NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

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INSERVICE TESTING PROGRAM

THIRD TEN YEAR INSPECTION INTERVAL
MAY 31, 1992 - MAY 31, 2002

SUBMITTED: December 2, 1992

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NORTHERN STATES POWER COMPANY

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THIRD TEN YEAR INTERVAL
MAY 31, 1992 - MAY 31, 2002

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Record of Revisions
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MONTICELLO NUCLEAR PLANT
INSERVICE TESTING PROGRAM
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1.0 INTRODUCTION

Under the provisions of 10CFR50.55a, inservice testing of safety-related pumps and valves will be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code to the extent practical. As specified in 10CFR50.55a(b) (1-1-91 Edition), the effective edition of Section XI with regard to this program is the 1986 Edition. This program identifies the pump and valve inservice testing that will be performed at the Monticello Nuclear Plant to comply with the requirements of 10CFR50.55a. This program applies to the Third Ten Year Inservice Inspection Interval beginning May 31, 1992, and ending May 31, 2002.

1.1 Relationship with Technical Specifications

Based on Technical Specification requirements, in the event of any conflicts between ASME Section XI requirements and the requirements of Technical Specifications, the plant Technical Specifications shall govern. Monticello Nuclear Plant will meet all requirements of both ASME Section XI and plant Technical Specifications unless there is a specific conflict between the two. Requirements of ASME Section XI that cannot be met due to Technical Specification guidance will be identified in appropriate Relief Requests or appropriate Technical Specification changes will be prepared.

1.2 Qualification of Test Personnel

Personnel performing pump and valve testing per ASME Section XI Subsections IWP and IWV will be qualified in accordance with the Monticello Nuclear Plant Quality Assurance Program. This is in keeping with the requirements of ASME Section XI, as clarified by ASME Code Interpretation XI-1-82-06R.

1.3 IST Program Component Selection Criteria

The components selected for this program are limited to Code Class 1, 2, or 3 pumps and valves as stated in 10CFR50.55(a). The document that identified Class 1, 2, and 3 components at Monticello Plant is the Color Coded P&ID Q-List Extension. This document shows Quality Groups A, B and C which correspond Code Classes 1, 2, and 3 respectively. These components are then judged as to whether they meet the IWV-1100 Scope criteria and are not exempted by IWV-1200.

Component functions that mitigate the consequences of accidents that are beyond single failure criteria (i.e., beyond the design basis) are not included in the program. For example, valve positions that apply exclusively to Emergency Operating Procedure actions are not included as safety positions that must meet Section XI testing requirements.

Subcomponents of safety related pumps or equipment are not identified as separate items and will be tested as an integral part of the in-service test. For example, the operational readiness of subcomponents of the HPCI pump, such as the auxiliary oil pump and the turbine driven oil pump, is verified by the satisfactory completion of the HPCI pump's in-service test. Similarly, subcomponents of the emergency diesel generator, such as the jacket water cooling pump and the engine fuel transfer pump, are not included in the IST program because they are considered to be an integral part of the emergency diesel generator and are verified by surveillance testing done on the diesel generator. In addition, such subcomponents are not designed to be individually tested in accordance with Code rules.

2.0 PUMP INSERVICE TESTING PROGRAM

The pump test program shall be conducted in accordance with Part 6 of ASME/ANSI OMa-1988 as allowed by ASME Code Case N-465, except for relief requested under the provisions of 10CFR50.55a(g) (5) (iii). Section 5 details the inservice testing program for all safety related pumps at Monticello Nuclear Plant. This table lists each pump required to be tested, each parameter to be measured, and specific relief requests concerning non-conformance.

The 10CFR50.55(a) specification of Class 1, 2, and 3 components has been used as criteria for including pumps in this program. Non-Class 1, 2, or 3 pump(s) judged important to safety are also listed. Testing of these pump(s) will be performed in accordance with Part 6 to the extent practical. Relief requests will not be submitted for these pump(s) if the Code requirements can not be met.

3.0 VALVE INSERVICE TESTING PROGRAM

The valve test program for Monticello Nuclear Plant shall be conducted in accordance with Subsection IWV of Section XI of the 1986 Edition of the ASME Boiler and Pressure Vessel Code, except for relief requested under the provisions of 10CFR50.55a(g) (5)(iii) and guidance provided in Generic Letter 89-04. The valve test program is included as Section 7. The codes and symbols used to abbreviate the tables in Section 7 are explained in Section 6.

Valves judged important to safety and outside the scope of IWV-1100 are also listed. Testing of these valves will be performed in accordance with Section XI of the Code to the extent practical. Relief requests will not be submitted for these valves if Code requirements can not be met.

3.1 Containment Isolation Valves

Containment isolation valves falling within the scope of ASME Section XI are tested in accordance with the Section XI requirements of IWV-3400, Category A, with the exception of the seat leakage tests (IWV-3420). The seat leakage testing performed on these valves meets the intent of Section XI, but the actual test procedures shall be conducted in accordance with the 10CFR50, Appendix J, Type C, CIV test program. For valves performing a containment isolation function, individual valve leak rates are not in themselves significant. The only pertinent leak rate criteria for CIV's is that the total leak rate for all penetrations and valves be less than 0.60 La. The Monticello Nuclear Plant was designed to perform the Appendix J, Type C tests, not the individual Category A leak test (i.e., some penetration test connections test more than one valve at a time). Accordingly, all CIV seat leak testing shall be performed in accordance with the requirements of 10CFR50, Appendix J, Type C. The requirements of Section XI IWV-3426 and IWV-3427(a) will be maintained for all CIVs. See Relief Request GR-3 in Section 8.

All CIVs have been categorized as A-Active or A-Passive, and will, as a minimum, be leak tested per 10CFR50 Appendix J. Passive valves will in general have no other testing performed.

3.2 Pressure Isolation Valves

The purpose of the plant Pressure Isolation Valves (PIV's) is to reduce the possibility of an inter-system LOCA which would occur by pressurizing low pressure systems to pressures exceeding their design limits. These Category A valves will be fully tested per IWV-3420, with the exception of relief requested under GR-2 (see Section 8).

3.3 CRD Valves

The CRD valves included in the Section XI program are the scram discharge volume vent and drain valves, the scram inlet and outlet valves, the scram discharge header check valves, the charging water header check valves and the cooling water header check valves. These valves will be functionally tested during the individual rod scram time test required by Technical Specifications to be performed once each operating cycle. See Relief Request CRD-1. An additional test will be performed for the charging water header check valves each refueling. See Relief Request CRD-2.

The cooling water header check valve is also tested by normal control rod motion. Since each partially or fully withdrawn operable control rod is exercised one notch at least once a week in accordance with Technical Specifications, this valve will be tested at least quarterly.

3.4 Cold Shutdown Testing

Section 9 identifies the valves that are tested on a Cold Shutdown frequency with operational justifications for each. A valve, that when tested, requires a safety related system to be inoperable for greater than 3 hours, is selected for Cold Shutdown frequency. Valves tested at this frequency may be tested during startup, outage recovery, etc. See relief request GR-5.

3.5 Part-stroke Testing

The goal of the Monticello Nuclear Plant Inservice Test Program is to perform full-stroke tests of all appropriate valves in order to assess the operational readiness of the valves via evaluation of valve degradation. With the exception of those valves for which specific relief has been requested, all valves will be full stroke tested whenever possible.

Part-stroke testing of power-operated valves is often not possible, due to valve logic circuitry which only allows full-open or full-closed valve movement. Moreover, the intent of Section XI is to assess valve operability through inservice testing; while a part-stroke exercise does provide some measure of confidence in valve operability, it does not provide assurance of valve safety-related function. In addition, a part-stroke of a power-operated valve has the possibility, through human or mechanical error, to cause adverse plant consequences (isolation of cooling water, plant transients, etc.) via an inadvertent full-stroke. Therefore, quarterly part stroke testing of the power-operated valves full stroke tested at Cold Shutdown, see Section 9, will not be performed.

Check valves whose safety function is to open will be full-stroked when possible. Since disk position is not always observable, the NRC staff has stated that "verification of the plant's safety analysis flow rate through the check valve would be an adequate demonstration of full-stroke requirement. Any flow rate less than design will be considered part-stroke exercising." Based on this position, check valves within the scope of this test program will be at least part-stroke exercised whenever any flow is passed through the valve. Check valves are considered to be full-stroke tested on at least the Code-required frequency, unless identified by Relief Request. Check valves for which a full-stroke exercise can not be confirmed, therefore, will be identified by an appropriate relief request.

3.6 Fail-Safe Actuators

No special tests will be performed for the valves with fail-safe actuators where normal cycling of the valve by the control switch removes the actuator power source. For these valves the fail-safe function is tested by normal valve exercise testing. All other fail-safe valves will be tested in accordance with IWV-3415.

3.7 Valve Position Indication Verification

Verification of valve position indicator accuracy will be performed in accordance with Section XI IWV-3300 with the exception of those valves for which specific relief has been requested.

3.8 Passive Valves

These valves, which have no Section XI operability testing requirements, are valves in safety-related system which are not required to change position in order to accomplish their required safety-function. Monticello Nuclear Plant has categorized as B-Passive all non-containment isolation valves which are required by procedure to be maintained in their safety-related position. Any valves which are administratively locked-open or locked-closed in their safety-related position are also considered Category B-Passive. Due to the lack of testing requirements, these valves have been excluded from Section 7.

3.9 Stroke Times

The valve stroke times identified in Section 7 are nominal values only and may change due to modification, maintenance, etc. over plant lifetime. Monticello Nuclear Plant will change these stroke times as necessary, incorporating the requirements of ASME Section XI, without further notification.

Valves with extremely short stroke times (less than 2 seconds) have stroke times of such short duration that comparison of measurements with previous data for specified percentage increases is not indicative of degrading valve performance. With measurement of stroke times to the nearest second per IWV-3413(b), a very small increase in stroke time will result in an extremely large percentage change. Verification that valves meet a specified maximum stroke time of short duration provides adequate assurance of operability.

Therefore, Monticello Nuclear Plant will assign a maximum limiting value of full stroke time of 2 seconds for most of those valves with nominal stroke times less than 2 seconds, as noted in the "Stroke Time" column of Section 7. The trending requirements of IWV-3417(a) will not apply. This is an accepted position of Generic Letter 89-04.

Monticello also feels that comparison of valve stroke times to the previous test results, without any evaluation of overall change in stroke time from initial test data, is not the optimum method of gauging valve performance. Therefore, Monticello requests relief from comparing the current valve stroke time with previous stroke time data per IWV-3417 and will, as an alternative, evaluate current valve stroke time data with a reference value stroke time taken when the valve is known to be in good condition. See Relief Request GR-4.

3.10 Excess Flow Check Valves

Excess flow check valves are installed on instrument lines penetrating containment. As such, the lines are sized and/or orificed such that off-site doses will be substantially below 10CFR100 limits in the event of a rupture. Therefore, individual leak rate testing of these valves is not required for conformance with 10CFR50, Appendix J requirements. Functional testing of valves to verify closure can be accomplished by the process of venting the instrument side of the valve while the process side is under pressure. Such testing is required by Technical Specification 4.7.D.1.b at least once per operating cycle. Testing on a more frequent basis is not feasible for several reasons. See Relief Request GR-6. A listing of excess flow check valves can be found in Section 10.

4.0 REFERENCES

- o 10CFR50.55a(g); Inservice Inspection
- o 1986 Edition ASME Boiler and Pressure Vessel Code - Section XI: Rules for Inservice Inspection of Nuclear Power Plant Components
- o Monticello Nuclear Plant; Piping and Instrument Diagrams
- o Monticello Nuclear Plant; Technical Specifications
- o Regulatory Guide 1.26
- o ANSI/ASME OM Standards
  - OM-1-1981 Relief Valve Inservice Testing
  - OM-6 Pump Inservice Testing
  - OM-10 Valve Inservice Testing
- o Monticello Updated Safety Analysis Report
  - Section 5, Containment Isolation
  - Section 6, Plant Engineered Safeguards
  - Section 14, Plant Safety Analysis
- o Northern States Power Letter Dated August 12, 1982 from D.M. Musolf to Director NRR; Subject: Supplemental Information Concerning Inservice Testing Program
- o Northern States Power and NRC correspondence on Event V valves
- o NRC Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"
- o 4 AWI-01.03.03 (COLOR CODED P&ID Q-LIST EXTENSION)

5.0 PUMP TEST PROGRAM AND PUMP RELIEF REQUESTS

Pump Relief Request Index

ASME SECTION XI PUMP TEST REQUIREMENTS

Pump Drawing No.	Pump Number	Pump Name	ASME Class	Parameter to be Measured				Relief Req. No.	Remarks
				Speed[1]	Delta[2] Press.	Vibration	Flow		
M-120	P-202B	RHR	2	N/A	X	X	X	PR-3,5	
M-120	P-202D	RHR	2	N/A	X	X	X	PR-3,5	
M-121	P-202A	RHR	2	N/A	X	X	X	PR-3,5	
M-121	P-202C	RHR	2	N/A	X	X	X	PR-3,5	
M-122	P-208A	Core Spray	2	N/A	X	X	X		
M-122	P-208B	Core Spray	2	N/A	X	X	X		
M-124	P-209	HPCI	2	X	X	X	X	PR-6	
M-126	P-207	RCIC	2	X	X	X	X	PR-6	
M-127	P-203A	SLC	2	N/A	X	X	X	PR-1,7	
M-127	P-203B	SLC	2	N/A	X	X	X	PR-1,7	
M-133	P-11	DOTP	NONE	N/A	X	X	X		
M-811	P-109A	RHRSW	3	N/A	X	X	X	PR-3,8	
M-811	P-109B	RHRSW	3	N/A	X	X	X	PR-3,8	
M-811	P-109C	RHRSW	3	N/A	X	X	X	PR-3,8	
M-811	P-109D	RHRSW	3	N/A	X	X	X	PR-3,8	
M-811	P-111A	ESW	3	N/A	X	X	X	PR-8	
M-811	P-111B	ESW	3	N/A	X	X	X	PR-8	
M-811	P-111C	ESW	3	N/A	X	X	X	PR-8	
M-811	P-111D	ESW	3	N/A	X	X	X	PR-8	
NH-94896	CGCP-1A	CGC	3	N/A	X	X	X		
NH-94897	CGCP-1B	CGC	3	N/A	X	X	X		

Note 1: **Not applicable to constant speed pumps.**

Note 2: **Discharge pressure is used for positive displacement pumps P-203A, P-203B and P-11.**

RELIEF REQUEST NUMBER PR-1

System: Standby Liquid Control (SBLC)

P&ID: M-127

Pumps: P-203A and P-203B

Class: 2

Function: Inject liquid poison into the Reactor

Impractical Test Requirement: OM-6-4.6.5; Flow Rate Measurement:
OM-6-5.6; Duration of Tests

Basis for Relief: The positive displacement SBLC pumps are designed to pump a constant flow rate regardless of system resistance. The SBLC system was not designed with a flow meter in the flow loop. The system was designed to be tested using a test tank where the change in level can be measured over time. This test methodology also limits the pump run time based on the size of the test tank. The cost associated with installing a flow meter would be impractical since changes in tank level over time is an accurate way to measure flow. The orifice used by flow meters could also result in an area where sodium pentaborate crystals accumulate and possibly restrict flow.

Alternative Testing: Determine pump flow rate by measuring changes in tank level over time. The pump will be started with suction from the condensate storage system and will discharge to the test tank. After approximately two minutes of operation the pump will be stopped and the change in level over the measured time will be converted to flow rate by the following formula:

$$Q(GPM) = 261.8 \times \Delta L\ (In)/\Delta t\ (Sec)$$

where 261.8 includes tank dimensions and unit conversions

The vibration testing will be performed while recirculating an adequately filled test tank. Therefore, the duration of test code requirements for vibration testing will be met.

Approval: Approval for the 3rd ten year interval is pending.

RELIEF REQUEST NUMBER PR-2

System: High Pressure Coolant Injection and Reactor Core Isolation Cooling

Northern States Power Company has withdrawn this Relief Request since it is not applicable to 1988A OM-6.

RELIEF REQUEST NUMBER PR-3

System: RHR and RHRSW

P&ID: M-120, M-121

Instruments: FT-111A, FT-10-111B, FT-10-97A and FT-10,97B

Class: 2 and 3

Function: Provides a flow signal to an indicating device.

Impractical Test Requirement: OM-6-4.6.1.2(a); Full scale range of each analog instrument shall not be greater than three times the reference value.

Basis for Relief: Flow transmitters FT-10-111A, FT-10-111B, FT-10-97A, and FT-10-97B are each designed to indicate flow while two parallel pumps are operating (RHR and RHRSW). During Section XI testing, only one pump operates at a time. The resulting reference value of flow for one pump is less than one-third of the instrument's range. Replacing the flow transmitter to meet this requirement would not meet the design intent of providing a flow signal for two pump operation. Installing a second flow transmitter in parallel is impractical and a burden that does not increase the public's safety. These existing transmitters are very reliable. Past calibration records show the typical AS FOUND accuracy is 0.25% of full scale.

Alternative Testing: Use the existing station instruments to measure pump inservice test parameters. Perform a loop check on the flow instrumentation for these systems that verifies the AS FOUND accuracy is within 2% of 3 times the Section XI reference value. This will be done as part of the routine calibration schedule.

Approval: Interim relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER PR-4

System: As applicable.

Northern States Power Company has withdrawn this Relief Request since it is not applicable to 1988A OM-6.

RELIEF REQUEST NUMBER PR-5

System: RHR

P&ID: M-120, M-121

Pumps: P-202A thru D

Class: 2

Function: LPCI, Shutdown Cooling, Primary Containment Cooling

Impractical Test Requirement: Repeating a single reference value of flow to determine changes in differential pressure.

Basis for Relief: The RHR pump design flow rate is at a steep portion of the pump curve. This makes the change in differential pressure (DP) large with a relatively small change in pump flow rate. Therefore, flow vs. DP reference values are inherently not readily duplicated during subsequent tests. In addition, the normal RHR pump discharge pressure is low so that a significant percent change in DP is a small numerical value (5% is only 7 to 10 PSI). This poor repeatability makes the test results of little value for trending purposes. The conservatism needed for the DP alert and required action limits for this situation may result in the pumps being placed on accelerated test frequency or being declared inoperable due solely to test methodology. An alternate test method must be used to determine differential pressure at the reference value of flow.

Alternative Testing: The proposed method is in accordance with OM-6 requirements except that pump differential pressure is determined by interpolating between two data points. A set reference value for flow (RVF) is determined from the system design requirements. A corresponding reference value for differential pressure is obtained by the following procedure:

(a) flow is set in the band of RVF-1.0% and the DP is recorded,
(b) flow is set in the band of RVF+1.0% and the DP is recorded,
(c) these DP points are plotted on a flow vs. differential pressure graph and the DP at RVF is determined by straight line interpolation.

Acceptable, alert, and required action ranges are determined for differential pressure using the OM-6 criteria.

The quarterly pump surveillance will repeat the procedure to determine subsequent operating differential pressure which will be compared to the established limits. Vibration readings will be taken at the data point of higher flow. This DP method is known to be more reliable and accurate than what the code specifies and is considered an improvement for all pumps regardless of operating characteristics.

Approval: Approval for the 3rd ten year interval is pending.

RELIEF REQUEST NUMBER PR-6

System: High Pressure Coolant Injection/Reactor Core Isolation Cooling

P&ID: M-124 and M-126

Pumps: P-209, P-207

Class: 2

Function: Inject coolant into the Reactor independent of AC power.

Impractical Test Requirement: OM-6 Table 3a; Vibration Alert Limit of 0.325 In/Sec.

Basis for Relief: The Alert limit of 0.325 In/Sec is impractical for these Terry turbine driven pumps which can be expected to vibrate at higher levels than motor driven pumps. At one or two points, the vibration reference values we have determined are near or slightly exceed 0.325 In/Sec such that the quarterly vibration levels measured enter into the Alert range and result in accelerated test frequency. All of the measured vibration levels have not trended up in the past several years of data.

Monticello believes that the proposed Alert limit of 2.5 times the reference value or 0.500 In/Sec, whichever is less, ensures the operational readiness of the pump. This is based on discussions with the pump manufacturers, knowledge of the pump's service conditions, and review of industry data, including NPRDS. Enforcing a 0.325 In/Sec Alert range and the resulting increased test frequency (monthly vice quarterly) will not provide any new data and is an extreme hardship without a compensating increase in safety. Furthermore, attempting to lower the vibration levels by modifying the pumps is a burden and may cause the vibration levels to actually increase.

Alternative Testing: A vibration Alert limit of 2.5 times the reference value or 0.500 In/Sec, whichever is less, will be used on the HPCI and RCIC pumps. The pumps Required Action range will incorporate the Code limit of 0.70 In/Sec.

Approval: Approval for the 3rd ten year interval is pending.

RELIEF REQUEST NUMBER PR-7

System: Standby Liquid Control (SBLC)

P&ID: M-127

Pumps: P-203A and P0203B

Class: 2

Function: Inject liquid poison into the Reactor.

Impractical Test Requirement: OM-6-4.6.1.6; Frequency response range of vibration measuring transducers and their read-out system shall be from one third minimum pump shaft rotational speed to at least 1000 Hz.

Basis for Relief: The SBLC pumps rotate at a speed of 280 RPM or 4.7 Hz. The Code requires that the frequency response range of the vibration instrument be from 1.5 Hz to 1000 Hz. This is an unattainable Code requirement because the universal industry standard for this instrumentation is to calibrate down to 5 Hz only. The reason for this is the effect of noise when integrating the acceleration signal from less than 5 Hz. Per discussion with the vibration instrument vendor, IRD, the accuracy of the instrument's integration process doesn't drop off until approximately 2 Hz. However, they will only publish a calibration record for the instrument down to 5 Hz.

The pump vendor, Union, has stated that these pumps have no sub-synchronous failure modes. Therefore, there is no useful vibration diagnostic information below pump running speed. The OM-6 Code Committee is working on a code case to allow exempting low speed positive displacement pumps from this one third minimum pump speed frequency response range requirement.

Alternative Testing: A vibration instrument with a calibrated range of 5 Hz to 1000 Hz will be used.

Approval: Approval for the 3rd ten year interval is pending.

RELIEF REQUEST NUMBER PR-8

System: Emergency Service Water, RHR Service Water

P&ID: M-811

Pumps: P-111A-D and P-109A-D

Class: 3

Function: To provide cooling to safety related equipment; to provide decay heat removal.

Impractical Test Requirement: Measuring pump inlet pressure directly.

Basis for Relief: These pumps are vertical line shaft pumps submersed in the plant intake basin. By design, there is no inlet to the pump that can provide pressure measurement instrumentation.

Alternative Testing: Determine pump inlet pressure by converting the static head of water above the pump inlet to pressure with the following formula:

$$P\ (PSI) = (H\ (FT) - PEL\ (FT)) \times 0.433$$

where H is the basin level elevation, and PEL is the pump inlet elevation

The 0.433 factor is based on the density of water at 40°F. The same factor at the design basis temperature of 90°F is 0.431. The difference of 0.002 LB/in^2-FT is considered negligible.

The basin level elevation will be measured from an instrument that is calibrated per OM-6 requirements.

Approval: Approval for the 3rd ten year interval is pending.

6.0 EXPLANATION OF SYMBOLS

SYMBOLS USED TO DESIGNATE VALVE TYPE

Symbol	Meaning
C	Check Valve
BF	Butterfly Valve
G	Gate Valve
GL	Globe Valve
RV	Pressure Relief Valve
RD	Rupture Disk
A	Angle Valve
PL	Plug Valve
SC	Stop Check
XP	Explosive Shear Valve
DI	Diaphragm
AR	Air Relief
BA	Ball Valve
FV	Excess Flow Check Valve

SYMBOLS USED TO DESIGNATE VALVE ACTUATOR TYPE

Symbol	Meaning
M	Motor
A	Air
S	Solenoid
H	Hand (manual)
SA	Self Actuating

SYMBOLS USED TO DESIGNATE VALVE POSITION

Symbols	Meaning
O	Open
C	Closed

NOTE: Monticello Nuclear Plant may revise, without notice, the identified positions listed in "Normal Position" and "Safety Position" based on changes in valves function/system configuration.

SYMBOLS USED TO DESIGNATE TESTING REQUIREMENT

Symbol	Meaning.
FE	Full stroke Test (with stroke time measurement as appropriate) per IWV-3400, on a quarterly frequency; or full stroke test of check valves per IWV-3520.
FC	Stroke Test per IWV-3400/3520, on a Cold Shutdown frequency (with stroke time measurement, as appropriate), supported by Justification (See Section 9)
FR	Stroke Test per IWV-3400, on a Refueling frequency (with stroke time measurement, as appropriate), supported by Relief Request
FS	Fail Safe Test (see Section 3.6) per IWV-3415
PI	Position Indicator Test (see Section 3.7) per IWV-3300
LJ	Leak Test per 10CFR50, App. J.
LK	Leak Test per IWV-3420
SP	Periodic Relief Valve Test per IWV-3510
EX	Explosive Valve Test per IWV-3610
RD	Rupture Disk Test per IWV-3620
RR	See Relief Request for testing details

SYMBOLS USED TO DESIGNATE SECTION XI VALVE CATEGORY

Symbol	Meaning
A	Valves with specified maximum seat leakage rate.
B	Valves with no specified maximum seat leakage rate.
C	Self-actuating (check, relief valves)
D	Actuated by energy source capable of only one operation (rupture disks, explosive valves).

SYMBOLS USED TO DESIGNATE ACTIVE AND PASSIVE VALVES

Symbols	Meaning
1	Active - valves which are required to change position to accomplish a specific function.
2	Passive - valves which are not required to change position to accomplish a specific function.

