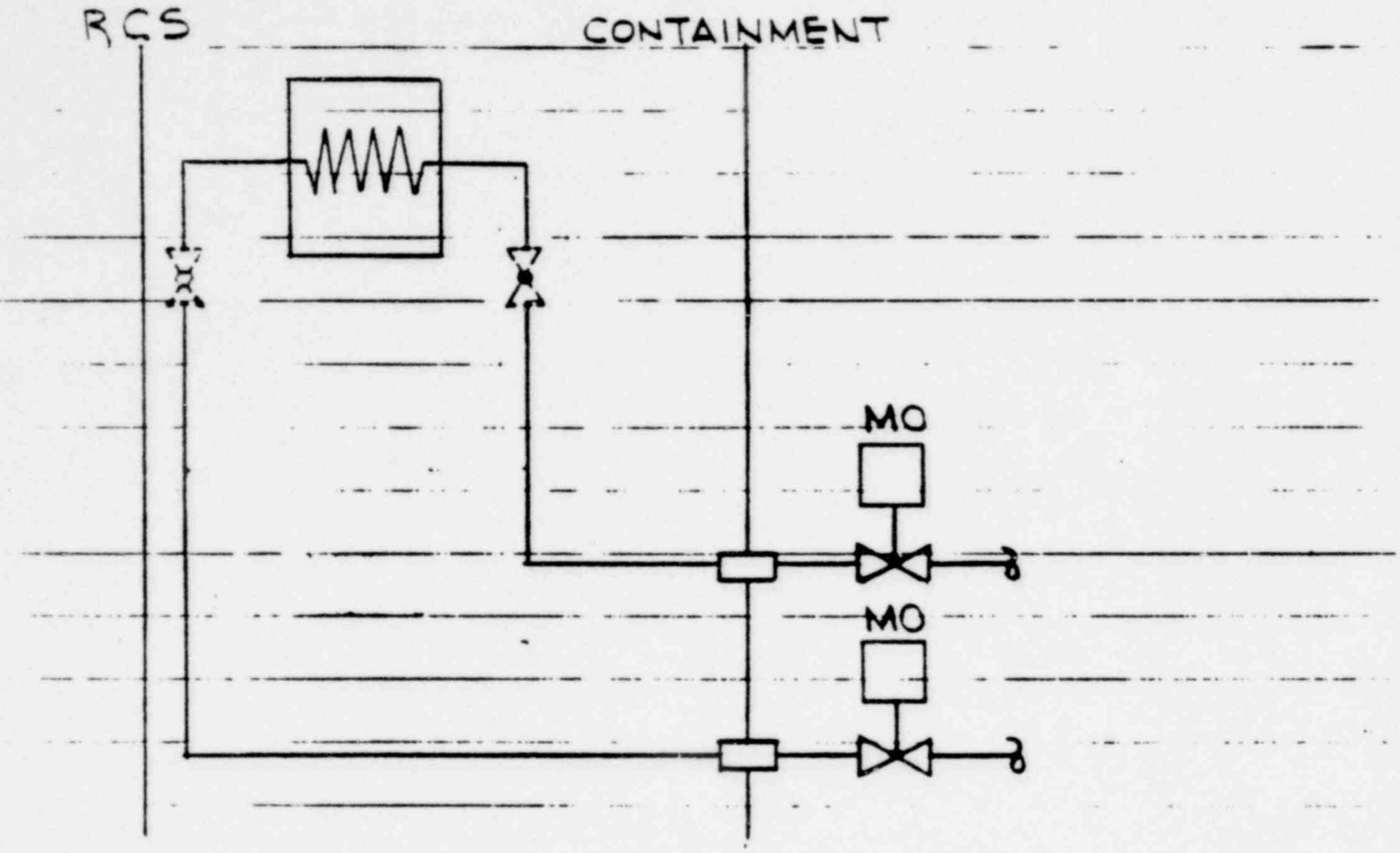


. 27 CACS/CAD SAMPLE LINES (N-51C) (N-203)



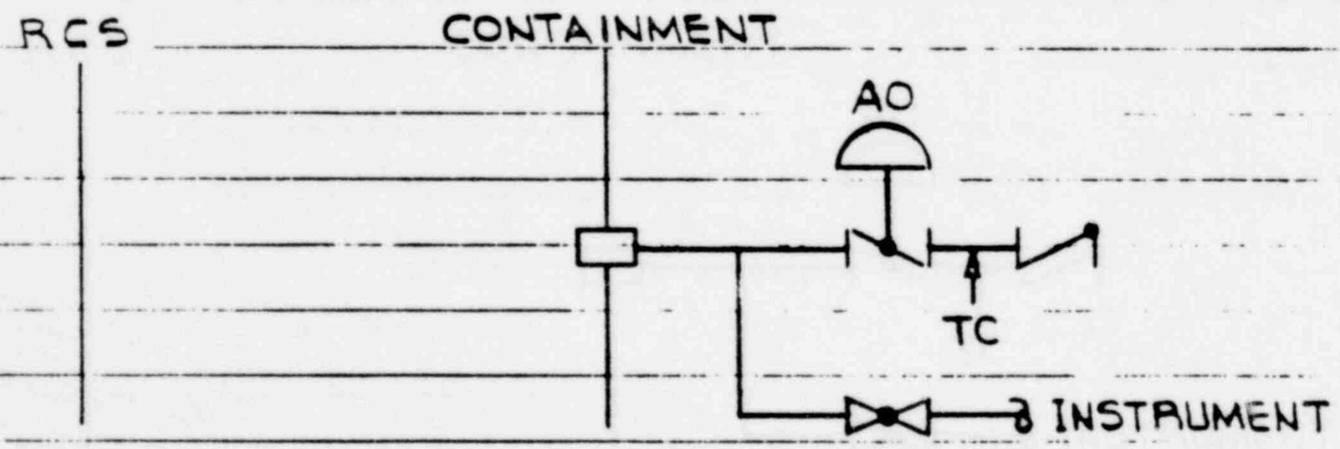
. 28 CACS SAMPLE RETURN (N-51D)

1376 234



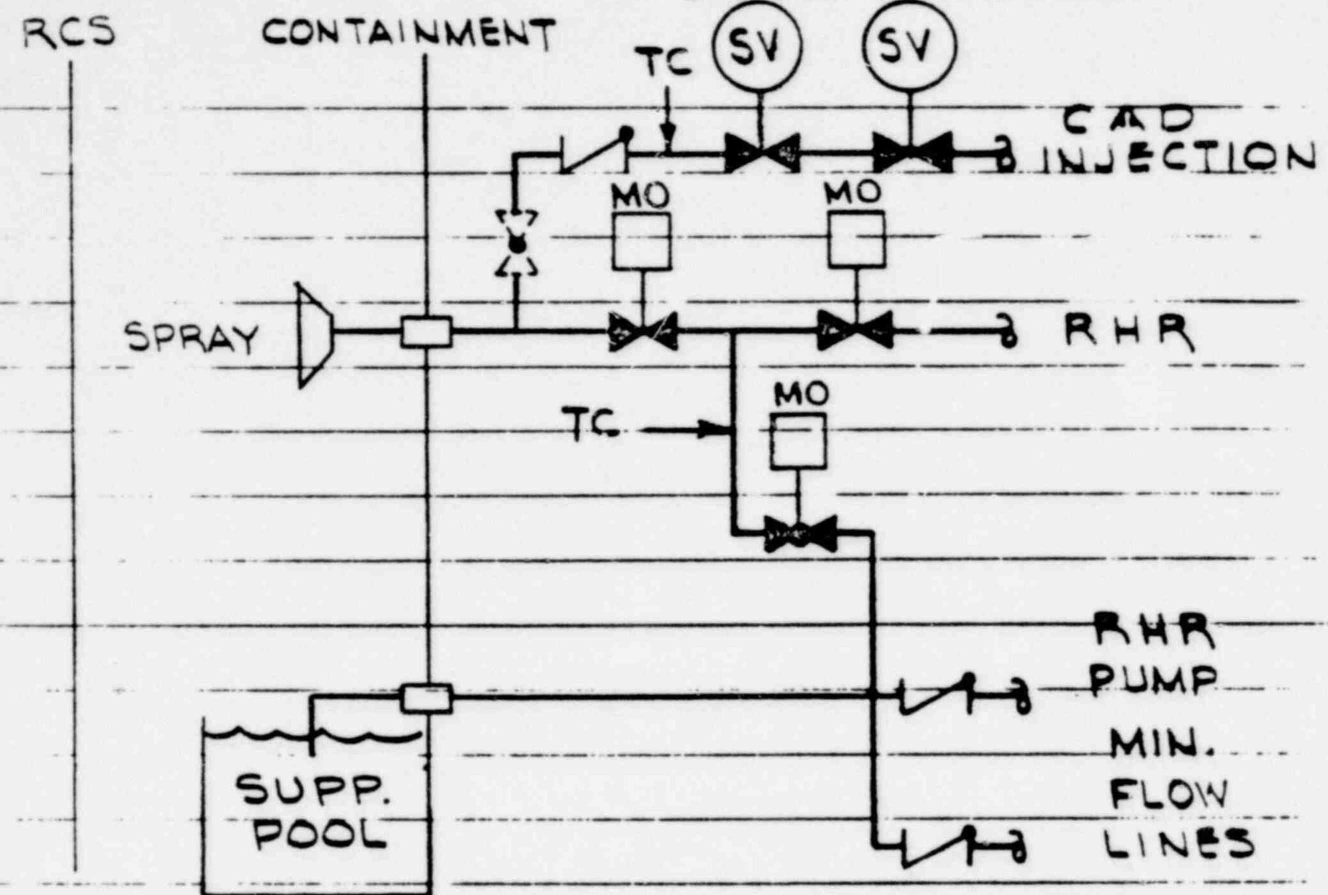
(N-53, N-54, N-55, N-56

. 29 DRYWELL CHILLED WATER

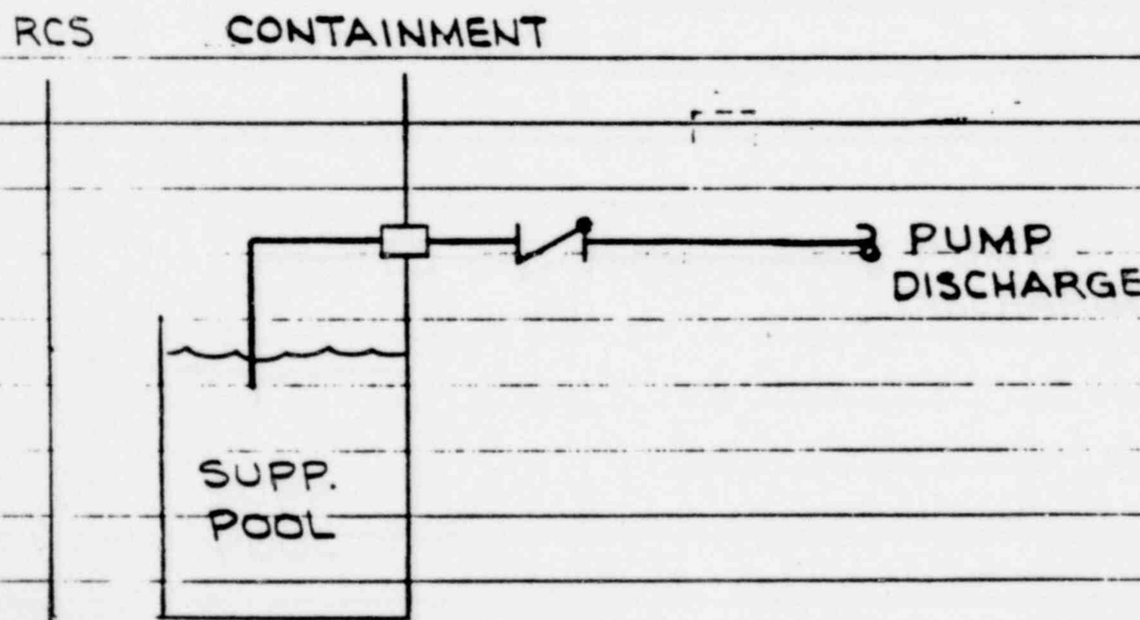


.30 TORUS VACUUM BREAKER (N-205A)

