LIMITING CONDITIONS FOR OPERATION

3.10 CONTAINMENT STRUCTURAL INTEGRITY (per unit)

OBJECTIVE:

To insure that the containment structure meets its design requirements throughout plant life.

SPECIFICATION:

1. Containment Leakage Rate Testing
   A. Containment Leakage Rate shall be limited to:
      1. An overall integrated leakage rate of:
         a. Less than or equal to L_a, 0.10 percent by weight of the containment air per 24 hours at P_a (47 psig), or
         b. Less than or equal to L_t, where L_t is as computed in 10CFR 50 Appendix J, is the maximum allowable leakage rate at pressure P_t (25 psig)
      2.* A combined leakage rate of less than or equal to 0.60 L_a, for all penetrations and valves subject to Type B and C tests, when pressurized to P_a.

APPLICABILITY: Modes 1, 2, 3, 4 and 7

SURVEILLANCE REQUIREMENT

4.10 CONTAINMENT STRUCTURAL INTEGRITY (per unit)

OBJECTIVE:

To establish the testing requirements to assure containment structural integrity.

1. Containment Leakage Rate Testing
   A. Surveillance and testing of the containment shall be performed as follows:
      1. The containment Type A leakage rate shall be determined in conformance with 10CFR 50 Appendix J.
         a. The leakage rate test shall be performed at or above the design basis accident pressure P_a (47 psig), or at or above the reduced pressure P_t (25 psig).
         b. Deleted

* Refer to note on page 213.

LIMITING CONDITIONS FOR OPERATION

3.10.1.A (Continued)

ACTION:

* With either (a) the measured overall integrated containment leakage rate exceeding 0.75 L_a or 0.75 L_t, as applicable, or (b) with the measured combined leakage rate for all penetrations and valves subject to Type B and C tests exceeding 0.60 L_a, restore the overall integrated leakage rate to less than or equal to 0.75 L_a or less than or equal to 0.75 L_t, as applicable, and the combined leakage rate for all penetrations subject to Type B and C tests to less than or equal to 0.60 L_a prior to entering MODE 4.

SURVEILLANCE REQUIREMENT

4.10.1.A. 1. c. The maximum allowable leakage rate L_a or L_t, as applicable, shall be computed in accordance with the appropriate paragraphs of 10CFR 50 Appendix J.

2.* Type B and C tests (except air lock tests) shall be performed at P_a or above in accordance with the provisions of the appropriate Section of 10CFR 50 Appendix J.

3. Air locks shall be tested and demonstrated OPERABLE per Surveillance Requirement 4.10.2.

4.* The Type A, B, and C leakage rate tests shall be considered to be satisfactory if the acceptance criteria delineated in 10CFR 50 Appendix J are met.

5. Leakage from containment isolation valves sealed by the Isolation Valve Seal Water system may be excluded from the combined Type B and C leakage rate.

* For the current operating cycles (Z1C12 and Z2C12) the Type C leak testing requirements specified in 10CFR50 Appendix J are not applicable to: Unit 1 - penetration P-80 (line 1RC158 - 4" AA-R), and Unit 2 - penetrations P-76 (line 2SI020 - 3/4" E-R) and P-80 (line 2RC158 - 4" AA-R).

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENT
3.10.1.A (Continued)	4.10.1.A. 6.* The retest schedules for Type A, B, and C tests shall be in accordance with the appropriate Section of 10CFR 50 Appendix J. 7. Inspection and reporting of tests shall be in accordance with the appropriate Section of 10CFR 50 Appendix J.

* Refer to note on page 213.

LIMITING CONDITIONS FOR OPERATION

3.10.2 Containment Air Locks

A. Each containment air lock shall be OPERABLE with:

1. Both doors closed except when the air lock is being used for normal entry and exit through the containment, then at least one air lock door shall be closed, and
2.* The air lock leakage rate, when combined with other Type B and C test results, shall be less than or equal to 0.60 L_a at 47 psig (P_a).

APPLICABILITY: Modes 1, 2, 3, 4 and 7

ACTION:

a.) With one containment air lock door inoperable:

1. Maintain at least the OPERABLE air lock door closed and either restore the inoperable air lock door to OPERABLE status within 24 hours or lock the OPERABLE air lock door closed.
2. Operation may continue until performance of the next required overall air lock leakage test provided that the OPERABLE air lock door is verified locked closed at least once per 31 days,
3. Otherwise be in at least MODE 3 within the next 6 hours and MODE 5 within the following 30 hours.

* Refer to note on page 213.