7.0 VALVE INSERVICE TEST PROGRAM

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Steam Jet Air Ejectors										P&ID NO.:	M-104-2
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AO-1825A	None	B-3	B-1	6	BF	A	4.0	O	C	FE, PI		FC, PI
AO-1825B	None	B-3	B-1	6	BF	A	4.0	O	C	FE, PI		FC, PI

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Condensate & Demineralized Water Storage System										P&ID NO.:	M108
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
DM 151	2	E-1	A-2	1	G	H	N/A	C	C	LJ		LJ
DM 152	2	E-1	A-2	1	G	H	N/A	C	C	LJ		LJ

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Reactor Building Cooling Water System**										**P&ID NO.:**	**M-111**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
MO-1426	2	E-4	A-1	8	G	M	33.0	O	C	FE, LJ,PI		FC, LJ,PI
MO-4229	2	E-4	A-1	8	G	M	25.0	O	C	FE,LJ,PI		FC,LJ,PI
MO-4230	2	E-3	A-1	8	G	M	20.0	O	C	FE,LJ,PI		FC,LJ,PI
RBCC-15	2	E-3	A,C-1	8	C	SA	N/A	O	C	FE,LJ	RBCW-1	LJ

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**RHR Service Water**										**P&ID NO.:**	**M-112**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
RV-3202	3	C-5	C-1	2.5	RV	SA	N/A	C	O	SP		SP
RV-3203	3	C-4	C-1	2.5	RV	SA	N/A	C	O	SP		SP

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Emergency Service Water Systems										P&ID NO.:	M-112
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
ESW-4-1	3	E-1	C-1	3	C	SA	N/A	C	O	FE		FE
ESW-4-2	3	E-3	C-1	3	C	SA	N/A	C	O	FE		FE
SW-101	3	E-1	C-1	3	C	SA	N/A	O	C	FE	ESW-1	RR
SW-102	3	E-1	C-1	3	C	SA	N/A	O	C	FE	ESW-1	RR
SW-103	3	E-3	C-1	3	C	SA	N/A	O	C	FE	ESW-1	RR
SW-104	3	E-3	C-1	3	C	SA	N/A	O	C	FE	ESW-1	RR

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Service Condensate System**										**P&ID NO.:**	**M-114-1**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
CST-88	2	B-5	C-1	2	C	SA	N/A	O	C	FE	SC-1	RR
CST-90	2	B-5	C-1	2	C	SA	N/A	O	C	FE	SC-1	RR
CST-92	2	B-5	C-1	2	C	SA	N/A	O	C	FE	SC-1	RR
CST-94	2	B-5	C-1	2	C	SA	N/A	O	C	FE	SC-1	RR
CST-96	2	B-6	C-1	2	C	SA	N/A	O	C	FE	SC-1	RR
CST-98	2	B-6	C-1	2	C	SA	N/A	O	C	FE	SC-1	RR
CST-189	2	B-6	C-1	1	C	SA	N/A	O	C	FE	SC-1	RR

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Nuclear Boiler System Steam Supply (Feedwater)**										**P&ID NO.:**	**M-115**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
FW-91-1	2	A-3	C-1	14	C	SA	N/A	O	C	FE		FC
FW-91-2	2	A-5	C-1	14	C	SA	N/A	O	C	FE		FC
FW-94-1	1	A-3	A,C-1	14	C	SA	N/A	O	O/C	FE,LJ		FE(O),FC(C), LJ
FW-94-2	1	A-4	A,C-1	14	C	SA	N/A	O	O/C	FE,LJ		FE(O),FC(C), LJ
FW-97-1	1	A-3	A,C-1	14	C	SA	N/A	O	O/C	FE,LJ		FE(O),FC(C), LJ
FW-97-2	1	A-4	A,C-1	14	C	SA	N/A	O	O/C	FE,LJ		FE(O),FC(C), LJ

ASME SECTION XI VALVE TEST REQUIREMENTS

SYSTEM: Nuclear Boiler System Steam Supply **P&ID NO.:** M-115

Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AO-2-80A	1	C-5	A-1	18	GL	A	3-5	O	C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-2-80B	1	E-5	A-1	18	GL	A	3-5	O	C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-2-80C	1	E-2	A-1	18	GL	A	3-5	O	C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-2-80D	1	C-2	A-1	18	GL	A	3-5	O	C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-2-86A	1	C-5	A-1	18	GL	A	3-5	O	C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-2-86B	1	E-5	A-1	18	GL	A	3-5	O	C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-2-86C	1	E-2	A-1	18	GL	A	3-5	O	C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-2-86D	1	C-2	A-1	18	GL	A	3-5	O	C	FE,LJ,PI,FS		FE,LJ,PI,FS
MO-2373	1	B-5	A-1	3	G	M	18	C	C	FE,LJ,PI		FE,LJ,PI
MO-2374	1	B-6	A-1	3	G	M	18	C	C	FE,LJ,PI		FE,LJ,PI
RV-2-71A	1	B-4	B,C-1	6	RV	SA/A	N/A	C	O	SP,FE	NB-1	SP,FR,RR
RV-2-71B	1	D-4	B,C-1	6	RV	SA/A	N/A	C	O	SP,FE	NB-1	SP,FR,RR
RV-2-71C	1	D-3	B,C-1	6	RV	SA/A	N/A	C	O	SP,FE	NB-1	SP,FR,RR
RV-2-71D	1	B-3	B,C-1	6	RV	SA/A	N/A	C	O	SP,FE	NB-1	SP,FR,RR
RV-2-71E	1	B-4	B,C-1	6	RV	SA/A	N/A	C	O	SP,FE	NB-1	SP,FR,RR
RV-2-71F	1	B-3	B,C-1	6	RV	SA/A	N/A	C	O	SP,FE	NB-1	SP,FR,RR
RV-2-71G	1	D-4	B,C-1	6	RV	SA/A	N/A	C	O	SP,FE	NB-1	SP,FR,RR
RV-2-71H	1	D-3	B,C-1	6	RV	SA/A	N/A	C	O	SP,FE	NB-1	SP,FR,RR

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Reactor Pressure Relief P&ID Drawing										P&ID NO.:	M-115-1
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
RV-3242A	None	A-5	C-1	8	RV	SA	N/A	C	O	SP		SP
RV-3243A	None	C-6	C-1	8	RV	SA	N/A	C	O	SP		SP
RV-3244A	None	C-4	C-1	8	RV	SA	N/A	C	O	SP		SP
RV-3245A	None	A-4	C-1	8	RV	SA	N/A	C	O	SP		SP
RV-7440A	None	A-6	C-1	8	RV	SA	N/A	C	O	SP		SP
RV-7441A	None	A-4	C-1	8	RV	SA	N/A	C	O	SP		SP
RV-7467A	None	C-5	C-1	8	RV	SA	N/A	C	O	SP		SP
RV-7468A	None	C-4	C-1	8	RV	SA	N/A	C	O	SP		SP

ASME SECTION XI VALVE TEST REQUIREMENTS

SYSTEM: Recirc Loops Nuclear Boiler System **P&ID NO.:** M-117-1

Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
CV-2790	2	D-5	A-1	0.75	G	A	3.0	O	C	FE,LJ,PI		FE,LJ,PI
CV-2791	2	D-6	A-1	0.75	GL	A	3.0	O	C	FE,LJ,PI		FE,LJ,PI
MO-2-53A	1	B-2	B-1	28	G	M	25.0	O	C	FE,PI		FC,PI
MO-2-53B	1	B-6	B-1	28	G	M	25.0	O	C	FE,PI		FC,PI

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Recirc Loops Pumps and Motors Nuclear Boiler System										P&ID NO.:	M-117-2
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
XR-27-1	2	D-3	A,C-1	1	C	SA	N/A	O	C	FE,LJ	REC-1	LJ
XR-27-2	2	D-5	A,C-1	1	C	SA	N/A	O	C	FE,LJ	REC-1	LJ

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Control Rod Hydraulic System (Recirc)**										**P&ID NO.:**	**M-118**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
XR-25-1	2	A-4	A,C-1	1	C	SA	N/A	O	C	FE,LJ	REC-1	LJ
XR-25-2	2	A-4	A,C-1	1	C	SA	N/A	O	C	FE,LJ	REC-1	LJ

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Control Rod Hydraulic System										P&ID NO.:	M-119
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
114*	2	B-6	C-1	0.75	C	SA	N/A	O/C	O	FE	CRD-1	RR
115*	2	B-4	C-1	0.50	C	SA	N/A	O/C	C	FE	CRD-2	RR
138*	2	E-4	C-1	0.50	C	SA	N/A	O/C	C	FE		FE
CV-126*	2	C-5	B-1	1	GL	A	N/A	C	O	FE	CRD-1	RR
CV-127*	2	C-6	B-1	0.75	GL	A	N/A	C	O	FE	CRD-1	RR
CV-3-32A	1	E-3	B-1	1	GL	A	30.0	O	C	FE,PI		FE,PI
CV-3-32B	1	E-1	B-1	1	GL	A	30.0	O	C	FE,PI		FE,PI
CV-3-32C	1	E-4	B-1	1	GL	A	30.0	O	C	FE,PI		FE,PI
CV-3-32D	1	E-1	B-1	1	GL	A	30.0	O	C	FE,PI		FE,PI
CV-3-33A	1	D-3	B-1	2	GL	A	30.0	O	C	FE,PI		FE,PI
CV-3-33B	1	D-2	B-1	2	GL	A	30.0	O	C	FE,PI		FE,PI
CV-3-33C	1	D-3	B-1	2	GL	A	30.0	O	C	FE,PI		FE,PI
CV-3-33D	1	D-2	B-1	2	GL	A	30.0	O	C	FE,PI		FE,PI

* Typical of 121 control rod drive units

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Residual Heat Removal System										P&ID NO.:	M-120
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AO-10-46B	1	D-2	A,C-1	16	C	SA	N/A	C	O/C	FE,PI,LK		FC,PI,LK
CV-1995	2	B-4	B-1	2	GL	A	<2	C	O/C	FE,PI		FE,PI
CV-1997	2	C-4	B-1	2	GL	A	<2	C	O/C	FE,PI		FE,PI
MO-1987	2	C-3	B-1	20	G	M	100.0	O	O	FE,PI		FE,PI
MO-1989	2	A-2	B-1	18	G	M	71.0	C	C	FE,PI		FE,PI
MO-2003	2	C-5	B-1	14	GL	M	23.0	O	O/C	FE,PI		FE,PI
MO-2007	2	D-6	B-1	12	G	M	42.0	C	O/C	FE,PI		FE,PI
MO-2009	2	D-6	B-1	10	GL	M	29.0	C	O/C	FE,PI		FE,PI
MO-2011	2	D-5	A-1	4	GL	M	9.0	C	O/C	FE,LJ,PI		FE,LJ,PI
MO-2013	2	D-3	A-1	16	GL	M	41.0	O	O/C	FE,LJ,PI		FE,LJ,PI
MO-2015	1	D-3	A-1	16	G	M	62.0	C	O/C	FE,LJ,PI,LK		FE,LJ,PI,LK
MO-2021	2	E-3	A-1	10	G	M	23.0	C	O/C	FE,LJ,PI		FE,LJ,PI
MO-2023	2	E-2	A-1	10	G	M	19.0	C	O/C	FE,LJ,PI		FE,LJ,PI
MO-4085B	1	D-1	B-1	4	G	M	20.0	C	O/C	FE,PI		FE,PI
RHR-2-2	2	A-5	C-1	10	C	SA	N/A	C	O/C	FE		FE
RHR-2-4	2	B-5	C-1	10	C	SA	N/A	C	O/C	FE		FE
RHR-8-2	2	C-3	C-1	3	C	SA	N/A	C	O	FE	RHR-1	RR
RV-1991	2	B-3	C-1	1	RV	SA	N/A	C	O	SP		SP
RV-1993	2	C-3	C-1	1	RV	SA	N/A	C	O	SP		SP
RV-2005	2	E-6	C-1	1	RV	SA	N/A	C	O	SP		SP
RV-4282	2	B-6	C-1	2.50	RV	SA	N/A	C	O	SP		SP
AI-243-2	None	A-5	A,C-1	3/4	C	SA	N/A	O	C	FE,LK		LK
AI-244-2	None	A-5	A,C-1	3/4	C	SA	N/A	O	C	FE,LK		LK
AI-610-2	None	B-4	A,C-1	3/4	C	SA	N/A	O	C	FE,LK		LK
AI-610-4	None	C-4	A,C-1	3/4	C	SA	N/A	O	C	FE,LK		LK
RHR-6-2	1	D-2	B-2	16	G	H	N/A	O	O	PI		PI

ASME SECTION XI VALVE TEST REOUIREMENTS												
SYSTEM:	**Residual Heat Removal System**										**P&ID NO.:**	**M-121**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
AO-10-46A	1	D-5	A,C-1	16	C	SA	N/A	C	O/C	FE,PI,LK		FC,PI,LK
CV-1994	2	B-4	B-1	2	GL	A	<2	C	O/C	FE,PI		FE,PI
CV-1996	2	C-5	B-1	2	GL	A	<2	C	O/C	FE,PI		FE,PI
MO-1986	2	B-6	B-1	20	G	M	100.0	O	O	FE,PI		FE,PI
MO-1988	2	B-6	B-1	18	G	M	61.0	C	C	FE,PI		FE,PI
MO-2002	2	B-3	B-1	14	GL	M	23.0	O	O/C	FE,PI		FE,PI
MO-2006	2	D-3	B-1	12	G	M	45.0	C	O/C	FE,PI		FE,PI
MO-2008	2	C-3	B-1	10	GL	M	31.0	C	O/C	FE,PI		FE,PI
MO-2010	2	C-3	A-1	4	GL	M	8.0	C	O/C	FE,LJ,PI		FE,LJ,PI
MO-2012	2	D-5	A-1	16	GL	M	36.0	O	O/C	FE,LJ,PI		FE,LJ,PI
MO-2014	1	D-5	A-1	16	G	M	62.0	C	O/C	FE,LJ,PI,LK		FE,LJ,PI,LK
MO-2020	2	E-5	A-1	10	G	M	23.0	C	O/C	FE,LJ,PI		FE,LJ,PI
MO-2022	2	E-5	A-1	10	G	M	23.0	C	O/C	FE,LJ,PI		FE,LJ,PI
MO-2026	1	E-6	A-1	4	G	M	12.0	C	C	FE,LJ,PI,LK		FC,LJ,PI,LK
MO-2027	1	E-6	A-1	4	G	M	11.0	C	C	FE,LJ,PI,LK		FC,LJ,PI,LK
MO-2029	1	D-6	A-1	18	G	M	25.0	C	C	FE,LJ,PI,LK		FC,LJ,PI,LK
MO-2030	1	C-6	A-1	18	G	M	20.0	C	C	FE,LJ,PI,LK		FC,LJ,PI,LK
MO-2032	2	C-4	B-1	4	G	M	18.0	C	C	FE,PI		FE,PI
MO-2407	None	C-4	B-1	4	G	M	20.0	O	C	FE,PI		FE,PI
MO-4085A	1	C-6	B-1	4	G	M	21.0	C	O/C	FE,PI		FE,PI
RHR-2-1	2	A-4	C-1	10	C	SA	N/A	C	O/C	FE		FE
RHR-2-3	2	B-4	C-1	10	C	SA	N/A	C	O/C	FE		FE
RHR-8-1	2	C-5	C-1	3	C	SA	N/A	C	O	FE	RHR-1	RR
RV-1990	2	B-5	C-1	1	RV	SA	N/A	C	O	SP		SP
RV-1992	2	C-5	C-1	1	RV	SA	N/A	C	O	SP		SP
RV-2004	2	D-2	C-1	1	RV	SA	N/A	C	O	SP		SP
RV-2025	2	E-4	C-1	1	RV	SA	N/A	C	O	SP		SP

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Residual Heat Removal System Sheet 2										P&ID NO.:	M-121
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
RV-2031	2	B-6	C-1	1	RV	SA	N/A	C	O	SP		SP
RV-4281	2	B-2	C-1	2.50	RV	SA	N/A	C	O	SP		SP
AI-243-1	None	A-3	A,C-1	.75	C	SA	N/A	O	C	FE,LK		LK
AI-244-1	None	A-3	A,C-1	.75	C	SA	N/A	O	C	FE,LK		LK
AI-610-1	None	A-4	A,C-1	.75	C	SA	N/A	O	C	FE,LK		LK
AI-610-3	None	C-6	A,C-1	.75	C	SA	N/A	O	C	FE,LK		LK
RHR-6-1	1	D-6	B-2	16	G	H	N/A	O	O	PI		PI

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Core Spray System**										**P&ID NO.:**	**M-122**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
AO-14-13A	1	E-3	A,C-1	8	C	SA	N/A	C	O	FE,PI,LK		FC,PI,LK
AO-14-13B	1	E-4	A,C-1	8	C	SA	N/A	C	O	FE,PI,LK		FC,PI,LK
CS-9-1	2	C-2	C-1	10	C	SA	N/A	C	O	FE		FE
CS-9-2	2	C-5	C-1	10	C	SA	N/A	C	O	FE		FE
CST-103-1	None	E-2	C-1	2	C	SA	N/A	O	C	FE	CS-1	RR
CST-104-1	2	E-2	C-1	2	C	SA	N/A	O	C	FE	CS-1	RR
MO-1741	2	A-3	B-1	12	G	M	50	O	O	FE,PI		FE,PI
MO-1742	2	A-4	B-1	12	G	M	50	O	O	FE,PI		FE,PI
MO-1749	2	D-2	B-1	6	GL	M	17.0	C	C	FE,PI		FE,PI
MO-1750	2	D-5	B-1	6	GL	M	16.0	C	C	FE,PI		FE,PI
MO-1751	2	E-3	A-1	8	G	M	8.0	O	O/C	FE,LJ,PI		FE,LJ,PI
MO-1752	2	E-5	A-1	8	G	M	8.0	O	O/C	FE,LJ,PI		FE,LJ,PI
MO-1753	1	E-3	A-1	8	G	M	8.0	C	O/C	FE,LJ,PI,LK		FE,LJ,PI,LK
MO-1754	1	E-5	A-1	8	G	M	8.0	C	O/C	FE,LJ,PI,LK		FE,LJ,PI,LK
RV-1745	2	E-2	C-1	2	RV	SA	N/A	C	O	SP		SP
RV-1746	2	E-6	C-1	2	RV	SA	N/A	C	O	SP		SP
CS-13-1	1	E-3	B-2	8	G	H	N/A	O	O	PI		PI
CS-13-2	1	E-4	B-2	8	G	H	N/A	O	O	PI		PI

ASME SECTION XI VALVE TEST REQUIREMENTS

SYSTEM:	High Pressure Coolant Injection System (Steam Side)										P&ID NO.:	M-123
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
CV-2046A	2	C-1	B-1	1	GL	A	<2	O	C	FE,PI		FE,PI
CV-2394A	None	A-3	B-1	1	GL	A	<2	O/C	C	FE,PI		FE,PI
HPCI-9	2	C-5	A,C-1	16	C	SA	N/A	C	O/C	FE,LJ		FE(O),FC(C), LJ
HPCI-10	2	C-5	A,C-1	16	C	SA	N/A	C	O/C	FE,LJ		FE(O),FC(C), LJ
HPCI-14	2	B-4	C-1	2	C	SA	N/A	C	C	FE		FC
HPCI-15	2	B-5	C-1	2	C	SA	N/A	C	C	FE		FC
HPCI-18	2	A-2	C-1	2	C	SA	N/A	C	O	FE		FE
HPCI-20	2	A-3	C-1	2	C	SA	N/A	C	O	FE		FE
HPCI-60	2	C-4	C-1	1	C	SA	N/A	C	C	FE		FE
HPCI-65	2	B-6	C-1	2	C	SA	N/A	C	C	FE		FC
HPCI-71	2	B-6	C-1	2	C	SA	N/A	C	C	FE		FC
MO-2034	1	D-5	A-1	8	G	M	40.0	O	O/C	FE,LJ,PI		FE,LJ,PI
MO-2035	1	D-4	A-1	8	G	M	40.0	O	O/C	FE,LJ,PI		FE,LJ,PI
MO-2036	2	D-2	B-1	8	G	M	17.0	C	O	FE,PI		FE,PI
PSD-2038	2	C-5	D-1	16	RD	SA	N/A	C	O	RD		RD
RV-2056	3	B-3	C-1	1.50	RV	SA	N/A	C	O	SP		SP

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	High Pressure Coolant Injection System (Water Side)										P&ID NO.:	M-124
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AO-23-18	2	B-5	C-1	12	C	SA	N/A	C	O/C	FE,PI		FC,PI
CV-2065	2	B-4	B-1	2	GL	A	2.0	C	O/C	FE,PI		FE,PI
HPCI-31	2	A-4	C-1	14	C	SA	N/A	C	O	FE	HPCI-4	RR
HPCI-32	2	E-4	C-1	14	C	SA	N/A	C	O	FE		FE
HPCI-42	2	A-4	C-1	4	C	SA	N/A	C	O	FE	HPCI-5	RR
MO-2061	2	A-5	B-1	14	G	M	40.0	C	O/C	FE,PI		FE,PI
MO-2062	2	A-4	B-1	14	G	M	38.0	C	O/C	FE,PI		FE,PI
MO-2063	2	D-3	B-1	14	G	M	37.0	O	O/C	FE,PI		FE,PI
MO-2067	2	B-5	B-1	12	G	M	16.0	C	O	FE,PI		FE,PI
MO-2068	2	B-5	B-1	12	G	M	17.0	C	O	FE,PI		FE,PI
MO-2071	2	C-5	B-1	8	GL	M	5.0	C	C	FE,PI		FE,PI
RV-2064	2	D-3	C-1	1	RV	SA	N/A	C	O	SP		SP
AI-611	None	C-4	A,C-1	.75	C	SA	N/A	O	C	FE,LK		LK

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	RCIC (Steam Side)										P&ID NO.:	M-125
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performod
CV-2082A	2	C-1	B-1	1	GL	A	<2	O	C	FE,PI		FE,PI
CV-2848	None	A-4	B-1	1	GL	A	<2	O/C	C	FE,PI		FE,PI
MO-2075	1	D-5	A-1	3	G	M	20	O	O/C	FE,LJ,PI		FE,LJ,PI
MO-2076	1	D-4	A-1	3	G	M	20	O	O/C	FE,LJ,PI		FE,LJ,PI
MO-2078	2	D-2	B-1	3	GL	M	11.0	C	O/C	FE,PI		FE,PI
MO-2096	2	A-3	B-1	2	GL	M	5.0	C	O	FE,PI		FE,PI
RCIC-9	2	B-6	A,C-1	8	C	SA	N/A	C	O/C	FE,LJ		FE(O),FC(C), LJ
RCIC-10	2	B-6	A,C-1	8	SC	SA	N/A	C	O/C	FE,LJ		FE(O),FC(C), LJ
RCIC-14	2	A-4	C-1	2	C	SA	N/A	C	O	FE		FE
RCIC-16	2	A-5	C-1	2	C	SA	N/A	C	C	FE		FC
RCIC-17	2	B-5	C-1	2	C	SA	N/A	C	C	FE		FC
RCIC-57	2	B-6	C-1	1.50	C	SA	N/A	C	C	FE		FC
RCIC-59	2	B-6	C-1	1.50	C	SA	N/A	C	C	FE		FC
RV-2097	3	B-3	C-1	1	RV	SA	N/A	C	O	SP		SP
PSD-2089	2	C-5	D-1	8	RD	SA	N/A	C	O	RD		RD
SV-4283	2	B-4	B-1	1	GL	S	<2	C	C	FE		FE

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**RCIC (Water Side)**										**P&ID NO.:**	**M-126**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
AO-13-22	2	B-5	C-1	4	C	SA	N/A	C	O/C	FE,PI		FC,PI
CV-2104	2	A-3	B-1	2	GL	A	<2.0	C	O/C	FE,PI		FE,PI
MO-2100	2	A-5	B-1	6	G	M	26.0	C	O	FE,PI		FE,PI
MO-2101	2	D-4	B-1	6	G	M	28.0	C	O	FE,PI		FE,PI
MO-2102	2	D-4	B-1	6	G	M	27.0	O	O/C	FE,PI		FE,PI
MO-2106	2	B-5	B-1	4	G	M	12.0	C	O	FE,PI		FE,PI
MO-2107	2	B-5	B-1	4	G	M	13.0	C	O	FE,PI		FE,PI
MO-3502	2	D-5	B-1	4	G	M	5.0	C	C	FE,PI		FE,PI
RCIC-31	2	A-4	C-1	6	C	SA	N/A	C	O	FE	RCIC-4	RR
RCIC-37	2	A-4	C-1	2	C	SA	N/A	C	O	FE	RCIC-5	RR
RCIC-41	2	D-4	C-1	6	C	SA	N/A	C	O	FE		FE
RV-2103	2	D-3	C-1	1	RV	SA	N/A	C	O	SP		SP
AI-612	None	C-5	A,C-1	.75	C	SA	N/A	O	C	FE,LK		LK

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Standby Liquid Control System										P&ID NO.:	M-127
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
11-14A	2	D-5	D-1	1.50	XP	SA	N/A	C	O	EX		EX
11-14B	2	E-5	D-1	1.50	XP	SA	N/A	C	O	EX		EX
RV-11-39A	2	C-4	C-1	1.50	RV	SA	N/A	C	O	SP		SP
RV-11-39B	2	B-4	C-1	1.50	RV	SA	N/A	C	O	SP		SP
XP-3-1	2	C-4	C-1	1.50	C	SA	N/A	C	O	FE		FE
XP-3-2	2	B-4	C-1	1.50	C	SA	N/A	C	O	FE		FE
XP-6	1	D-6	A,C-1	1.50	C	SA	N/A	C	O/C	FE,LJ	SLC-1	FR,LJ
XP-7	1	C-6	A,C-1	1.50	C	SA	N/A	C	O/C	FE,LJ	SLC-1	FR,LJ

