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Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
May 9, 1975

Mr. James G. Keppler, Regional Director
Directorate of Regulatory Operations-Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

50-237

SUBJECT: REPORT OF ABNORMAL OCCURRENCES, PER SECTION 6.6.A, AND OF PRIMARY CONTAINMENT LEAKAGE PER SECTION 4.7.A.2.e OF THE TECHNICAL SPECIFICATIONS
DRESDEN UNIT 2 END OF CYCLE 3 LOCAL LEAK RATE TEST SUMMARY

References: 1) Regulatory Guide 1.16 Rev. 1 Appendix A

2) Notification of Region III NRC Regulatory Operations: See the table below.

3) Drawing Number: See the table below.

Report Number: See the table below.

5-30-75

50-237
Inquiry

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Report Number	Region III Notification Telephone	Telegram	Drawing Number	Report Date	Occurrence Date
50-237/74-60	Mr. Johnson 11/6/74 @ 1400	Mr. Keppler 11/6/74 @ 1504	M-14		11/5/74
50-237/74-61	Mr. Johnson 11/8/74 @ 1040	Mr. Keppler 11/8/74 @ 1245	M-14		11/7/74
50-237/74-62	Mr. Johnson 11/8/74 @ 1040	Mr. Keppler 11/8/74 @ 1245	M25		11/7/74
50-237/74-63	Mr. Johnson 11/15/74 @ 1600	Mr. Keppler 11/15/74 @1630	M-25		11/8/74
50-237/74-64	Mr. Johnson 11/14/74 @ 1545	Mr. Keppler 11/15/74 @ 0855	M-25		11/11/74
50-237/74-65	Mr.Johnson 11/14/74 @ 1545	Mr. Keppler 11/15/74 @ 0855	M-29		11/13/74
50-237/74-68	Mr. Johnson 11/15/74 @ 1600	Mr. Keppler 11/15/74 @ 1630	M-29		11/14/74
50-237/74-72	Mr. Johnson 11/22/74 @ 1600	Mr. Keppler 11/22/74 @ 1600	B-24 & 26		11/21/74
50-237/74-71	Mr. Knopf 12/2/74 @ 1310	Mr. Keppler 12/2/74 @ 1335	M-51		11/29/74
50-237/74-75	Mr. Johnson 12/12/74 @ 1545	Mr. Keppler 12/16/74 @ 0920	Q-6535A	12/20/74	12/12/74
50-237/74-76	Mr. Johnson 12/13/74 @ 1545	Mr. Keppler 12/16/74 @	B-24 & 26	12/20/74	12/12/74
50-237/74-80	Mr. Johnson 12/24/74 @ 1030	Mr. Keppler 12/24/74 @ 1140	M-12		12/23/74
50-237/75-3	Mr. Johnson 1/21/75 @ 1000	Mr. Keppler 1/21/75 @ 1120	M-26		1/20/75
50-237/75-6	Mr. Johnson 1/23/75 @ 1445	Mr. Keppler 1/23/75 @ 1530	M-29		1/22/75

Facility: Dresden Nuclear Power Station, Morris, Illinois

IDENTIFICATION OF OCCURRENCE

While performing local leak rate tests for Dresden Unit 2 during the recent refueling outage, as per section 4.7.A.2.e of the Technical Specification, the following tests exceeded the maximum allowable limit:

Report Number	Test Volume Boundary	Test Type	System	Max leakage SCFH @ 48 PSIG
50-237/74-60	Valves: 220-57A & 58A	Primary isol valve	Reactor feed piping	29.38
50-237/74-60	220-57A & 62A	Primary isol valve	Reactor Feed Piping	29.38
50-237/74-61	Valves: 220-57B & 58B	Primary isol valve	Reactor Feed Piping	29.38
50-237/74-61	220-57B & 62B	Primary isol valve	Reactor Feed Piping	29.38
50-237/74-62	Valve Flanges: 1601-32D	Double Gasketed	Pressure Suppression	29.38 or combined leakage of 58.763
50-237/74-62	1601-33D	Double Gasketed	Pressure Suppression	29.38 or combined leakage of 58.763
50-237/74-67	Valves: 8502-501, 1601-21, 22, 55,&56	Primary Isol Valve	Pressure Suppression	29.38
50-237/74-64	Valve flanges: 1601-32B	Double Gasketed	Pressure Suppression	29.38 or combined leakage of 58.763
50-237/74-64	Valve flanges: 1601-33C	Double Gasketed	Pressure Suppression	29.38 or combined leakage of 58.763
50-237/74-64	1601-33E	Double Gasketed	Pressure Suppression	29.38 or combined leakage of 58.763
50-237/74-64	1601-33F	Double Gasketed	Pressure Suppression	29.38 or combined leakage of 58.763
50-237/74-65	Valves: 1501-18A & 19A	Primary Isol valve	LPCI	29.38
50-237/74-65	1501-20A & 38A	Primary isol valve	LPCI	29.38

