REACTOR CONTAINMENT

LOCAL LEAKAGE RATE TESTING

1980 OUTAGE

DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT AND POWER COMPANY

BECHTEL CORPORATION

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Approved by Samuel O. Flood Jr. Date 4/22/80

IELP REVIEW AND APPROVAL

Reviewed by [illegible] Date 7/11/80

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Approved by Daniel L. Mineck Date 7-11-80

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1.0 SUMMARY

The scheduled Type B and C Local Leakage Rate Testing of the Duane Arnold Energy Center (DAEC) Unit No. 1 containment was conducted during the period of February 11, 1980 to April 15, 1980 in accordance with the requirements of the DAEC Technical Specifications. All testing was conducted by Bechtel Outage Engineers except for the test of the personnel air lock which was conducted by IELP personnel. Most of the testing employed the Pressurized Flowmeter Test Method by which the flow of makeup air required to maintain a given pressure is measured and recorded as the leakage from the system. The personnel air lock was tested by measuring the pressure decay rate and the inboard Main Steam Isolation Valves (MSIV's) were tested by measuring the outflow from the valve seats while a given pressure was maintained on the reactor vessel. All testing was done at 54 psig, except for testing of the MSIV's which was done a 24 psig and all testing was in accordance with DAEC Surveillance Test Procedures (STP's) 47A003, 47A004 or 47A005, as revised. Extensive revisions were made to STP-47A005 to incorporate design changes, procedural changes, typographical corrections, the addition of the HPCI/RCIC Exhaust Vacuum Breaker valves not previsouly leakage rate tested and the addition of 20 valves not presently included in the DAEC Technical Specifications.

Leakages in excess of maximum allowable limits were recorded for 13 valves (five were too large to measure) and an additional 13 valves had leakages high enough to warrant repairs. Deviation Reports (DR's) 80-26, 80-57 and 80- 84 were issued to report these excessive leakages. The "as found" leakage totals are as follows:

MSIV's (four penetrations)	250,000 SCCM
Other Type C (measurable)	104,000 SCCM
Total Measurable	354,000 SCCM

All valves exhibiting excessive leakages were repaired and the valves satisfactorily retested. After repairs were completed the total leakage rates were as follows:

Type C (Tech Spec)	26,372 SCCM
Type B	169 SCCM
Personnel Air Lock	11,205 SCCM
Total	37,746 SCCM

The acceptance criteria for the Type B and C Tests is that the total measured leakage be less than 0.60 L_a. For DAEC Unit No. 1 this limit corresponds to 220,532 SCCM. The total measured leakage (CLR), after repairs was well below this limit.

In addition to the tests that were required to be performed by the DAEC Technical Specifications (summarized above), 19 other tests were performed to determine the leakages of penetrations proposed to be tested by IELP per RTS-112. The total measured leakage for these tests was 13,142 SCCM.

2.0 REFERENCES

2.1 Title 10 CFR 50 Appendix J.

2.2 Duane Arnold Technical Specification, Section TS 4.7, Plant Containment Systems.

2.3 DAEC STP 47A003: Leak Rate Test - Type B Penetrations Test.

2.4 DAEC STP 47A004: Air Lock Local Leak Rate Test.

2.5 DAEC STP 47A005: Containment Isolation Valve Leak Tightness Test - Type C Penetrations.

2.6 Manufacturer's Standardization Society, Standard Practice Edition 1961 (MSS-SP-61).

3.0 DEFINITIONS

3.1 CLR (SCC/min). The combined leakage rate for all components subject to Type B and C penetration tests.

3.2 L_a (Percent/24 hr.). The design basis accident leakage rate at the calculated peak containment internal pressure defined in the Technical Specifications. (For DAEC L_a equals 2% per day at 54 psig or 367,553 SCCM).

3.3 SCCM. Cubic centimeters of air or nitrogen at standard temperature and pressure per minute.

4.0 ACCEPTANCE CRITERIA

4.1 The combined leakage rate for all penetrations and valves subject to Type B and C tests shall be less than 0.60 L_a. For DAEC Unit No. 1 0.60 L_a equals 220,532 SCCM.