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Reactor Water Cleanup System**										**P&ID NO.:**	**M-128**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
MO-2397	1	D-8	A-1	4	G	M	23.0	O	C	FE,LJ,PI		FE,LJ,PI
MO-2398	1	D-7	A-1	4	G	M	18.0	O	C	FE,LJ,PI		FE,LJ,PI
RC-6-1	2	D-6	C-1	11/2	C	SA	N/A	O	C	FE	RWCU-1	FR
RC-6-2	2	D-7	C-1	11/2	C	SA	N/A	O	C	FE	RWCU-1	FR

ASME SECTION XI VALVE TEST REQUIREMENTS

SYSTEM: Primary Containment Nitrogen Control System **P&ID NO.:** M-130

Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
CV-3267	2	C-4	A-1	1	GL	A	<2	O	C	FE,LJ,PI		FE,LJ,PI
CV-3268	2	C-4	A-1	1	GL	A	<2	O	C	FE,LJ,PI		FE,LJ,PI
CV-3269	2	D-4	A-1	1	GL	A	<2	O	C	FE,LJ,PI		FE,LJ,PI
CV-3311	2	C-5	A-1	1	GL	A	<2	O	C	FE,LJ,PI		FE,LJ,PI
CV-3312	2	C-5	A-1	1	GL	A	<2	O	C	FE,LJ,PI		FE,LJ,PI
CV-3313	2	C-4	A-1	1	GL	A	<2	O	C	FE,LJ,PI		FE,LJ,PI
CV-3314	2	C-5	A-1	1	GL	A	<2	O	C	FE,LJ,PI		FE,LJ,PI
SV-3307	2	C-5	A-1	0.75	GL	S	<2	O	C	FE,LJ,PI		FE,LJ,PI
SV-3308	2	C-5	A-1	0.75	GL	S	<2	O	C	FE,LJ,PI		FE,LJ,PI

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Containment Atmosphere Monitoring System										P&ID NO.:	NH-91197
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
SV-4001A	2	B-6	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4001B	2	B-6	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4002A	2	A-5	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4002B	2	A-4	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4003A	2	A-5	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4003B	2	A-4	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4004A	2	A-4	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4004B	2	A-4	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4005A	2	B-4	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4005B	2	B-4	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4020A	2	A-6	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4020B	2	A-6	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI

ASME SECTION XI VALVE TEST REQUIREMENTS

SYSTEM: Post Accident Sampling | **P&ID NO.:** NF-96042

Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
PAS-58-1	2	B-7	C-1	0.75	C	SA	N/A	C	C	FE		FE
PAS-58-2	2	A-7	C-1	0.75	C	SA	N/A	C	C	FE		FE
SV-4081	1	C-5	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
SV-4082	1	C-5	A-1	0.75	GL	S	<2	C	C	FE,LJ,PI		FE,LJ,PI
PAS-59-5	2	B-6	C-1	0.75	FV	SA	N/A	O	C	FE		FC
PAS-59-6	2	B-6	C-1	0.75	FV	SA	N/A	O	C	FE		FC

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Service Air System**										**P&ID NO.:**	**M-131 SH4**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
AS-78	2	D-8	A-2	1	G	H	N/A	C	C	LJ		LJ
AS-[illegible]9	2	D-7	A-2	1	G	H	N/A	C	C	LJ		LJ

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Alternate SRV Nitrogen Supply System										P&ID NO.:	M-131 SH10
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AI-593	None	B-7	B-1	1	GL	H	N/A	C	O	FE		FE
AI-596	None	C-4	A,C-1	1	C	SA	N/A	C	O/C	FE		FR,LK
AI-597	None	D-4	A,C-1	1	C	SA	N/A	C	O/C	FE		FR,LK
AI-598	2	B-5	A,C-1	1	C	SA	N/A	C	O/C	FE,LJ		FE,LJ
AI-599	2	C-5	A,C-1	1	C	SA	N/A	C	O/C	FE,LJ		FE,LJ
SV-4234	2	C-5	A-1	1	GL	S	<2	C	O/C	FE,LJ,PI		FE,LJ,PI
SV-4235	2	B-5	A-1	1	GL	S	<2	C	O/C	FE,LJ,PI		FE,LJ,PI

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Instrument Air-Reactor Building										P&ID NO.:	M-131 SH12
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AI-11-5	None	C-7	A,C-1	1	C	SA	N/A	O	C	FE,LK		LK
AI-11-6	None	C-7	A,C-1	1	C	SA	N/A	O	C	FE,LK		LK
AI-11-7	None	D-7	A,C-1	1	C	SA	N/A	O	C	FE,LK		LK
AI-11-8	None	D-7	A,C-1	1	C	SA	N/A	O	C	FE,LK		LK
AI-12-9	None	B-5	A,C-1	1	C	SA	N/A	O	C	FE,LK		LK
AI-12-10	None	B-5	A,C-1	1	C	SA	N/A	O	C	FE,LK		LK
AI-12-11	None	D-5	A,C-1	1	C	SA	N/A	O	C	FE,LK		LK
AI-12-12	None	C-5	A,C-1	1	C	SA	N/A	O	C	FE,LK		LK
AI-13-1	None	B-3	A,C-1	.75	C	SA	N/A	C	C	FE,LK		LK
AI-13-2	None	B-3	A,C-1	.75	C	SA	N/A	C	C	FE,LK		LK
AI-13-3	None	C-3	A,C-1	.75	C	SA	N/A	C	C	FE,LK		LK
AI-13-4	None	D-3	A,C-1	.75	C	SA	N/A	C	C	FE,LK		LK
AI-13-5	None	B-3	A,C-1	.75	C	SA	N/A	C	C	FE,LK		LK
AI-13-6	None	C-3	A,C-1	.75	C	SA	N/A	C	C	FE,LK		LK
AI-13-7	None	A-3	A,C-1	.75	C	SA	N/A	C	C	FE,LK		LK
AI-13-8	None	C-3	A,C-1	.75	C	SA	N/A	C	C	FE,LK		LK
AI-571	2	C-5	A,C-1	2	C	SA	N/A	O	C	FE,LJ		FC,LJ
CV-1478	2	C-5	A-1	2	GL	A	<2	O	C	FE,LJ,PI		FC,LJ,PI

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Instrument Air-Reactor Building										P&ID NO.:	M-131 SH14
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
CV-7956	2	B-6	A-1	0.75	GL	A	<2	C	C	FE,LJ,PI		FE,LJ,PI
AI-226-1	2	C-4	A,C-1	0.25	C	SA	N/A	O	C	FE,LJ	IA-2	LJ
AI-613	None	D-7	A,C-1	0.25	C	SA	NA	O	C	FE,LK		LK
AI-614	None	C-7	A,C-1	0.25	C	SA	N/A	O	C	FE,LK		LK
AI-615	None	C-6	A,C-1	0.25	C	SA	N/A	O	C	FE,LK		LK
AI-616	None	C-6	A,C-1	0.25	C	SA	N/A	O	C	FE,LK		LK
AI-617	None	B-6	A,C-1	0.25	C	SA	N/A	O	C	FE,LK		LK
AI-618	None	B-3	A,C-1	0.25	C	SA	N/A	O	C	FE,LK		LK
AI-619	None	B-3	A,C-1	0.25	C	SA	N/A	O	C	FE,LK		LK
AI-625	2	C-4	A,C-1	0.25	C	SA	N/A	O	C	FE,LJ	IA-2	LJ
AI-629	2	B-6	A,C-1	0.75	C	SA	N/A	C	C	FE,LJ		FE,LJ

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Diesel Oil**										**P&ID NO.:**	**M-133**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
FO-2	None	C-3	C-1	1	C	SA	N/A	O	C	FE		FE
FO-5	None	D-3	C-1	2	C	SA	N/A	O/C	O	FE		FE
FO-43	None	B-2	C-1	1.5	C	SA	N/A	O/C	O	FE		FE
FO-44	None	B-2	C-1	1.5	C	SA	N/A	O	O	FE		FE
GSA-32-1	None	B-4	C-1	.75	C	SA	N/A	O/C	C	FE		FE
GSA-32-2	None	B-3	C-1	.75	C	SA	N/A	O/C	C	FE		FE
GSA-32-3	None	E-2	C-1	.75	C	SA	N/A	O/C	C	FE		FE
GSA-32-4	None	E-2	C-1	.75	C	SA	N/A	O/C	C	FE		FE
RV-1523	None	D-3	C-1	.75	RV	SA	N/A	C	O	SP		SP
RV-3216	None	B-3	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3217	None	B-3	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3218	None	A-3	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3219	None	B-3	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3220	None	B-3	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3221	None	A-3	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3224	None	E-2	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3225	None	E-3	C-1	.50	RV	SA	N/.A	C	O	SP		SP
RV-3226	None	E-3	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3227	None	E-2	C-1	.50	RV	SA	N/A	C	O	SP		SP
RV-3228	None	E-3	C.1	.50	RV	SA	N/A	C	O	SP		SP
RV-3229	None	E-3	C-1	.50	RV	SA	N/A	C	O	SP		SP

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Fuel Pool Cooling & Cleanup System										P&ID NO.:	M-135
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
PC-20-1	3	E-3	C-1	6	C	SA	N/A	O	C	FE	FP-1	RR
PC-20-2	3	E-3	C-1	6	C	SA	N/A	O	C	FE	FP-1	RR

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Open (Dirty) Radwaste Sump System										P&ID NO.:	M-137
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AO-2541A	2	E-2	A-1	2	G	A	30.0	O	C	FE,LJ,PI		FE,LJ,PI
AO-2541B	2	E-1	A-1	2	G	A	30.0	O	C	FE,LJ,PI		FE,LJ,PI

ASME SECTION XI VALVE TEST REQUIREMENTS

SYSTEM: Closed (Clean) Radwaste Sump System

P&ID NO.: M-138

Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AO-2561A	2	E-2	A-1	2	G	A	30	O	C	FE,LJ,PI		FE,LJ,PI
AO-2561B	2	E-1	A-1	2	G	A	30	O	C	FE,LJ,PI		FE,LJ,PI

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	**Primary Containment & Atmospheric Control System**										**P&ID NO.:**	**M-143**
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
AO-2377	2	C-2	A-1	18	BF	A	7	C	C	FE,LJ,PI		FE,LJ,PI
AO-2378	2	B-3	A-1	18	BF	A	7	C	C	FE,LJ,PI		FE,LJ,PI
AO-2379	2	C-2	A-1	20	BF	A	20	C	O/C	FE,LJ,PI		FE,LJ,PI
AO-2380	2	B-2	A-1	20	BF	A	30	C	O/C	FE,LJ,PI		FE,LJ,PI
AO-2381	2	C-3	A-1	18	BF	A	8	C	C	FE,LJ,PI		FE,LJ,PI
AO-2382A	None	B-4	A,C-1	18	C	SA	N/A	C	O/C	FE,LK,PI		FE,LK,PI
AO-2382B	None	B-4	A,C-1	18	C	SA	N/A	C	O/C	FE,LK,PI		FE,LK,PI
AO-2382C	None	B-4	A,C-1	18	C	SA	N/A	C	O/C	FE,LK,PI		FE,LK,PI
AO-2382E	None	B-4	A,C-1	18	C	SA	N/A	C	O/C	FE,LK,PI		FE,LK,PI
AO-2382F	None	B-4	A,C-1	18	C	SA	N/A	C	O/C	FE,LK,PI		FE,LK,PI
AO-2382G	None	B-4	A,C-1	18	C	SA	N/A	C	O/C	FE,LK,PI		FE,LK,PI
AO-2382H	None	B-4	A,C-1	18	C	SA	N/A	C	O/C	FE,LK,PI		FE,LK,PI
AO-2382K	None	B.4	A,C-1	18	C	SA	N/A	C	O/C	FE,LK,PI		FE,LK,PI
AO-2383	2	B-6	A-1	18	BF	A	7	C	C	FE,LJ,PI		FE,LJ,PI
AO-2386	2	D-6	A-1	18	BF	A	7	C	C	FE,LJ,PI		FE,LJ,PI
AO-2387	2	D-6	A-1	18	BF	A	7	C	C	FE,LJ,PI		FE,LJ,PI
AO-2896	2	C-6	A-1	18	BF	A	7	C	C	FE,LJ,PI		FE,LJ,PI
CV-2384	2	A-6	A-1	2	GL	A	<2	C	C	FE,LJ,PI		FE,LJ,PI
CV-2385	2	C-6	A-1	2	GL	A	<2	C	C	FE,LJ,PI		FE,LJ,PI
DWV-8-1	2	B-2	A,C-1	20	C	SA	N/A	C	O/C	FE,LJ		FE,LJ
DWV-8-2	2	C-2	A,C-1	20	C	SA	N/A	C	O/C	FE,LJ		FE,LJ

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Service Water Systems and Makeup Intake Structure (RHRSW)										P&ID NO.:	M-811
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AV-3147	3	C-4	C-1	3	AR	SA	N/A	O	C	FE		FE
AV-3148	3	B-8	C-1	3	AR	SA	N/A	O	C	FE		FE
AV-3149	3	B-4	C-1	3	AR	SA	N/A	O	C	FE		FE
AV-3150	3	B-8	C-1	3	AR	SA	N/.A	O	C	FE		FE
RHRSW-1-1	3	C-4	C-1	12	C	SA	N/A	C	O/C	FE		FE
RHRSW-1-2	3	C-8	C-1	12	C	SA	N/A	C	O/C	FE		FE
RHRSW-1-3	3	C-4	C-1	12	C	SA	N/A	C	O/C	FE		FE
RHRSW-1-4	3	C-8	C-1	12	C	SA	N/A	C	O/C	FE		FE
RV-3038	3	C-4	C-1	1	RV	SA	N/A	C	O	SP		SP
RV-3039	3	C-7	C-1	1	RV	SA	N/A	C	O	SP		SP
SW-21-1	3	C-3	C-1	1	C	SA	N/A	O	C	FE	SW-1	RR
SW-21-2	3	C-7	C-1	1	C	SA	N/A	O	C	FE	SW-1	RR
SW-22-1	None	C-3	C-1	1	C	SA	N/A	O	C	FE	SW-1	RR
SW-22-2	None	C-7	C-1	1	C	SA	N/A	O	C	FE	SW-1	RR
RHRSW-21-1	3	C-4	B-1	0.5	GL	H	N/A	C	O	FE		FE
RHRSW-21-2	3	C-8	B-1	0.5	GL	H	N/A	C	O	FE		FE
RHRSW-21-3	3	C-4	B-1	0.5	GL	H	N/A	C	O	FE		FE
RHRSW-21-4	3	C-8	B-1	0.5	GL	H	N/A	C	O	FE		FE
RHRSW-3-1	3	C-4	B-1	18	G	H	N/A	C	O	FE		FE
RHRSW-3-2	3	C-7	B-1	18	G	H	N/A	C	O	FE		FE

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Service Water Systems and Makeup Intake Structure (ESW)										P&ID NQ.:	M-811
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AV-3155	3	B-5	C-1	2	AR	SA	N/A	O	C	FE		FE
AV-3156	3	B-6	C-1	2	AR	SA	N/A	O	C	FE		FE
AV-4024	3	C-4	C-1	1	AR	SA	N/A	O	C	FE		FE
AV-4026	3	C-6	C-1	1	AR	SA	N/A	O	C	FE		FE
ESW-1-1	3	B-5	C-1	4	C	SA	N/A	C	O	FE		FE
ESW-1-2	3	B-6	C-1	4	C	SA	N/A	C	O	FE		FE
SW-15	None	D-7	C-1	4	C	SA	N/A	C	C	FE	ESW-2	RR
SW-16	3	D-7	C-1	4	C	SA	N/A	C	C	FE	ESW-2	RR
SW-17	None	D-7	C-1	4	C	SA	N/A	C	C	FE	ESW-2	RR
SW-18	3	D-7	C-1	4	C	SA	N/A	C	C	FE	ESW-2	RR
ESW-13	None	D-6	C-1	4	C	SA	N/A	O	C	FE	ESW-2	RR
ESW-14	3	D-6	C-1	4	C	SA	N/A	O	C	FE	ESW-2	RR
ESW-15	None	D-5	C-1	4	C	SA	N/A	O	C	FE	ESW-2	RR
ESW-16	3	D-4	C-1	4	C	SA	N/A	O	C	FE	ESW-2	RR
ESW-17	3	C-6	C-1	4	C	SA	N/A	C	O	FE		FE
ESW-18	3	C-4	C-1	4	C	SA	N/A	C	O	FE		FE
ESW-23	3	C-6	C-1	4	C	SA	N/A	C	O	FE		FE
ESW-24	3	C-4	C-1	4	C	SA	N/A	C	O	FE		FE
ESW-2-2	3	C-5	B-1	4	G	H	N/A	C	O	FE		FE
ESW-2-1	3	C-5	B-1	4	G	H	N/A	C	O	FE		FE
ESW-5-2	3	C-7	B-1	4	G	H	N/A	O	C	FE		FE
ESW-3-1	3	C-5	B-1	4	G	H	N/A	C	O	FE		FE
ESW-3-2	3	C-6	B-1	4	G	H	N/A	C	O	FE		FE
ESW-19	3	C-6	B-1	4	G	H	N/A	C	O	FE		FE
ESW-20	3	C-4	B-1	4	G	H	N/A	C	O	FE		FE

ASME SECTION XI VALVE TEST REQUIREMENTS												
SYSTEM:	Combustible Gas Control System Div I (East)										P&ID NO.:	NH-94896
Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AO-7422A	2	D-7	A-1	4	GL	A	20	C	O/C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-7423A	2	D-7	A-1	4	GL	A	20	C	O/C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-7424A	2	B-7	A-1	6	GL	A	20	C	O/C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-7425A	2	B-7	A-1	6	GL	A	20	C	O/C	FE,LJ,PI,FS		FE,LJ,PI,FS
CGC-12-1	3	A-5	C-1	1.50	C	SA	N/A	C	O/C	FE		FE
MO-4043A	3	D-5	B-1	3	GL	M	55	C	O	FE,PI		FE,PI
MO-4044A	3	C-5	B-1	3	GL	M	53	C	O	FE,PI		FE,PI
MO-4047A	3	B-4	B-1	0.75	GL	M	25	C	O	FE,PI		FE,PI
RV-4032A	3	B-5	C-1	1	RV	SA	N/A	C	O	SP		SP
SV-4033A	2	A-6	B-1	2	GL	S	<2	C	O	FE,PI		FE,PI
SV-4034A	2	A-6	B-1	2	GL	S	<2	C	O	FE,PI		FE,PI
SV-4054A	3	A-5	B-1	0.75	GL	S	<2	C	O	FE,PI		FE,PI

ASME SECTION XI VALVE TEST REQUIREMENTS

SYSTEM: Combustible Gas Control System Div II (West) **P&ID NO.:** NH-94897

Valve No.	ASME Class	P&ID Coord	Sect XI Category	Size (in.)	Vlv Type	Act Type	Stroke Time	Norm. Pos.	Safety Pos.	Req'd. Tests	Relief Req. No.	Tests Performed
AO-7422B	2	D-7	A-1	4	GL	A	20	C	O/C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-7423B	2	D-7	A-1	4	GL	A	20	C	O/C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-7424B	2	B-7	A-1	6	GL	A	20	C	O/C	FE,LJ,PI,FS		FE,LJ,PI,FS
AO-7425B	2	B-7	A-1	6	GL	A	20	C	O/C	FE,LJ,PI,FS		FE,LJ,PI,FS
CGC-12-2	3	A-5	C-1	1.50	C	SA	N/A	C	O/C	FE		FE
MO-4043B	3	D-5	B-1	3	GL	M	52	C	O	FE,PI		FE,PI
MO-4044B	3	C-5	B-1	3	GL	M	54	C	O	FE,PI		FE,PI
MO-4047B	3	B-4	B-1	0.75	GL	M	31	C	O	FE,PI		FE,PI
RV-4032B	3	B-5	C-1	1	RV	SA	N/A	C	O	SP		SP
SV-4033B	2	A-6	B-1	2	GL	S	<2	C	O	FE,PI		FE,PI
SV-4034B	2	A-6	B-1	2	GL	S	<2	C	O	FE,PI		FE,PI
SV-4054B	3	A-5	B-1	0.75	GL	S	<2	C	O	FE,PI		FE,PI

ASME SECTIQN XI VALVE TEST REQUIREMENTS

SYSTEM:	Traversing Incore Probe System										P&ID NO.:	GE-719E520
Valve No.	**ASME Class**	**P&ID Coord**	**Sect XI Category**	**Size (in.)**	**Vlv Type**	**Act Type**	**Stroke Time**	**Norm. Pos.**	**Safety Pos.**	**Req'd. Tests**	**Relief Req. No.**	**Tests Performed**
TIP 1-1	2	D-5	A-1	0.25	BA	S	<2	C	C	FE,PI,LJ		FE,PI,LJ
TIP 2-1	2	D-5	A-1	0.25	BA	S	<2	C	C	FE,PI,LJ		FE,PI,LJ
TIP 3-1	2	D-5	A-1	0.25	BA	S	<2	C	C	FE,PI,LJ		FE,PI,LJ
TIP 1-2	2	D-5	D-1	0.25	XP	XP	N/A	O	C	EX		EX
TIP 2-2	2	D-5	D-1	0.25	XP	XP	N/A	O	C	EX		EX
TIP 3-2	2	D-5	D-1	0.25	XP	XP	N/A	O	C	EX		EX

8.0 VALVE INSERVICE TEST PROGRAM RELIEF REQUESTS

Valve Relief Request Index

Valve Relief Request Index (continued)

RELIEF REQUEST NUMBER RBCW-1

System: Reactor Building Cooling Water

Valve: RBCC-15

Category: A, C-1

Class: 2

Function: System check valve for system penetrating primary containment.

Impractical Test Requirements: IWV-3521; Test Frequency - exercise at least once every three months, quarterly.

Basis for Relief: This check valve is the inboard primary containment isolation valve for a system considered in service during plant operation. The normally open check valve requires an exercise in the reverse flow direction which can only be verified by leak testing. Primary containment leak testing performed each refueling, i.e. 10CFR50 Appendix J, constitutes proper valve exercising. Closing this valve during power operation would result in temperature transients in the equipment it supplies, including Recirc pump seals, possibly resulting in equipment damage. Also, this valve supplies drywell cooling during power operation and cold shutdown. Performing leak testing per Appendix J during Cold Shutdown would require de-inerting, entering containment, and shutdown of drywell cooling for an extended period, causing equipment damage and personnel hazard.

Alternative Testing: Exercise valve during refueling (at least once every two years) in conjunction with Appendix J leak testing.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER ESW-1

System: Emergency Service Water

Valve: SW-101, SW-102; SW-103, SW-104

Category: C-1

Class: 3

Function: To prevent diversion of ESW flow to non-safety related systems.

Impractical Test Requirements: Individual valve closure testing per IWV-3520

Basis for Relief: Each pair of valves, SW-101/SW-102 and SW-103/SW-104, are in series with no test taps installed between them. Safety function is assured if either one of the pair of valves will provide safety function. This means that testing of the pair of valves will verify system safety function.

Alternative Testing: Test each pair of valves, SW-101/SW-102 and SW-103/SW-104 quarterly by back flow testing each pair. If the pair fails a test, corrective action will be taken on both valves.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER SC-1

System: Condensate Storage Transfer (a.k.a Service Condensate)

Valve: CST-88, CST-92, CST-94, CST-98; CST-90, CST-96, CST-189

Category: C-1

Class: 2

Function: These keep fill check valves prevent the diversion of RHR and Core Spray flow to the non-safety related service condensate system.

Impractical Test Requirements: IWV-3520; Full stroke exercise, frequency and method.

Basis for Relief: These are 6 two-inch and one one-inch lift type check valves in the service condensate system that open to keep the RHR or Core Spray discharge lines full. They close upon RHR or Core Spray discharge pressure greater than approximately 20 PSI which is a safety function to prevent diversion of ECCS flow. There are no test taps or instrumentation installed that would allow testing that proves by positive means that the disc moves to the seat on cessation or reversal of flow. Installation of test taps and isolation valves to back flow test these valves is impractical.

Alternative Testing: Group CST-88, CST-92, CST-94, and CST-98 together and group CST-90, CST-96, and CST-189 together for testing by disassembly and inspection as allowed by Generic Letter 89-04 position 2. These groups meet the grouping criteria with the exception that CST-189 is a one inch valve while the rest are two inch valves. This grouping is still appropriate since the size difference is not significant compared to all the other criteria that is in compliance with position 2. CST-189 has been put in the smaller group so it will be disassembly tested once every four and one-half years. Service Condensate is the system that determines the valve groupings' service conditions. The fact that CST-96 interfaces with the Core Spray system while the rest interface with RHR is irrelevant. All provisions of position 2 regarding test failures will be met.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER FW-1

System: Nuclear Boiler System - Feedwater

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER FW-2

System: Primary Containment Isolation Check Valves

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER NB-1

System: Nuclear Boiler System - Steam Supply ADS and Relief/Safety Valves

Valves: RV-2-71A; RV-2-71B; RV-2-71C; RV-2-71D; RV-2-71E; RV-2-71F; RV-2-71G; RV-2-71H

Category: B, C-1

Class: 1

Function: Provide automatic depressurization and/or overpressure protection for the reactor coolant pressure boundary.

Impractical Test Requirements: IWV-3410, Valve Exercising Test

Basis for Relief: Cycling the SRVs once per quarter is not practical since during power operation such cycling will cause reactor power and pressure transients which could result in a scram. Also, cycling SRVs should be minimized. Every SRV stroke at operating conditions severely challenges plant equipment and increases the potential for subsequent second stage or pilot stage leakage due to seat wear or fouling. If the leakage is high enough, it could cause a spurious SRV lift and prevent reclosure of the SRV. This could result in a reactor scram and small break LOCA.