1373 235

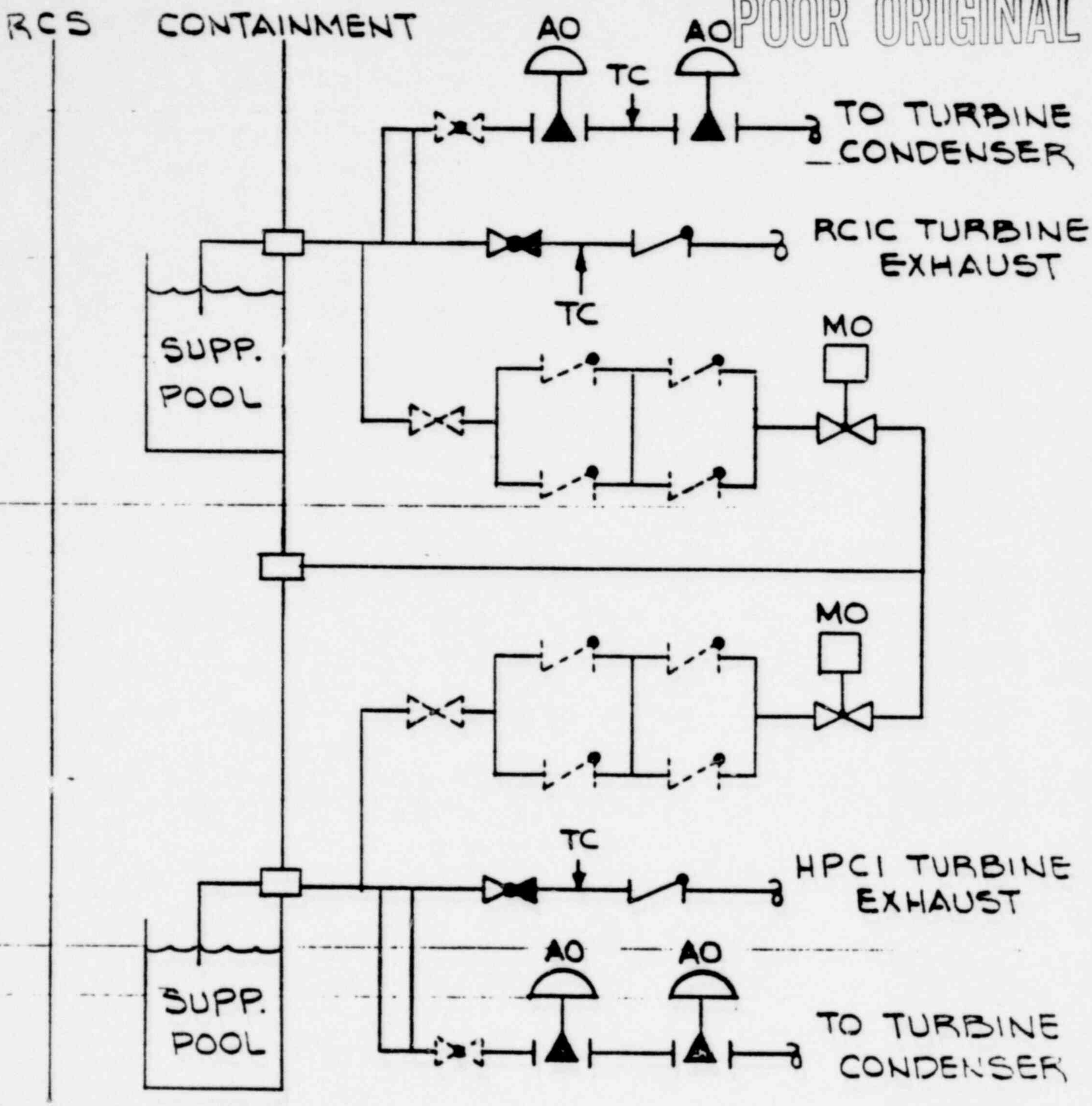


. 31 RHR TORUS SPRAY (N-211A, B)
RHR TEST & POOL COOLING (N-210 A, B)

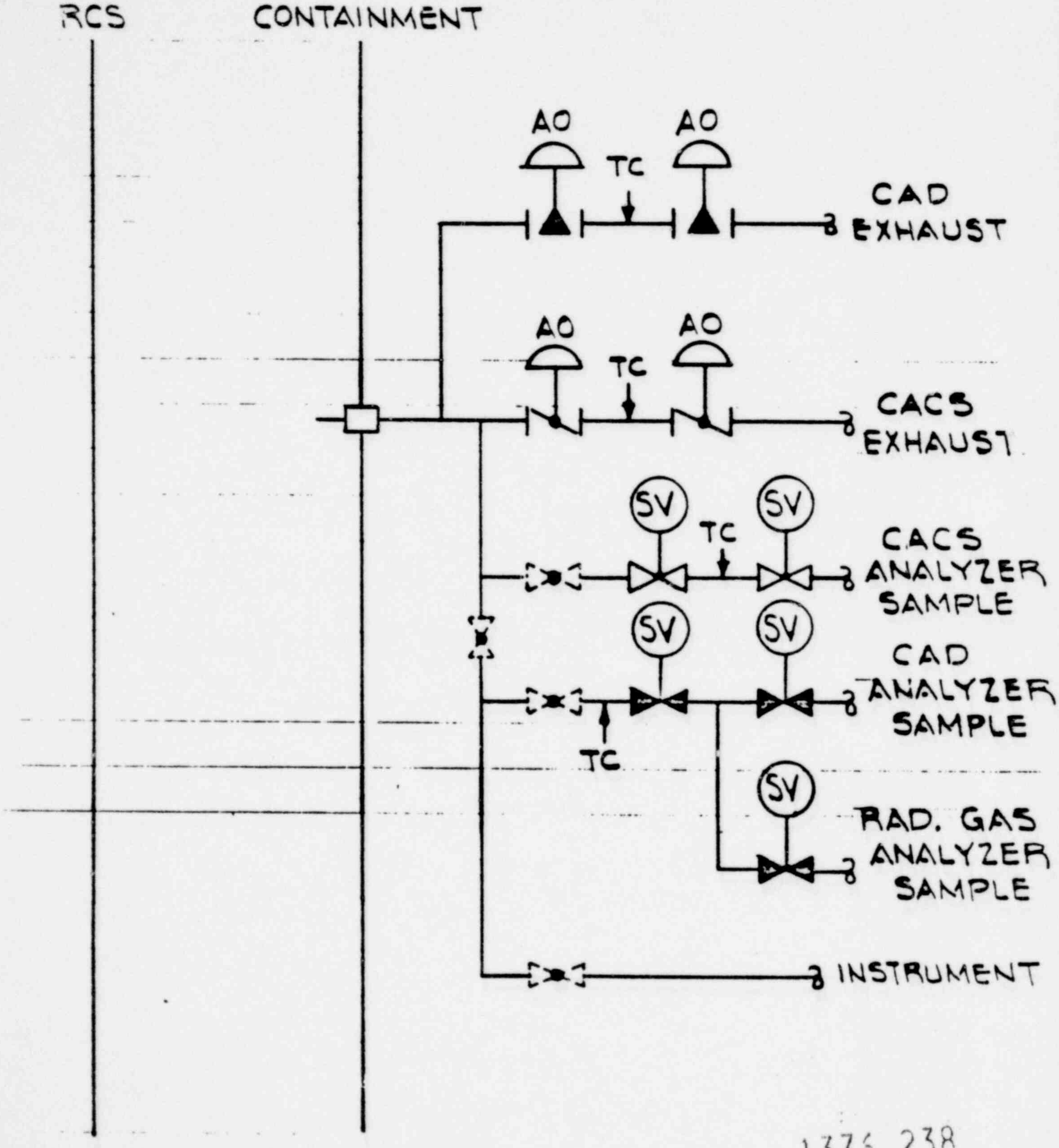


1376 236

. 32 HPCI MIN. FLOW (N-216)

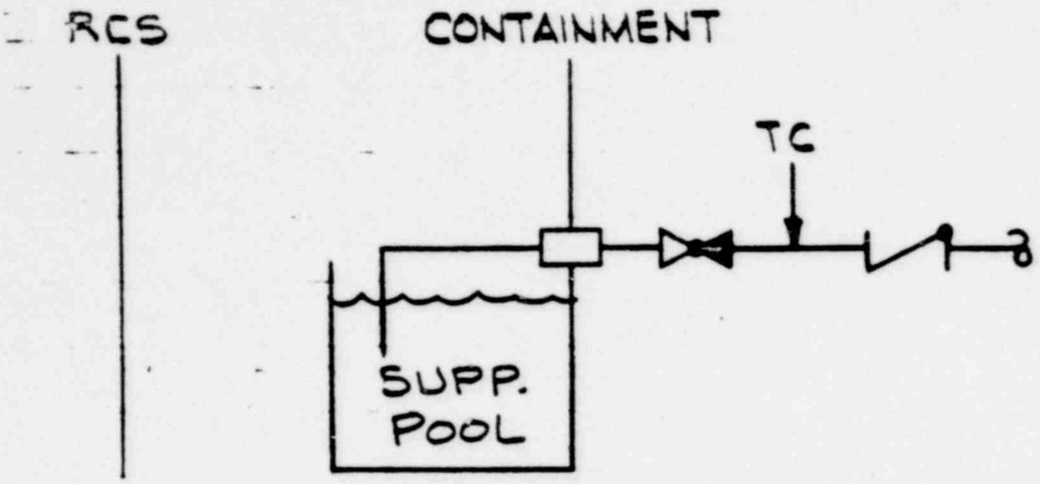


RCIC TURBINE EXHAUST (N-212)
HPCI TURBINE EXHAUST (N-214)
FIG. 33 HPCI & RCIC VACUUM RELIEF (N-217B)

