PART II - Local Leakage Rate Tests
A. Type B Test Results

Local leakage rate testing for the containment electrical penetrations has been performed twice since the last type A test report, once in the late spring of 1977 and again in the fall of 1978. The results were acceptable for both series of tests.

The local leakage rate testing for the containment electrical penetrations checks the leakage through the penetration O-ring seals on the bolt-on flanges and the leakage from the penetration canisters. The total leakage from the electrical penetrations is the sum of the leakage from the O-ring seals and the canister leakages. A summary sheet is included for each series of electrical penetration tests.

Other type B local leakage rate tests measure the leakage through the personnel airlock, the equipment hatch and the fuel transfer tube. These results are noted on the test results leakage summary after each section of electrical penetration leakages.

It should be noted that there are two leakage tests (OST 1.47.1 and OST 1.47.83) performed on the airlock. OST 1.47.1, which is a type C leakage test, pressurizes the door seals and uses a bubble flow detector to check for leaks. If the seals are leaking, this device will detect this by bubbling. This test is performed after each opening, or if the airlock is being used for multiple entries, then at least once every three days. Since the last type A report, there have been approximately six occurrences where seal problems were found. By either lubricating and/or replacing the old seals, the leaks were stopped as subsequent retesting proved. In OST 1.47.83, which is a type B leakage test, the total airlock leakage rate is measured. The results from this test can be found on the test results leakage summary, after each tabulated section of the individual electrical penetration leakages.

PART II - Local Leakage Rate Tests
A. Type B Test Results Summary

Electrical penetration type B tests completed 6/26/77

Penetration Number	O-Ring Seal Leakage (SCF/D)	Canister Leakage (SCF/D)	Total Penetration Leakage (SCF/D)
1 - B	0.010	0	0.010
1 - D	0.009	0	0.009
1 - F	Blank	Blank	0.000
2 - B	0.007	0	0.007
2 - D	0.004	0	0.004
2 - F	0.005	0	0.005
3 - A	0.004	0	0.004
3 - B	0.006	0	0.006
3 - C	0.008	0	0.008
3 - D	0.008	0	0.008
3 - E	0.011	0	0.011
3 - F	0.106	0	0.106
3 - G	Blank	Blank	0.000
4 - A	0.004	0	0.004
4 - B	0.003	0.043	0.046
4 - C	0.008	0	0.008
4 - D	0.004	0	0.004
4 - E	0.004	0	0.004
4 - F	0.006	0	0.006
4 - G	0.005	0	0.005
Totals Page 1	0.212	0.043	0.255

PART II - Local Leakage Rate Tests

A. Type B Test Results Summary (continued)

Electrical penetration type B tests completed 6/26/77

Penetration Number	O-Ring Seal Leakage (SCF/D)	Canister Leakage (SCF/D)	Total Penetration Leakage (SCF/D)
5 - A	0.005	0.043	0.048
5 - B	0.006	0	0.006
5 - C	0.007	0	0.007
5 - D	0.005	0	0.005
5 - E	0.007	0	0.007
5 - F	0.007	0	0.007
5 - G	0.006	0.130	0.136
6 - A	0.003	0	0.003
6 - B	Blank	Blank	0.000
6 - C	0.003	0	0.003
6 - D	0.003	0	0.003
6 - E	0.004	0	0.004
6 - F	0.004	0	0.004
6 - G	0.005	0	0.005
7 - A	Blank	Blank	0.000
7 - B	0.003	0	0.003
7 - C	0.003	0	0.003
7 - D	0.005	0	0.005
7 - E	0.004	0	0.004
7 - F	0.004	0	0.004
7 - G	Blank	Blank	0.000
Totals Page 2	0.084	0.173	0.257

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Part II - Local Leakage Rate Tests

A. Type B Test Results Summary

Electrical penetration type B tests completed 6/26/ 77

Penetration Number	O-Ring Seal Leakage (SCF/D)	Canister Leakage (SCF/D)	Total Penetration Leakage (SCF/D)
8 - A	0.004	0	0.004
8 - B	0.005	0	0.005
8 - C	0.006	0	0.006
8 - D	0.011	0	0.011
8 - E	0.004	0	0.004
8 - F	Blank	Blank	0.000
8 - G	0.014	0	0.014
9 - A	0.005	0	0.005
9 - B	0.005	0	0.005
9 - C	0.003	0	0.003
9 - D	0.010	0	0.010
9 - E	0.005	0	0.005
9 - F	0.017	0	0.017
9 - G	0.009	0	0.009
10 - A	0.006	0	0.006
10 - B	0.003	0.217	0.220
10 - C	0.002	0	0.002
10 - D	0.004	0	0.004
10 - E	0.002	0.043	0.045
10 - F	0.003	0	0.003
10 - G	0.045	0	0.045
Total Page 3	0.163	0.260	0.423

Part II - Local Leakage Rate Tests

A. Type B Test Results Summary

Electrical penetration type B tests completed 6/26/77

Penetration Number	O-Ring Seal Leakage (SCF/D)	Canister Leakage (SCF/D)	Total Penetration Leakage (SCF/D)
11 - A	0.006	0	0.006
11 - B	0.006	0	0.006
11 - C	Blank	Blank	0.000
11 - D	0.006	0	0.006
11 - E	0.024	0	0.024
11 - F	0.014	0	0.014
11 - G	0.006	0	0.006
12 - A	0.008	0	0.008
12 - B	0.008	0	0.008
12 - C	0.009	0	0.009
12 - D	0.005	0	0.005
12 - E	0.007	0	0.007
12 - F	0.008	0	0.008
12 - G	0.003	0	0.003
13 - A	Blank	Blank	0.000
13 - B	Blank	Blank	0.000
13 - C	0.008	0	0.008
13 - D	Blank	Blank	0.000
13 - E	0.005	0	0.005
13 - F	0.006	0	0.006
13 - G	0.008	0	0.008
Total Page 4	0.137	0.000	0.137