Cold shutdown cycling is also impractical. This is because the power actuated pressure relieving mode of the SRVs still require system pressure to change disc position. The reactor is only pressurized with steam during startup and power operating conditions.

Stroke timing of the SRVs as means of monitoring SRV degradation is meaningless. The reason for this is as follows:

The SRVs can only be stroked once per fuel cycle during a startup and all eight SRV topworks (pilot and second stage assembly) are replaced with a spare set of refurbished and bench tested topworks each refueling outage. (Technical Specifications require changeout of 7 of 8 topworks). In addition, the SRV stroke time can only be measured based on plant response to an open SRV. This response time can be relatively high when compared to the SRV stroke time of < 0.5 seconds (per bench check test data) and is highly dependent on plant and responding equipment conditions (e.g., reactor pressure, turbine bypass valve condition, measuring instrumentation condition, etc.) at the time of the lift. These conditions will not be identical from refueling outage to refueling outage due to changes in operating requirements or procedures and because of maintenance performed or changes made to plant equipment. Therefore, the baseline stroke data would have to be re-established after each fuel cycle. However, only one date point is collected each fuel cycle and comparing this point to previous baseline data is meaningless since the topworks, operating, and plant equipment conditions have changed.

Alternative Testing: The following actions are performed to ensure proper operation of the SRV power actuated pressure relieving mode:

1) Leak testing of the SRV accumulator check valves performed each refueling also tests the diaphragm operator (the only component subject to degradation),

2) The SRV topworks (pilot and second stage assembly) are changed out with a spare set of refurbished, setpoint checked, and stroke timed topworks each refueling outage.

3) The diaphragm operator is rebuilt every third refueling outage.

4) Two SRV main bodies are disassembled and inspected every refuel outage.

5) The SRVs are exercised each refuel outage, during startup, and their position verified by positive means.

In addition, the safety and relief valve periodic testing performed in accordance with OM-1-1981 (via IWV-3510) has performance requirements for the auxiliary actuating devices.

Approval: Interim relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER REC-1

System: Recirc Loops Pumps and Motors Nuclear Boiler System

Valves: XR27-1/XR27-2/XR25-1/XR25-2

Category: A, C-1

Class: 2

Function: Prevents reversal of flow from recirc seals to the CRD System.

Impractical Test Requirements: IWV-3521, Test Frequency - exercise at least once every three months, quarterly.

Basis for Relief: These valves are the inlet valves for the lower recirc pump seals. Exercising could result in loss of seal water to lower seals of the Reactor Coolant Recirculation pumps causing plant trip or equipment damage. The reactor coolant recirculation pumps are normally operated during all plant operating conditions except refueling. Testing during Cold Shutdown would require entering containment, de-inerting, and performing testing identical to 10CFR50 Appendix J testing, which contributes to an unnecessary burden on the Licensee with no corresponding increase in plant safety.

Alternative Testing: Exercise the valves closed during refueling, in conjunction with Appendix J leak testing.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER CRD-1

System: Control Rod Hydraulic System

Valves: 114, CV-126, CV-127

Category: C-1, B-1,B-1

Class: 2

Function: CRD-114; Exhaust scram discharge flow from the CRD during a scram.

CV-126; Provide a scram accumulator pressure to the bottom of the control rod drive piston during a scram.

CV-127; Exhaust scram discharge water from the top of the control rod drive piston during a scram.

Impractical Test Requirements: IWV-3411, IWV-3521; Test Frequency - exercise at least once every three months, quarterly.

Basis for Relief: The above listed valves are located on each of the 121 hydraulic control units. There is no practical method of testing these valves in accordance with Section XI requirements. Testing these valves during power operation requires rapid insertion of each control rod. This introduces rapid reactivity transients and unreasonable wear of the control rod drive mechanism.

Alternative Testing: Proper operation of these valves will be verified by the individual control rod scram time test performed each refueling.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER CRD-2

System: Control Rod Hydraulic System

Valves: 115

Category: C-1

Class: 2

Function: Prevents depressurization of accumulator charges on cessation of flow.

Impractical Test Requirements: IWV-3521; Test Frequency - exercise at least once every three months, quarterly.

Basis for Relief: The above listed valve is located on each of the 121 hydraulic control units. These valves can be tested to verify proper seating only by doing a special test during cold shutdown/refueling.

Alternative Testing: The test would involve depressurizing the accumulator charging water header and watching for accumulator low pressure alarms. Depressurizing the charging water header would cause a reversal of flow and the ball discs of the CRD 115 valves should move to their seats. If a ball disc did not move to its seat, the associated accumulator would rapidly depressurize and an alarm on low accumulator pressure would be received shortly thereafter. This test will be performed at least once each operating cycle, i.e., refueling.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER RHR-1

System: Residual Heat Removal

Valves: RHR-8-1/RHR-8-2

Category: C-1

Class: 2

Function: Provide minimum flow recirculation from the RHR pumps.

Impractical Test Requirements: Full flow test open quarterly per IWV-3520.

Basis for Relief: There is no means of measuring flowrate through this valve during quarterly pump testing. Operating the pump with only the minimum flow recirculation line available is not good operating practice, as recommended by the NRC for pump protection. This means there is no normal test method to examine these valves condition except disassembly.

Alternative Testing: These valves have been disassembled and manually exercised with no discernible degradation detected. Based on the results of these inspections, one valve will be inspected each refueling outage alternating between the valves. If degradation is detected, repairs will be made and the remaining valve shall also be inspected.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER RHRSW-1

System: Residual Heat Removal Service Water

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER CS-1

System: Core Spray

Valves: CST-103-1/CST-104-1

Category: C-1

Class: 2

Function: To prevent diversion of core spray flow to condensate storage system.

Impractical Test Requirements: Individual valve closure testing per IWV-3520.

Basis for Relief: Valves CST-103-1/CST-104-1 are in series with no test taps installed between them. Safety function is assured if either one of the valves will provide safety function. This means that testing of the pair of valves will verify system safety function.

Alternative Testing: Test the pair of valves, CST-103-1/CST-104-1, quarterly by back flow testing the pair. If the pair fails a test, corrective action will be taken on both valves.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER HPCI-1

System: High Pressure Coolant Injection

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER HPCI-2

System: High Pressure Coolant Injection

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER HPCI-3

System: High Pressure Coolant Injection

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER HPCI-4

System: High Pressure Coolant Injection

Valves: HPCI-31

Category: C-1

Class: 2

Function: Allows torus water to flow into the HPCI System.

Impractical Test Requirements: IWV-3520; Full-stroke exercise frequency and method.

Basis for Relief: HPCI-31 cannot be exercised during power operation ("open" safety-related position), since this would require injecting torus water into RCS which would cause chemistry control problems. Furthermore, there is no practical means available to verify the disc in HPCI-31 moves promptly away from the seat when the closing differential is removed and flow through the valve is initiated.

Alternative Testing: HPCI-31 shall be disassembled and inspected every other cycle. Previous disassembly and inspection results, documented in the Check Valve Review program, did not detect any discernible degradation. The valve never sees any actual service (flow) during operation. Disassembly and inspection more often than every other cycle is undesirable because it risks degrading or damaging the valve. If problems are detected, repairs will be made and the disassembly and inspection frequency shall be evaluated to determine if it should continue at every other cycle. Partial valve stroking will be performed on a cold shutdown frequency and after disassembly and inspection testing.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER HPCI-5

System: High Pressure Coolant Injection

Valves: HPCI-42

Category: C-1

Class: 2

Function: Provide minimum flow recirculation from the HPCI pump.

Impractical Test Requirements: IWV-3520; Full-stroke exercise frequency and method.

Basis for Relief: There is no means of measuring flowrate through this valve during quarterly pump testing. Operating the pump with only the minimum flow recirculation line available is not good operating practice, as recommended by the NRC for pump protection. Therefore, there is no normal test method to examine the valve condition except disassembly.

Alternative Testing: HPCI-42 shall be disassembled and inspected every other cycle. Previous disassembly and inspection results, documented in the Check Valve Review program, did not detect any discernible degradation. Disassembly and inspection more often than every other cycle is undesirable because it risks degrading or damaging the valve. If problems are detected, repairs will be made and the disassembly and inspection frequency shall be evaluated to determine if it should continue at every other cycle.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER RCIC-1

System: Reactor Core Isolation Cooling

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER RCIC-2

System: Reactor Core Isolation Cooling

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER RCIC-3

System: Reactor Core Isolation Cooling

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER RCIC-4

System: Reactor Core Isolation Cooling

Valve: RCIC-31

Category: C-1

Class: 2

Function: Allows torus water to flow into the RCIC System.

Impractical Test Requirements: IWV-3520; Full-stroke exercise frequency and method.

Basis for Relief: RCIC-31 cannot be exercised during power operation ("open" safety-related position), since this would require injecting torus water into RCS which would cause chemistry control problems. Furthermore, there is no means available to verify the disc in RCIC-31 moves promptly away from the seat when the closing differential is removed and flow through the valve is initiated.

Alternative Testing: RCIC-31 shall be disassembled and inspected every other cycle. Previous disassembly and inspection results, documented in the Check Valve Review program, did not detect any discernible degradation. The valve never sees any actual service (flow) during operation. Disassembly and inspection more often than every other cycle is undesirable because it risks degrading or damaging the valve. If problems are detected, repairs will be made and the disassembly and inspection frequency shall be evaluated to determine if it should continue at every other cycle. Partial valve stroking will be performed on a cold shutdown frequency and after disassembly and inspection testing.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER RCIC-5

System: Reactor Core Isolation Cooling

Valve: RCIC-37

Category: C-1

Class: 2

Function: Provide minimum flow recirculation from the RCIC pump.

Impractical Test Requirements: IWV-3520; full-stroke exercise frequency and method.

Basis for Relief: There is no means of measuring flowrate through this valve during quarterly pump testing. Operating the pump with only the minimum flow recirculation line available is not good operating practice, as recommended by the NRC for pump protection. Therefore, there is no normal test method to examine valve conditions except disassembly.

Alternative Testing: RCIC-37 shall be disassembled and inspected every other cycle. Previous disassembly and inspection results, documented in the Check Valve Review program, did not detect any discernible degradation. Disassembly and inspection more often than every other cycle is undesirable because it risks degrading or damaging the valve. If problems are detected, repairs will be made and the disassembly and inspection frequency shall be evaluated to determine if it should continue at every other cycle.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER SLC-1

System: Standby Liquid Control System

Valve: XP-6, XP-7

Category: A, C-1

Class: 1

Function: Standby Liquid Control Injection Check Valves

Impractical Test Requirements: IWV-3521; Test Frequency - exercise at least once every three months, quarterly.

Basis for Relief: To verify forward flow operability during normal operation would require firing a squib valve and injecting water into the reactor vessel using the SLC pumps. This is impractical due to the extensive maintenance and cost required to replace squib valves. The SBLC system would also be inoperable while changing the squib valves.

Alternative Testing: Verify forward flow operability during refueling while performing the standby liquid control system injection test, which pumps demineralized water into the reactor vessel. Reverse flow testing will be performed during Appendix J leak rate testing.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER RWCU-1

System: Reactor Water Cleanup

Valve: RC-6-1/RC-6-2

Category: C-1

Class: 2

Function: Prevent flow diversion from HPCI/RCIC injection.

Impractical Test Requirements: Full stroke quarterly per IWV-3520.

Basis for Relief: Closure testing these valves requires testing identical to Local Leak Rate Testing. Closing these valves interrupts RWCU flow, which is required in all modes except refueling to maintain water chemistry and reduce radioactivity. Closure testing would require an extended period of inoperability of the primary feedwater system, as well as HPCI/RCIC during power operation. In Cold Shutdown, RWCU operates to reduce reactor coolant system contamination.

Alternative Testing: Verify closure at refueling by performance of back flow testing.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER IA-1

System: Instrument Air - Reactor Building

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER IA-2

System: Instrument Air - Reactor Building

Valve: AI-226-1 and AI-625

Category: A, C-1

Class: 2

Function: Prevent reversal of flow in TIP purge line.

Impractical Test Requirements: IWV-3521; Test Frequency - exercise at least once every three months, quarterly.

Basis for Relief: Check valves AI-226-1 and AI-625 are normally open check valves that are in service during all modes of operation. In addition, there is no practical means available to verify their discs travels promptly to the seat on cessation or reversal of flow.

Alternative Testing: Exercise valve by performance of 10CFR50 Appendix J leak testing during refueling.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER FP-1

System: Fuel Pool Cooling and Cleanup System

Valve: PC-20-1/PC-20-2

Category: C-1

Class: 3

Function: Prevents siphoning of water from fuel storage pool into fuel pool cleanup system.

Impractical Test Requirements: IWV-3521; Test Frequency - exercise at least once every three months, quarterly.

Basis for Relief: There is no practical means available to verify the disc in PC-20-1/PC-20-2 travels promptly to the seat on cessation or reversal of flow.

Alternative Testing: Valves PC-20-1/PC-20-2 have been disassembled and manually exercised with no discernible degradation detected. Based on the results of these inspections, one valve will be inspected each refueling outage alternating between the valves. If degradation is detected, repairs will be made and the remaining valve shall also be inspected.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER SW-1

System: RHR Service Water Systems and Makeup Intake Structure

Valve: SW-21-1/SW-22-1; SW-21-2/SW-22-2

Category: C-1

Class: 3

Function: Prevents reversal of RHRSW flow into the service water system.

Impractical Test Requirements: Individual valve closure testing per IWV-3520.

Basis for Relief: Each pair of valves, SW-21-1/SW-22-1 and SW-21-2/SW-22-2, are in series with no test taps installed between them. Safety function is assured if either one of the pair of valves will provide safety function. This means that testing of the pair of valves will verify system safety function

Alternative Testing: Test each pair of valves, SW-21-1/SW-22-1 and SW-21-2/SW-22-2, quarterly by back flow testing each pair. If the pair fails a test, corrective action will be taken on both valves.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER ESW-2

System: Service Water Systems and Makeup Intake Structure

Valve: SW-15/SW-16; SW-17/SW-18; ESW-13/ESW-14; ESW-15/ESW-16

Category: C-1

Class: 3

Function: Prevents reversal of flow from emergency water system into the service water system.

Impractical Test Requirements: Individual valve closure testing per IWV-3520.

Basis for Relief: Each pair of valves are in series with no test taps installed between them. Safety function is assured if either one of the pair of valves will provide safety function. This means that testing of the pair of valves will verify system safety function.

Alternative Testing: Test each pair of valves quarterly by back flow testing each pair. If the pair fails a test, corrective action will be taken on both valves.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER GR-1

System: As applicable

This relief request has been withdrawn by NSP.

RELIEF REQUEST NUMBER GR-2

System: Various

Valve: Various

Category: A and AC pressure isolation valves (PIV)

Class: As applicable

Function: Various

Impractical Test Requirements: IWV-3427(b); Trending and Corrective action for leakage rates for valves 6 in. nominal pipe size and larger.

Basis for Relief: These valves are located inside containment or inside radiation areas during operation and testing on an increased frequency would increase radiation exposure for testing personnel. Testing is now being performed during refueling to minimize exposure. With increased frequency, operational constraints would be placed upon the plant during cold shutdown. Monticello Nuclear Plant feels that the leakage rates for valves 6 in. and larger do not show enough consistency in the level of degradation prior to reaching the maximum leakage limit to justify maintaining these additional corrective action and trending requirements . This is in keeping with the NRC approved OM-10 code on Inservice Testing of Valves, which does not require trending of leakage rates.

Alternative Testing: Test in accordance with OMa-1988 part 10 paragraph 4.2.2.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER GR-3

System: Various

Valve: Various

Category: All those identified category A or A/C containment isolation valves in the associated Valve Test Program.

Class: As Applicable

Function: Various

Impractical Test Requirements: IWV-3421 through 3425 regarding leak rate test methodology, and IWV 3427(b).

Basis for Relief: In keeping with NRC Staff position, all CIV testing shall be performed under 10CFR50 Appendix J in addition to IWV-3426 and IWV-3427(a) of Section XI. Testing per 10CFR50 Appendix J meets the intent of leak rate testing per Section XI, but will be controlled via the Local Leak Rate Testing Program.

Alternative Testing: Monticello shall test all CIVs under the requirements of 10CFR50 Appendix J, in addition to IWV-3426 and IWV-3427(a) of Section XI.

Approval: Relief granted in SER dated September 24, 1992.

RELIEF REQUEST NUMBER GR-4

System: Various

Valve: Various

Category: A, B

Class: Various

Function: Various

Impractical Test Requirements: IWV-3413; Power Operated Valves Corrective Action, IWV-3417; Corrective Action

Basis for Relief: Generic Letter 89-04 Position 6 recognizes that measuring changes in stroke times from a reference value as opposed to measuring changes from the previous test is a better way to detect valve degradation. Generic Letter 89-04 Position 5 and OMa-1988, Part 10 provide NRC approved methodology for establishing a stroke time reference value, an acceptable stroke time band, and a limiting stroke time value. The alternative testing is in accordance with this methodology.

Alternative Testing: The power operated valve testing will be performed in accordance with OMa-1988, Part 10, paragraphs 4.2.1.4, 4.2.1.8, and 4.2.1.9. The acceptable band and Limiting Stroke Time (LST) will be determined as follows (RV time in Sec):

Operator Type	Ref. Value	Acc. Band	LST
Motor	RV > 10	0.85RV - 1.15RV	1.3RV
	$2 \leq RV \leq 10$	0.75RV - 1.25RV	1.5RV
Other	RV > 10	0.75RV - 1.25RV	1.5RV
	$2 \leq RV \leq 10$	0.50RV - 1.50RV	2.0RV
All	RV < 2	≤ 2	2

In addition, if a more restrictive value of stroke time exists in the Technical Specifications or the Updated Safety Analysis Report, it will be used as the LST instead of the value calculated above.

Approval: Relief granted with provisions in SER dated September 24, 1992.

RELIEF REQUEST NUMBER GR-5

System: As Shown in IST Program Section 9.0

Valve: As Shown in IST Program Section 9.0

Category: Various

Class: Various

Function: Various

Impractical Test Requirements: IWV-3412; Complete all cold shutdown frequency exercise testing prior to plant startup.

Basis for Relief: IWV-3412 has no allowance to startup the plant prior to completing the cold shutdown frequency exercise testing. The NRC approved OM-10 code on valve testing states that it is not the intent of the Code to keep the plant in cold shutdown in order to complete cold shutdown testing and it allows valve exercising to be deferred to refueling outages if quarterly and cold shutdown testing is not practical. Monticello has changed the frequency of many check valve exercise tests from refueling to cold shutdown in response to the Technical Evaluation Report comments in this program's SER dated September 24, 1992. This makes a large number of reverse flow check valve tests which are quite labor and time intensive required at cold shutdown. Requiring that all cold shutdown tests be completed prior to startup is impractical and a burden especially for unplanned and short outages.

Alternative Testing: Cold shutdown valve exercising for unplanned or forced outages, shall commence not later than 48 hours after cold shutdown is achieved. All valve testing does not have to be completed prior to subsequent plant startup. For extended outages, including refueling, where all required testing can be completed, exception to the above start time may be taken. However, during these extended outages, all cold shutdown frequency testing will be completed prior to plant startup.

In the event cold shutdown doesn't require specific de-inerting of containment, those valves requiring containment access for cold shutdown testing will be deferred until the next cold shutdown that provides containment access.

Approval: Approval for the 3rd ten year interval is pending.

RELIEF REQUEST NUMBER GR-6

System: Various

Valve: See Penetration Number Shown in Section 10

Category: C

Class: 1, 2

Function: Excess flow check valves close to limit small break LOCA consequences.

Impractical Test Requirements: IWV-3521 and IWV-3522; Closure Test Frequency.

Basis for Relief: The lines containing these excess flow check valves (XFV) feed plant instruments that are critical to plant safety during power operation and cold shutdown. Testing these excess flow check valves requires that the instrument be out of service while the piping downstream of the XFV is vented and the piping upstream is under reactor pressure. Testing at other than refueling is impractical because it increases the possibility of a transient which decreases public safety. The NRC approved OM-10 Code on valve testing allows the testing frequency to be extended to refueling when quarterly and cold shutdown testing is impractical.

Alternative Testing: Monticello will test the XFVs listed in Section 10 in accordance with Technical Specification 4.7.D.1.b which requires that these valves be tested for proper operation at least once per operating cycle (refueling).

Approval: Approval for the 3rd ten year interval is pending.

9.0 COLD SHUTDOWN TESTING JUSTIFICATION

VALVES TESTED AT COLD SHUTDOWN

System	P&ID NO.	Valves	Justification
Steam Jet Air Ejectors	M-104 SH-2	AO-1825A AO-1825B	Cycling valves requires starting/stopping condenser mechanical vacuum pump. Plant operating procedures prohibit pump operation above 5% Reactor power.
Reactor Building Cooling Water System	M-111	MO-1426 MO-4229 MO-4230	Full-stroking these valves during power operation would interrup cooling flow to the Recirculation Pump Seals, causing equiment damage. In addition, interruption of cooling water to the drywell has the potential to cause unit shutdown due to high drywell temperature or pressure.
Feedwater	M-115	FW-91-1 FW-91-2 FW-94-1 FW-94-2 FW-97-1 FW-97-2	Backflow testing these valves requires isolating each feedwater loop and taking each loop of reactor water cleanup out of service. The test connections and/or isolations also require entry into primary containment. Back flow testing will be performed during cold shutdowns when the containment is de-inerted.
Main Steam	M-115	AO-2-80A-D AO-2-86A-D	It is impractical to test the Fail Safe function of the MSIVs quarterly. The additional cycling and slow stroke times associated with the Fail Safe exercise unnecessarily risks a plant transient. The full stroke exercise using normal valve exercising methods will continue to be done quarterly.
Recirc Loops Nuclear Boiler	M-117-1	MO-2-53A MO-2-53B	The recirculation pump discharge valves are in the main flowpath of the Reactor Recirculation System which is necessary to maintain reactivity control of the reactor. Cycling of these valves during power operation would interrupt the driving core flow, possibly resulting in severe changes to core power level, causing plant shutdown.

System	P&ID NO.	Valves	Justification
RHR	M-120 M-121	AO-10-46A AO-10-46B	These check valves can not be stroke tested during operation due to the inability of the operator to move the disc against reactor pressure. To ensure full stroke using the valve operator, cold shutdown testing frequency is required.
RHR	M-121	MO-2026 MO-2027 MO-2029 MO-2030	All of these valves connect directly to the Reactor Coolant System and are interlocked on reactor pressure. Opening these valves during power operation could cause over-pressurization of downstream piping.
Core Spray	M-122	AO-14-13A AO-14-13B	These check valves can not be stroke tested during operation due to the inability of the operator to move the disc against reactor pressure. To ensure full stroke using the valve operator, cold shutdown testing frequency is required.
HPCI	M-123	HPCI-9 HPCI-10 HPCI-14 HPCI-15 HPCI-65 HPCI-71	The closure exercise for these valves will be performed during cold shutdowns by a reverse flow test. This frequency is required because testing during plant operations makes the HPCI System inoperable for an extended period of time (>3 Hrs).
HPCI	M-124	AO-23-18	This check valve can not be stroke tested during operation due to the inability of the operator to move the disc against reactor pressure. To ensure full stroke using the valve operator, cold shutdown testing frequency is required.
RCIC	M-125	RCIC-9 RCIC-10 RCIC-16 RCIC-17 RCIC-57 RCIC-59	The closure exercise for these valves will be performed during cold shutdowns by a reverse flow test. This frequency is required because testing during plant operation makes the RCIC System inoperable for an extended period of time (>3 Hrs).

System	P&ID NO.	Valves	Justification
RCIC	M-126	AO-13-22	This check valve can not be stroke tested during operation due to the inability of the operator to move the disc against reactor pressure. To ensure full stroke using the valve operator, cold shutdown testing frequency is required.
Instrument Air	M-131 SH-12	CV-1478 AI-571	Performing the closure exercise test for these valves interrupts instrument air to the MSIVs and could cause them to close. To ensure the MSIVs don't go closed during power operation, cold shutdown testing will be performed.
PASS	NF-96042	PAS-59-5 PAS-59-6	Testing these excess flow check valves closed requires that the RHR loops be operating. It is not practical to test these valves during the quarterly RHR test because the process liquid is contaminated and special measures are needed to direct or collect the flow. The time involved is also a factor since the testing is performed in a high radiation area.

10.0 EXCESS FLOW CHECK VALVES TESTED DURING VESSEL HYDROSTATIC/LEAK TEST EACH REFUELING

EXCESS FLOW CHECK VALVES
TESTED DURING VESSEL HYDROSTATIC/LEAK TEST EACH REFUELING

Penetration No.	P&ID No.
X-27A	M-116
X-27B	M-116
X-27C	M-122
X-28A	M-116
X-28E	M-116
X-28F	M-115
X-29A	M-116
X-30B	M-115-1
X-30C	M-115-1
X-30E	M-115-1
X-30F	M-115-1
X-31A	M-117-1
X-31B	M-117-1
X-31D	M-117-1
X-31E	M-117-2
X-31F	M-117-2
X-32A	M-117-1
X-32B	M-117-1
X-32D	M-117-1
X-32E	M-117-2
X-32F	M-117-2
X-33A	M-115
X-33B	M-115
X-33C	M-115
X-33D	M-115
X-33E	M-115
X-33F	M-115
X-34C	M-115-1
X-34D	M-115-1
X-34E	M-115-1
X-34F	M-115-1
X-40A-A	M-116
X-40A-B	M-116
X-40A-C	M-116

EXCESS FLOW CHECK VALVES
TESTED DURING VESSEL HYDROSTATIC/LEAK TEST EACH REFUELING
(Cont'd.)