SURVEILLANCE REQUIREMENT

4.10.2 Containment Air Locks

A. Each air lock shall be demonstrated OPERABLE:

1. Within 72 hours following each opening (except when the air lock is being used for multiple entries, then at least once per 72 hours);
   a. Verify that the leakage rate from the air lock door seals is less than or equal to 1.0 SCFH at a test pressure (P_{tr}) of greater than or equal to 2.5 psig; or verify that the leakage rate from the air lock door seals is less than or equal to 4.75 SCFH at a test pressure (P_t) of greater than or equal to 10.0 psig.

   b. If the air lock door seal test identifies a leakage rate greater than 1.0 SCFH at a test pressure (P_{tr}) of greater than or equal to 2.5 psig or 4.75 SCFH at a test pressure (P_t) of greater than or equal to 10.0 psig, then an overall air lock leakage test shall be performed at a pressure (P_a) of 47 psig or greater. The acceptance criteria shall be as stated in 3.10.2.A.2.

ATTACHMENT C

SUPPORTIVE DOCUMENTATION

- UFSAR page 6.6-3
- UFSAR Table 6.6.5-1 sheet 5
- Penetration 76 Simplified Diagram (Unit 1)
- Penetration 76 Simplified Diagram (Unit 2)
- Penetration 80 Simplified Diagram (Unit 2)

6.6.2.1.4 Class 4 - Missile Protected

Incoming and outgoing lines which penetrate the containment and are connected to closed systems inside the containment and protected from missiles throughout their length are provided with at least one manual isolation valve located outside the containment. Seal water injection is not required for this class of penetration.

6.6.2.1.5 Class 5 - Normally Closed Lines Penetrating the Containment

Lines which penetrate the containment and which can be opened to containment atmosphere, but which are normally closed during reactor operation are provided with two isolation valves in series, either inside or outside the containment. In certain cases a blind flange or closed system outside the containment is utilized as the second barrier in lieu of an isolation valve.

6.6.2.1.6 Class 6 - Special Service

The ventilation purge duct penetrations, the containment access opening, and the fuel transfer tube are special cases.

Each ventilation purge duct penetration is provided with two butterfly valves which are closed automatically upon a containment isolation or a containment high radiation signal. One valve is located inside and one valve is located outside the containment at each penetration.

The equipment access closure is a bolted, gasketed closure which is sealed during reactor operation. The personnel air locks consist of two doors in series with mechanical interlocks to assure that one door is closed at all times. Each air lock door and the equipment closure are provided with double gaskets to permit pressurization between the gaskets by the Penetration Pressurization System.

The fuel transfer tube penetration inside the containment is designed to present a missile protected and pressurized double barrier between the containment atmosphere and the atmosphere outside the containment. The penetration closure is treated in a manner similar to the equipment access hatch. A positive pressure is maintained between these gaskets to complete the double barrier between the containment atmosphere and the inside of the fuel transfer tube. The interior of the fuel transfer tube is not pressurized. Seal water injection is not required for this penetration.

6.6.2.1.7 Class 7 - Lines Required for Post-Accident Service

Lines which are required for post-accident service have power operated valves which are either normally open and must remain open during an accident or are normally closed and must be opened should an accident occur. For such lines a minimum one valve outside the containment is provided for containment isolation when the system is no longer required.

TABLE 6.6.5-1 (Cont'd)

CONTAINMENT ISOLATION AND ISOLATION VALVE SEAL WATER

		INSIDE		OUTSIDE			
Penetration	Line Size	Barrier(s)	Isolation Signal	Barrier(s)	Isola-tion Signal	Penetra-tion Class	IVSW+
Aux FW Pump Steam Line Drain	2"			2 AOV	T	2	A
Heating Water Supply	2"			2 AOV	T	5	A
Heating Water Return	2"			2 AOV	T	5	A
Purification Pump from Refueling Cavity	3"			2 NC Manual valves		5	A
Primary Water to Pressurizer Relief Tank	3"			2 AOV	T	4	A
Steam to Auxiliary Feedwater Pump (3)	6"	Missile Protected		MOV		7	None
Cold Leg Safety Injection	3"	Check Valve		MOV		7	None
Steam Generator Blowdown Sample (3)	3/4"	Missile Protected		AOV	T	4	None
Accumulator Tank Sample	3/8"			2 AOV	T	2	A
Accumulator Nitrogen Supply	1"	Missile Protected & Check Valve		AOV	T	4	None
Loop Fill Header	2"	Check Valve		2 NC Manual valves		5	A
Accumulator Test Line	3/4"	Missile Protected		NC Manual Valve		4	None