IDENTIFICATION OF OCCURRENCES (cont'd)

Report Number	Test Volume Boundary	Test Type	System	Max leakage SCFH @ 48 PSIG
50-237/74-68	Valves: 1501-18B & 19B	Primary isol vlv	LPCI	29.38
50-237/74-68	1501-20B & 38B	Primary isol vlv	LPCI	29.38
50-237/74-68	1501-27B & 28B	Primary isol vlv	LPCI	29.38
50-237/74-72	Penetration: X-202s	Electrical Pent	Primary Containment	29.38
50-237/74-71	Valves: 2301-45 & 74	Primary isol vlv	HPCI	29.38
50-237/74-75	Penetration: X-105C	Bellows seal	Primary Cont.	29.38
50-237/74-76	Penetration: X-123	Bellows seal	Primary Cont.	29.38
50-237/74-80	Valves: 203-1C & 2C	MSIV	Main steam piping	11.5 @ 25 PSIG
50-237/75-3	Valves: 205-2-7 & blind flange	Primary isol valve	Rx Head Cooling	29.38
50-237/75-6	Valves: 1501-25B & 26B	Primary isol valve	LPCI	29.38

Due to the excessive leakage through the feedwater check valves 220-58A and 220-62A, report number 50-237/74-60 includes the fact that the total through leakage for all penetrations (exluding double gasketed seals) exceeded the Technical Specification limit of 178.29 SCFH at a pressure of 48 PSIG.

CONDITIONS PRIOR TO OCCURRENCE

At the time of each occurrence, Dresden Unit 2 was shutdown for refueling. The position of the reactor mode switch was as follows:

Report Number	Rx Mode Switch Position	Report Number	Rx Mode Switch Position
50-237/74-60	Shutdown	50-237/74-72	Refuel
50-237/74-61	Shutdown	50-237/74-71	Refuel
50-237/74-62	Shutdown	50-237/74-75	Refuel
50-237/74-67	Shutdown	50-237/74-76	Refuel
50-237/74-64	Refuel	50-237/74-80	Shutdown
50-237/74-65	Refuel	50-237/75-3	Shutdown
50-237/74-68	Refuel	50-237/75-6	Refuel

DESCRIPTION OF OCCURRENCE

Report Number 50-237/74-60:

At 1615 hours on November 5, 1974 the feedwater check valves in "A" line were leak rate tested by using the pressure decay method at 48 PSIG to determine the "as found" leakage. The two check valves (220-58A & 62A) were tested independantly of each other; therefore, the maximum through leakage was the minimum of the individual leakages. The 220-57A manual valve was a boundary for both tests, but was assumed not to leak because of a waterhead present on the reactor side. Upstream of each check valve leakages were verified. The 220-58A and 220-62A had leakages of 96, 393 SCFH and 5,835 SCFH respectively. See Appendix "A" for the final leakage rates.

Report Number 50-237/74-61:

At 0220 hours on November 7, 1974 the feedwater check valves in "B" line were leak rate tested. The same method and valve configuration as used in the "A" line tests were utilized. The 220-58B and 220-62B valves were found to have leakages of 3,238 SCFH and 358.2 SCFH respectively. See Appendix "A" for the final leakage rates.