Penetration No.	P&ID No.
X-40A-D	M-116
X-40A-E	M-116
X-40A-F	M-116
X-40B-A	M-116
X-40B-B	M-116
X-40B-C	M-116
X-40B-D	M-116
X-40B-E	M-116
X-40B-F	M-116
X-40C-A	M-116
X-40C-B	M-116
X-40C-C	M-116
X-40C-D	M-116
X-40C-E	M-116
X-40C-F	M-116
X-40D-A	M-116
X-40D-B	M-116
X-40D-C	M-116
X-40D-D	M-116
X-40D-E	M-116
X-40D-F	M-116
X-49A	M-125
X-49B	M-125
X-49C	M-123
X-49D	M-123
X-49E	M-115
X-49F	M-115
X-50A	M-122
X-50B	M-117-1
X-50C	M-117-1
X-50D	M-116
X-51A	M-117-1

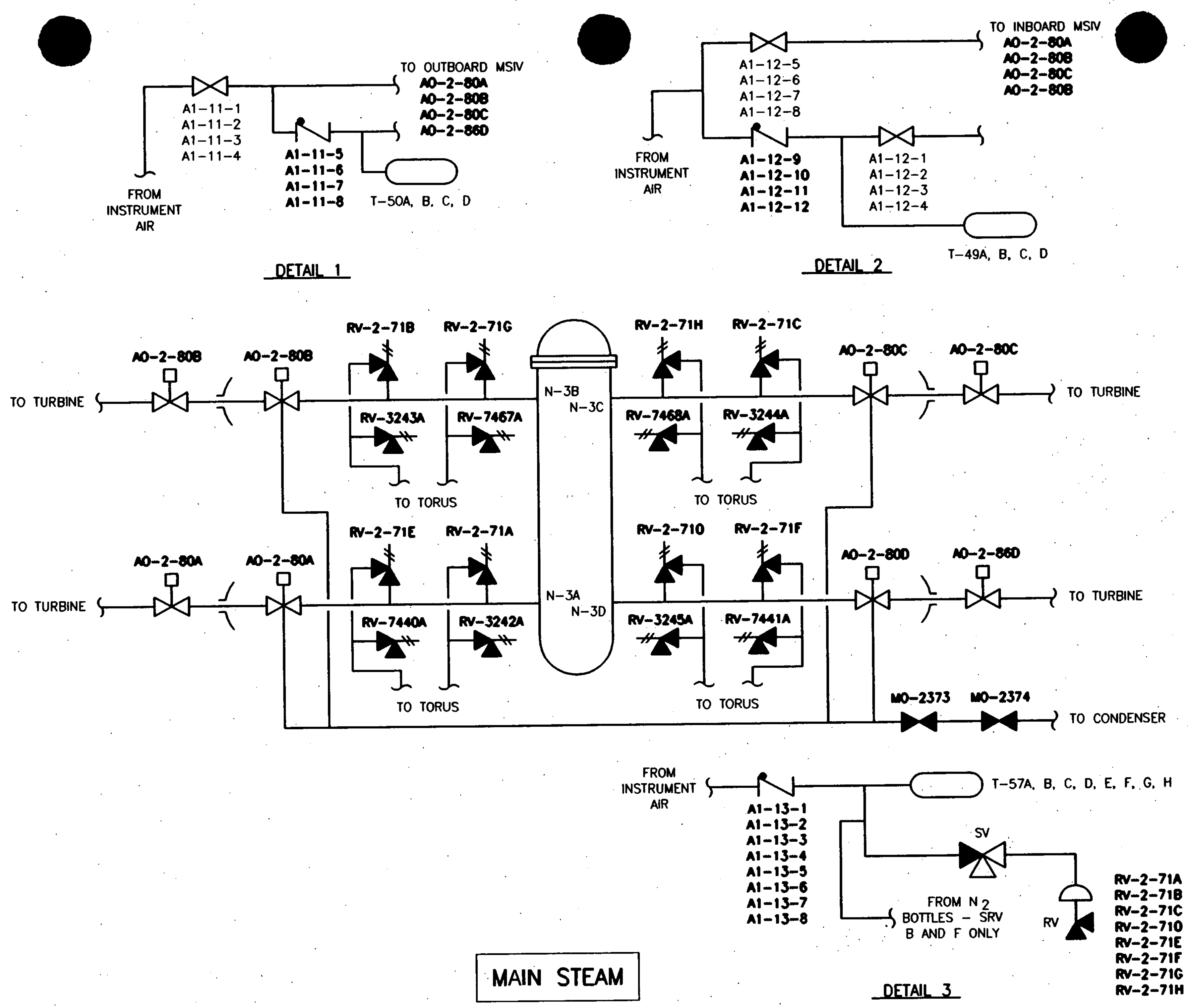
EXCESS FLOW CHECK VALVES
TESTED DURING VESSEL HYDROSTATIC/LEAK TEST EACH REFUELING
(Cont'd.)

Penetration No.	P&ID No.
X-51B	M-117-1
X-51C	M-117-1
X-51D	M-117-1
X-51E	M-117-1
X-51F	M-117-1
X-52A	M-117-1
X-52B	M-117-1
X-52C	M-117-1
X-52D	M-117-1
X-52E	M-117-1
X-52F	M-117-1
X-53A	M-116
X-53B	M-116
X-54A	M-116
X-54B	M-116

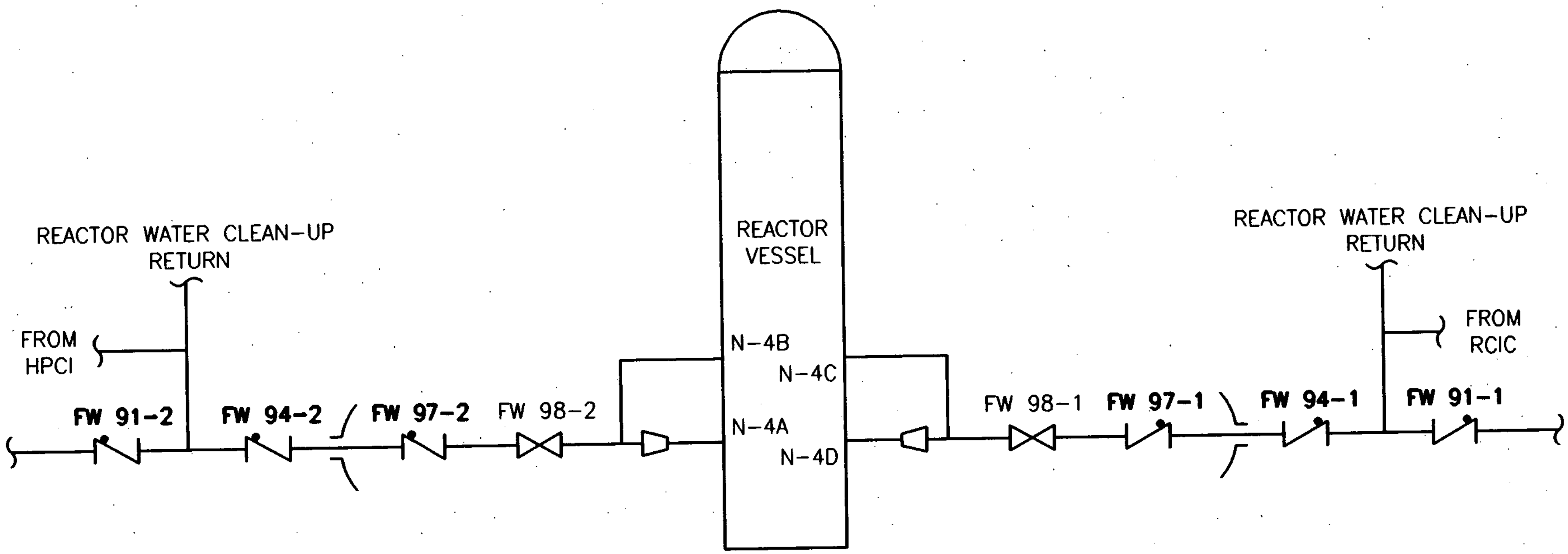
SECTION 11 PUMP AND VALVE (IST) DRAWINGS

NOTE 1: THESE DRAWINGS ARE FOR INFORMATION ONLY. THEY ARE INTENDED TO SHOW THE RELATIVE LOCATION OF IST COMPONENTS WITHIN A SYSTEM BOUNDARY. FOR UPDATED INFORMATION, CONSULT THE P & ID'S.

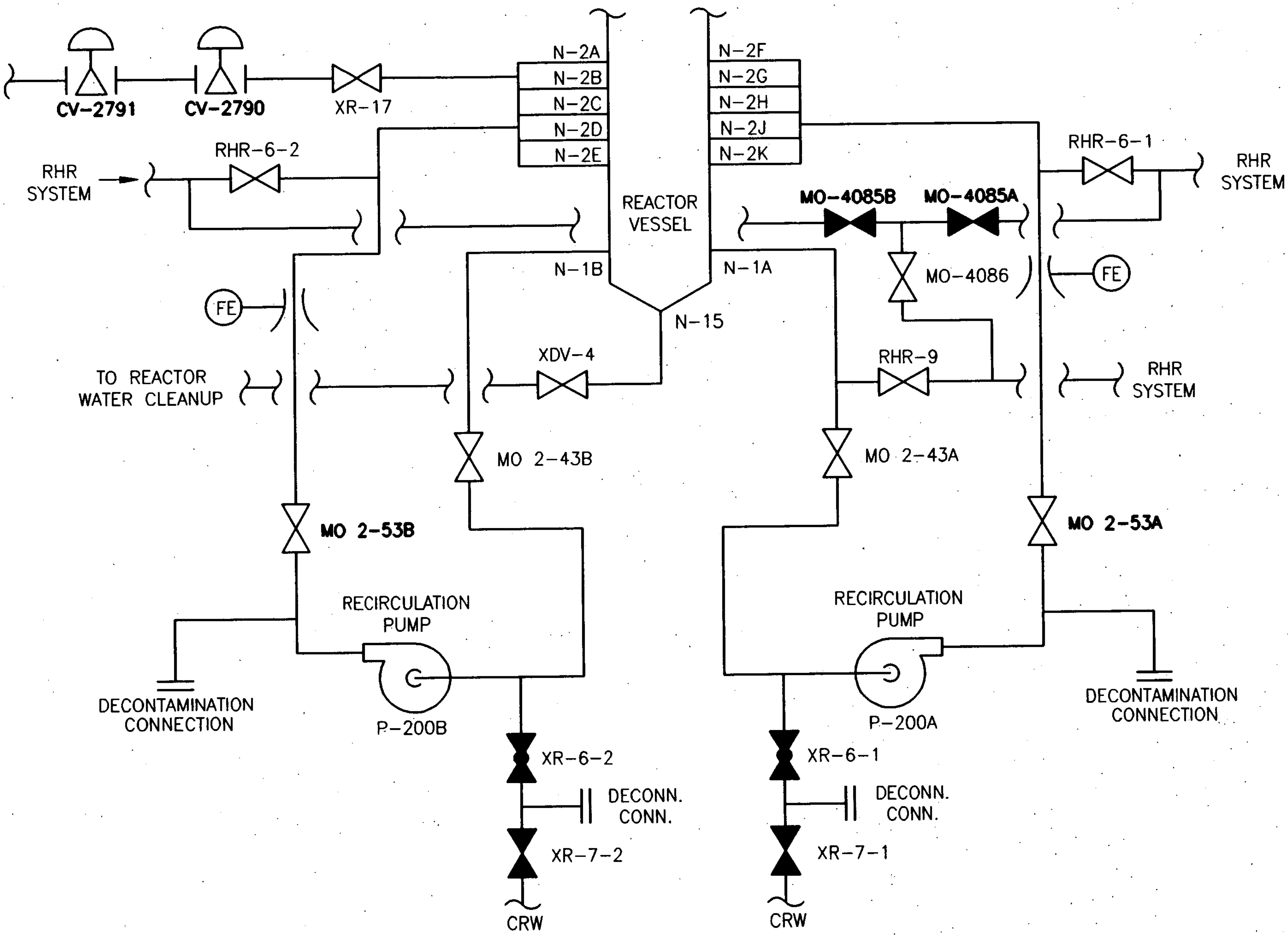
NOTE 2: PUMPS AND VALVES INCLUDED IN THE IST PROGRAM ARE IDENTIFIED BY **BOLD** ALPHA-NUMERIC CHARACTERS.


FROM INSTRUMENT AIR
A1-11-1
A1-11-2
A1-11-3
A1-11-4
A1-11-5
A1-11-6
A1-11-7
A1-11-8
TO OUTBOARD MSIV
AO-2-80A
AO-2-80B
AO-2-80C
AO-2-86D
T-50A, B, C, D
DETAIL 1
FROM INSTRUMENT AIR
A1-12-5
A1-12-6
A1-12-7
A1-12-8
A1-12-9
A1-12-10
A1-12-11
A1-12-12
A1-12-1
A1-12-2
A1-12-3
A1-12-4
TO INBOARD MSIV
AO-2-80A
AO-2-80B
AO-2-80C
AO-2-80B
T-49A, B, C, D
DETAIL 2
TO TURBINE
AO-2-80B
AO-2-80B
RV-2-71B
RV-2-71G
RV-3243A
RV-7467A
TO TORUS
N-3B
N-3C
RV-2-71H
RV-2-71C
RV-7468A
RV-3244A
TO TORUS
AO-2-80C
AO-2-80C
TO TURBINE
TO TURBINE
AO-2-80A
AO-2-80A
RV-2-71E
RV-2-71A
RV-7440A
RV-3242A
TO TORUS
N-3A
N-3D
RV-2-710
RV-2-71F
RV-3245A
RV-7441A
TO TORUS
AO-2-80D
AO-2-86D
TO TURBINE
MO-2373
MO-2374
TO CONDENSER
FROM INSTRUMENT AIR
A1-13-1
A1-13-2
A1-13-3
A1-13-4
A1-13-5
A1-13-6
A1-13-7
A1-13-8
T-57A, B, C, D, E, F, G, H
SV
FROM N 2 BOTTLES - SRV B AND F ONLY
RV
RV-2-71A
RV-2-71B
RV-2-71C
RV-2-710
RV-2-71E
RV-2-71F
RV-2-71G
RV-2-71H
DETAIL 3