4.2 The absolute maximum leakage rate for any single penetration will be 5% of L_a (18,378 SCCM).

4.3 The leakage from any one MSIV shall not exceed 11.5 SCF/hr (5427 SCCM) at an initial test pressure of 24 psig.

4.4 Since the containment isolation valves were procured in accordance with the manufacturer's standardization society, Standard Practice Edition 1961 (MSS-SP-61), which specifies a maximum permissible leakage rate of less than 0.1 SCFH (50 cc/min.) per inch of nominal diameter as manufactured, this specification is used as the basis for calculating the desired leakage rate for each containment isolation valve.

5.0 EQUIPMENT

5.1 Local Leakage Rate Testing (LLRT) Units

5.1.1 Most of the leakage rate testing employed one of two LLRT units. These portable units are constructed of 3/8" stainless steel and plastic tubing fitted with a pressure regulator, pressure gage, two or three flow instruments, a bubbler and various isolation valves. In use, the unit is supplied with either air or nitrogen and connected to the volume to be tested. Leakage rates are determined by measuring the amount of makeup air required to maintain the test pressure. A meter scale reading is read directly from the flowmeters and is converted to SCC/min by using the calibration curve for the flowmeter. See Figure 1 for a diagram of the testing unit.

5.1.2 Leakage from the inboard MSIV's was measured by pressurizing the reactor vessel to 24 psig and measuring the outflow of air which leaked through the seat. For this type of measurement the flow meters were connected directly to the test vent connection with no additional equipment required. This method of leakage measurement was also employed to determine the leakage for one of the non-Tech Spec penetrations because the manual isolation valve which formed the inboard test boundary was leaking excessively.

5.1.3 Testing specified to be performed with water (designated Type "H" in appendix II) was accomplished by using a pressure tank that was pressurized with air at the top and water was taken off from the bottom. A hose connection was provided to refill the tank, as required. Test results were reported as air flow required to maintain the test pressure in the tank.

5.2 Instrument Calibration and Accuracy

The LLRT units are designed to provide measurement of test volume leakage at a high level of accuracy. Instruments were calibrated and checked for accuracy immediately prior to the conduct of the tests.