Report Number: 50-237/74-62:

At 1520 hours on November 7, 1974 the torus to drywell vacuum breakers, 1601-32D and 1601-33D, were leak rate tested by using the pressure decay method at 48 PSIG to determine the "as found" leakage. The vacuum breakers have a "double gasketed" type seal. Each vacuum breaker test simultaneously checks:

1. One cover flange
2. Two shaft seals
3. Two shaft seal flanges

Since the volume tested is between the double concentric gaskets, the maximum through leakage is assumed to be half the total leakage, if the leakage source (or sources) cannot be found. Vacuum breakers 1601-32D and 1601-33D had total leakages of 48.859 SCFH and 121.701 SCFH, respectively, yielding a total through leakage of 85.280 SCFH. See appendix "B" for the final leakage rates.

Report Number 50-237/74-67:

At 1415 hours on November 8, 1974 the inerting and purge line for the drywell and torus was leak rate tested by using the pressure decay method at 48 PSIG to determine the "as found" leakage. The AO-1601-55 valve was known to leak prior to the test; therefore, during operation, the 8503-500 manual valve was closed and out of service, thus providing primary containment. The total test leakage was 40.910 SCFH. The maximum through leakage is 20.455 SCFH. See Appendix "A" for the final leakage rate.

Report Number 50-237/74-64:

At 1340 hours on November 11, 1974 the torus to drywell vacuum breakers 1601-32B, 1601-33C, 1601-33E, and 1601-33F were leak rate tested in the same manner as 1601-32D and 1601-33D. The respective individual leakages were 146.041 SCFH, 243.849 SCFH, 40.716 SCFH, and 52.349 SCFH. Combining the through leakage

of all twelve vacuum breaker yields 358.487 SCFH. See appendix "B" for the final leak rates.

Report Number 50-237/74-65:

At 1445 hours on November 13, 1974, the isolation valves for the test line and suppression chamber spray on LPCI "A Loop" were leak rate tested by using the pressure decay method at 48 PSIG to determine the "as found" leakage. The isolation valves and the leakages for these lines are MO-1501-20A & 38A/ 537.769 SCFH and MO-1501-18A & 19A/952.101 SCFH respectively. The two tests were repeated, but there was an 80 PSIG waterhead present against the MO-1501-38A and MO-1501-18A. The results were then 0.0 SCFH and 13.885 SCFH respectively. Assumming the above leakages to be through MO-1501-20A and MO-1501-19A, the total through leakages were 0.0 SCFH for valves MO-1501-20A & 38A and 13.885 SCFH for valves MO-1501-18A & 19A. See appendix "A" for the final leakage rates.

Report Number 50-237/74-68:

At 1330 hours on November 14, 1975, LPCI "B Loop" valves MO-1501-18B & 19B (suppression chamber spray), MO-1501-20B & 38B (test line), and MO-1501-27B & 28B (containment spray) were leak rate tested by using the pressure decay method at 48 PSIG to determine the "as found" leakage. In each test, one valve leaked a great deal more than the other, as verified by sightglasses located in upstream vents. The valves found to be leaking was MO-1501-18B, 38B, and 27B. The test on valves MO-1501-27B & 28B was repeated with an 80 PSIG waterhead present on the other side of the MO-1501-27B valve. The result of this test was 2.462 SCFH. The total leakages and maximum through leakages are 7228.108/ 3614.054 SCFH for MO-1501-18B & 19B, 987.132/493.567 SCFH for MO-1501-20B & 38B, and 959.532/2.462 SCFH for MO-1501-27B & 28B. See appendix "A" for the final leakage rates for the above tests.

Report Number 50-237/74-72:

At 0915 hours on November 21, 1974 electrical penetration X-2025 was being leak rate tested by using the pressure decay method at 48 PSIG to determine the "as found" leakage. As per procedure, nitrogen was used instead of service air. The total penetration leakage was found to be 217.834 SCFH. Using a sonic gun and "snoop", no leaks were detected in the outer seal. After removing the inner cover and shield blocks, the source of the leakage was found to be in the drywell. Cracks were found in the epoxy used to form a seal where the cables come through the inner boundary. Since no leaks were detected in the outer seal, the through leakage is 0.0 SCFH. See appendix "C" for the final leak rate results.