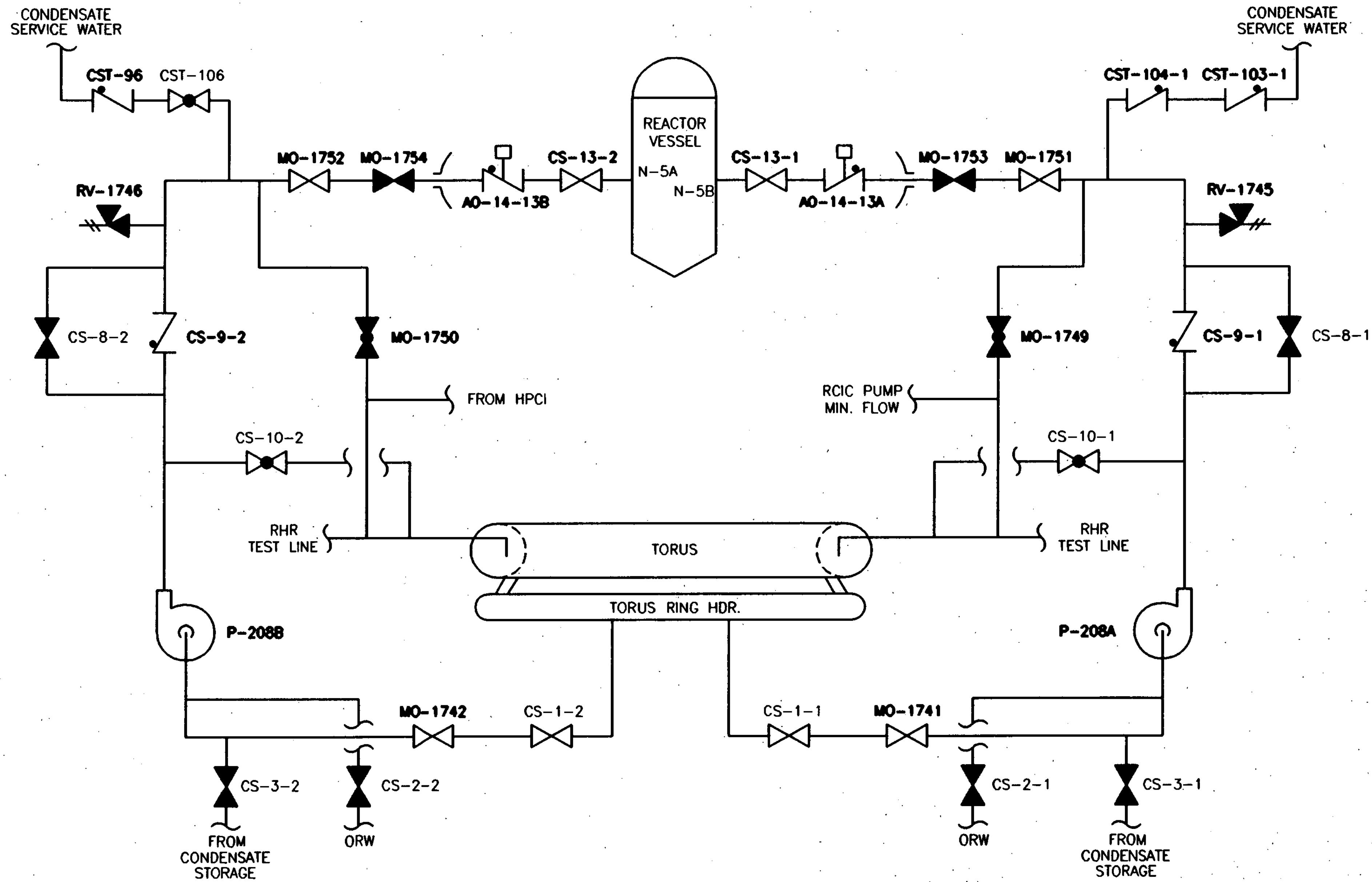
MAIN STEAM



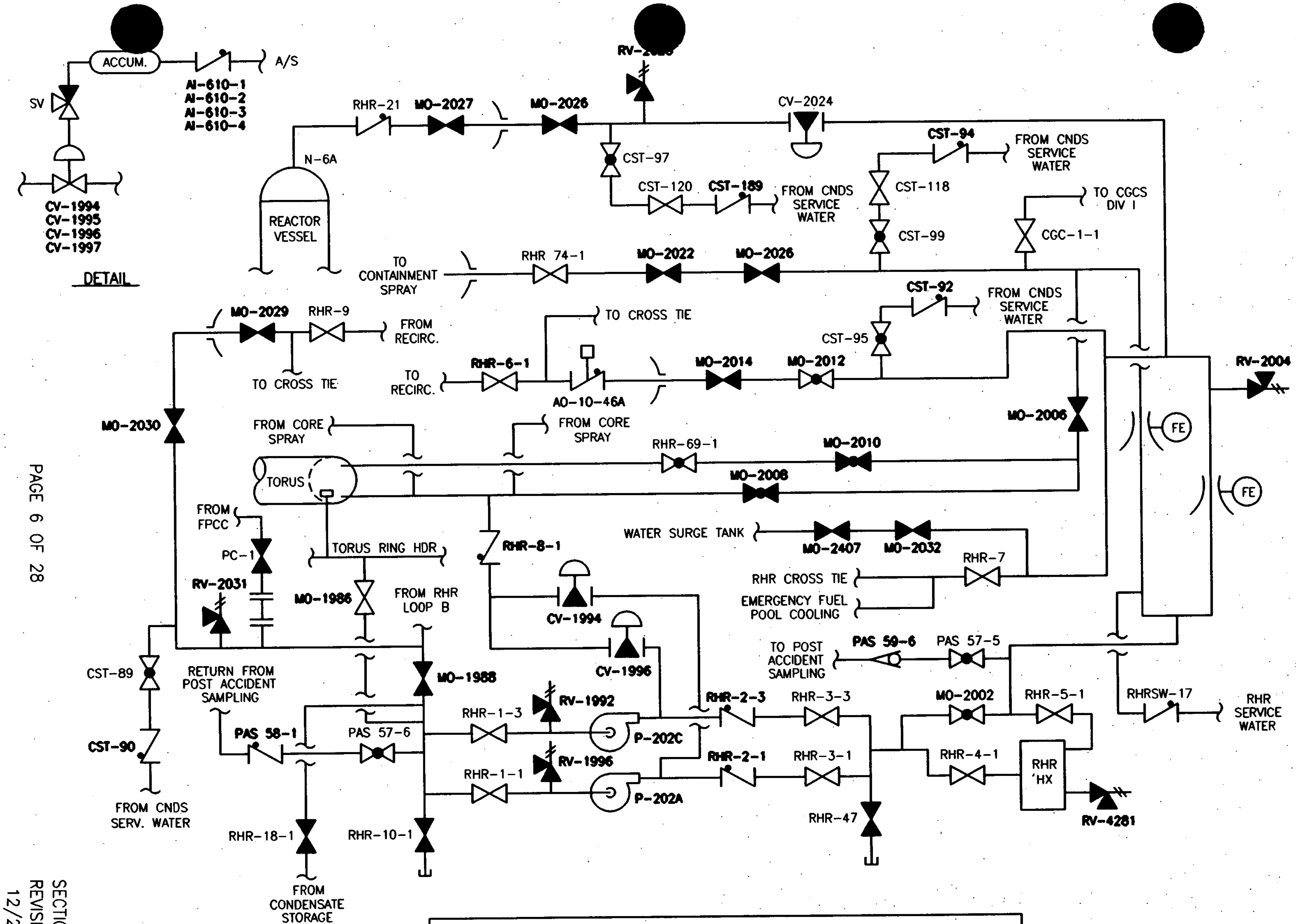
FEEDWATER SYSTEM



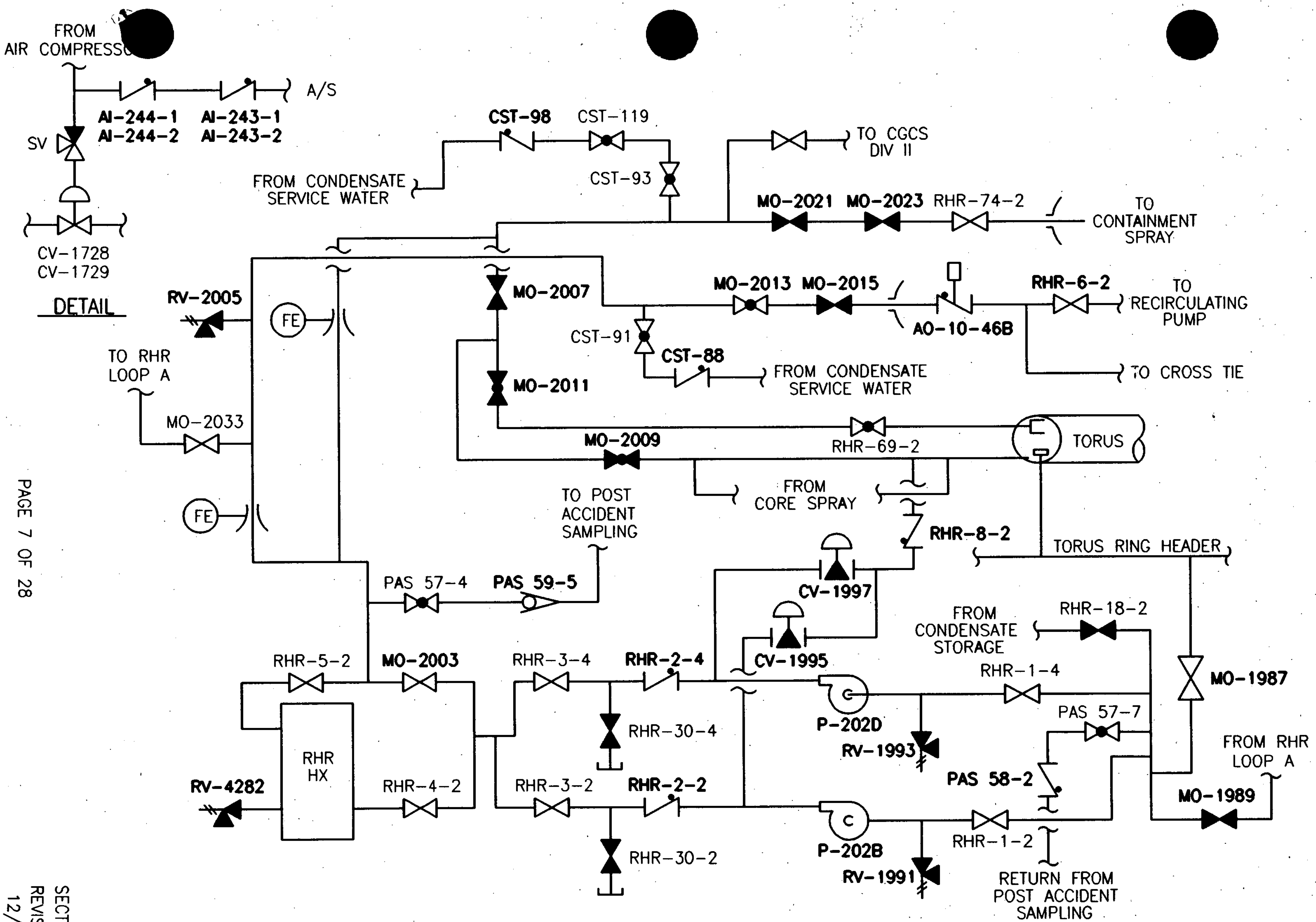
REACTOR RECIRCULATION SYSTEM



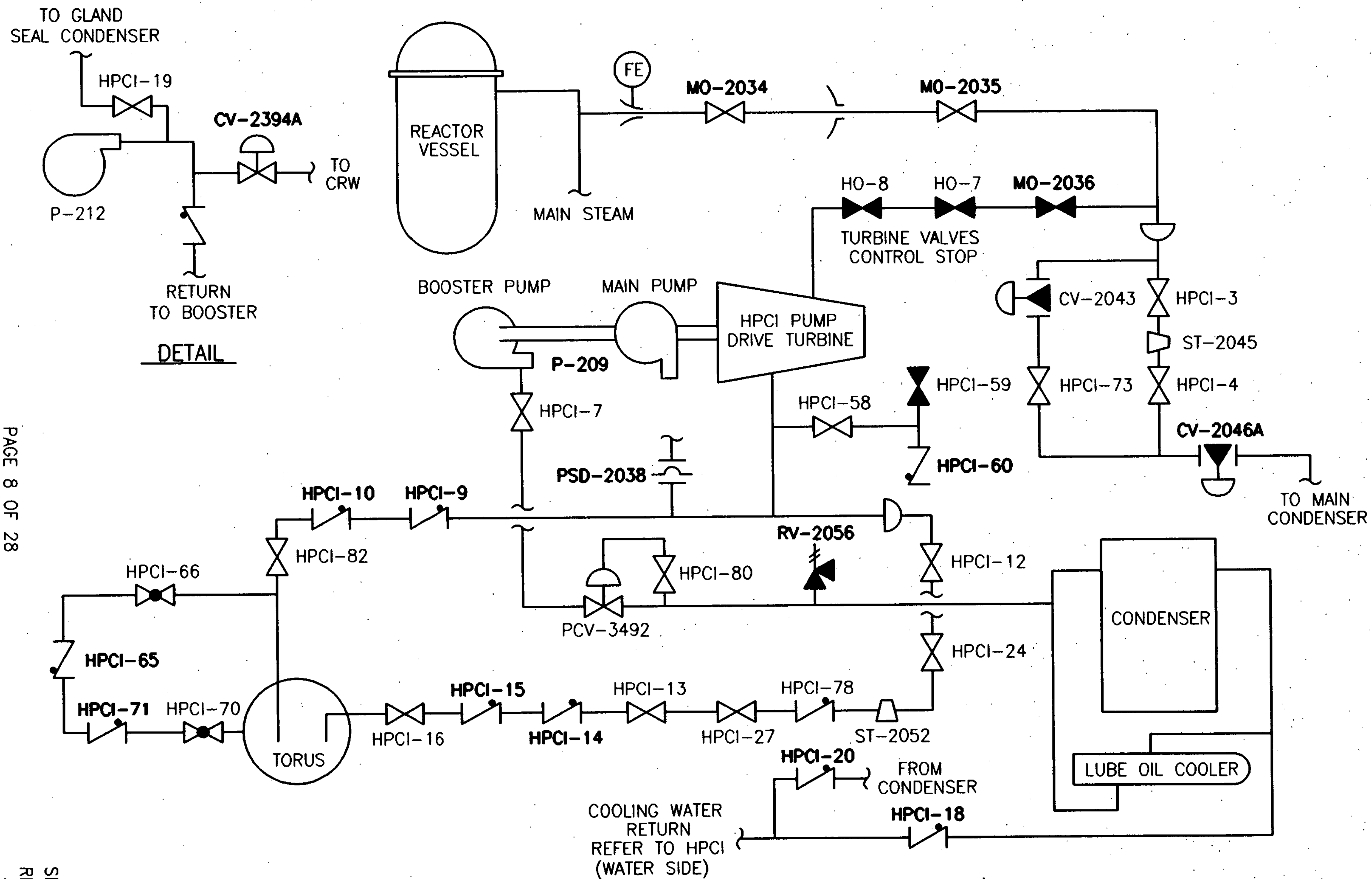
CORE SPRAY SYSTEM



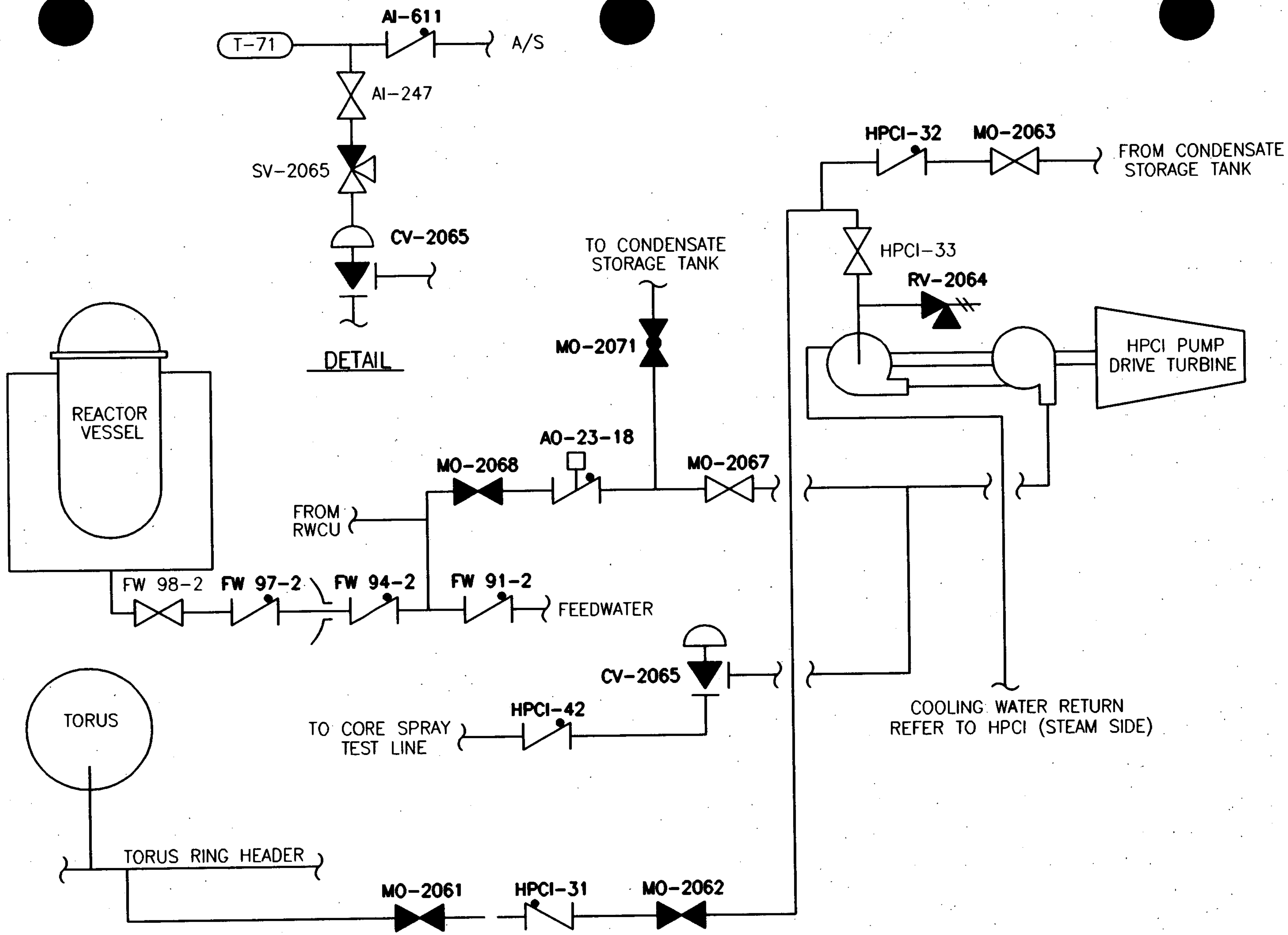
RESIDUAL HEAT REMOVAL SYSTEM LOOP A



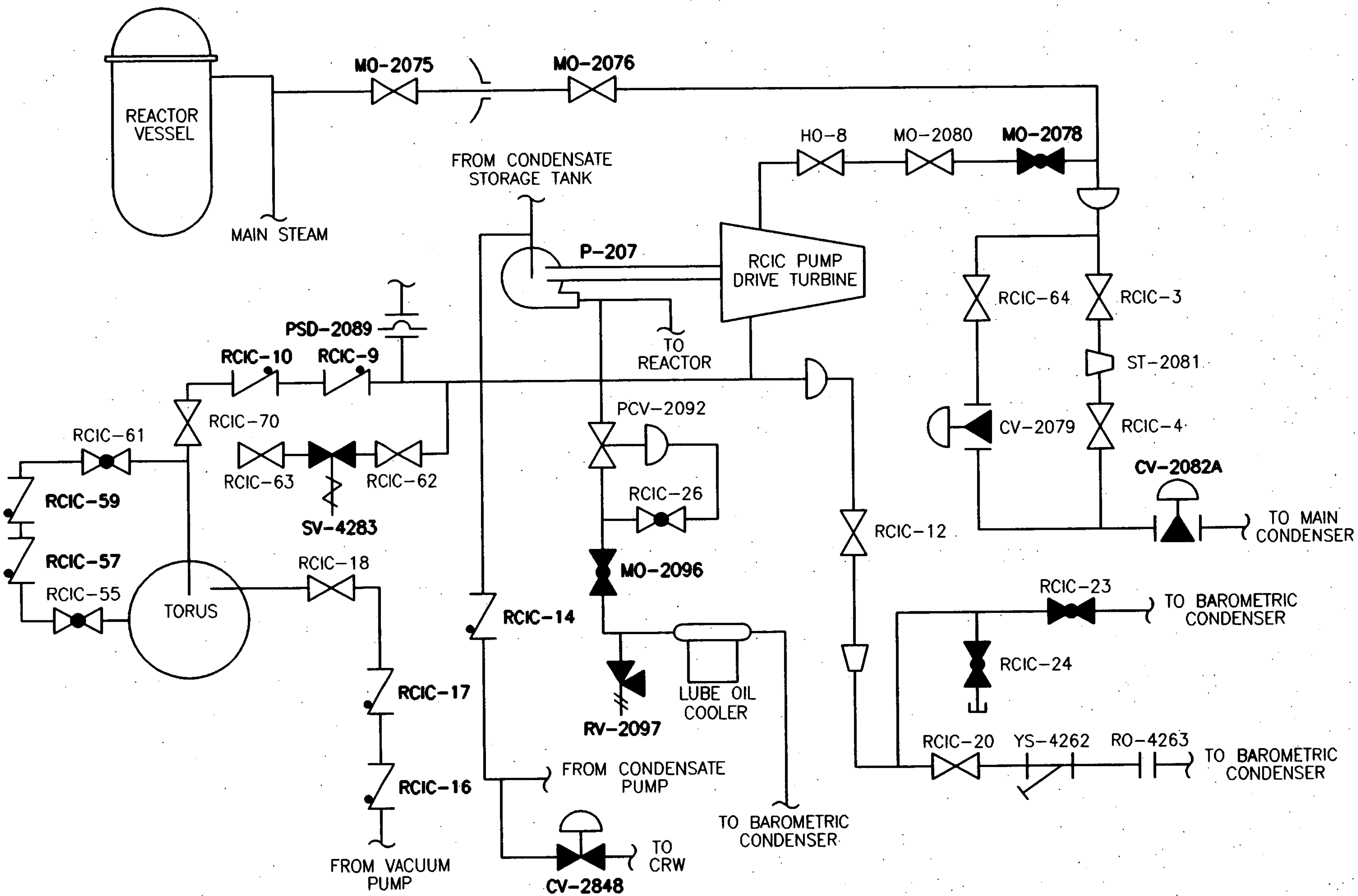
RESIDUAL HEAT REMOVAL SYSTEM LOOP B



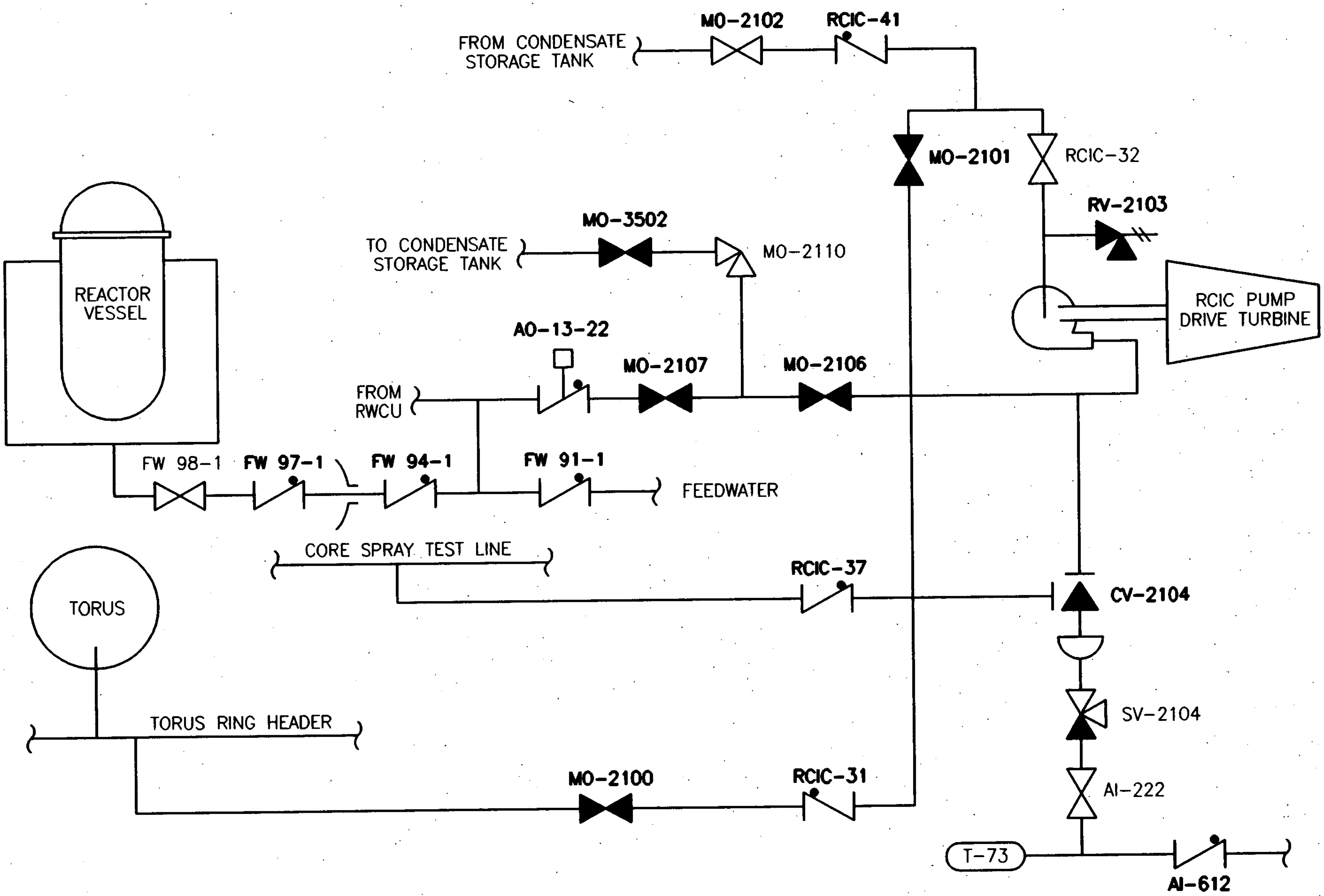
HIGH PRESSURE COOLANT INJECTION SYSTEM (STEAM SIDE)



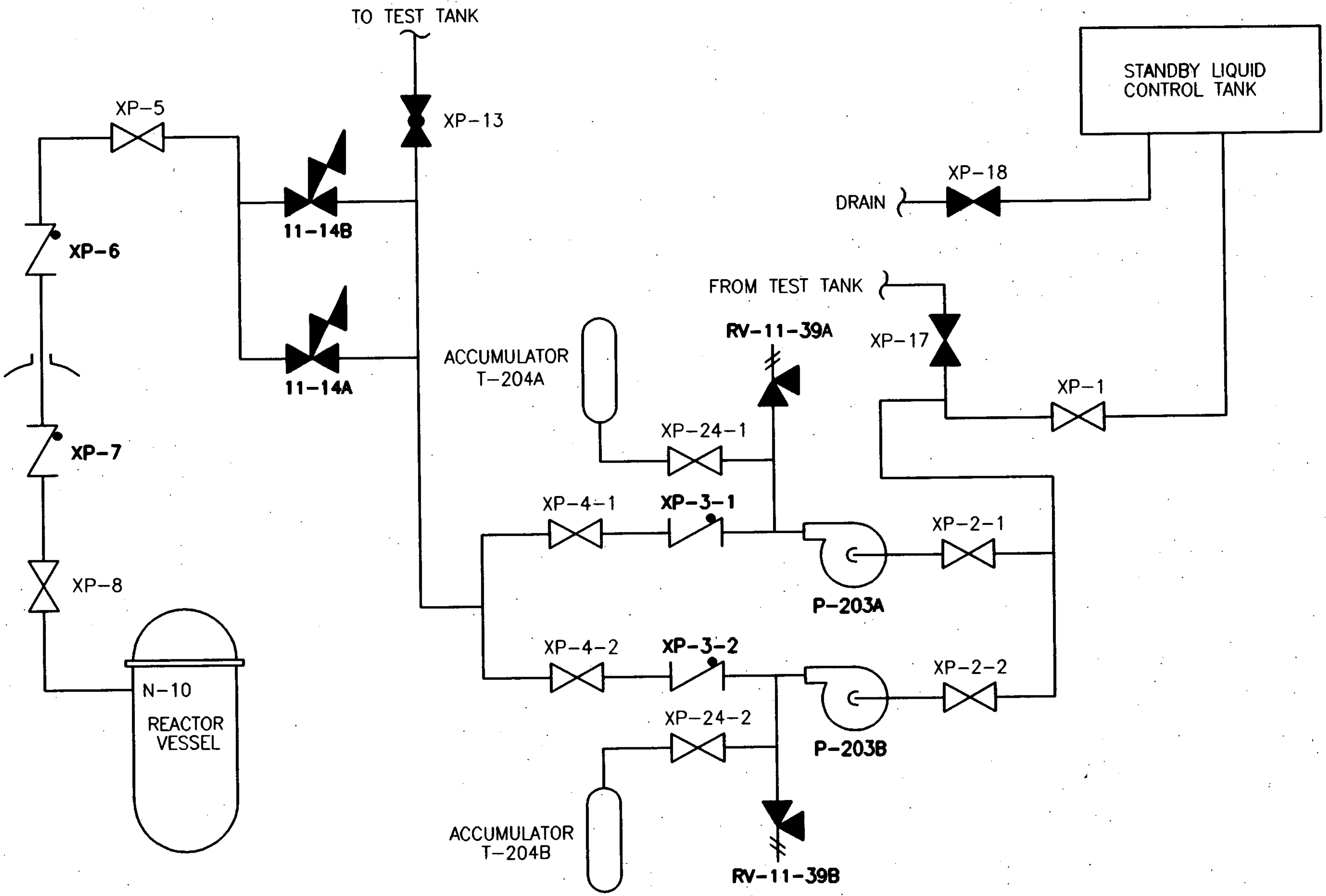
HIGH PRESSURE COOLANT INJECTION SYSTEM (WATER SIDE)



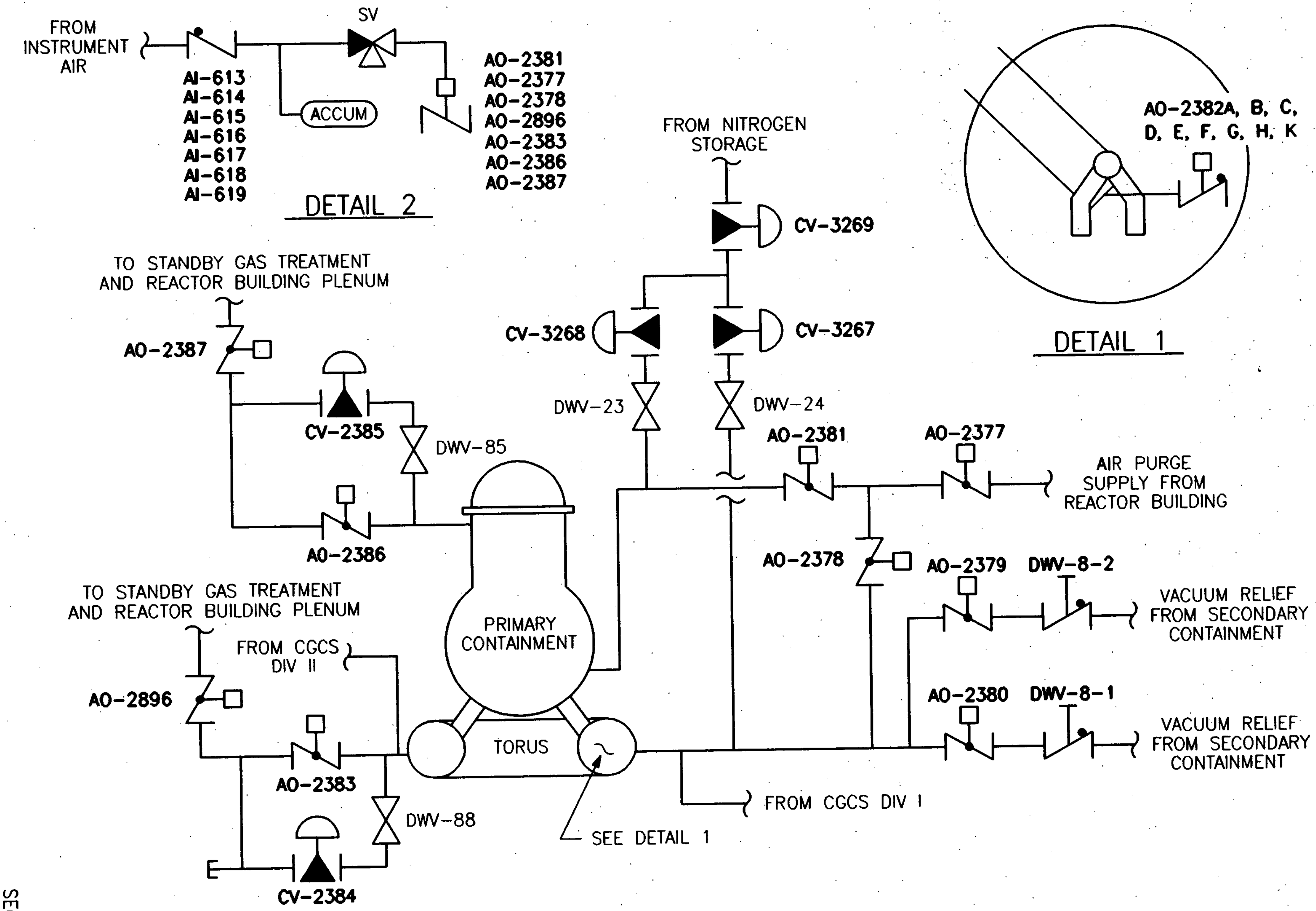
REACTOR CORE ISOLATION COOLING (STEAM SIDE)



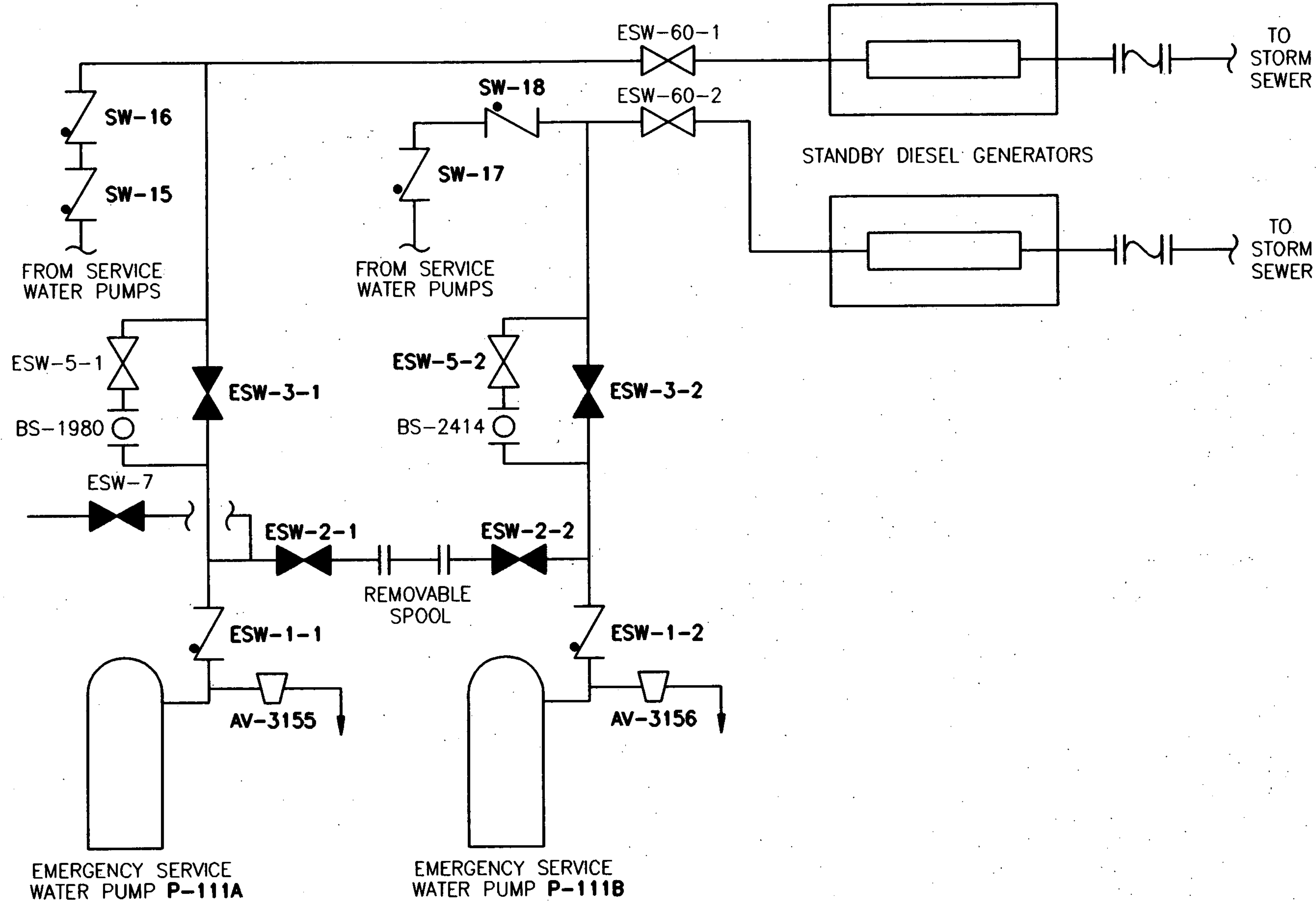
REACTOR CORE ISOLATION COOLING (WATER SIDE)