5.2.1 Pressure Gages

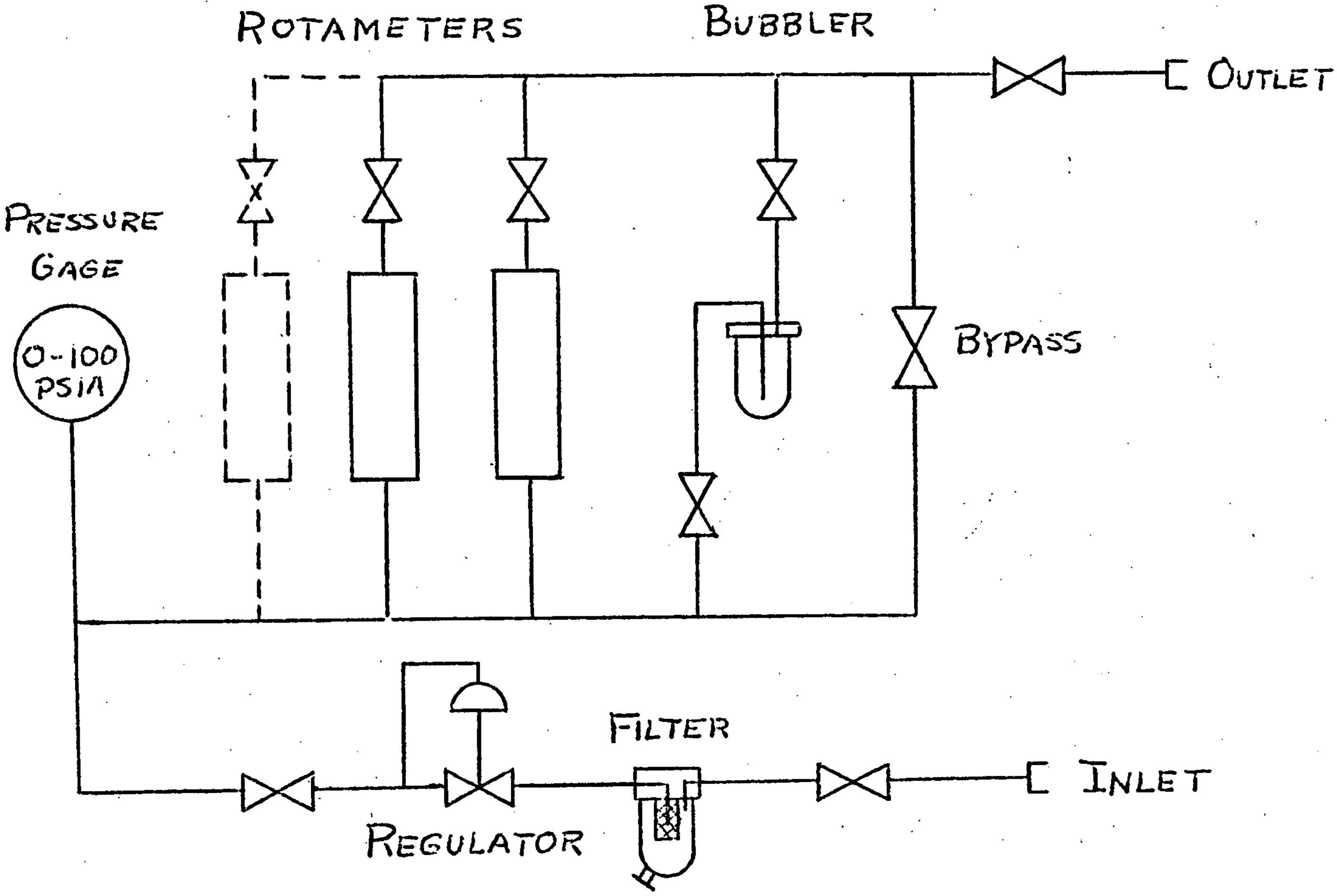
Instrument Nos.	P-129 and P-131
Manufacturer	Heise
Model	CMM
Range	0-100 psia

5.2.2 Flow Indicators (See Table 1)

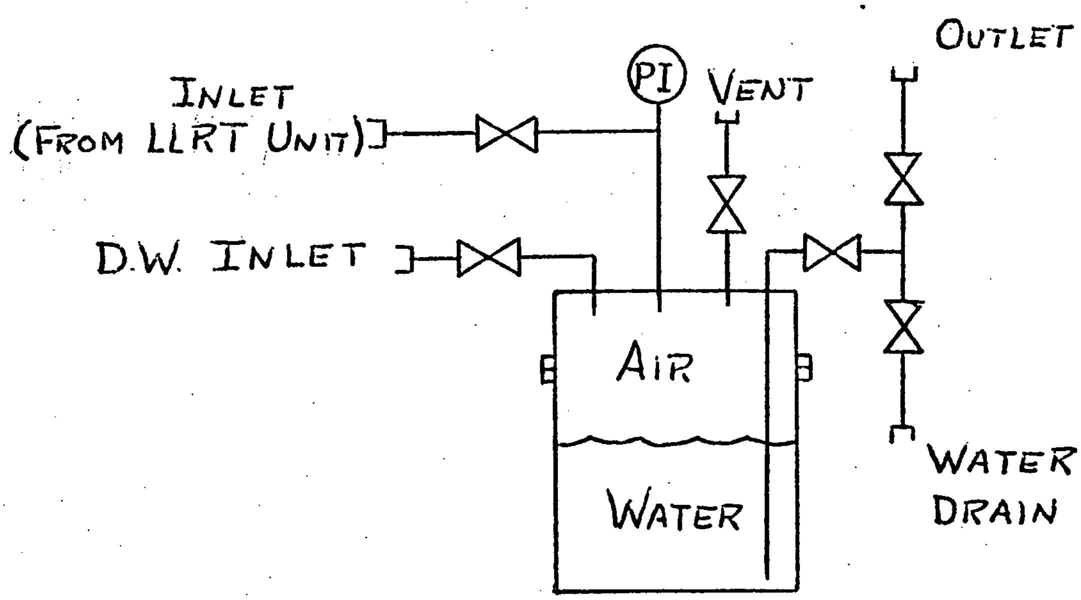
5.3 Test Medium

5.3.1 Type B testing of testable gaskets and flange-o-rings was performed using dry instrument air. Testing of electrical penetration canisters and piping expansion bellows was performed using bottled nitrogen.