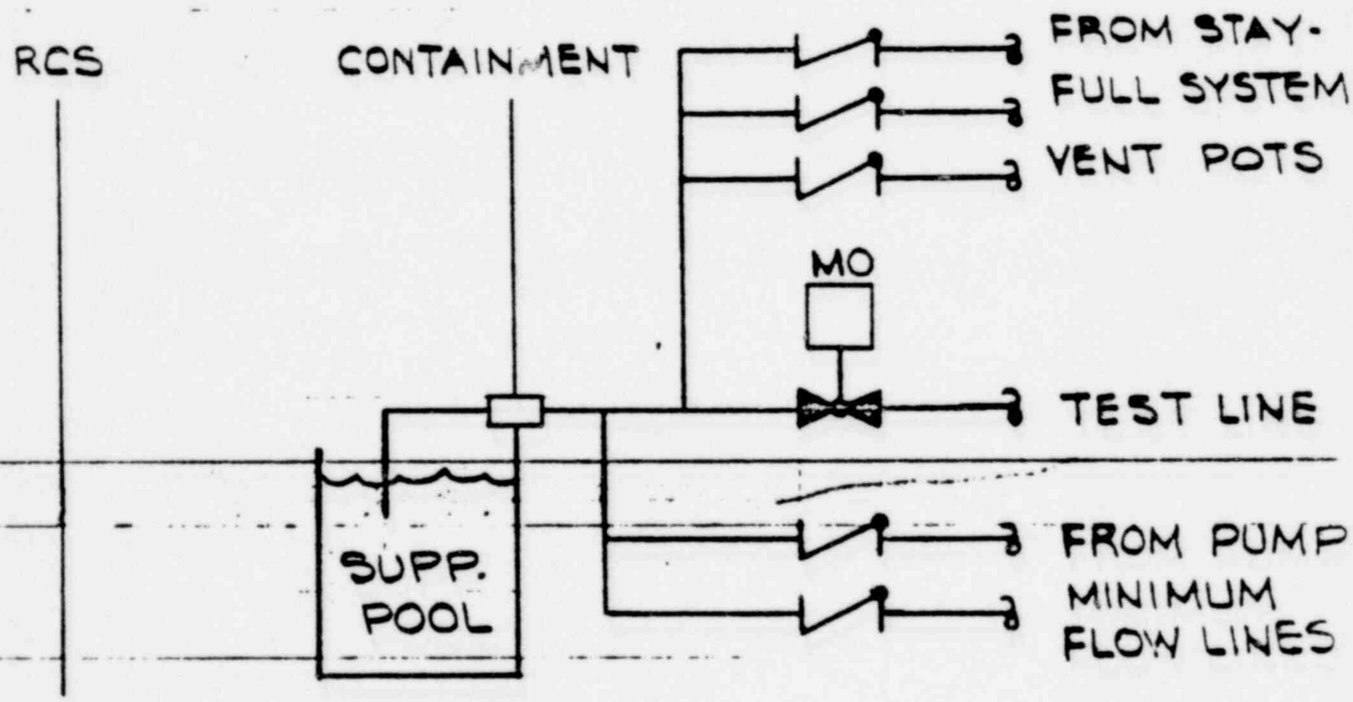


1376 238

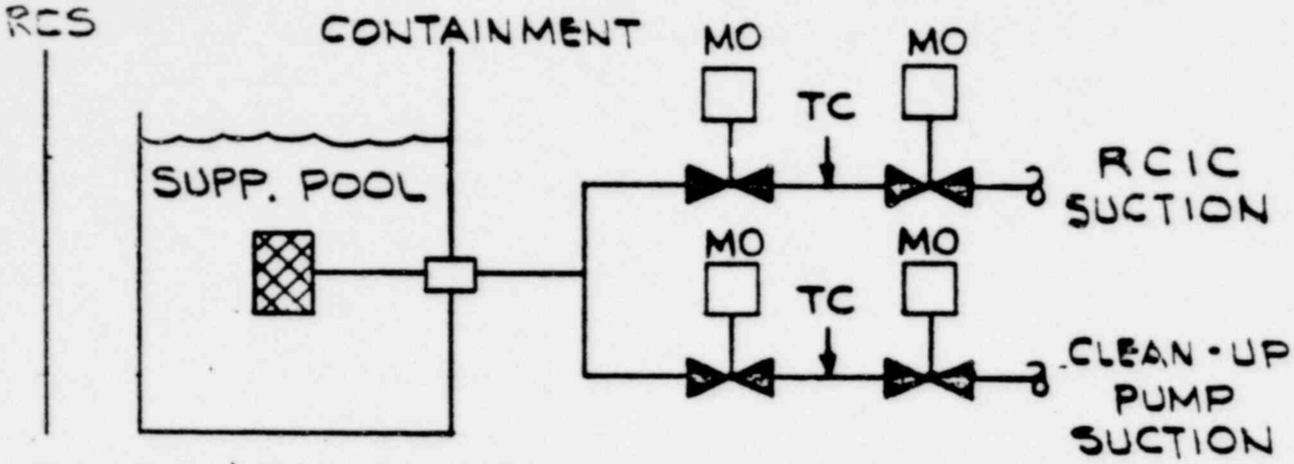
IG. 34 TORUS PURGE EXHAUST (N-219)



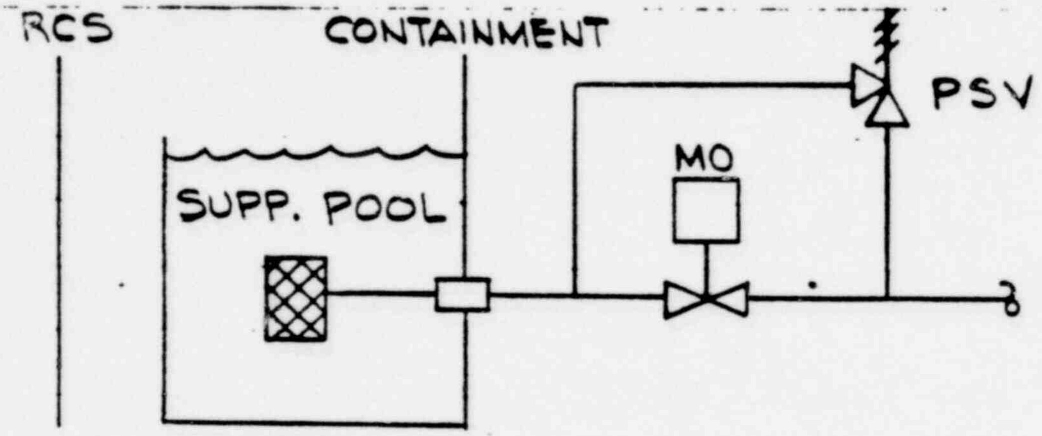
35 RCIC VAC. PUMP DISCH. (N-221)
HPCI TURB. DRAIN (N-223)



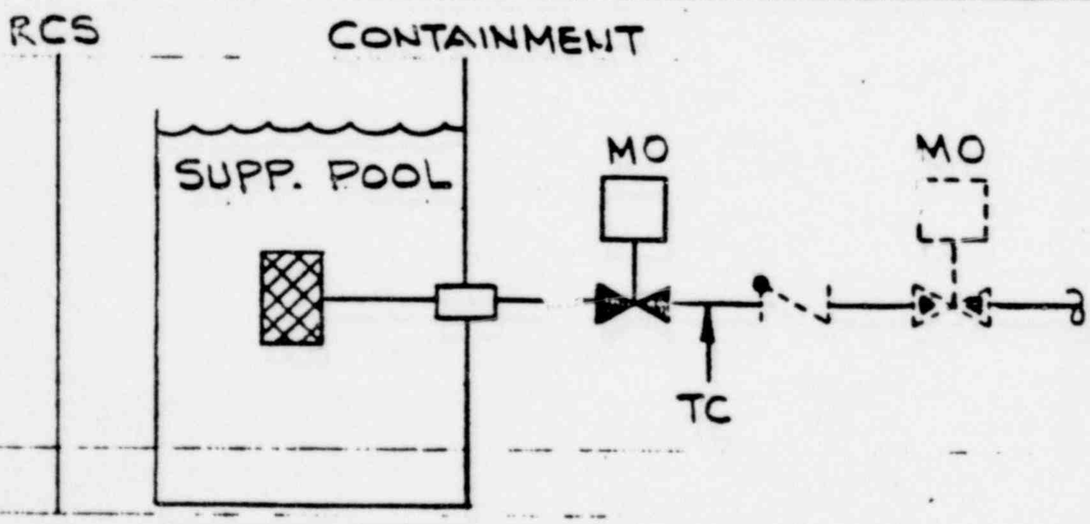
36 CORE SPRAY TEST LINE (N-224)



... 37 RCIC & TORUS WATER CLEAN-UP SUCTION (N-225)

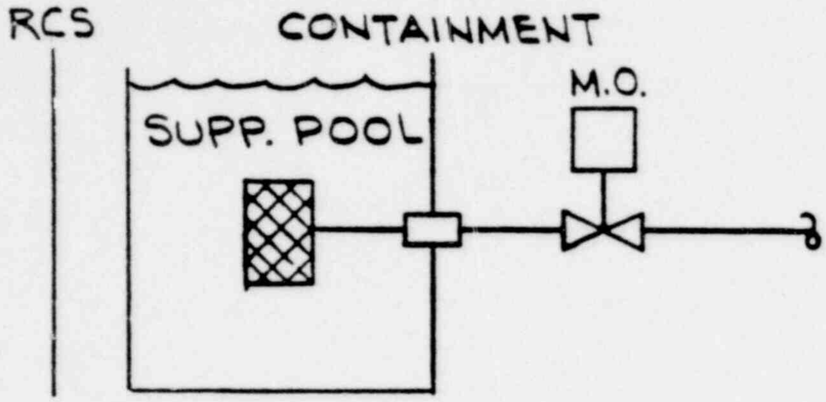


... 38 RHR PUMP SUCTION (N-226 A TO D)

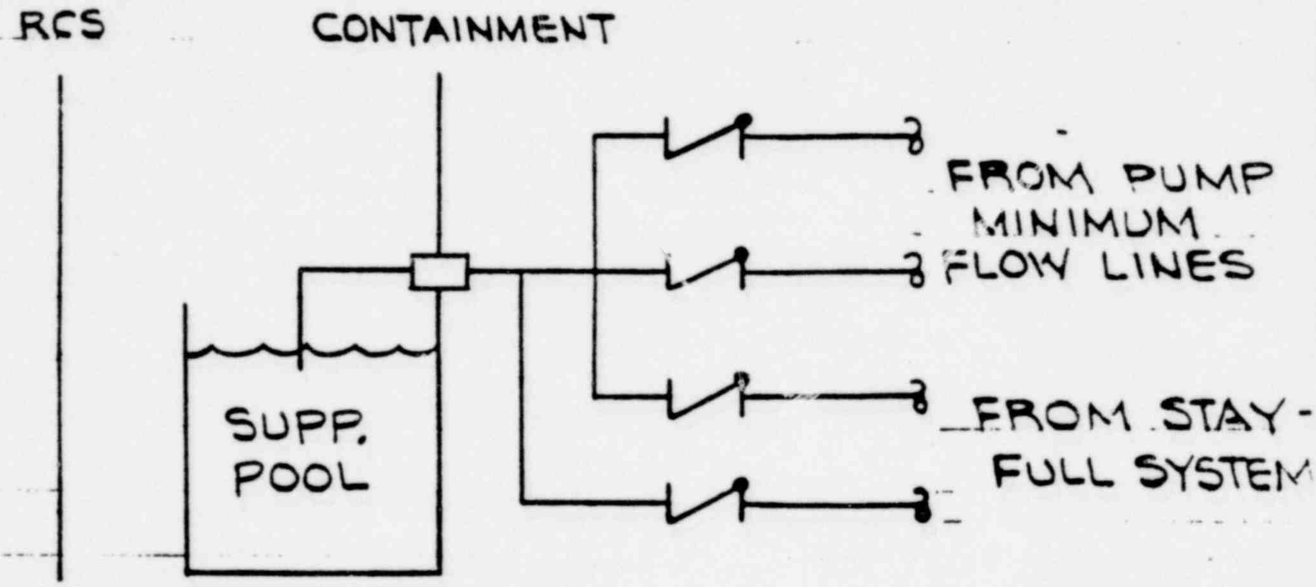


... 39 HPCI SUCTION (N-227)