Report Number 50-237/74-71:

At 1730 hours on November 29, 1974 the check valves in the HPCI condensate return line were leak rate tested by using the pressure decay method at 48 PSIG. The two valves in the line are 2301-45 (a check valve) and 2301-74 (a stop check valve). The total test leakage was found to be 2,611.707 SCFH. Using the line to the 2368A pressure switch as an upstream vent, the 2301-45 valve was found to be leaking. Using the sonic gun at penetration X-317A (HPCI condensate return to torus), the 2301-74 valve was found to have no leaks. Since all the leakage was through the 2301-45 valve, the total through leakage was 0.0 SCFH. See appendix "A" for the final leakage rate results.

Report Number 50-237/74-75:

For the "description of occurrence", see the letter from B. B. Stephenson to Mr. J. G. Keppler dated December 20, 1974. See appendix "D" for the final leakage rate.

Report Number 50-237/74-76:

For the "description of occurrence", see the letter from Mr. B. B. Stephenson to Mr. J. G. Keppler dated December 20, 1974. See Appendix "D" for the final leakage rate.

Report Number 50-237/74-80:

At 1400 hours on December 23, 1974 the main steam isolation valves on"C" steam line were local leak rate tested by using the pressure decay method at 25 PSIG to determine the "as found" leakage. The vessel water level was at a level below the steam parts; therefore, AO-203-1C and AO-203-2C were tested simultaneously. Both valves had the air supply valved in to assist the springs in keeping the valves in the closed position. The first test yielded a total leakage of 159.433 SCFH @ 48 PSIG (92.189 SCFH @ 25 PSIG). Valve AO-203-1C was cycled a few times and then the test was repeated, yielding a total leakage of 260.215 @ 48 PSIG (150.441 SCFH @ 25 PSIG). On December 31, 1974 repairs on AO-203-1C were complete and the test was repeated a third time (vessel water level below steam ports). The third test yeilded a total leakage of 154.485 SCFH @ 48 PSIG (89.314 SCFH @ 25 PSIG). Assuming that AO-203-1C was leak tight, then AO-203-2C had a leakage of 154.485 SCFH @ 48 PSIG (89.314 SCFH @ 25 PSIG). On March 12, 1975 repairs to AO-203-2C were complete and the test was again repeated (vessel water below steam ports). The total leakage of this test was 0.0 SCFH.

Report Number 50-237/75-3:

At 1130 hours on January 20, 1975 the reactor head cooling 205-2-7 check valve was leak rate tested by the pressure decay method at 48 PSIG to determine the "as found" leakage. A flange was installed where the line normally connects to the reactor head to provide a downstream boundary for the test. The leak rate was found to be 53.779 SCFH and was verified to all be through the 205-2-7 check valve by use of an upstream vent. In order to determine the through leakage, a second test was performed between MO-205-2-4 valve and the installed flange. This test includes the volume in the previous test. This test yielded a leak rate of 0.310 SCFH. See appendix "A" for the final leakage rate.

Report Number 50-237/75-6:

At 1400 hours on January 22, 1975 the LPCI AO-1501-25B was leak rate tested for the first time. A 48 PSIG pressure decay test was used to determine the "as found" leakage. The other valve used to form a boundary was the 1501-26B manual valve. This valve ties into the recirculation header and therefore had a water-head present. The resulting leakage of 56.632 SCFH was then consequently all through the check valve as verified by an upstream vent. A second test was done using 1501-26B, MO-1501-22B and MO-1001-5B as boundaries. This volume includes the volume of the previous test. This tested yielded a leakage of 0.635 SCFH and therefore this is the maximum penetration through leakage. See Appendix A for the final leakage rate.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE

Report Numbers 50-237/74-60 & 61:

Inspection of the feedwater check valves subsequent to leak testing revealed the valves to be missing their "O" rings which cause the valves to seal at low pressures. The missing "O" rings were made of a silicone based rubber called "Silartic". This material is rated for a maximum temperature of 450°F in an air environment. In a water environment, at the temperature of the feedwater system (340°F), this type of "O" ring dissociated into sand and carbon dioxide.

Report Numbers 50-237/74-62 & 64:

The torus to drywell vacuum breakers are a double gasketed type seal and each valve has five test points which are as follows:

a) 1 double gasketed flanged cover
b) 2 double gasketed shaft seal flanges
c) 2 shaft seals

In all the cases where the vacuum breakers exhibited any leakage at all, the leakage was through the shaft seals. This leakage was due to a lack of the waterless grease used as a packing. In the cases where excessive leakage was exhibited, the zerk fittings were found to be bad.