FIGURE 1



LOCAL LEAKAGE RATE TESTING UNIT



WATER TEST UNIT

TABLE 1

Flowmeter Calibration Data

Instrument No.	Manufacturer	Tube No.	Meter Calibrated Range (SCCM) 14.7 psia, 70°F	24 psig, 70°F	54 psig, 70°F
P-133	Brooks	R-2-25-D	85-810	210-1488	371-2109
P-134	Brooks	R-2-25-D	81-810	208-1466	352-2086
P-135	Brooks	R-2-25-B	248-2935	575-5176	851-7228
P-138	Brooks	R-2-15-AAA	6.2-50.9	15.3-122.4	24.5-205.4
P-139	Brooks	R-2-15-AAA	5.8-47.2	14.4-118.8	24.7-201.7
P-200	Fischer & Porter	1/4-19-G-10	8.4-17919	1873-30375	2759-41198
P-202	Fischer & Porter	1/4-19-G-10	892-17719	2023-29977	2912-40538
DAEC-A	Fischer & Porter	1/4-10-G-10	462-12156	----------	1880-27827
DAEC-B	Fischer & Porter	1/4-10-G-10	457-12134	----------	1868-27826

Flowmeter all have an accuracy of ±1% FS and were all calibrated by Homer R. Dulin Co.; Long Beach, California

5.3.2 Most of the Type C testing was performed using dry instrument air. MSIV testing was performed using service air. Penetrations specified to be done with water were performed using instrument or service air to pressurize the water. Demineralized water was used to fill the test volumes.

6.0 RESULTS DESCRIPTION

6.1 Type B Testing:

Type B testing began on February 14, 1980 with testing of the expansion bellows on Main Steam penetration 7B and ended on April 15, 1980 with the retest of the north torus access hatch (penetration N-200B) following its being opened and reinstalled for unscheduled repairs inside the torus. Testing was performed in accordance with DAEC STP-47A003 and STP 47A004. The type B penetrations are divided into five categories. The categories and the final leakage results for each is as follows:

Personnel Airlock	11,205 SCCM
Testable Gaskets	55 SCCM
Electrical Canisters	25 SCCM
Flange-O-Rings	16 SCCM
Expansion Bellows	73 SCCM
Total	11,374 SCCM

Very few problems were encountered during the Type B testing. Excessive leakage was found on only two items: the flange-o-rings on CV-4302 and the testable gaskets on torus construction drain N-213B. In both cases the excessive leakage was caused by damage to o-rings which occured during replacement of flanges as a result of outage work. The o-rings were replaced and both penetrations successfully retested. Only one electrical canister (X-104D) indicated any leakage at all and it was very small. One expansion bellows (N-201B) indicated a leakage rate approximately twice that of the next largest rate, but was still quite small (25 SCCM). One flange-o-ring indicate a leakage rate of 11 SCCM whereas the others were all less than 1 SCCM. In all three cases the exact point of leakage was not isolated. One expansion bellows (X-15) had water of unknown origin in it. The bellows was blown dry and purged with nitrogen. The bellows didn't exhibit any unusual leakage.

Revision 2 of STP 47A003 was initiated to add the torus construction drain penetrations (N-213A and N-213B) to this procedure for periodic Type B testing in accordance with RTS-112 and to make other minor corrections and changes.