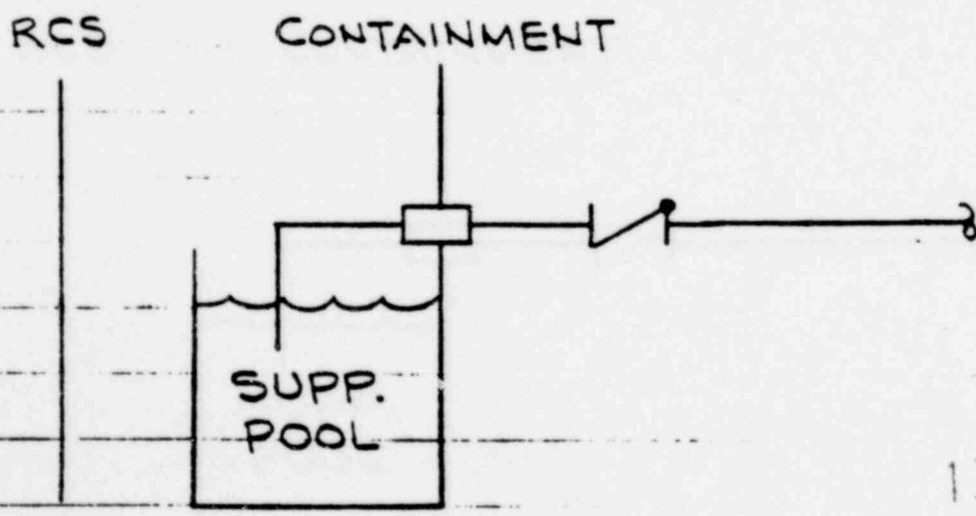
1376 240



. 40 CORE SPRAY PUMP SUCTION (N-228 A To D)



. 41 CORE SPRAY PUMP MIN FLOW (N-229)(N-236B)



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. 42 RCIC PUMP MIN. FLOW (N-230)

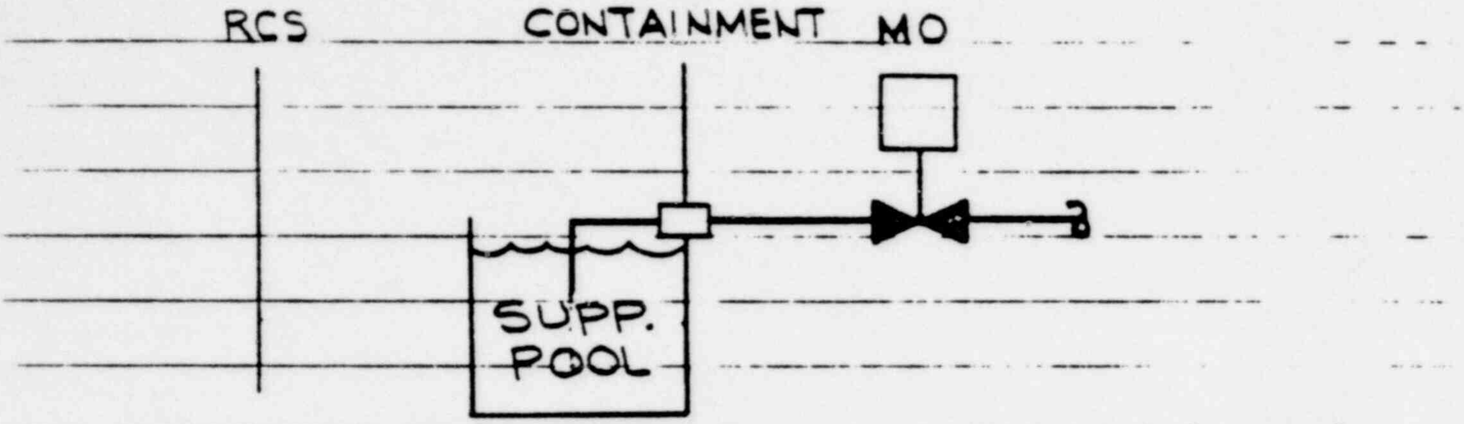

FIG. 43 HPCI TEST LINE (N-233)(N-235)

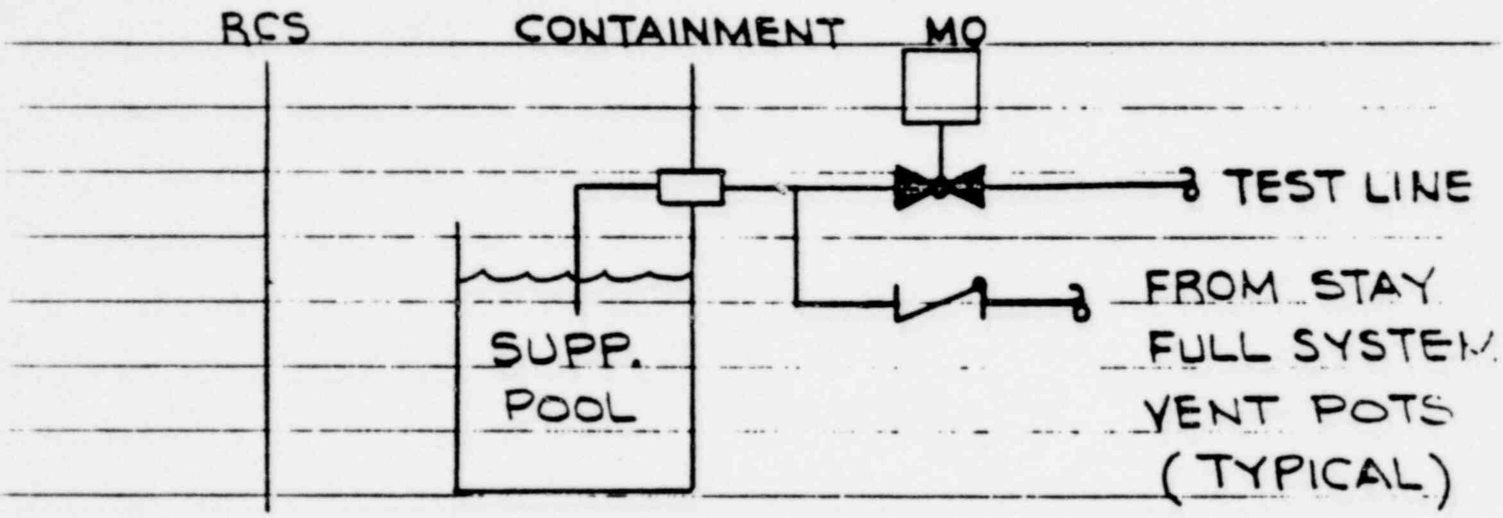

FIG. 44 CORE SPRAY TEST LINE (N-234A,B)(N-234)

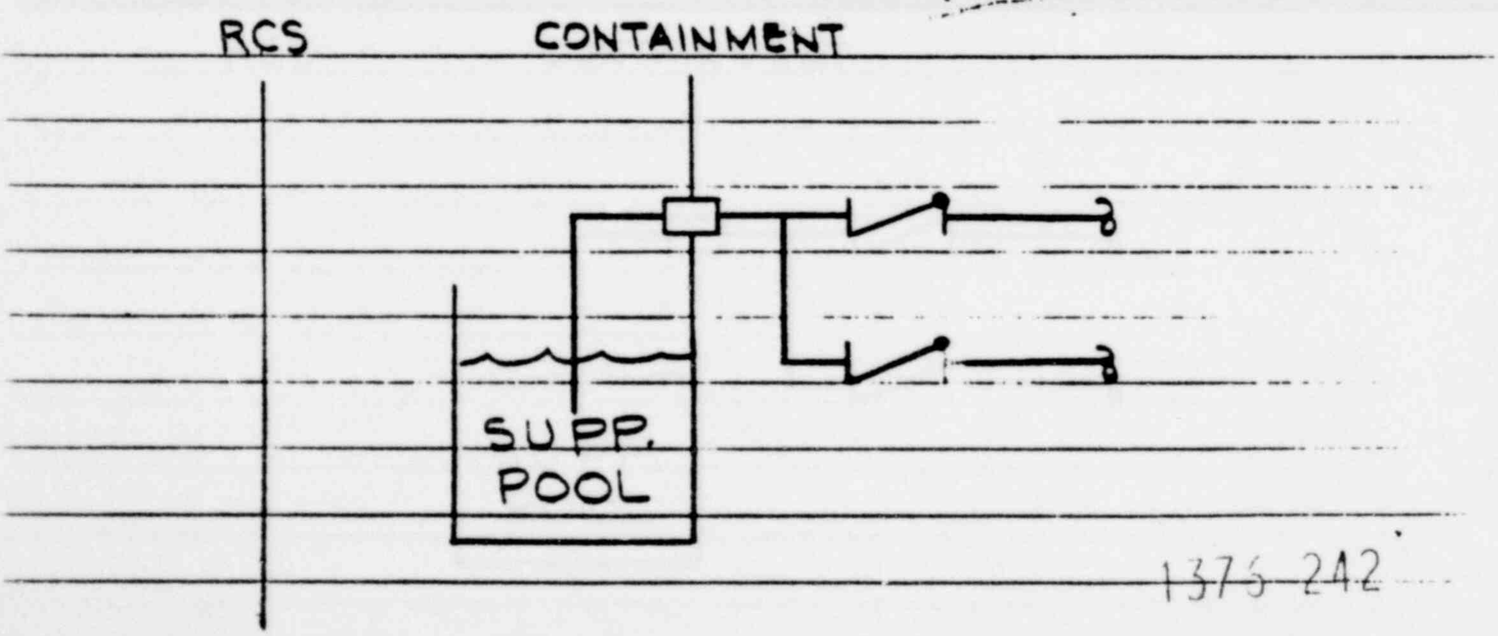

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FIG. 45 PUMP MIN. FLOW (N-236A)

PLANT Peach Bottom UNIT(S) II & III

DESIGN REQUIREMENTS FOR CONTAINMENT ISOLATION BARRIERS

Question:

Discuss the extent to which the quality standards and seismic design classification of the containment isolation provisions follow the recommendations of Regulatory Guides 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Water-Containing Components of Nuclear Power Plants", and 1.29, "Seismic Design Classification".

Response:

NRC regulatory Guides 1.26 and 1.29 had not been issued at the time Peach Bottom Atomic Power Station was being designed and constructed. The approach to Quality Group and Seismic Class of the piping and valves associated with each line penetrating primary containment is described in the FSAR, Appendix A.

Appropriate Quality Groups are listed on the attached table. All lines penetrating primary containment are Seismic Class I, out to and including the outer isolation valve, with the following exceptions:

1) Piping at the following penetrations is presently being upgraded to Seismic class I:

   N-21, Service Air Supply
   N-23, 24 RBCW to and from Recirc. Pumps
   N-53 to 56 Chilled Water to and from Drywell Coolers

2) Evidence of seismic analysis of the following small lines can not be located at the present time:

Penetration	Line Description
N-36 A to E	TIP Drives
N-35F	TIP Purge

   Our Engineering Department is continuing to investigate these lines. Reanalyses and/or modifications will be made as necessary to meet seismic standards.

3) Seismic analyses for certain valves can not be located at the present time. All appropriate manufacturers have been contacted and are in the process of supplying analyses for these valves.