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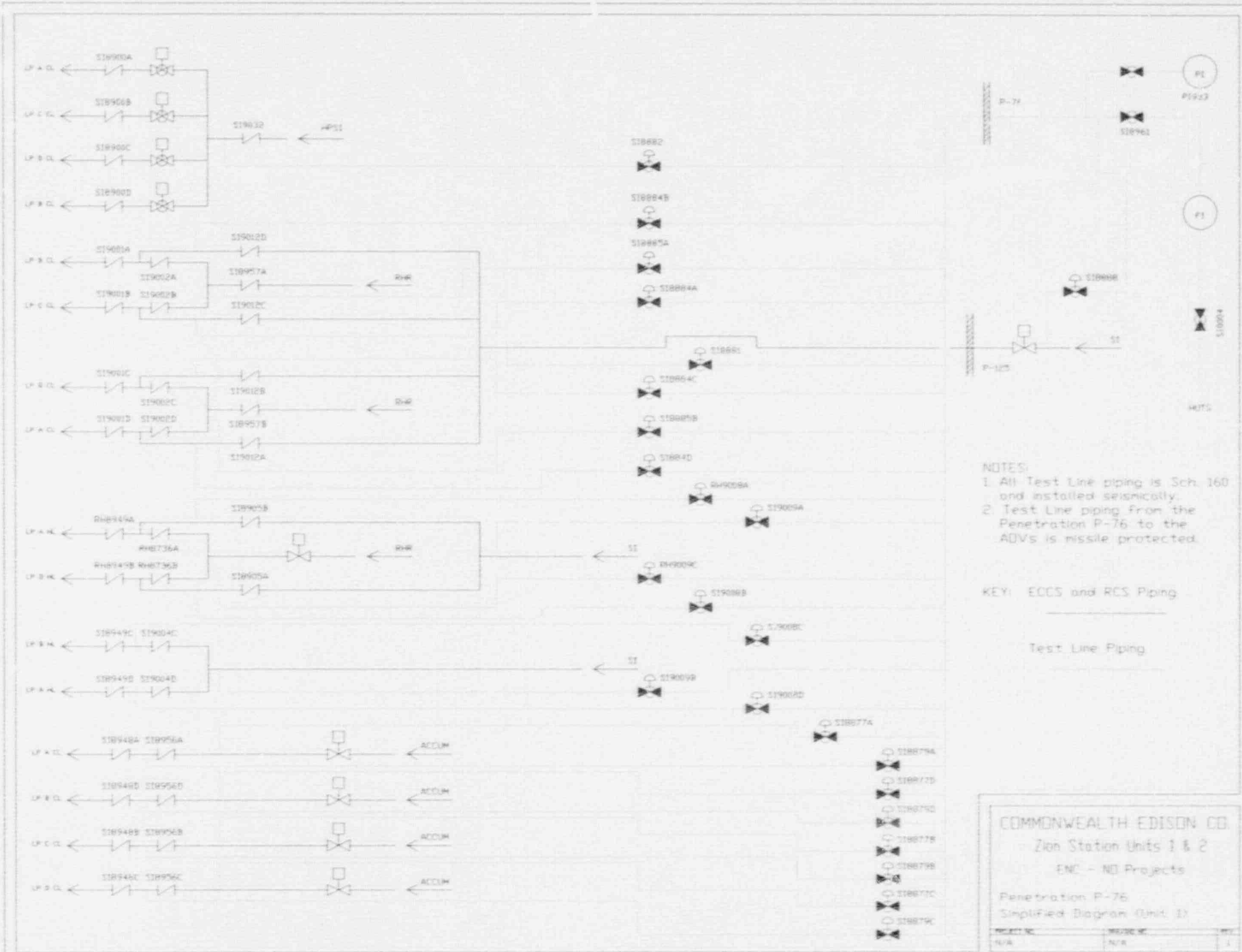