6.2 Type C Testing

6.2.1 Technical Specifications Testing

Type C testing on valves required to be tested by the DAEC Technical Specifications began on February 11, 1980 with testing of the MSIV's and ended on April 13, 1980 with testing of the nitrogen makeup isolation valves. Testing was performed in accordance with DAEC STP-47A005. The tests in this category may be subdivided into tests done with water and tests done with air. The final leakage results for each is as follows:

Air Tested Valves	25,276 SCCM
Water Tested Valves	1,096 SCCM
Total	26,372 SCCM

Difficulties requiring repair action other than simply tightening packing were encountered with 26 valves of the 96 tested. Table 2 lists the valves which were repaired and summarizes the information concerning the repairs and the valve leakages. Two generic operator problems were confronted during the testing. The first was sticky and hesitant operation experienced on several Well Water Cooling and Drywell sump discharge valves. The most prominent occurrence in this category was with CV-5703A which would not open when operation was first attempted. This valve is used for back washing the Well Water Cooling system in the Drywell and normally remains in the closed position except for testing during refueling outages. Apparently the combination of no lubrication in the operator cylinder and the long periods between operation have led to a corrosion build up in the cylinder. The other operators in this category worked satisfactorily, but were oiled to improve their operation. These symptoms have occurred before and the temporary fix has been to squirt oil into the operator cylinders on these valves. As explained by DAEC maintenance personnel the operators for these valves should have lubricators installed in the air lines to the operators. The second was a failure to close completely experienced on CV-4309 and CV-4310. These valves both have Kieley & Mueller, Inc. (KMI) operators. Investigation of these valves revealed that stem packing resistence was keeping the valves from closing completely. Cleaning the stems, adjusting the spring tension for maximum closing force and repacking the valves with graphite packing lubricated with silicon grease minimized this problem and permitted these valves to operate satisfactorily. Both of these problem areas have been discussed with DAEC personnel and are being addressed by their engineering department.

TABLE 2

Valve Repair Summary

Valve No.	Penetration No.	Service	Leakage As Found	Leakage After Repair	Problem/ Repair Description
CV-4412	X-7A	MSIV	10,500	4150	1, 2
CV-4413	X-7A	MSIV	56,000	4100	1, 2
CV-4416	X-7B	MSIV	36,000	2320	1
CV-4418	X-7C	MSIV	9,100	25	1, 2
CV-4419	X-7C	MSIV	78,000	1320	1, 2
CV-4420	X-7D	MSIV	7,750	25	1, 2
CV-4421	X-7D	MSIV	80,800	2950	1
V-14-3	X-9A	Feedwater	25	170	8, 2
V-14-1	X-9B	Feedwater	11,400	352	8, 2
CV-2410	X-10	RCIC Cond.	10,800	352	1, 2
MO-2401	X-10	RCIC Steam	30,000	183	1, 2
CV-2211	X-11	HPCI Cond.	9,100	510	7
CV-3704	X-19	Drywell Sump	8,400	132	2, 11
CV-5718B	X-23B	Well Water Cool	1,920	1120	11
CV-5703A	X-24A	Well Water Cool	8,300	29	11
CV-5704A	X-24A	Well Water Cool	8,300	29	2
CV-4303	X-25	Purge Outlet	*	109	3, 4
CV-4310	X-25	Purge Outlet	2,000	352	1, 6
CV-4306	X-26 & N220	Purge Supply	*	145	3, 4
CV-4311	X-26 & N220	N_2 Makeup	*	2850	2
CV-4308	N-220	Purge Supply	*	146	3, 5
CV-4300	N-205	Purge Outlet	10,000	875	3
CV-4309	N-205	Purge Outlet	3,300	95	1, 6
CV-4304	N-231	Vacuum Breaker	1,500	42	3
CV-4305	N-231	Vacuum Breaker	35	35	10
[illegible]	N-231	Vacuum Breaker	*	35	9

TABLE 2 (Con't)

1. Valve packing replaced or added to.
2. Valve disassembled and seating surfaces lapped.
3. Valve stem o-rings greased with silicon grease.
4. Valve closed position adjusted for tight shut-off.
5. Seal air valve not opening to supply seal air in valve closed position. Valve adjusted.
6. Valve operator adjusted for tighter shut off.
7. New valve installed.
8. Feedwater valves replaced per Design Change.
9. New seal gasket installed.
10. New seal ring installed because of air leak into test volume causing "negative" leak rate.
11. Oil squirted into operator cylinder. Operator sticking.