PLANT Peach Bottom UNIT(S) II & III

PROVISIONS FOR TESTING

Question:

Discuss the design provisions for testing the operability of the isolation valves.

Response:

Isolation valves are designated for operability testing as follows:

a. power operated, automatically initiated isolation valves are tested once per operating cycle for simulated automatic initiation and closure times.

b. normally open, power operated isolation valves (except MSIV's) are fully closed and reopened once per quarter.

c. MSIV's are tripped individually to verify closure time at less than 75% reactor power, once per quarter.

d. Instrument line excess flow check valves are tested once per operating cycle.

Local leak rate tests are performed once per operating cycle, as indicated on the attached table.

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PLANT Peach Bottom UNIT(S) II & III

CODES, STANDARDS, AND GUIDES

Question:

Identify the codes, standards, and guides applied in the design of the containment isolation system and system components.

Response:

The following codes, standards, and guides were applied in the design of the containment isolation system and system components:

10 CFR 50, Appendix A, General Design Criteria 54, 55, 56, and 57

IEEE 279 (August 1968)

ANSI B31.1.0 (1967)

Other codes and standards used for design, fabrication, installation, and inspection of piping systems are discussed in detail in FSAR, Appendix A.

By NRC request, isolation valve testing provisions have been reviewed against 10 CFR 50, Appendix J. A Technical Specification change request resulting from this review was submitted in November, 1976.

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PLANT Peach Bottom UNIT(S) II & III

NORMAL OPERATING MODES AND ISOLATION MODES

Question:

Discuss the normal operating modes and containment isolation provision and procedures for lines that transfer potentially radioactive fluids out of the containment.

Response:

The following are the systems that have the ability to transfer potentially radioactive gases or liquids outside the primary containment:

Gas Systems

Containment Ventilation and Purging System
Drywell Oxygen Analyzer System
Standby Gas Treatment System
Containment Atmospheric Dilution System
CAD Oxygen and Hydrogen Analyzer Systems
Main Steam Lines and Drains
Reactor Core Isolation Cooling Steam Line
High Pressure Coolant Injection Steam Line

Liquid Systems

Residual Heat Removal System
Core Spray System
High Pressure Coolant Injection System
Reactor Core Isolation Cooling System
Reactor Water Cleanup System
Drywell Sump Systems
Torus Water Cleanup System
Primary Coolant Sampling Systems

a. No interlocks currently exist to prevent transfer of potentially radioactive gases or liquids when high radiation levels exist in the primary containment. However, the applicable procedures do require measurement of activity levels within containment prior to venting of containment or resetting of isolation signals.

b. All such systems are isolated by the applicable containment isolation signals with the exception of the following:

1. The containment Atmospheric Dilution System Oxygen and Hydrogen Analyzer System which is required for post LOCA gas analysis.

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2. The Residual Heat Removal System sample valves. An Engineering review request has been initiated to review the design to determine if automatic isolation of these lines is necessary

c. The functional capability of the Primary Containment Isolation System is verified by surveillance testing every 6 months in accordance with the Technical Specifications.

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APPENDIX A

PRESSURE INTEGRITY OF PIPING AND EQUIPMENT PRESSURE PARTS

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APPENDIX A

PRESSURE INTEGRITY OF

PIPING AND EQUIPMENT PRESSURE PARTS

FIGURES

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APPENDIX A

PRESSURE INTEGRITY OF

PIPING AND EQUIPMENT PRESSURE PARTS

TABLES

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APPENDIX A

PRESSURE INTEGRITY OF PIPING AND EQUIPMENT PRESSURE PARTS

A.1 SUMMARY DESCRIPTION

This appendix provides additional information pertinent to the preceding sections concerning the pressure integrity of piping and equipment pressure parts.

Piping and equipment pressure parts are specified according to service and location. The design, fabrication, examination, and testing requirements are defined for the equipment of each category to assure the proper pressure integrity.

For the purpose of this appendix, the pressure boundary of the process fluid includes but is not necessarily limited to: branch outlet nozzles or nipples, instrument wells, reservoirs, pump casings and closures, blind flanges, studs, nuts, and fasteners in flanged joints between pressure parts, bodies and pressure parts of in-line components, such as traps and strainers, and instrument lines up to and including the first shutoff valve.

Specifically excluded from the scope of this appendix are vessels and heat exchangers or any components which are within the scope of the ASME Boiler and Pressure Vessel Code, Sections III and VIII; and non-pressure parts such as pump motors, shafts, seals, impellers, wear rings, valve stems, gland followers, set rings, guides, yokes, and operators; and non-metallic material such as packing and gaskets; fasteners not in pressure part joints such as yoke studs and gland follower studs; and washers of any kind.

This appendix defines the design limitations for piping and valves associated with the reactor coolant primary pressure boundary (nuclear steam supply), primary containment pressure boundary (drywell) and related auxiliary systems within the power generation (operational) systems.

Table A.9.1 specifies systems falling within the applicable codes and the scope of this appendix.

A.1.1 Code and Specifications

The piping and equipment pressure parts in this nuclear power plant are designed, fabricated, inspected, and tested in accordance with recognized codes, as far as these codes can be applied, and in accordance with project specifications. Where conflicts occur between the industrial codes and project specifications, the project specifications take precedence.

All piping systems within the scope of this Appendix including pipe, flanges, bolting, valves and fittings are in accordance with ANSI B31.1.0, "Power Piping," including requirements for design, erection, supports, tests, inspections, and additional requirements specified herein.

The weld reinforcement height limitations recommended for pipe butt welds in paragraph 127.4.2 (d) and 127.4.3 of ANSI B31.1.0 (1967) for those piping systems not within the scope of ANSI B31.1.0 Case 74, are modified as follows:

a. Under cutting shall not exceed 1/32 inches deep, provided it does not encroach on the minimum wall thickness.

b. The maximum thickness of reinforcement of butt welds shall not exceed the values tabulated below, when the thickness of the thinner component being joined is considered:

Thickness of Base Metal (inches)	Thickness of Reinforcement* (inches)	
	Column I	Column II
Up to 3/16 inclusive	1/16	1/16
Over 3/16 to 1/2 inclusive	1/8	1/16
Over 1/2 to 1 inclusive	5/32	3/32
Over 1 to 2 inclusive	3/16	1/8
Over 2	1/4	5/32

* The weld reinforcement thickness shall be determined from the higher of the abutting surfaces involved.

For double welded butt joints, the limitation on reinforcement given in Column I shall apply separately to both inside and outside surfaces of the joint.

For single welded butt joints, the reinforcement limits given in Column I shall apply to the outside only and the reinforcement given in Column II shall apply to the inside.

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The plant piping is classified in three groups, depending on the design requirements for the service.

The design requirements for piping systems designated in Groups I and II are in accordance with the requirements of ANSI B31.1.0 (1967) and supplementary requirements in the project specifications. Namely, these systems require full radiography and supplementary surface inspections of the weld joints and supplementary non-destructive test requirements of the pressure components. Additionally, some of these piping systems are analyzed for seismic Class I design criteria as indicated in Table A.9.1.

The design requirements for some piping in Group III, such as main steam lines downstream of the outer isolation valve to the main turbine stop valve, but excluding the stop valves, are in accordance with the requirements of ANSI B31.1.0 (1967) and supplementary requirements in the project design specifications, namely, full radiography of pressure weld joints.

The above mentioned systems in Groups I and II and a portion of Group III are designated as "critical piping" for design, stress analysis, fabrication, inspection, erection, testing and quality control purposes.

The remaining portion of piping systems in Group III is in accordance with ANSI B31.1.0 and these systems are designated as non-critical systems.

Table A.9.1 summarizes the classification of piping systems and Table A.9.2 lists design guides for plant equipment.

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A.2 CLASSIFICATION OF PIPING AND EQUIPMENT PRESSURE PARTS

Piping and equipment pressure parts may be classified as follows and as shown on Figure A.2.1:

Group I - Piping and equipment pressure parts within the reactor primary pressure boundary through the outer isolation valve, inclusive.

Group II - Piping and equipment pressure parts downstream of the outer isolation valve and extensions of containment and the Core Standby Cooling Systems.

Group III - Balance of plant piping and equipment pressure parts, including power generation systems.

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A.3 DESIGN REQUIREMENTS

A.3.1 Piping Design

Pressure and temperature conditions to which the piping pressure components are subjected are described in the appropriate system design section of the FSAR.

A.3.1.1 Allowable Stresses

The allowable stresses for piping design are as follows:

a. For carbon steel, the allowable stress values of ANSI B 31.1.0 are used.

b. For austenitic stainless steel, the allowable stress values of ANSI B31.1.0 are used. For material not covered by ANSI B31.1.0, the higher stress values of the ASME Boiler and Pressure Vessel Code, Section I, Appendix A-24 are used.

A.3.1.2 Wall Thickness

Pipe wall thickness, fittings, and flange ratings are in accordance with ANSI B31.1.0, including adequate allowances for corrosion and erosion according to individual system requirements for a design life of 40 years.

A.3.1.3 Reactor Vessel Nozzle Load

All piping including instrument piping connecting to the reactor pressure vessel nozzles is designed so that the nozzle to pipe interface load will not result in stresses in excess of the allowable material stresses. Thermal sleeves are used where nozzles are subjected to high thermal stresses.

A.3.1.4 Seismic Design

Seismic Class I piping is defined as that portion of a piping system whose failure might cause, or increase the severity of, the design basis accident, or which is essential for safe shutdown of the reactor.

The piping is designed and supported to satisfy seismic criteria specified in the loading criteria (Appendix C).

The piping systems indicated as seismic Class I in Table A.9.1 are analyzed for the maximum credible seismic condition.

A.3.1.4.1 Supplementary Analysis of Seismic Class I Piping

Seismic Class I piping is classified as either rigid or flexible. Rigid piping is that which has a fundamental frequency in the rigid range of the spectrum curves for the building locations. This corresponds to frequencies greater than 20 Hz. These piping systems are analyzed with static loads corresponding to the acceleration in the rigid range of the spectrum curves.

The dynamic analysis of flexible seismic Class I piping systems for seismic loads is performed using the spectrum response method, as applied to a lumped mass mathematical model of the piping systems. The maximum responses of each mode are calculated and combined by the root-mean-square method to give the maximum response quantities resulting from all modes. The response thus obtained was combined with the results produced by other loading conditions to compute the resultant stresses. All modes are used which have frequencies less than 20 Hz. The percentage of critical damping for all modes is 0.5 for the design earthquake and the maximum credible earthquake.

In lieu of the above procedure, some seismic Class I piping is analyzed for a static load equivalent to the peak of the spectrum curve for the applicable floor elevation.

The horizontal acceleration spectrum curves applied to the piping systems are developed as part of the seismic analysis for the building in which the piping is located.

A.3.1.5 Analysis of Piping

a. Primary Stresses (S_p)

Primary stresses are as follows:

1. Circumferential primary stress (S_R): circumferential primary stresses are below the allowable stress (S_h) at the design pressure and temperature.

2. Longitudinal primary stresses (S_L): the following loads are considered as producing longitudinal primary stresses: internal or external pressures; weight loads including valves, insulation, fluids, and equipment; hanger loads; static external loads and reactions; and the inertia load portion of seismic loads.

When the seismic load is due to the Design Earthquake (0.05g horizontal), the vectorial combination of all longitudinal primary stresses (S_L) does not exceed 1.2 times the allowable stress (S_h).