Report Number 50-237/74-67:

Prior to the refueling outage, valve AO-1601-55 exhibited excessive leakage rates, therefore, the 8503-500 manual valve was closed and taken out of service until the unit was shutdown for refueling. The A)-1601-22 valve exhibited some disc to seat leakage and some packing leakage. It could not be determined if the AO-1601-21 & 56 valves had any disc to seat leakage though they did not have any packing leaks. The 1601-56 valve was removed and the line was blind flanged. The test was repeated with a resulting leakage of 6.639 SCFH, which was within Technical Specification limits.

Report Numbers 50-237/74-65 & 68:

The following LPCI valves are all throttle control valves and are used to regulate flow:

a) MO-1501-18A & B
b) MO-1501-38A & B

The leak rate tests involving the above valves were all repeated, but prior to the tests, it was verified that the control room operator held the control switch in the "close" position long enough to completely close the valve. The leakage rate of the above tests were all within Technical Specification limits, therefore, during the first tests either the operator failed to completely close the valves or the limit switches were not properly adjusted.

Failure of the MO-1501-27B valve was due to excessive seat to disc clearance and improper operation of the limitorque.

Report Number 50-237/74-72:

Failure of the electrical penetration X-202S was due to cracks in the epoxy on the inside seal. The epoxy is used for filling in the gaps between the electrical cables and the pipe they are contained in. The cause of the cracks is unknown. No abnormal environmental conditions were observed.

Report Number 50-237/74-71, 50-237/75-3 & 6:

The 2301-45, 205-2-7, and AO-1501-25B all had excessive disc to seat leakage due to dirt on the seats and small scratches in the discs. No other defects could be found.

Report Numbers 50-237/74-75 & 76:

For the "designation of apparent cause of occurrence", see the letters from Mr. B. B. Stephenson to Mr. J. G. Keppler dated December 20, 1974.

Report Number 50-237/74-80:

Both main steam isolation valves AO-203-1C & 2C were found to be dirty, and contain small cracks in the seats and mating disc surfaces. No major defects were indicated or extensive repairs required.

ANALYSIS OF OCCURRENCE

The health and safety of the plant personnel and the public were not jeopardized as a result of any of the above mentioned leak rate test failures.

Report Numbers 50-237/74-60 & 61:

Although the feedwater check valves exhibited large leak rates at 48 PSIG, they where considerded functional. If a feedwater line had broken during operation, the high differential pressure conditions created would have been more than adequate to seat the valves. If a low pressure condition existed and the line broke within secondary containment, the standby-gas treatment system would offer a sufficient barrier to the atmosphere. If the line break was in the turbine building, motor-operated valves were available to sufficiently isolate the leakage, with the exception of two lengths of pipe approximately 12 feet each between the motor-operated valves in the turbine building and the secondary containment. The probability of a line break here is very remote.

Report numbers 50-237/74-62 & 64:

Should an accident have occurred, the combined leakage from all the torus to drywell vacuum breakers,which are within the bounds of the secondary containment, would have been well within the capability of the standby-gas treatment system, to prevent direct release to the environment.

Report Number 50-237/74-67:

The AO-1601-55 valve had failed prior to the refueling outage. The manual valves, 8502-501 and 8503-500, were closed and taken out of service. The system passed

the remaining tests until this end of cycle leak test.

Report Numbers 50-237/74-65 & 68:

There is no safety significance, even with a LPCI line break. The leakage through the inner most valve in each of the five cases is within the technical specification limits.

Report Number 50-237/74-72:

Only the inner seal of electrical penetration X-202S exhibited leakage. The outer seal was still providing primary containment within the technical specification limit. If the outer seal failed during an accident, all leakage would be into the secondary containment and within the capabilities of the standby-gas treatment system.

Report Number 50-237/74-71:

There is no safety significance associated with the 2301-45 failure because 2301-74 is a stop check valve and is nearer to the torus penetration. Even though the 2301-74 valve was closed manually during the leak test, it seated properly and there is no reason why it should not do the same in the case of an accident causing reverse flow.

Report Numbers 50-237/74-75 & 76:

For the "analysis of occurrence" for each of these failures see letters from Mr. B. B. Stephenson to Mr. J. G. Keppler dated December 20, 1974.