*Leakage beyond measurement capability of equipment.

6.2.2 Non-Technical Specification Testing

IELP has proposed changes to the DAEC Technical Specifications in document RTS-112 sent to the NRC in August 1978. To date these changes have not been accepted, but the Type C testing program was enlarged and revised to include the intent of both the current and proposed Technical Specifications. Testing on these additional valves began on April 2, 1980 with testing of the Containment Atmosphere Dilution (CAD) Supply valves and ended on April 14, 1980 with testing of the High Pressure Coolant Injection (HPCI) turbine exhaust valves. Testing was performed in accordance with approved revisions to DAEC STP-47A005. The tests in this category may also be subdivided into tests done with water and tests done with air. The final leakage results for each is as follows:

Air Tested Valves	5,045
Water Tested Valves	8,097
Total	13,142

The only significant difficulties experienced with the valves in this category were with three check valves that hadn't been previously leakage rate tested. Two of these valves were 1½" spring return plug check valves in the Standby Liquid Control (SBLC) System. The third was a 16" swing check in the HPCI turbine exhaust which would not seat initially. Disassembly of the worse SBLC valve revealed that the seat was distorted (most likely from welding during initial installation). This valve was hand lapped and reassembled, reducing its leakage from approximately 28,000 SCCM to 1450 SCCM. Since there is presently no Tech Spec requirement to include these valves in the Type C testing, DAEC elected not to perform any additional repairs on these valves.

6.2.3 Revision 13 of DAEC STP 47A005 was initiated to include testing of the HPCI/RCIC Exhaust Vacuum Breaker valves, to include the additional testing proposed by RTS-112, to include testing changes resulting from design modifications completed during the 1980 outage and to clarify, elaborate and improve the procedure.

TABLE 1

TYPE B LOCAL LEAK RATE MEASUREMENT DATA SUMMARY SHEET

Procedure #47A003(TG)

Pen. #	Description	As Found Leakage SCCM	Remarks
1	Personnel Lock Equipment Door	—	Tested per STP 47A004
1	Personnel Lock Doors & Penetrations	—	Tested per STP 47A004
2	Equipment Access	0	
4	Head Access	4	
6	CRD Removal Hatch	6	
35A	TIP Drives	0	
35B	TIP Drives	1	
35C	TIP Drives	1	
35D	TIP Drives	2	
53	Spare	0	
--	Drywell Head	20	
58A	Stabilizer Access Ports	1	
58B	Stabilizer Access Ports	3	
58C	Stabilizer Access Ports	0	
58D	Stabilizer Access Ports	2	
58E	Stabilizer Access Ports	3	
58F	Stabilizer Access Ports	1	
58G	Stabilizer Access Ports	2	
58H	Stabilizer Access Ports	2	
200A	Access Hatch	1	
200B	Access Hatch	1	
213A	Construction Drain	1	
213B	Construction Drain	4	

Procedure #47A003(EC)

Pen. #	Description	As Found Leakage SCCM	Remarks
100B	Neutron Monitoring	0	
100C	Neutron Monitoring	0	
100E	Neutron Monitoring	0	
100F	Neutron Monitoring	0	
100G	RPV Vibration Monitoring	0	
101A	Recirc Pump Power	0	
101C	Recirc Pump Power	0	
103	Thermocouples	0	
104A	CRD Rod Position Ind	0	
104B	CRD Rod Position Ind	0	
104C	CRD Rod Position Ind	0	
104D	CRD Rod Position Ind	25	Low residual pressure &c
105B	Power & Control	0	
105D	Power & Control	0	
106A	Power & Control	0	EC found depressurized
106C	Power & Control	0	Isolation valve found ope
230B	Vacuum Breakers Electrical Cables	0	

Procedure #47A003(FOR)

Pen. #	Description	As Found Leakage SCCM	Remarks
25*	Drywell Purge Outlet CV-4302	1	After replacement-MAR 28
26	Drywell & Torus Purge Supply CV-4307	1	
220	Drywell & Torus Purge Supply CV-4308	11	
205	Torus Purge Outlet CV-4300	1	
231	Torus Vacuum Breakers CV-4304,	1	
	CV-4305	1	