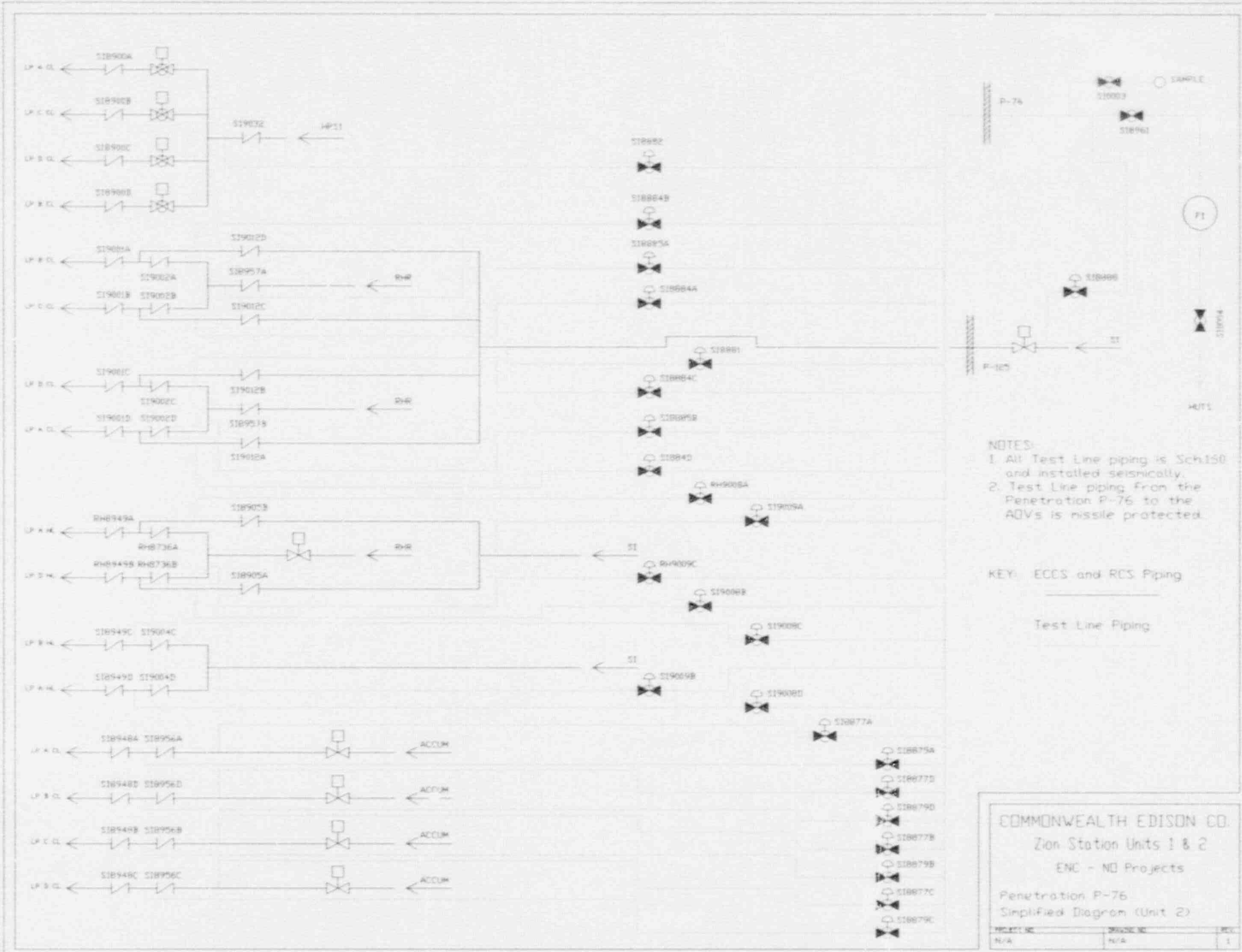
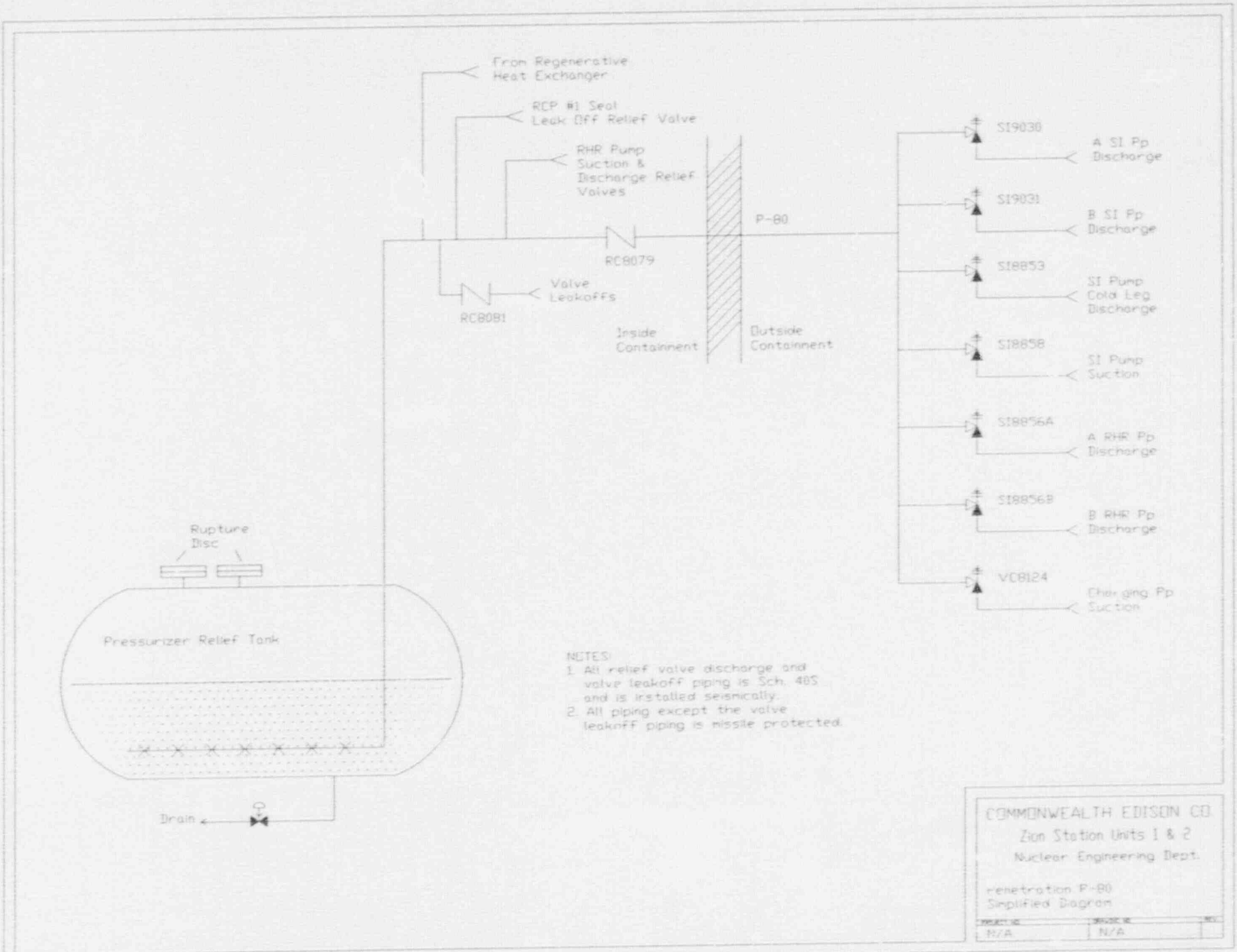