When the seismic load is due to the Maximum Credible Earthquake (0.12g horizontal), the vectorial combination of all longitudinal primary stresses does not exceed material yield stress at temperature unless higher allowable limits are calculated and substantiated by the methods outlined in Appendix C.

b. <u>Secondary Stresses</u> (S_E)

Secondary stresses are determined by use of the Maximum Shear Stress theory:

$$T_{max} = \frac{1}{2}\sqrt{S^2 + 4S_t^2} = \frac{1}{2} S_E$$

therefore,

$$S_E = \sqrt{S^2 + 4S_t^2} \quad \text{(see ANSI B31.1.0)}.$$

The following loads are considered in determining longitudinal secondary stresses:

1. Thermal expansion of piping
2. Movement of attachments due to thermal expansion
3. Forces applied by other piping systems as a result of their expansion
4. Any variations in pipe hanger loads resulting from expansion of the system, and
5. Anchor point movement portion of seismic loads.

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The vectorial combination of longitudinal secondary stresses (S_E) does not exceed the allowable stress range S_A, i.e., $S_E \leq S_A$, where

$$S_A = f[1.25(S_c+S_h)-S_L]$$

(This is Equation 1 from paragraph 102.3.2 of ANSI B31.1.0 modified to include the additional stress allowance permitted when S_L is less than S_h.)

A.3.2 Valve Design

Valves are designed and rated by the manufacturer to meet the design pressure and temperature. They are in compliance with ANSI B31.1.0, "Power Piping", ANSI B16.5, "Steel Pipe Flanges and Flanged Fittings", or Manufacturers Standarization Society, Standard Practice MSS SP-66, "Pressure-Temperature Ratings for Steel Butt-Welded End Valves."

A.3.3 Pump Design

The pressure retaining parts of pumps are designed to meet the design pressure and temperature in the piping to which they are attached.

a. For pumps used in piping systems classified as Group I, the requirements of Section III of the ASME Boiler and Pressure Vessel Code for Class C were used as a guide in calculating the thickness of pressure retaining parts and in sizing the cover bolting.

b. For pumps used in piping systems classified as Group II, the requirements of Section VIII, Division I of the ASME Boiler and Pressure Vessel Code are used as a guide in calculating the thickness of pressure retaining parts and in sizing the cover bolting.

c. When a pump is used in piping systems classified as Group III, the standard commercial design is accepted for the specific service.

A.4 MATERIALS

The material for piping and equipment pressure parts is in accordance with the applicable design code and the supplementary requirements of the project design specifications.

A.4.1 Brittle Fracture Control for Ferritic Steels

The fracture or notch toughness properties and the operating temperature of ferritic materials in systems which form the reactor coolant boundary (Group I) are controlled to ensure adequate toughness when the system is pressurized to more than 20 percent of the design pressure. Such assurance is provided by maintaining the material service temperature at least 60 F above the nil ductility transition temperature (NDTT). Further requirements are:

a. Ferritic steel piping that forms the reactor coolant boundary (Group I) is tested by the Charpy V-notch impact test (ASTM A-370) or drop weight test (ASTM E-208). Such tests are not required for: bolting, with a nominal size 1" and smaller, including nuts; materials whose section thickness is 1/2 inch and less; piping, valves, and fittings whose nominal inlet pipe size is only six inches in diameter and less, regardless of thickness; consumable insert material.

b. Impact testing is not required on components or piping within the reactor coolant boundary having a minimum service temperature of 250 F or more when pressurized at more than 20 percent of design pressure. For example, the main steam line is excluded from the brittle fracture test requirement since the steam temperature will exceed 250 F when the steam line pressure is at 20 percent of the design pressure.

c. Impact testing is used to determine that the material and weld metal will meet brittle fracture requirements at test temperature. The acceptance standards are in accordance with Table N-421 of the ASME Boiler and Pressure Vessel Code, Section III, for the minimum service temperature.

A.4.2 Furnace Sensitized Stainless Steel Materials

An effort has been made to minimize furnace sensitized austenitic stainless steel materials in the reactor pressure vessel, piping, and pressure retaining components in the critical systems. Austenitic stainless steel is considered to be furnace sensitized if it has been heated by other than welding within the range of 800 to 1800 F, regardless of the subsequent cooling rate.

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A.5 WELDING PROCEDURES AND PROCESSES

A.5.1 General

All welding procedures, welders, and welding machine operators are qualified in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code for the materials to be welded. Qualification records, including the results of procedure and performance qualification tests and identification symbols assigned to each welder, are maintained.

A.5.2 Procedures and Processes

Welding procedures and processes are employed which produce welds of complete penetration, of complete fusion, and free of unacceptable defects. The finished surfaces of the weld (both root and crown) merge smoothly into the adjacent component surfaces. Weld layers are built up uniformly around the circumference and across the width of the joint. Weld starts and stops are staggered. Pressure countaining and attachment welds are made by any of the following processes within the limitations described in this appendix:

a. Gas tungsten-arc welding with filler metal added

b. Shielded metal arc welding with low hydrogen coated electrodes

c. Submerged arc welding with multipass technique

d. Gas metal arc welding within the limitations in the project specifications.

e. Gas metal arc welding using shorting arc mode on carbon steel only.

A.5.3 Dissimilar Metal Welds

Transition pieces are used wherever possible when carbon steel valves are welded to stainless steel piping. For piping systems with nominal wall thicknesses 3/4 inches and greater, the carbon steel transition piece mating to stainless steel is clad, a minimum of 3/16 inches after machining, with stainless steel weld metal (type 309) and stress relieved.

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A.6 FABRICATION AND ERECTION

A.6.1 Welded Construction

Piping and equipment pressure parts are assembled and erected by welding, except that flanged or screwed joints are used where necessary for maintenance.

Piping 2 1/2 inches and larger is V groove butt welded. Piping 2 inches and smaller is generally socket welded.

A.6.2 Branch Connections

For critical piping, branch connections are made by using commercially available standard welding fittings. Integrally reinforced fittings are used for branch connections where standard fittings are not available; however, these fittings are not used for branch connections with nominal sizes larger than one half the nominal size in the main run. For piping where the branch is 2 inches or smaller, welded on forged fittings suitable for full penetration attachment welding are used. Branch connections are attached by full penetration welds.

For non-critical piping, standard fittings are used for the same size branches or one size reductions. Integrally reinforced fittings are used for two or more size reductions; however, stub-ins are permitted in certain special cases.

A.6.3 Bending

A section of pipe may be bent by either cold or hot methods within the following limitations:

a. Sections of pipe shall be selected so that thinning will not reduce the wall thickness below the minimum specified.

b. Hot bending of austenitic stainless steel is not permitted unless followed by solution annealing heat treatment.

c. The bend radius is limited to five times the nominal pipe diameter, unless otherwise specified.

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A.6.4 Heat Treatment

A.6.4.1 Heat Treatment of Welds

Pre-heat and post-heat treatment of welds are in accordance with qualified welding procedures per the ASME Boiler and Pressure Vessel Code, Section IX.

A.6.4.2 Carbon and Low Alloy Steel

The heat treatment of carbon steel and low alloy steel piping components and equipment pressure parts is in accordance with requirements of the ASTM material specifications.

A.6.4.3 Austenitic Stainless Steel

Austenitic stainless steel piping components and equipment pressure parts are solution annealed at least once. Materials are annealed by heating to a temperature between 1900 and 2050 F and held at this temperature for one hour per inch of thickness, but not less than 1/2 hour, followed by rapid cooling to below 800 F.

A.6.5 Defect Repair

A.6.5.1 General

Repair of base metal or weld metal defects is in accordance with the following requirements:

a. Surface defects such as laps, scabs, slivers, seams, or tears, which do not encroach on minimum wall thickness, are removed by machining or grinding and are blended into the adjacent metal surfaces.

b. When defects or defect removal encroaches on minimum wall thickness, repairs are made by welding.

A.6.5.2 Repair Welding

Repair welding is performed employing welding procedures and welders qualified in accordance with Section IX of the ASME Boiler and Pressure Vessel Code.

A.6.5.3 Inspection of Repair Welds

Repair welds of a depth greater than 10 percent of the wall thickness must meet the inspection requirements for welds specified for the applicable classification of piping. Other inspection methods are not employed without approval.

A.6.5.4 Heat Treatment After Repair by Welding

Base material repair welds are heat treated as required by the applicable materials specifications. Weld repairs are heat treated as required, in accordance with the project specifications.

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A.7 TESTING AND INSPECTION REQUIREMENTS

A.7.1 Radiography

A.7.1.1 Welds

Radiographic procedures and standards of acceptance for welds are in accordance with the ASME Boiler and Pressure Vessel Code Section VIII, Division I, Paragraph UW-51, Section III, Paragraph N-624, or Section I, Paragraph PW-51.

A.7.1.2 Castings

Radiographic procedures for inspection of castings and casting repair welds are in accordance with ASTM E-94 and E-142, plus the following:

a. Radiographic film shall be of the high contrast, high definition, fine grain type - "Kodak AA", "Ansco Superay A", "Dupont 506", or approved equal.

b. All radiography is done with lead screens.

c. Film density in the area to be interpreted is within the range 1.7 to 3.5 as determined by either a film density strip or by a densitometer.

d. Film location and identification markers are permanently marked on weldments and castings in accordance with the manufacturer's standard shop practice.

Acceptance standards for casting and casting repair welds less than 2 inches thick are in accordance with ASTM E71 as follows:

Category	Severity Level (acceptable)
A	A2
B	B2
C	C2
D	None acceptable
E	None acceptable
F	None acceptable
G	None acceptable

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Acceptance standards for casting and casting repair welds 2 inches to less than 4-1/2 inches thick shall be in accordance with ASTM E186 as follows:

Category	Severity Level (acceptable)
A	A2
B	B2
C	Type 1 - CA2
	Type 2 - CB2
	Type 3 - CC2
D	None acceptable
E	None acceptable

Acceptable standards for casting and casting repair welds 4-1/2 inches to 12 inches thick shall be in accordance with ASTM E 280 as follows:

Category	Severity Level (acceptable)
A	A2
B	B2
C	Type 1 - CA2
	Type 2 - CB2
	Type 3 - CC2
D	None acceptable
E	None acceptable

A.7.2 Ultrasonic Examination

A.7.2.1 Forgings

Ultrasonic methods and acceptance standards for forgings are in accordance with ASTM A-388, "Ultrasonic Testing and Inspection of Heavy Steel Forgings", or the standard of acceptance is in accordance with Paragraph N-322.1 of the ASME Boiler and Pressure Vessel Code, Section III, as modified in the following paragraphs.

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A.7.2.1.1 Normal Beam Testing - Acceptance Standards

The materials are considered unacceptable, unless repaired, based on the following test indications:

1. Indications of discontinuities in the material that produce a complete loss of back reflection not associated with the geometric configuration of the piece. (A complete loss of back reflection is assumed when the back reflection falls below 5 percent of full screen height.)

2. Traveling indications of discontinuities with 10 percent or more of the back reflection losts. (A traveling indication is defined as an indication which displays sweep movement of the oscilloscope pattern at a relatively constant amplitude as the search unit is moved along the part being examined.)

A.7.2.1.2 Angle Beam Testing - Acceptance Standards

Materials are unacceptable where oscilloscope indications exceed those produced by the reference standard. The reference standard notch is the smaller of a depth equal to 5 percent of the material thickness of 3/8 inch.