* Test on Inboard flange only of designated valves

Procedure #47A003(EB)

Pen. #	Description	As Found Leakage SCCM	Remarks
7A	Steam to Turbine	2	
7B	Steam to Turbine	1	
7C	Steam to Turbine	0	
7D	Steam to Turbine	0	
9A	RPV Feedwater	0	
9B	RPV Feedwater	2	
10	Steam to RCIC Turbine	2	
11	Steam to HPCI Turbine	0	
12	Shutdown Pump Supply RHR	2	
13A	RHR Pump Discharge	2	
13B	RHR Pump Discharge	5	
15	RWCU Supply	12	Water in bellows
16A	Core Spray Pump Discharge	0	
16B	Core Spray Pump Discharge	1	Very slight packing leak nc on test manifold E valve
17	RPV Head Spray	0	
201A	Vent Line	6	
201B	Vent Line	25	
201C	Vent Line	13	
201D	Vent Line	0	
201E	Vent Line	0	
201F	Vent Line	0	
201G	Vent Line	0	
201H	Vent Line	0	

SUBTOTAL TYPE B TESTS = 169 scc/min

= ____ scc/min x $\frac{14.7}{68.7}$ = ____ cc/mi @54 p

TABLE I

PENETRATION LEAKAGE STATUS FOR TYPE C TESTS

Pen. No.	Description	Type	Desired	SCCM Inside	SCCM Outside	SCCM Maximum
7-A	Main Steam	C	1000	4150 CV-4412	4100 CV-4413	4150
7-B	Main Steam	C	1000	5000 CV-4415	2320 CV-4416	5000
7-C	Main Steam	C	1000	25 CV-4418	1320 CV-4419	1320
7-D	Main Steam	C	1000	25 CV-4420	2950 CV-4421	2950
8	Steam Line Drain	C	150	MO-4423 (480, combined)	MO-4424 (480, combined)	480
9-A	Feedwater	C	800	V-14-3 170	MO-4441, MO-2312, ~~CV-2313~~ 42	170
9-B	Feedwater	C	800	V-14-1 352	MO-4442, ~~V-27-11~~, MO-2740, ~~CV-2513~~, MO-2512 770	770
10	RCIC Cond Rtn	H	50	N/A	CV-2410, CV-2411 —	352
10	RCIC Steam	C	200	MO-2400 (183, combined)	MO-2401 (183, combined)	183
11	HPCI Steam	C	500	MO-2238 (372, combined)	MO-2239 (372, combined)	372
11	HPCI Cond Rtn	H	50	None	CV-2211, CV-2212 —	510
12	RHR Supply	H	900	MO-1908 (74, combined)	MO-1909 (74, combined)	74
15	RX Water Cleanup	C	200	MO-2700 352	MO-2701 100	352

TABLE I - (continued)

PENETRATION LEAKAGE STATUS FOR TYPE C TESTS

Pen. No.	Description	Type	Desired	SCCM Inside	SCCM Outside	Maximum
16-A	Core Spray	H	400	None	MO-2117 } MO-2115 } —	91
16-B	Core Spray	H	400	None	MO-2135 } MO-2137 } —	28
19	Drywell Drain	C	150	None	CV-3704 } CV-3705 } —	132
22 & 229-A	Cont Compressor	C	100	CV-4371B 500	CV-4371C 35 CV-4371A 25	500
23-A	Well Water Supply	C	200	None	CV-5718A } CV-5719A } —	55
23-B	Well Water Supply	C	200	None	CV-5718B } CV-5719B } —	1120
24-A	Well Water Rtn	C	200	None	CV-5703A } CV-5704A } —	29
24-B	Well Water Rtn	C	200	None	CV-5703B } CV-5704B } —	830
25	Drywell Purge	C	900	None	CV-4302 } CV-4303 } 109 CV-4310 352	352
26 & 220	Drywell & Torus Purge	C	900	None	CV-4307 } CV-4308 } CV-4306 } —	145