Part II - Local Leakage Rate Tests

A. Type B Test Results Summary

Electrical penetration type B tests completed 6/26/77

Penetration Number	O-Ring Seal Leakage (SCF/D)	Canister Leakage (SCF/D)	Total Penetration Leakage (SCF/D)
14 - A	0.004	0.043	0.047
14 - B	0.004	0	0.004
14 - C	0.003	0	0.003
14 - D	0.004	0	0.004
14 - E	0.008	0	0.008
14 - F	0.007	0	0.007
14 - G	0.006	0	0.006
15 - A	0.004	0	0.004
15 - B	0.004	0	0.004
15 - C	0.003	0	0.003
15 - D	0.006	0	0.006
15 - E	0.004	0	0.004
15 - F	0.007	0.130	0.137
15 - G	0.004	0	0.004
16 - A	0.003	0	0.003
16 - B	0.006	0	0.006
16 - C	0.004	0	0.004
16 - D	0.002	0	0.002
16 - E	0.003	0	0.003
16 - F	0.004	0	0.004
16 - G	Blank	Blank	0.000
Total Page 5	0.090	0.173	0.263

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Part II - Local Leakage Rate Tests

A. Type B Test Results Summary

Electrical penetration type B tests completed 6/26/77

Penetration Number	O-Ring Seal Leakage (SCF/D)	Canister Leakage (SCF/D)	Total Penetration Leakage (SCF/D)
17 - B	0.003	0	0.003
17 - D	Blank	Blank	0.000
17 - F	Blank	Blank	0.000
18 - B	0.003	0	0.003
18 - D	0.004	0	0.004
18 - F	Blank	Blank	0.000
111	0.006	0	0.006
Total Page 6	0.016	0.000	0.016

Total, page 1	0.255 SCF/D
Total, page 2	0.257 SCF/D
Total, page 3	0.423 SCF/D
Total, page 4	0.137 SCF/D
Total, page 5	0.263 SCF/D
Total, page 6	0.016 SCF/D
TOTAL	1.351 SCF/D

$$(1.351 \text{ SCF/D}) \frac{(0.1\% \text{ leakage})}{(6489.8 \text{ SCF})} = \underline{0.000021\% \text{ Leakage/day}}$$

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PART II - Local Leakage Rate Tests
A. Type B Test Results

Type B Tests	
Electrical penetrations (6/26/77)	1.351 SCF/D
*Personnel airlock (3/14/77)	0.000 SCF/D
Equipment hatch (3/7/76)	0.000 SCF/D
Fuel transfer tube (3/12/76)	11.800 SCF/D
Type C Tests (8/7/75)	893.510 SCF/D
Total, Local Leakage Rate Tests	906.661 SCF/D

$$(906.661 \text{ SCF/D}) \quad \frac{(0.1\% \text{ leakage})}{(6489.8 \text{ SCF})} = \quad 0.0140 \% \text{ leakage/day}$$

*Additional results of personnel airlock tests performed prior to 3/14/77:

Personnel airlock (2/15/76)	101.9 SCF/D
Personnel airlock (3/13/76)	0.0 SCF/D
Personnel airlock (9/11/76)	5.33 SCF/D
Personnel airlock (10/24/76)	8.46 SCF/D

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PART II - Local Leakage Rate Tests
A. Type B Test Results Summary

Type B Test Results	
Electrical penetrations (10/30/78)	8.251 SCF/D
*Personnel airlock (10/30/78)	0.000 SCF/D
Equipment hatch (11/15/78)	1.617 SCF/D
Fuel transfer tube (11/1/78)	8.900 SCF/D
Type C Tests (11/18/78)	1693.358 SCF/D
Total, Local Leakage Rate Tests	1712.126 SCF/D

$$(1712.126 \text{ SCF/D}) \frac{(0.1\% \text{ leakage})}{(6489.80 \text{ SCF})} = 0.0264\% \text{ leakage/day}$$

*Additional results of personnel airlock tests performed prior to 10/30/78:

Personnal airlock (10/22/77)	71.76 SCF/D
Personnel airlock (4/ 5/78)	2.52 SCF/D

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Part II - Local Leakage Rate Tests
B. Type C Test Results (continued)

Type B Tests	
Electrical penetration (8/2/75)	0.000 SCF/D
Personnel airlock (10/24/76)	8.460 SCF/D
Equipment hatch (3/7/76)	0.000 SCF/D
Fuel transfer tube (3/12/76)	11.800 SCF/D
Type C Tests (as of 2/28/77)	2608.354 SCF/D
Total, Local Leakage Rate Tests	2628.614 SCF/D

$$(2628.614 \text{ SCF/D}) \frac{(0.1\% \text{ leakage})}{(6489.80 \text{ SCF})} = \underline{0.0405 \text{ \% leakage/day}}$$

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Part II - Local Leakage Rate Tests
B. Type C Test Results (continued)

Type B Test Results

Electrical penetrations (10/30/78)	8.251 SCF/D
Personnel Airlock (10/30/78)	0.000 SCF/D
Equipment hatch (11/15/78)	1.617 SCF/D
Fuel transfer tube (11/1/78)	8.900 SCF/D
Type C Tests (11/18/78)	1722.186 SCF/F
Total, Local Leakage Rate Tests	1740.954 SCF/D

$$(1740.954 \text{ SCF/D}) \frac{(0.1\% \text{ leakage})}{(6489.80 \text{ SCF})} = 0.0268 \% \text{ leakage/day}$$

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