A.7.2.2 Piping and Fittings

Ultrasonic methods and acceptance standards for seamless pipe are in accordance with Paragraph N-324.3 of the ASME Boiler and Pressure Vessel Code, Section III. Plate for seam welded piping and fittings is examined prior to fabrication in accordance with Paragraph N-321.1 of the ASME Boiler and Pressure Vessel Code, Section III, or ASTM A-35 or E-273 or A-388.

Seamless fittings made from pipe are ultrasonically examined in accordance with Paragraph N-324.3 of the ASME code, Section III,or ASTM E-213 prior to forming of the fitting. After final forming and any required heat treatment specified in the material specification, seamless fittings will be magnetic particle or liquid penetrant examined on all accessible surfaces.

A.7.3 Liquid Penetrant Testing

Methods, techniques and acceptance standards for liquid penetrant testing are in accordance with Section VIII, Appendix VIII of the ASME code or Section III, Paragraph N-627.

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A.7.4 Magnetic Particle Testing

Methods, techniques and acceptance standards for magnetic particle testing are in accordance with Section VIII, Appendix VI of the ASME code or Section III, Paragraph N-626.

A.7.5 Ferrite Testing

Austenitic stainless steel welds are subject to ferrite tests in order to determine the presence of a controlled amount of ferrite. The minimum amount of ferrite shall be 3-8 percent as determined by Schaeffler Diagram or by magnetic ferrite indicator.

A.7.6 Hydrostatic Testing

Hydrostatic testing of pipe and components is in accordance with ANSI B31.1.0 or the ASME code, as appropriate.

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A.8 CLEANING

To minimize the requirement for cleaning after erection and to prevent damage during shipment, storage or handling, piping and equipment pressure parts are cleaned and capped by the pipe fabricator prior to shipment.

A.8.1 Stainless Steel Piping

Austenitic stainless steel interior surfaces are mechanically cleaned, blast cleaned, or in a pickled condition and are free of scale. Blast cleaned surfaces are free of residual quantities of the cleaning medium. The final cleaning operation consists of cleaning with process controlled water with chemical additive. Immediately after cleaning and inspection, all openings in the pipe assemblies are covered with suitable protective covers or caps.

A.8.2 Carbon Steel and Low Alloy Piping

Carbon steel and low alloy piping steel surfaces are mechanically cleaned per PFI Standard ES-5, shot blast cleaned per Steel Structural Painting Council Standard SP-5, or pickled. After cleaning, piping assemblies are blown out with clean, oil free air. After cleaning and inspection, all openings of the pipe assemblies are covered with suitable protective covers or caps.

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A.9 PIPING DESIGN REQUIREMENTS

A.9.1 General

Piping design requirements for the plant piping systems may be classified into the following schedules:

Schedule I summarizes the pipe material specifications and design requirements for piping systems in Group I and Group II. Note that Group I piping has additional design requirements above Group II.

Schedule II summarizes the pipe material specifications and design requirements for certain piping systems in Group III. These systems are:

> Main steam lines downstream of outer isolation valves to the first remotely operated stop valves, excluding the turbine stop valves.
>
> Feedwater lines upstream of outer isolation check valves to the first remotely operated stop valve in the feedwater pump discharge lines.

Schedule III summarizes the balance of plant piping.

The piping design requirements for the major components of the piping are described in general. No attempt has been made to completely describe each and every detailed component requirement in these piping systems. Various minor deviations from the basic design requirements, e.g., materials substitution, have been reviewed to ensure that such deviations meet the applicable codes and standards to assure the structural integrity of piping systems. However, no deviations are made for non-destructive testing required by codes (radiographic, magnetic particle and liquid penetrant examinations).

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SCHEDULE I

PIPING DESIGN REQUIREMENTS FOR GROUPS I AND II

1. MATERIAL SPECIFICATIONS

   a. Carbon Steel Piping

      Seam welded pipe, 26" and larger, is ASTM A-155-65 Gr. KC-70 (Firebox quality), Class I.

      Seamless pipe, 24" and smaller, is ASTM A-106, Gr. B.

      Seam welded fittings, 26" butt welding, are ASTM A-234, Gr. WPB-W or WPC-W and MSS SP-48.

      Butt weld fittings, 24" through 2-1/2", are ASTM A-234, Gr. WPB, WPB-W or WPC-W. Welded seams are 100 percent radiographed after forming operation and either magnetic particle or liquid penetrant inspection is made on the final weld layer. Surfaces of fittings in the finished condition are examined by either magnetic particle or liquid penetrant method.

      Seamless fittings, 2" and smaller, are forged carbon steel, ASTM A-105, Gr. II.

   b. Stainless Steel Piping

      Seamwelded pipe, 12" and larger, is ASTM A-358, TP-304, Class I.

      Seamless pipe, 12" through 2-1/2", is ASTM A-376 TP 304 or A-312 TP 304. Seamless pipe, 2" and smaller, is ASTM A-376 TP 304 or A-312 TP 304.

      Butt weld fittings are ASTM A-403, Gr. WP304 or WP304-W. Welded seams are 100 percent radiographed after forming operations and liquid penetrant test is made on the final layer. Surfaces of fittings, 2-1/2" and larger, are examined by liquid penetrant method.

Seamless fittings, 2" and smaller, socket weld forged stainless steel, are ASTM A-182, Gr. F-304.

c. Flanges

Carbon steel flanges are ANSI Standard forged to ASTM A-105 Gr. II.

Stainless steel flanges are ANSI Standard, forged to ASTM A-182, Gr. F-304 or F-316. Surfaces of stainless steel flanges, 2-1/2" and larger, are examined by either magnetic particle or liquid penetrant method.

2. INSPECTION

a. Butt welds for 2 1/2" and larger pipe joints in the shop and field are 100 percent radiographed.

b. The final layer of pressure welds in the shop and field are examined by either magnetic particle or liquid penetrant method. This requirement covers all pipe sizes for butt welds.

c. Pressure retaining forgings over 4" in thickness are examined by ultrasonic method plus either liquid penetrant or magnetic particle methods.

d. Pressure retaining parts of valves 2 1/2" and larger in nominal pipe sizes are radiographed.

e. Valves are shop hydrostatic tested in accordance with the ANSI B 16.5 or MSS SP-66 requirements.

3. FABRICATION REQUIREMENTS

Fabrication requirements are in accordance with the project design requirements for critical systems.

4. SPECIAL REQUIREMENTS FOR GROUP I SYSTEMS

a. Brittle fracture control for ferritic steel is required for the following portions of Group I systems:

Feedwater System - from RPV to the outer isolation check valve (valve 6-96) and startup recirculation line isolation valves 38 A and 38 B.

High Pressure Coolant Injection Line - from feedwater line to testable check valve (valve 23-18).

Core Spray - isolation valves 14-14A and 14-14B.

Reactor Core Isolation Cooling System - from feedwater line to testable check valve (valve 13-22).

RHR System shutdown cooling isolation valves (10-17, 10-18 and 10-88), LPCI valves (10-81A and 10-81B)

Cleanup System Return - from feedwater line to check valve (valve 12-62).

Control Rod Hydraulic System Return Line - from valve 3-110 to valve 3-114.

b. Pressure retaining bolting greater than 1" is examined by either magnetic particle or liquid penetrant method.

c. Pipe and fittings, 2-1/2" and larger pipe sizes, in Group I systems are 100 percent volumetrically examined per Section III of the ASME code. This requirement applies to Unit 3 only.

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SCHEDULE II

PIPING DESIGN REQUIREMENTS

1. MATERIAL SPECIFICATIONS

   a. Carbon Steel Piping

      Seamwelded pipe, 26", is ASTM A-155-65, Gr. KC-70 (Firebox quality), Class I.

      Seamless pipe, 24" and smaller, is ASTM A-106, Gr. B.

      Seamwelded butt weld fittings, 26", are ASTM A-234, Gr. WPC-W and MSS-SP-48. Welded seams are 100 percent radiographed after forming operations and magnetic particle inspection is made on the final weld layer.

      Seamless butt weld fittings, 24" through 2-1/2", are ASTM A-234, Gr. WPB.

      Seamless socket weld fittings, 2" and smaller, are forged carbon steel to A-105, Gr. II.

   b. Stainless Steel Piping

      Not applicable.

   c. Flanges

      Flanges are ANSI Standard, forged carbon steel to ASTM A-105, Gr. II.

2. INSPECTION

   a. Butt welds for 2-1/2" and larger pipe joints in the shop and field are 100 percent radiographed.

   b. The final layer of pressure welds are examined by either magnetic particle or liquid penetrant method.

   c. Pressure retaining parts of valves, 2-1/2" and larger, are radiographed.

d. Valve butt weld end preparations for field welding are examined by either magnetic particle or liquid penetrant method.

e. Valves are shop hydrostatic tested in accordance with ANSI B16.5 or MSS SP-66 requirements.

3. FABRICATION REQUIREMENTS

Fabrication requirements are in accordance with the project design specifications for critical systems.

SCHEDULE III

1. MATERIAL SPECIFICATIONS (Partial List)

   a. Carbon Steel Piping

      Seamwelded pipe is ASTM A-155-65, Gr. KC-70 Cl.2 or ASTM A-155, Gr. C-55 Cl.2.

      Seamless pipe is ASTM A-106, Gr. B or A-53, Gr. A or B.

      Fittings are ASTM A-234 WPB, WPB-W or WPC-W, or ASTM A-105, Gr. II.

   b. Stainless Steel Piping

      Seamwelded pipe is ASTM A-312 TP-304, 304L plus eddy current test, or ASTM A-358, TP-304 or 304L, Class I.

      Seamless pipe is ASTM A-376 TP 304 or ASTM A-312 TP 304 or 304L.

      Fittings are ASTM A-403, WP 304WL or ASTM A-182, Gr. F-304.

   c. Low Alloy Piping

      Seamless pipe is ASTM A-335, Gr. P-11 or P-5.

      Seamwelded pipe is ASTM A-155, Class II, Gr. 1-1/4 CR.

      Fittings are ASTM A-234 WP-11, WP-11W, WP-5, or WP-5W, or ASTM A-182, F11 on F5.

2. INSPECTION REQUIREMENTS

Inspections are in accordance with material specifications or the requirements of ANSI B31.1.0.

Inspection of valves conforms to ANSI B31.1.0 requirements.

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3. FABRICATION REQUIREMENTS

Fabrication requirements shall conform to the project design specifications. Those systems requiring thermal stress analysis and special fabrication techniques are identified as Schedule IIIc, the "c" denoting a critical system.