TABLE I - (continued)

PENETRATION LEAKAGE STATUS FOR TYPE C TESTS

				SCCM		
Pen. No.	Description	Type	Desired	Inside	Outside	Maximum
26 & 220	Drywell & Torus N_2 Makeup	C	900	None	CV-4311 / CV-4312 / CV-4313 } —	2850
32-D	Cont Compressor	C	100	None	CV-4378A 125 / CV-4378B 100	125
32-E	Recirc Pump A Seal	C	50	V-17-96 122	CV-1804B 750	750
32-F	Recirc Pump B Seal	C	50	V-17-83 850	CV-1804A 25	850
36	CRD Rtn	H	150	V-17-53 41	V-17-52 27	41
41	Recirc Loop Sample	C	50	CV-4639 (25 bracketed with CV-4640)	CV-4640	25
46-E	O_2 Analyzer	C	50	None	SV-8105B 0 / SV-8106B 0	0
48	Drywell Drain Discharge	C	150	None	CV-3728 / CV-3729 } —	25
50-B	O_2 Analyzer	C	50	None	SV-8101A 1 / SV-8102A 0	1
50-D	O_2 Analyzer	C	50	None	SV-8105A 4 / SV-8106A 3	4
50-E	O_2 Analyzer	C	50	None	SV-8103A 1 / SV-8104A 1	1
54	Closed Cooling Water Ret	C	200	None	MO-4841A	65

TABLE I - (continued)

PENETRATION LEAKAGE STATUS FOR TYPE C TESTS

				SCCM		
Pen. No.	Description	Type	Desired	Inside	Outside	Maximum
55	Closed Cooling Water Supply	C	200	None	MO-4841B	25
56-C	O_2 Analyzer	C	50	None	SV-8101B 4 SV-8102B 1	4
56-D	O_2 Analyzer	C	50	None	SV-8103B 25 SV-8104B 25	25
205	Torus Purge Out	C	900	None	CV-4300 } 875 CV-4301 } CV-4309 95	875
219	HPCI/RCIC Exh. Vac. Breakers	C	100	None	MO-2290A 580 MO-2290B 580	580
229-B	O_2 Analyzer	C	50	None	SV-8107A 25 SV-8108A 30	30
229-C	O_2 Analyzer	C	50	None	SV-8109A 25 SV-8110A 25	25
229-F	O_2 Analyzer	C	50	None	SV-8109B 4 SV-8110B 4	4
229-G	O_2 Analyzer	C	50	None	SV-8107B 25 SV-8108B 25	25
231	Vacuum Breaker	C	1000	None	CV-4304 } V-43-169 }	42
231	Vacuum Breaker	C	1000	None	CV-4305 } V-43-168 }	35

Desired 16,700 SCC/min.

Table 1 (continued)

Penetration Leakage Status For Type C Tests

(Non-Tech Spec Valves Tested Per RTS-112)*

Pen No.	Description	Type	Desired	SCCM Inside	SCCM Outside	Maxim
39A	CAD Supply	C	100	None	SV-4332A 81**	
					SV-4332B 81**	81
39B	CAD Supply	C	100	None	SV-4331A 51	
					SV-4331B 47	51
211A	CAD Supply	C	100	None	SV-4333A 25	
					SV-4333B 25	25
211B	CAD Supply	C	100	None	SV-4334A 25	
					SV-4334B 25	25
20	Demin Water	C	50	V-09-111 (25)	V-09-65	25
21	Service Air	C	50	Blind Flange (25)	V-30-287	25
212	RCIC Turbine Exh.	H	500	None	V-24-23	129
214	HPCI Turbine Exh.	H	800	None	V-22-16	610[illegible]
222	HPCI Condensate	H	100	None	V-22-21	186[illegible]
35	TIP Valves	C	200	None	(four)	36
42	Standby Liquid Control	C	75	V-26-9 4450	V-26-8 1450	44[illegible]
	Desired Total 2175 SCC/min				TOTAL	13,14

*Results not to be included in "Test Completion Criteria", paragraph 5.5.

** Leakage determined by measuring air outflow thru the test vent.