Report Number 50-237/75-3:

There is no safety significance associated with the 205-2-7 failure because the penetration through leakage at valve MO-205-2-4 was within the technical specifications Limit.

Report Number 50-237/75-6:

There is no safety significance associated with the AO-1501-25B failure because the penetration through leakage at valves MO-1501-22B and MO-1001-5B was within the Technical Specification limit. The LPCI injection line is not affected by the failure as far as operability is concerned.

Report Number 50-237/74-80:

Although the "C" main steam line isolation valves exhibited an excessive leakage rate at 48 PSIG, they were still considered functional. During operation the differential pressure conditions created following an isolation would be more than adequate to seat the valves. For a steam line break outside the drywell, the leakage through the valves is insignificant compared to the initial blowdown values as described in the FSAR. For breaks inside the drywell, the leakage through the valves would be contained by the main stop valves, turbine control valves, and bypass valves.

CORRECTIVE ACTIONS

Report Numbers 50-237/74-60 & 61:

Repairs of the feedwater check valves included installing new "O" rings made of a carbon fluoride compound called "viton". This material will withstand radiation as well as the environmental conditions of the 350° F water to which it will subjected. Other repairs included lapping the valve discs. The valves were reassembled and tested. See Appendix "A" for the final leakage rates.

Report Numbers 50-237/74-62 & 64:

The vacuum breakers with excessive leakage had new zerk fittings installed on the shaft seals. Both shaft seals on all the vacuum breakers were repacked with waterless grease. For the final leakage rate of all the breakers see Appendix "B".

Report Number 50-237/74-67:

The torus to drywell-purge, vent line was the only "butterfly valve" leak test to fail. In order to reduce this leakage and prevent any of the other butterfly valves from developing leaks, all were sent back to the manufacturer for rebuilding the seats. This included the following valves:

AO-1601-20A & B	AO-1601-23	AO-1601-56
AO-1601-21	AO-1601-24	AO-1601-60
AO-1601-22	AO-1601-55	AO-1601-63

The new seat installed was Resiloseal "W" EPT Rubber. See Appendix "A" for the final leakage rates.

Report Number 50-237/74-65 & 68:

LPCI valves MO-1501-18A & B and MO-1501-38A & B were found to have no problems with leakage once they were closed all the way. In order to ensure that the control room operator doesn't get a premature "closed" signal, the limit switches were checked and adjusted as required. See appendix "A" for the final leakage rates. See the special note at the end of this letter concerning valve MO-1501-27B.

Report Number 50-237/74-72:

Electrical penetration X-202S was the only penetration of this type to exceed the technical specification limit. The repair of this penetration required direction and supervision by General Electric Company. To prevent future leaks, as long as special equipment was required for X-202S, four other electrical penetrations were sealed. These are X-203B, X-204S, X-200A, and X-202Q. A special G.E. Co procedure was used to insert more epoxy, thus sealing any existing cracks. See appendix "C" for the final leakage rates.

Report Numbers 50-237/74-71 & 80
50-237/75-3 & 6

Valves 2302-45, AO-203-1C & 2C, 205-2-7, and AO-1501-25B were all disassembled and no major defects were found. All that was required to return these valves

to normal condition was a seat cleaning and valve lapping. See Appendix "A" for the final leakage rates of valves 2301-45, 205-2-7, and AO-1501-25B. See Appendix "E" for the final leakage rate of valves AO-203-1C & 2C.

Report Number 50-237/74-75:

See the letter from Mr. B. B. Stephenson to Mr. J. G. Keppler dated December 20, 1974.

Report Number 50-237/74-76:

The original bellows on penetration X-123 were removed and sent back to the manufacturer, Pathway Bellows Inc. They made up a new bellows seal by welding new bellows to the existing end plates. The new bellows seal was then installed as a single unit. The process pipe was cut at an existing weld between the two fluid heads. This allowed the bellows seal to be installed without increasing the number of welds used in the original configuration. After all welding was complete, the welds were radiographed and the penetration was successfully hydrostatic tested. See appendix "D" for the final leakage rate.