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TABLE A.9.1

SUMMARY CLASSIFICATION OF PIPING SYSTEMS

Group I (Primary Pressure Boundary)	Design Schedule	Seismic Class
Recirculation System	I	I
Systems from RPV to Outer Iso. Valve:		
Feedwater Lines	I	I
Main Steam Lines	I	I
Main Steam Drain Lines	I	I
Steam to HPCI	I	I
Steam to RCIC	I	I
Core Spray	I	I
Residual Heat Removal:		
Shutdown Supply	I	I
Head Spray	I	I
LPCI	I	I
Reactor Water Cleanup Supply & Return	I	I
CRD Return	I	I
Standby Liquid Control	I	I
Reactor Vessel Instrumentation	I	I
Sample Lines	I	I
Small Lines, 2" and under		
To and including first shutoff valve	I	I
Beyond shutoff valve	III	-
CRD System		
Insert and Withdraw Lines	I	I
Scram Discharge Volume	I	I

TABLE A.9.1 (Continued)

Group II (Core Cooling and Containment Extension)	Design Schedule	Seismic Class
Residual Heat Removal:		
LPCI	I	I
Containment Cooling and Spray (excluding spargers)	I	I
Shutdown Cooling	I	I
Reactor Head Spray	I	I
Core Spray	I	I
HPCI:		
Steam Supply and Exhaust	I	I
Suction	I	I
Discharge	I	I
RCIC:		
Steam Supply and Exhaust	I	I
Suction	I	I
Discharge	I	I
Reactor Water Cleanup System		
High Pressure System Only	I	-
Standby Liquid Control System:		
Excluding system test components	I	I
Essential instrument lines for Standby Core Cooling Systems	I	I
Inerting System:		
From Containment to the Second Isolation Valve	I	I

TABLE A.9.1 (Continued)

Group II (Continued)	Design Schedule	Seismic Class
Containment Ventilation System:		
From Containment to the Second Isolation Valve	I	I
Special Auxiliary Systems:		
High Pressure Service Water	I	I
Emergency Service Water	I	I
Emergency Cooling Water	I	I
Post - LOCA Containment Atmosphere Dilution System	I	I

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TABLE A.9.1 (Continued)

Group III (Balance of Plant Systems)	Design Schedule	Seismic Class
Main Steam:		
Downstream of Outer Isolation Valves to Main Stop Valve or First Remotely Operated Valve	II	--
Turbine Steam Bypass	II	--
Feedwater:		
Upstream of Outer Isolation Check Valves to First Remotely Operated Valves	II	--
Feed Pump Recirc.	IIIc*	--
Control Rod Hydraulic System:		
Suction line to Pump	III	--
Condensate Supply to CSCS Pumps	III	I
Offgas System:		
Air Ejector to Holdup Pipe	IIIc*	--
Holdup Pipe	IIIc*	--
Holdup Pipe to Offgas Filters	IIIc*	--
Downstream of Offgas Filter to Stack	III	--
Inerting System:		
From the Second Isolation Valves to Storage Tank	III	--
Standby Liquid Control System:		
System Test Components	IIIc	--

*All welds 100% radiographed

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TABLE A.9.1 (Continued)

Group III (Continued)	Design Schedule	Seismic Class
Reactor Water Cleanup System:		
Blowdown to Condenser and Radwaste	IIIc	--
Low Pressure System	IIIc	--
RCIC:		
Suction from Cond. Storage Tank	IIIc	I
Radwaste:		
Liquid Process	III	--
Fuel Pool Cooling and Cleanup	III	--
Extraction Steam	IIIc	--
Condensate:		
Pump Suction	IIIc	--
Pump Discharge	IIIc	--
Condensate Service	III	--
Auxiliary Steam	IIIc	--
Plant Heating	III	--
Service Water	III	--
Reactor Building Cooling Water	III	--
Turbine Building Cooling Water	III	--
Instrument Air	III	--
Service Air	III	--
Fire Protection System	III	--
Domestic Water	III	--

TABLE A.9.1 (Continued)

Group III (Continued)	Design Schedule	Seismic Class
Lube Oil	III	--
Fuel Oil	III	--
Chemicals	III	--
Chilled Water System	III	--
Makeup Water System	III	--

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TABLE A.9.2

SUMMARY OF EQUIPMENT

DESIGN GUIDES

Group I

Reactor Pressure Vessel	ASME III, Cl. A
Recirc. Pumps	See Par. A.3.3
Recirculation Valves	MSS-SP-66
Safety Valves, RV	ASME III
Relief Valves, RV	ASME III
Main Steam Valves	B16.5
Recirc. Flow Nozzle	B31.1.0
Steam Flow Nozzle	B31.1.0
Feedwater Isolation Check Valves	MSS-SP-66
Isolation Valves: Except Listed Below	B16.5
MO-10-25, AO-46	MSS-SP-66
AO-13-22, AO-23-18	MSS-SP-66
MO-14-12, AO-14-13	MSS-SP-66

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TABLE A.9.2 (Continued)

Group II	
Containment Vessel	ASME III, Cl. B
Cleanup System	
Non-Regenerative Heat Exchanger	Shell: ASME VIII Tube: ASME III, Cl. C
Regenerative Heat Exchanger	ASME III, Cl. C
Filter Demineralizer	ASME III, Cl. C
HPCI	
Turbine	Per design specification
Pump	See Par. A.3.3
RCIC	
Turbine	Per design specification
Pump	See Par. A.3.3
Core Spray	
Pumps	See Par. A.3.3
Residual Heat Removal	
Pump	See Par. A.3.3
Heat Exchanger	Shell: ASME III, Cl. C Tube: ASME VIII
Standby Liquid Control	
Pump	See Par. A.3.3
Containment Vacuum Relief Valves and Drywell Vacuum Breakers	B31.1.0 & ASME Sec. III, Cl. B
Post - LOCA Containment	Asme Section III (1971)
Atmosphere Dilution System Liquid N_2 Tank	Class 2

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TABLE A.9.2 (Continued)

Group III (Partial List)

Radwaste:	
Waste Filter	ASME III, Cl. C
Floor Drain Filter	ASME III, Cl. C
Waste Demineralizer	ASME III, Cl. C
Fuel Pool Heat Exchangers	ASME VIII, Div. I
Reactor Building Cooling Water Heat Exchangers	ASME VIII, Div. I
Turbine Building Cooling Water Heat Exchangers	ASME VIII, Div. I
Offgas Filter Vessels	ASME VIII, Div. I
Air Compressor After Coolers	ASME VIII, Div. I
Condensate Demineralizer Vessels	ASME VIII, Div. I
Make-up Demineralizer Vessels	ASME VIII, Div. I
Auxiliary Boilers	ASME I
Auxiliary Boiler Blowoff Tank	ASME VIII, Div. I
Auxiliary Boiler Deaerator	ASME VIII, Div. I
Compressed Air Receivers	ASME VIII, Div. I
Moisture Separator Tanks	ASME VIII, Div. I
Moisture Separator Drain Tanks	ASME VIII, Div. I

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SYSTEM LEGENDS

1. REACTOR RECIRCULATION
2. MAIN STEAM
3. FEEDWATER
4. REACTOR WATER CLEAN-UP
5. REACTOR CORE ISOLATION COOLING (RCIC)
6. CORE SPRAY
7. RESIDUAL HEAT REMOVAL
8. CONTAINMENT SPRAY
9. REACTOR HEAD SPRAY
10. STANDBY LIQUID CONTROL
11. HIGH PRESSURE COOLANT INJECTION (HPCI)
12. LOW PRESSURE COOLANT INJECTION (LPCI)

PIPING CODE

ANSI B31.1.0 - PIPING

GROUP I

GROUP II

GROUP III

EQUIPMENT CODE

ASME SECTION III A

ASME SECTION III C

ASME SECTION VIII, API

-- CONTAINMENT BOUNDARY

GROUP I:

PIPING AND EQUIPMENT PRESSURE PARTS WITHIN THE REACTOR PRIMARY PRESSURE BOUNDARY THROUGH THE OUTER ISOLATION VALVE, INCLUSIVE.

GROUP II:

PIPING AND EQUIPMENT PRESSURE PARTS DOWNSTREAM OF THE OUTER ISOLATION VALVE AND EXTENSIONS OF CONTAINMENT AND THE CORE STANDBY COOLING SYSTEMS.

GROUP III:

BALANCE OF PLANT PIPING AND EQUIPMENT PRESSURE PARTS INCLUDING POWER GENERATION SYSTEMS.

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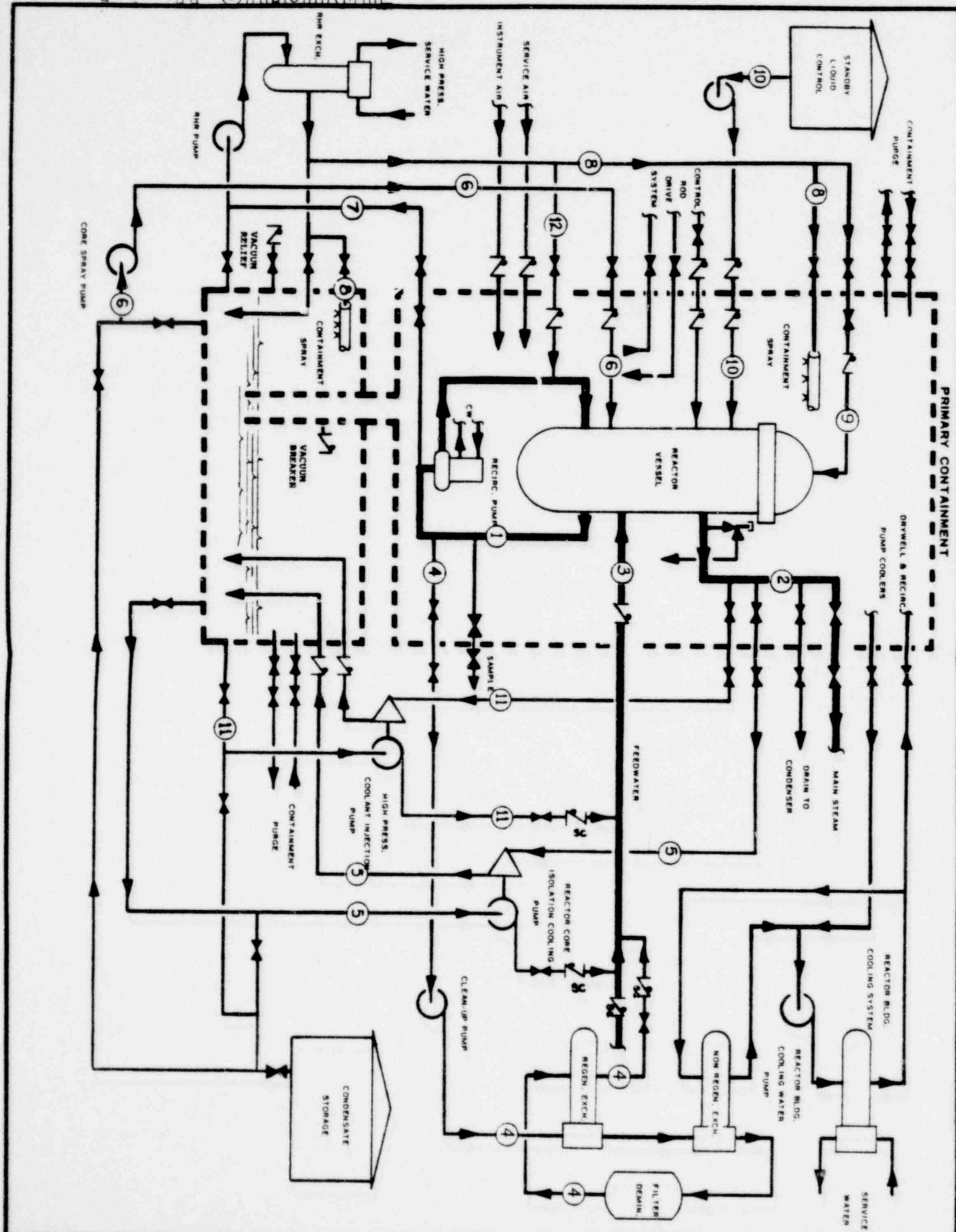
PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
FINAL SAFETY ANALYSIS REPORT

PIPING CODE CLASSIFICATION

(NSSS)

FIGURE A.2.1

POOR ORIGINAL



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