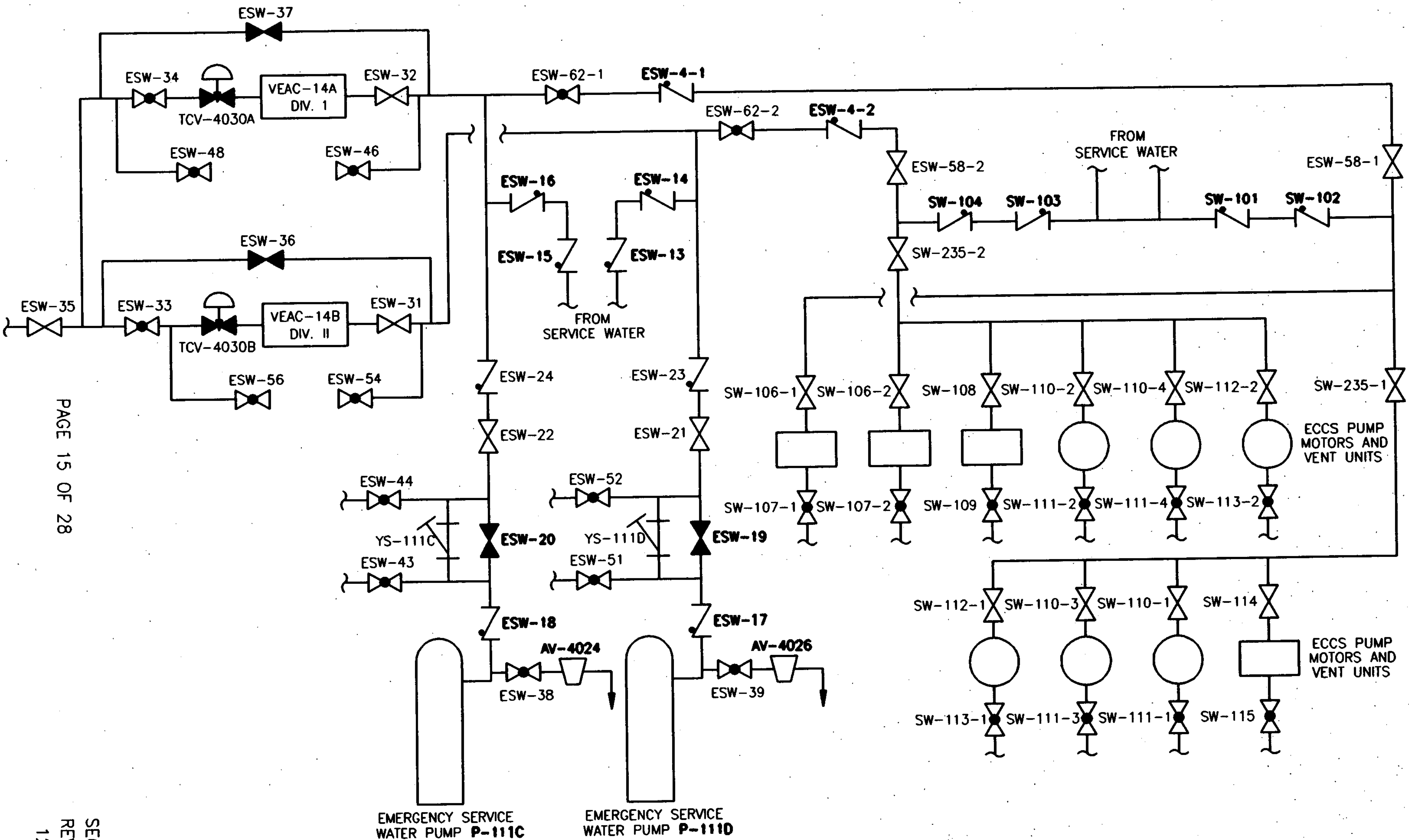
STANDBY LIQUID CONTROL SYSTEM



PRIMARY CONTAINMENT ATMOSPHERIC CONTROL SYSTEM



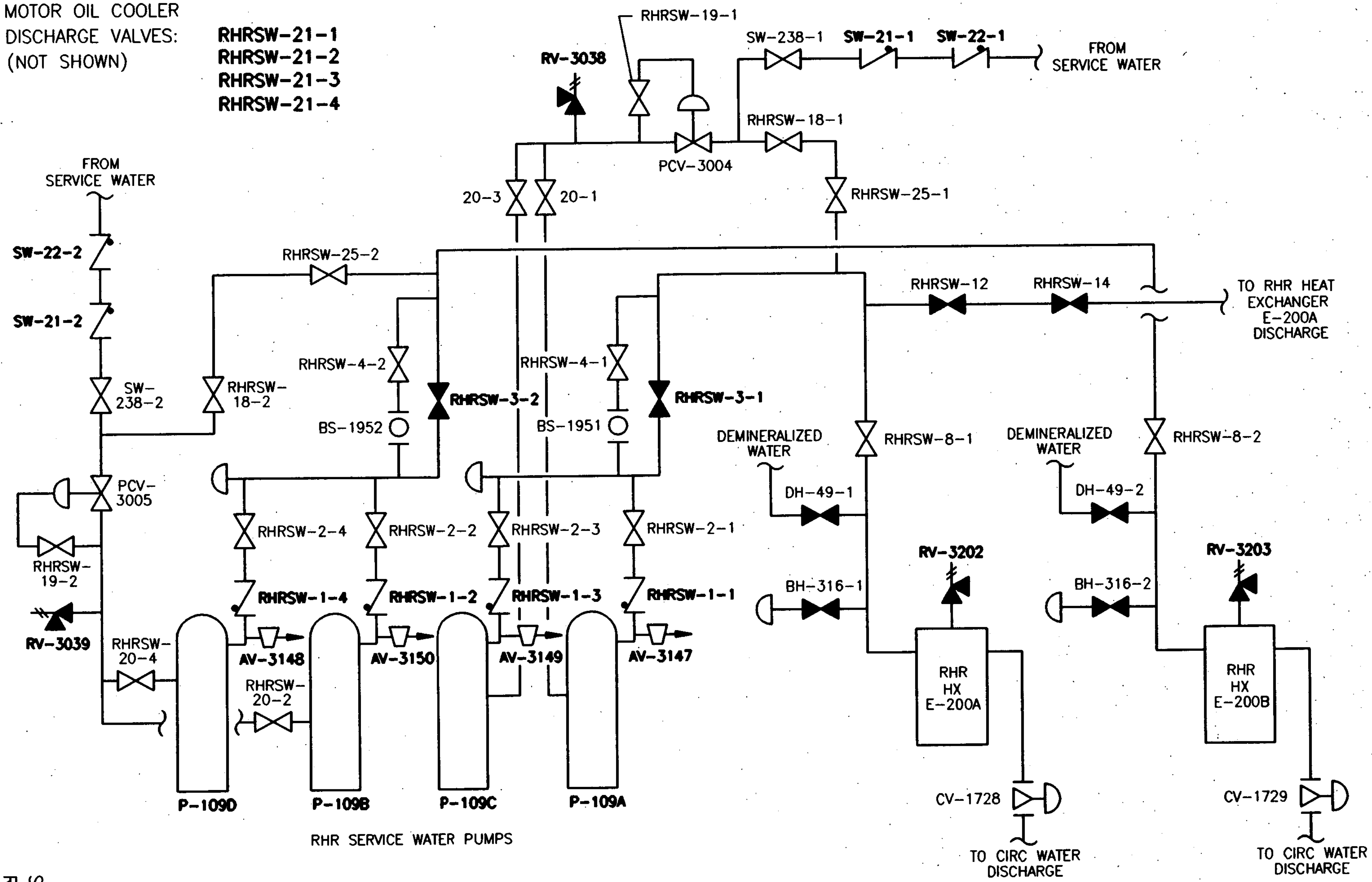
EMERGENCY DIESEL GENERATORS EMERGENCY SERVICE WATER



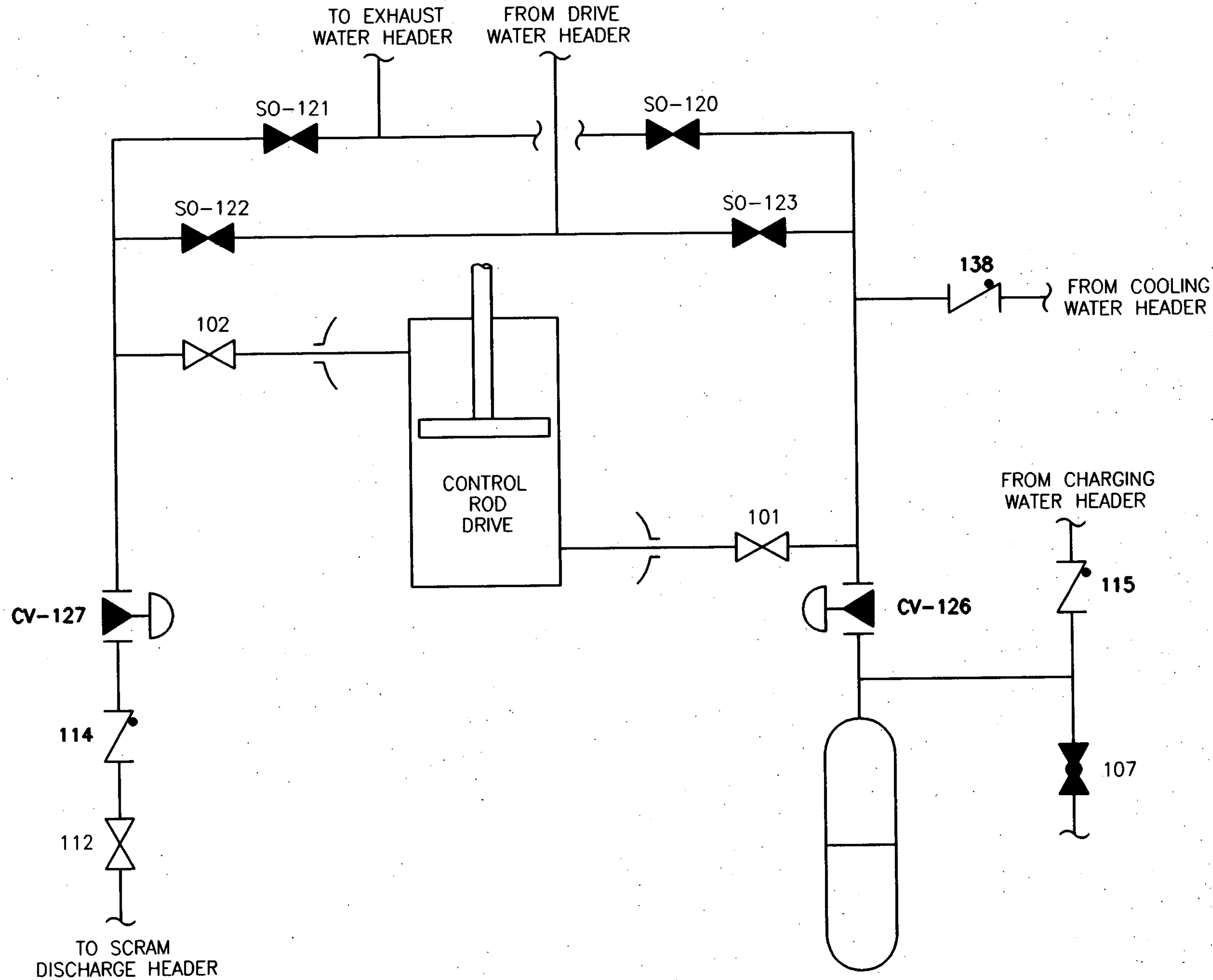
EMERGENCY SERVICE WATER

MOTOR OIL COOLER
DISCHARGE VALVES:
(NOT SHOWN)

RHRSW-21-1
RHRSW-21-2
RHRSW-21-3
RHRSW-21-4

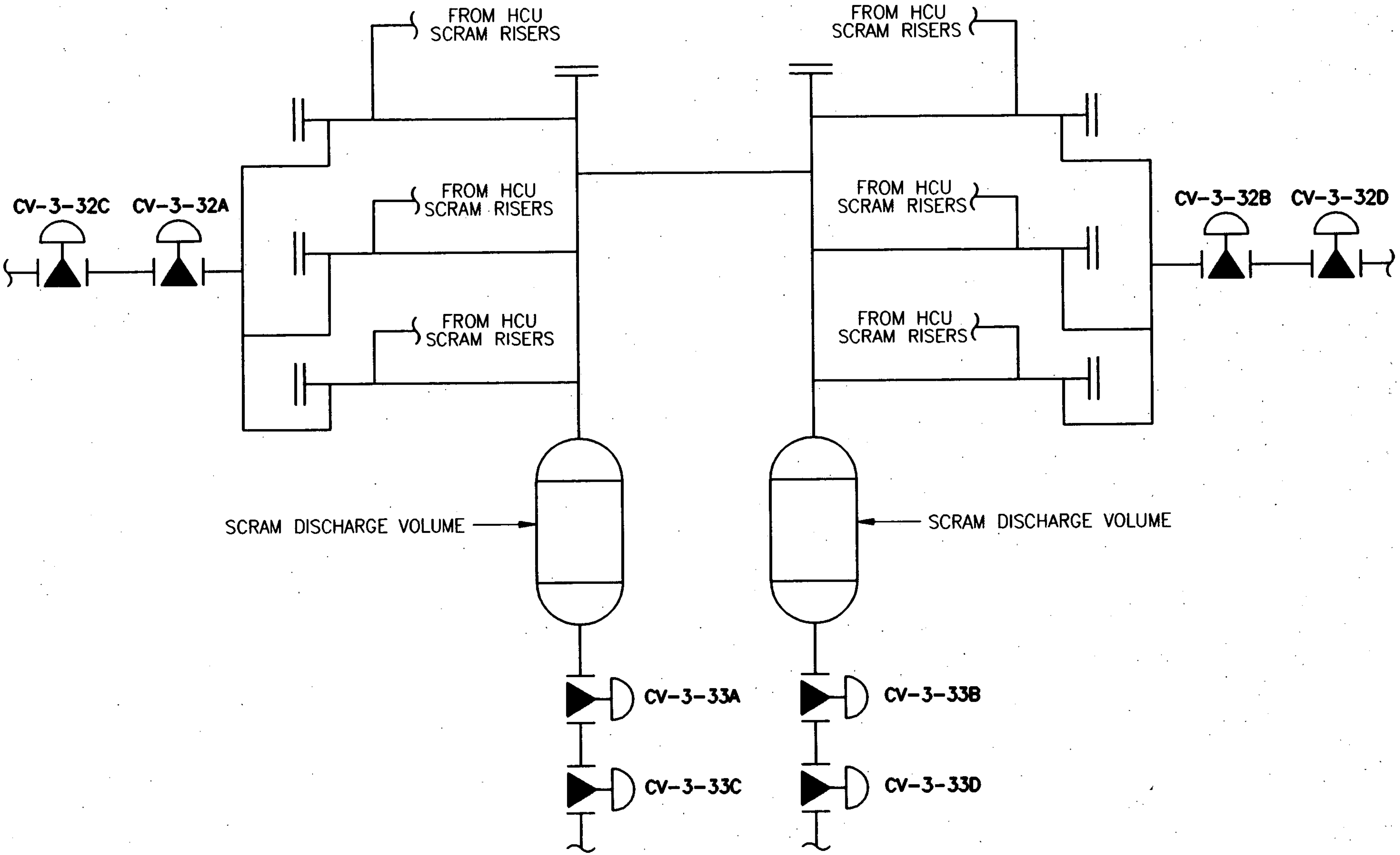


RHR SERVICE WATER

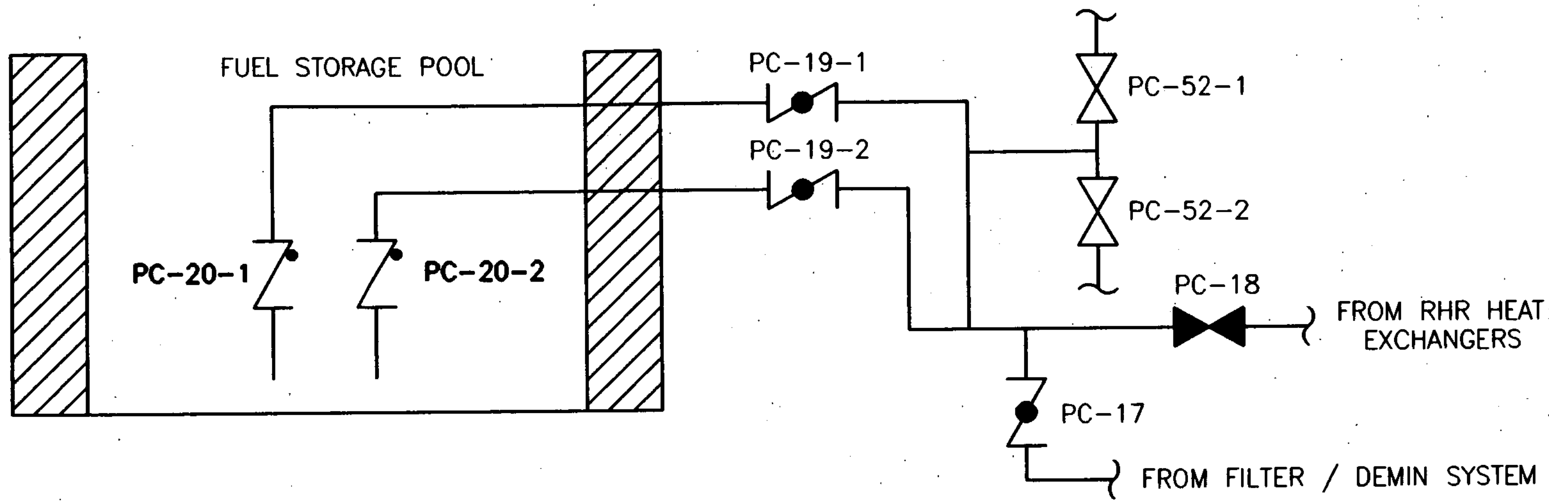


HYDRAULIC CONTROL UNIT

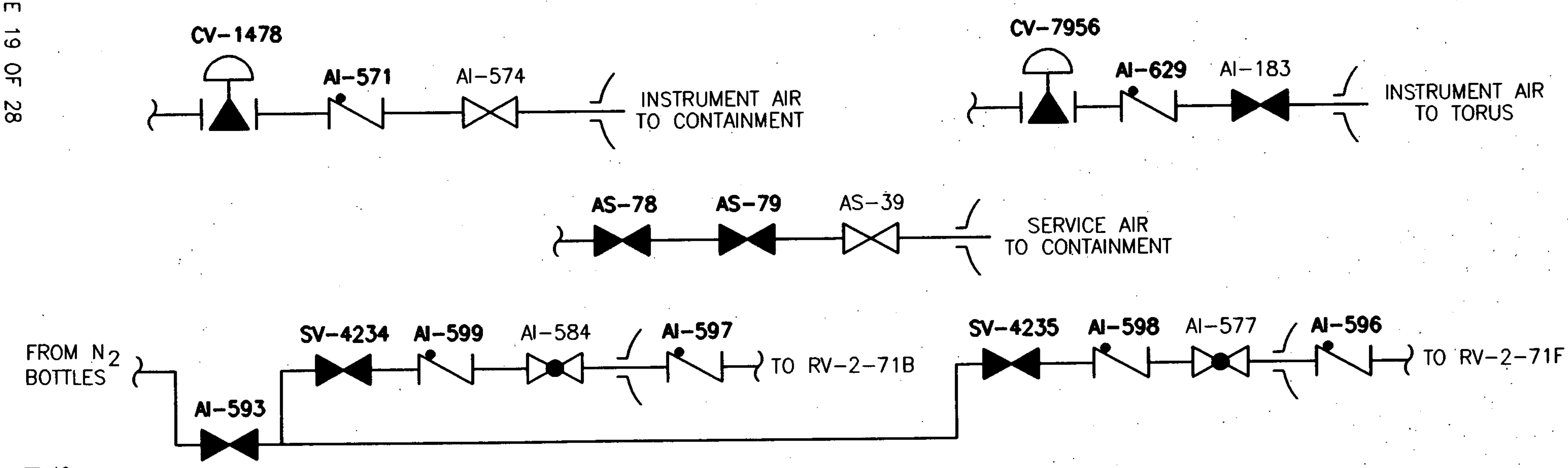
(TYPICAL OF 121)



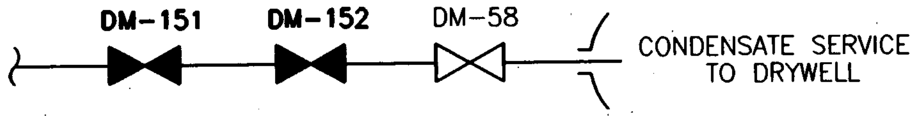
CONTROL ROD DRIVE SYSTEM (SCRAM DISCHARGE PIPING)