NOTES:
1. All Test Line piping is Sch. 160 and installed seismically.
2. Test Line piping from the Penetration P-76 to the AOVs is missile protected.
KEY: ECCS and RCS Piping
Test Line Piping
COMMONWEALTH EDISON CO.
Zion Station Units 1 & 2
ENC - NO Projects
Penetration P-76
Simplified Diagram (Unit 1)
HPSI
RHR
SI
ACCUM
P-125
SI8882
SI8884B
SI8885A
SI8884A
SI8881
SI8884D
SI8877A


NOTES:
1. All Test Line piping is Sch.150 and installed seismically.
2. Test Line piping from the Penetration P-76 to the AOVs is missile protected.
KEY: ECCS and RCS Piping
Test Line Piping
P-76
P-125
SAMPLE
HPSI
RHR
SI
ACCUM
COMMONWEALTH EDISON CO.
Zion Station Units 1 & 2
ENC - NO Projects
Penetration P-76
Simplified Diagram (Unit 2)
N/A
N/A
1


From Regenerative Heat Exchanger
RCP #1 Seal Leak Off Relief Valve
RHR Pump Suction & Discharge Relief Valves
P-80
RC8079
Valve Leakoffs
RC8081
Inside Containment
Outside Containment
SI9030
A SI Pp Discharge
SI9031
B SI Pp Discharge
SI8853
SI Pump Cold Leg Discharge
SI8858
SI Pump Suction
SI8856A
A RHR Pp Discharge
SI8856B
B RHR Pp Discharge
VC8124
Charging Pp Suction
Rupture Disc
Pressurizer Relief Tank
Drain
NOTES:
1. All relief valve discharge and valve leakoff piping is Sch. 40S and is installed seismically.
2. All piping except the valve leakoff piping is missile protected.
COMMONWEALTH EDISON CO.
Zion Station Units 1 & 2
Nuclear Engineering Dept.
Penetration P-80
Simplified Diagram
N/A
N/A