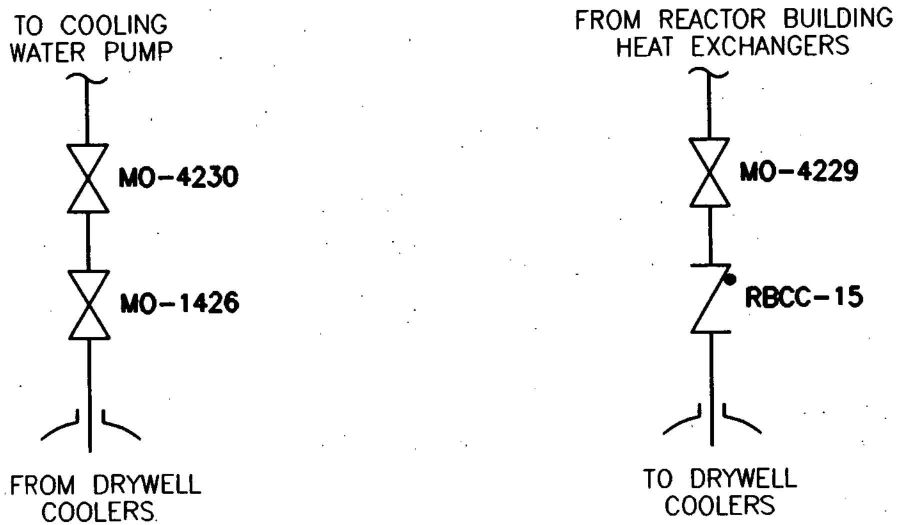
FUEL POOL COOLING & CLEAN-UP SYSTEM



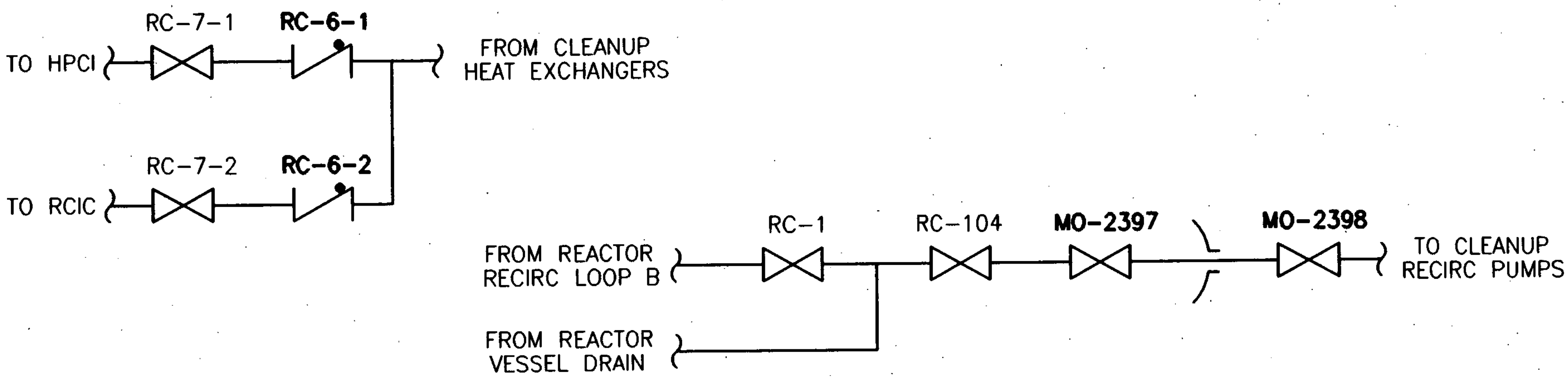
COMPRESSED AIR SYSTEM



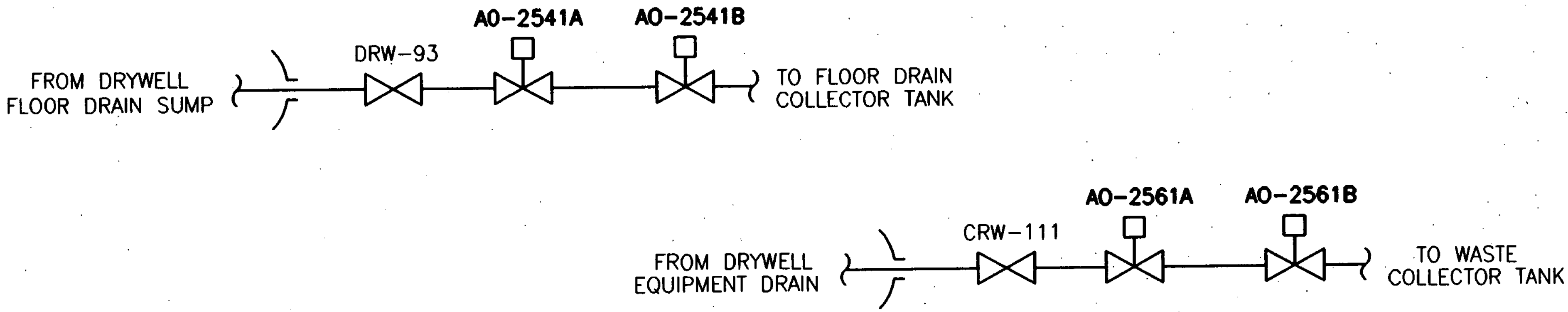
CONDENSATE SERVICE SYSTEM



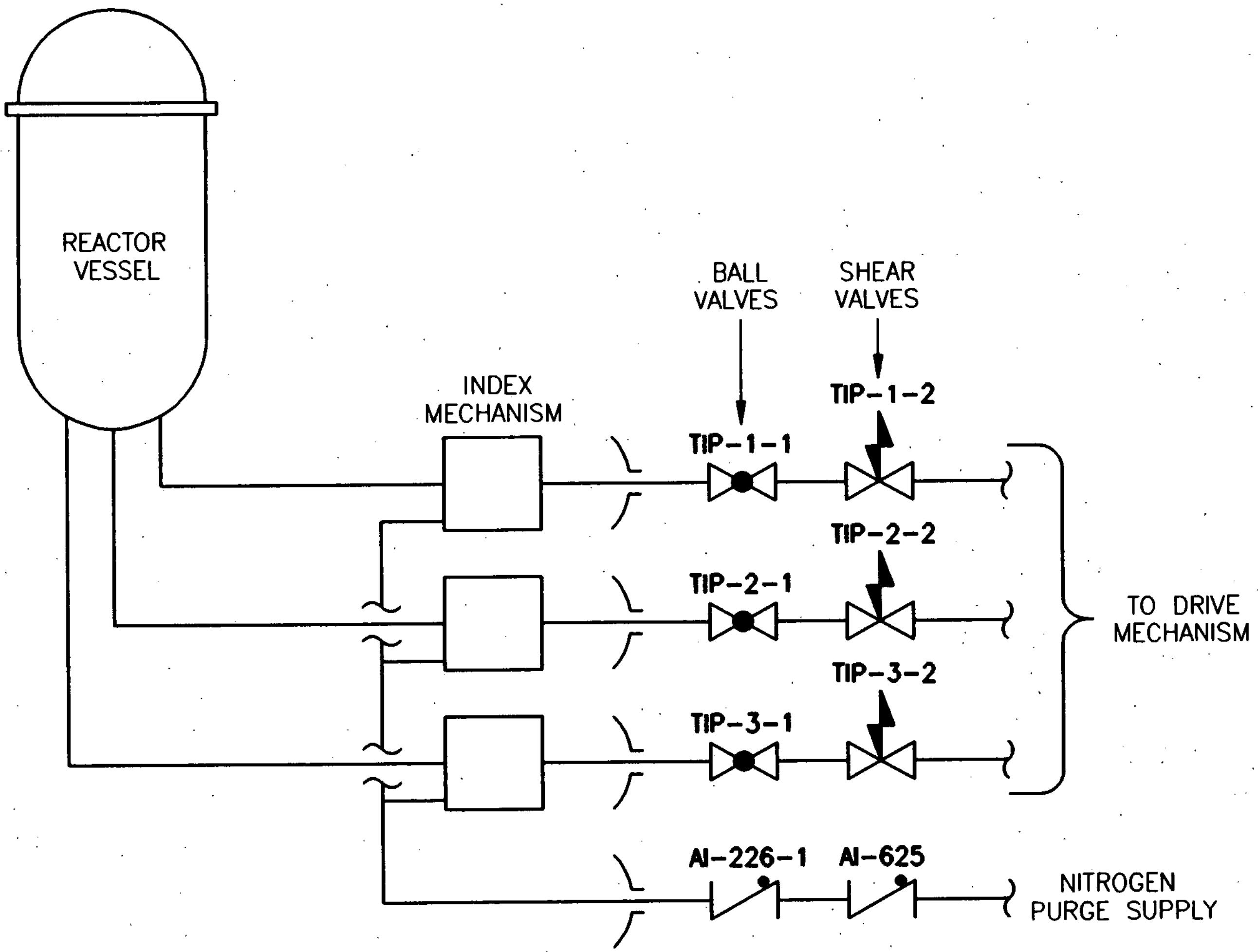
REACTOR BUILDING COOLING WATER SYSTEM



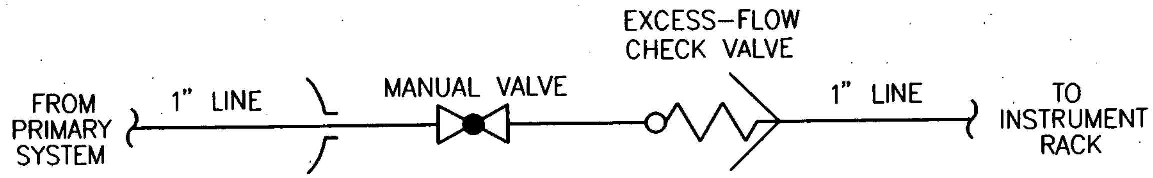
REACTOR WATER CLEAN-UP SYSTEM



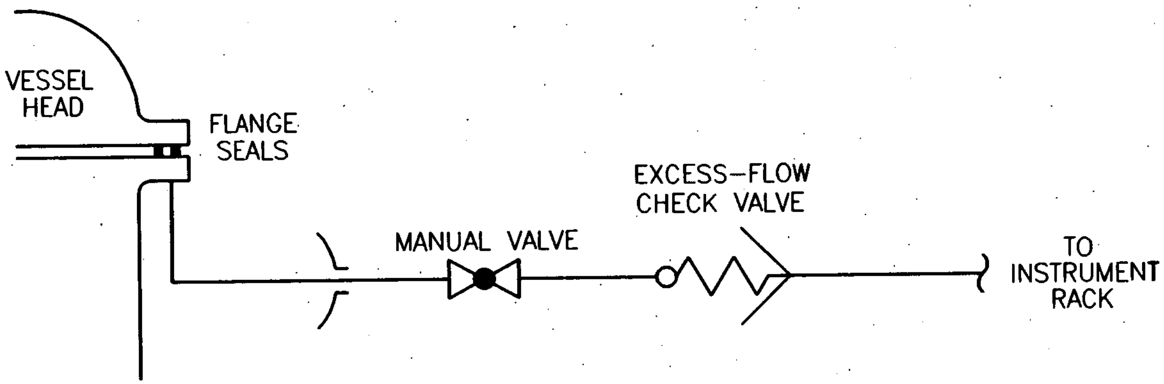
LIQUID RADWASTE



TRAVERSING IN-CORE PROBE SYSTEM

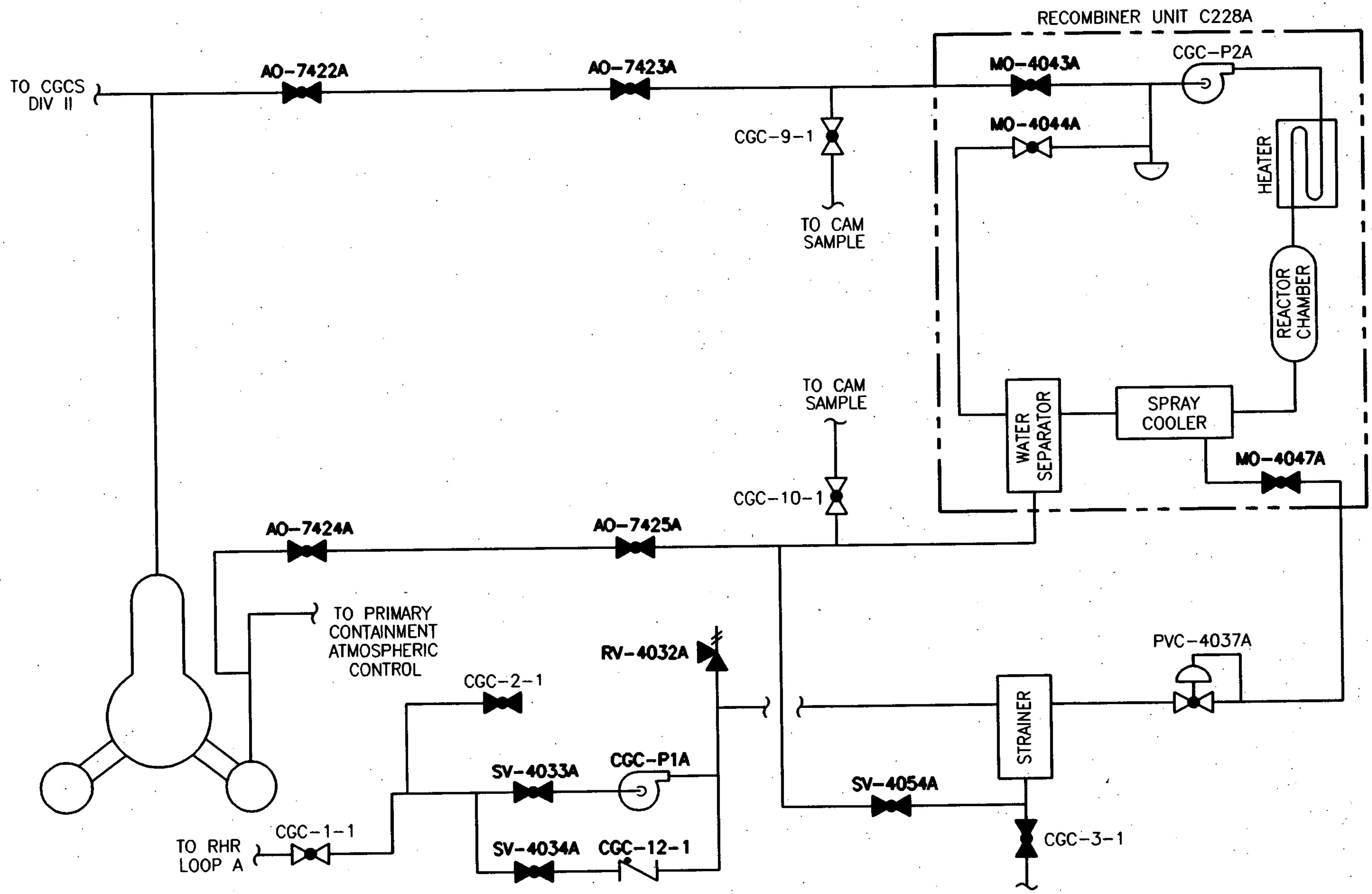


TYPICAL FOR EXCESS-FLOW CHECK VALVES EXCEPT EXCESS-FLOW CHECK VALVE FOR PENETRATION X-28F

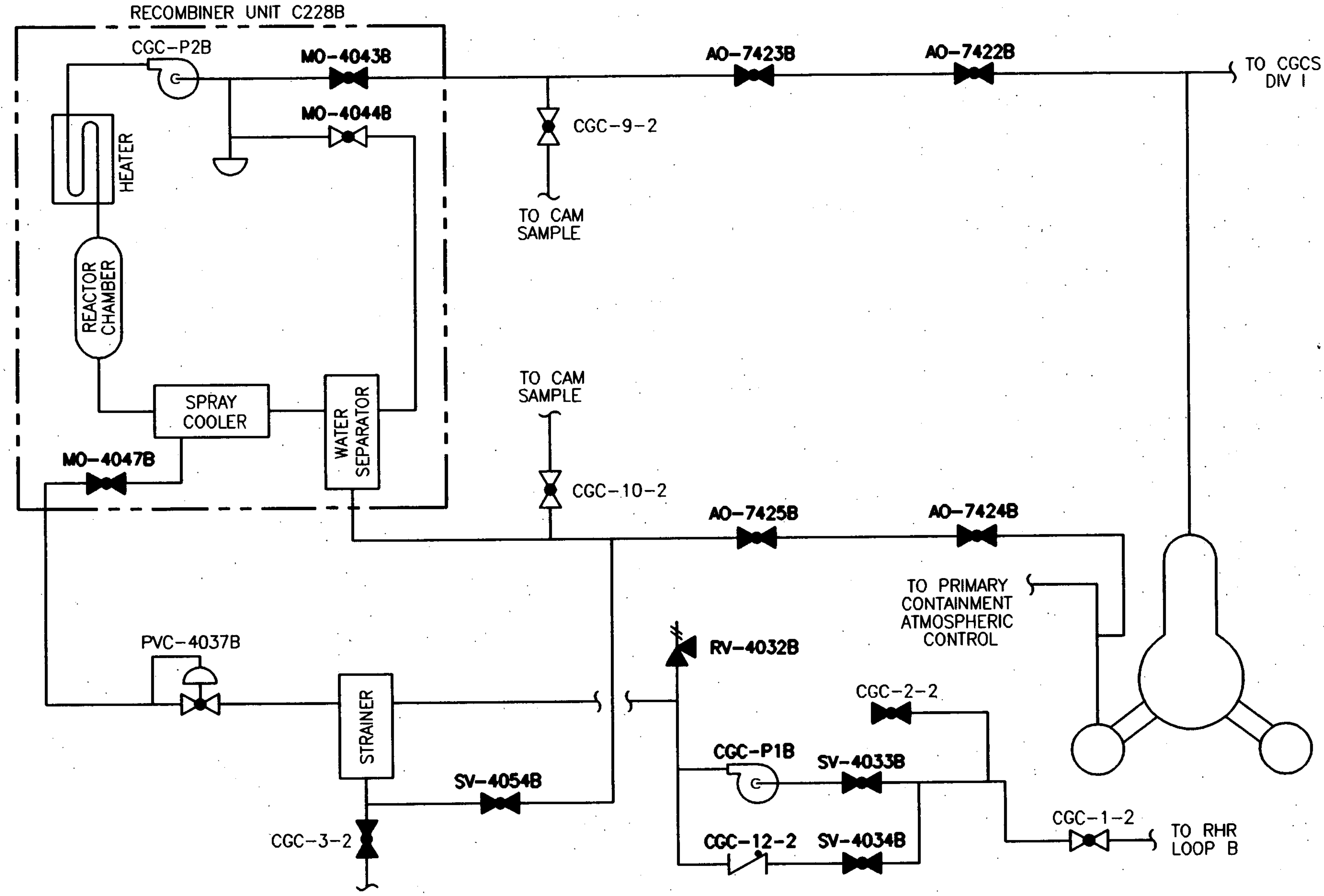


EXCESS-FLOW CHECK VALVE FOR PENETRATION X-28F

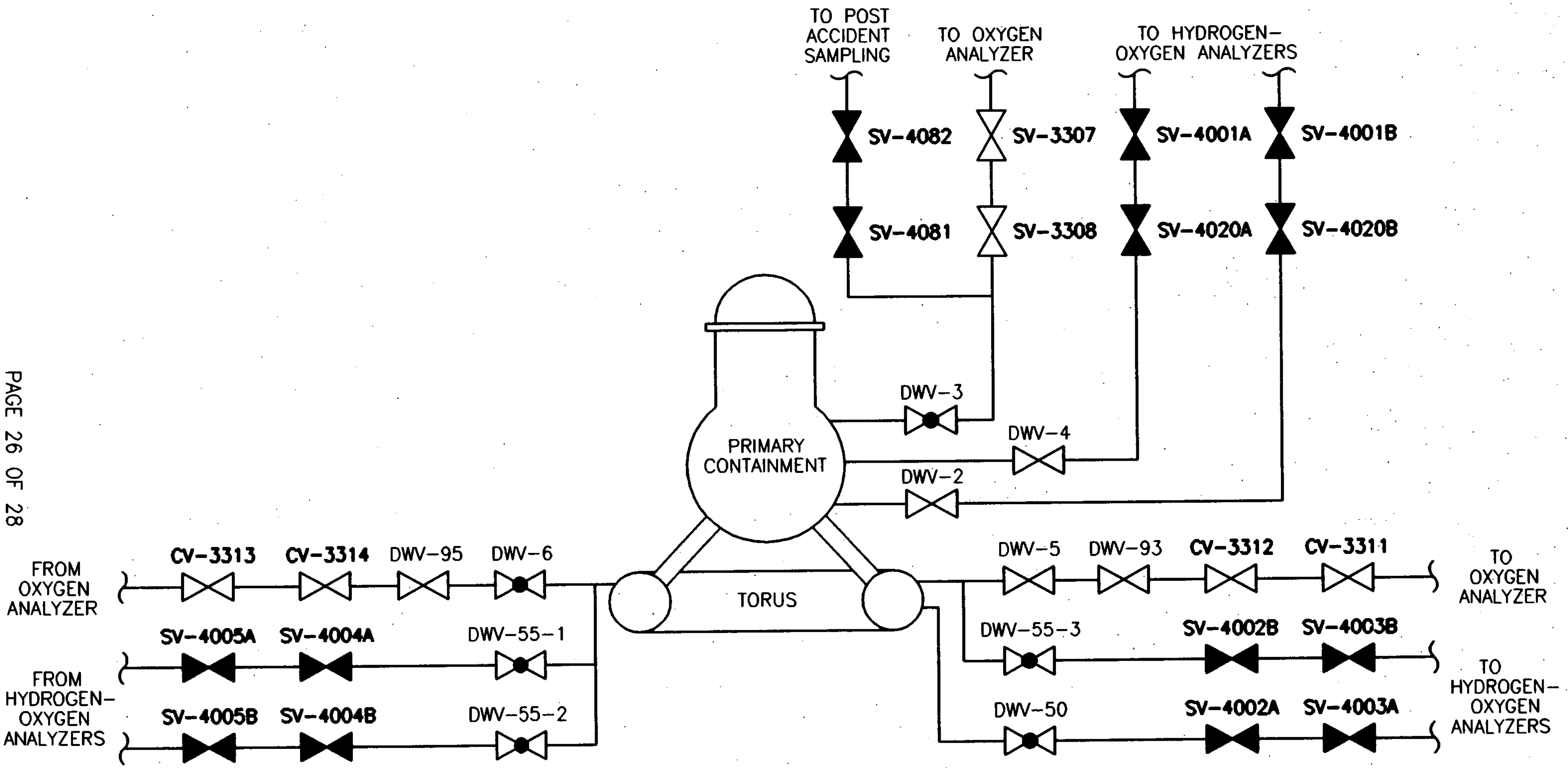
EXCESS-FLOW CHECK VALVES



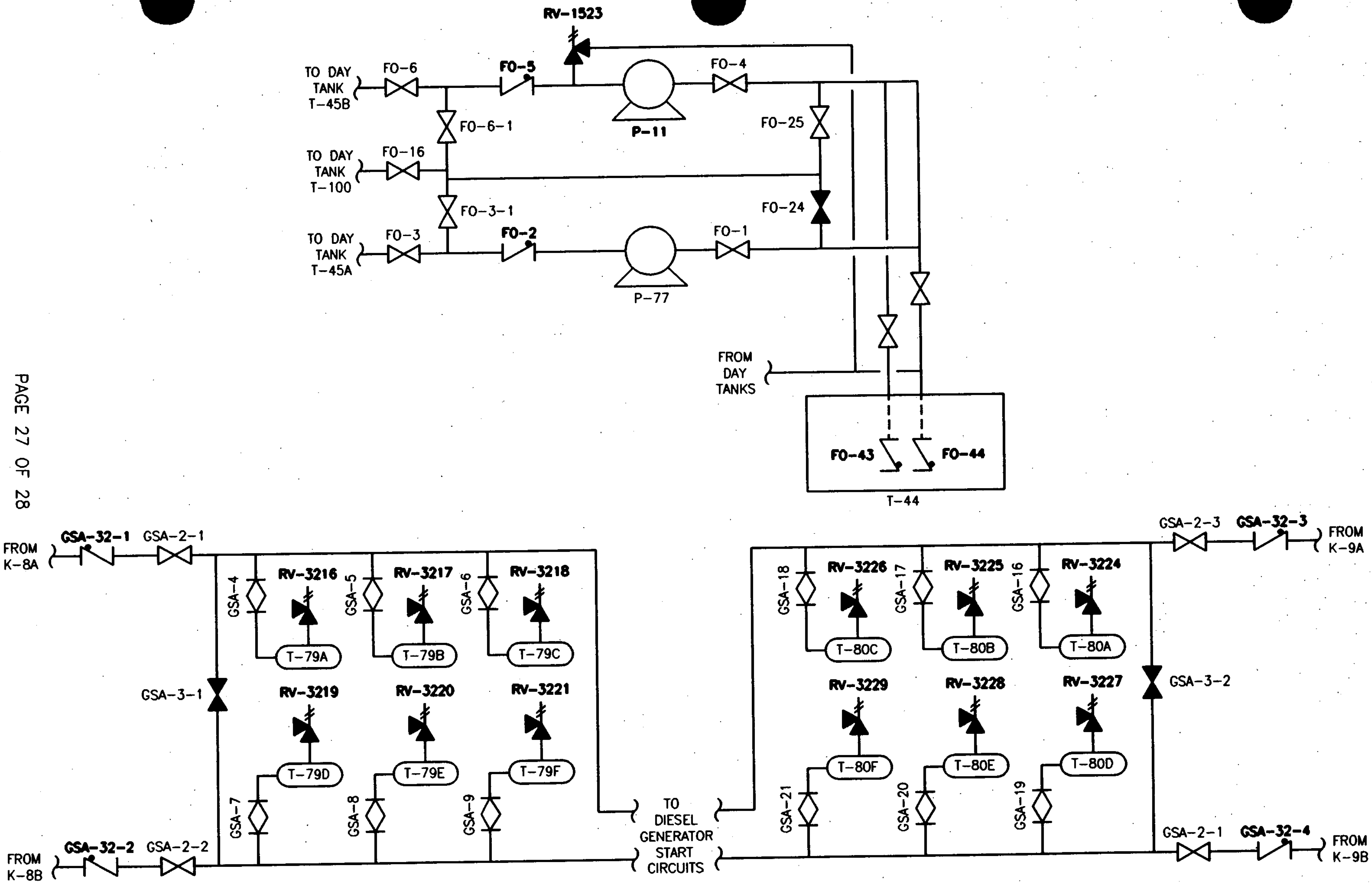
COMBUSTIBLE GAS CONTROL, DIVISION I



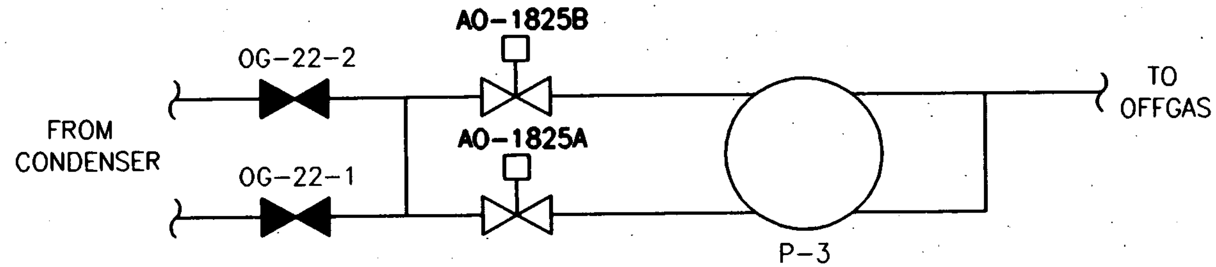
COMBUSTIBLE GAS CONTROL, DIVISION II



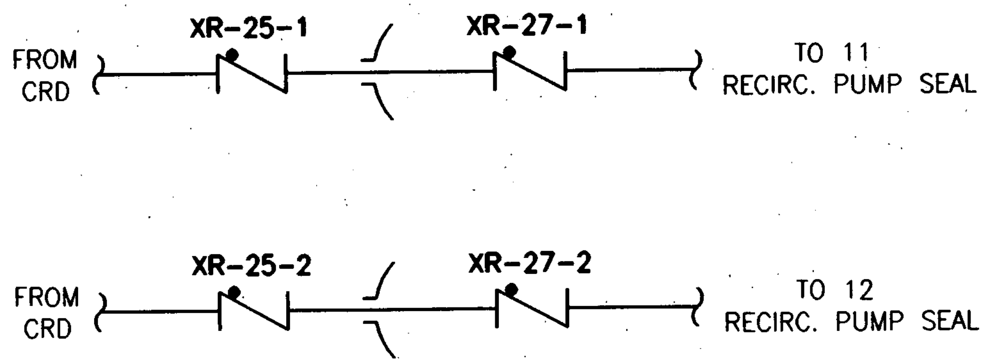
PRIMARY CONTAINMENT SAMPLING SYSTEMS



DIESEL GENERATOR AUXILIARIES



MECHANICAL VACUUM PUMP



RECIRC. SEAL INJECTION