FAILURE DATA

Valve Number	Identification	History
220-58A	18" check valve Crane 973	No previous D-2 failures D-3 failure (6/74)
220-58B	Same as above	2 Previous D-2 Failures (6-71/6-72) D3 failure (6/74)
220-62A	Same as above	No previous D-2 failures D-3 failure (6/74)
220-62B	Same as above	1 previous D-2 Failure (6/72) D3 failure (6/74)
1601-32A-F & 1601-33A-F	Check valve-Atwood & Morrill 60LCBSPL	No previous D-2 failures No previous D-3 failures
1601-21	18" Butterfly valve H. Pratt 2 FII Operator: Miller Hyd A-81	1 previous D-2 failure (6/72) No previous D-3 failure
1601-22	Same as above	Same as above
1601-55	4" butterfly valve- H.Pratt 2FII Operator: Miller Hyd J-53	No previous D-2 failures No previous D-3 failures
1601-56	18"Butterfly valve H. Pratt 2FII Operator: Miller Hyd A-81	1 previous D-2 Failure (6/72) No previous D-3 failure

FAILURE DATA (cont'd)

Valve Number	Identification	History
1501-18A & B	6" Globe valve Crane-151½ x R Operator: limitorque SMB-00	No previous D-2 failures No previous D-3 failures
1501-38A & B	14" Globe valve Crane-7183V Operator: limitorque SMB-3	Same as above
1501-27B	16" Gate valve Crane-33½ x R Operator: limitorque SMB-0	Same as above
Penetration X-202S	12" electrical pent. type 4 pent.	1 previous D-2 failure (6/71 X-202BB)No previous D-3 failures
2301-45	16" check valve Mission Duo Check model B	1 previous D-2 failure (6/71) No previous D-3 failure
Bellows X-105C	36" Pathways-Tandem Bellows	No previous failures
Bellows X-123	12" Pathways-Single bellows	Same as above
203-1C & 2C	20" Crane Y-Pattern Globe valve	No previous D-2 failures 2 previous D-3 failures (6/74 203-1B 203-2B)
205-2-7	2½" Duo Check style B Mission Mfg.	No previous D-2 failures No previous D-3 failures
1501-25B	16" testable check Atwood & Morrill	First time tested due to system mod

Note: As per the telephone conversation with Mr. P. Johnson on May 6, 1975 at 1530 hours, this report will be submitted with the following local leak rate tests still pending.

Penetration	Test Boundary	System
X-144	Valves 301-95 & 99	CRD Return
X-144	Valves 301-96 & 99	CRD Return
X-145	Valves 1501-27B & 28B	LPCI
X-100	Equipment hatch	Primary Containment
	Drywell head flange	Primary Containment

Prior to Dresden Unit 2 startup, these tests will be completed and a supplementary report issued as soon as possible.

Sincerely,

B. B. Stephenson
Superintendent

BBS:amp

File/NRC

APPENDIX A

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Primary System Boundary

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
5	X-107A	RW Recirculation Check 220-58A & 57A*	96 73.383		0.320	
6	X-107A	" 220-62A & 57A*	5835.304	5835.304	0.000	0.0
7	X-107B	" 220-58B & 57B*	3237.953		23.018	
8	X-107B	" 220-62B & 57B*	358.208	358.208	6.190	6.190
21	X-304	Torus Vac Relief 1601-20A & 31A	9.973	4.987	5.503	2.752
22	X-304	" 1601-20B & 31B	0.497	0.249	12.656	6.328
23	X-304 X-126	Torus, DW - Vent Purge 1601-21, 22 55, 54 & 8502-501	40.910	20.455	7.953	1.977
24	X-125 X-318A	Torus, DW - Vent 1601-23, 24, 60, 61, 62 & 63	6.113	3.057	6.226	3.113
29	X-150A	LPCI DW Spray 1501-27A & 27A	0.0	0.0	0.0	0.0
30	X-311A	LPCI Suppression Spray 1501-18A & 17A	952.101		14.507	7.254
30A	X-311A	" " 1501-18A* & 19A	13.885	13.885		
31	X-310A	LPCI Test Line 1501-20A & 38A	537.767		4.888	2.444
31A	X-310A	" 1501-20A & 38A*	0.0	0.0		
32	X-145	LPCI DW Spray 1501-27A & 28B	959.532			
32A	X-145	" 1501-27A* & 28B	2.462	2.462		
33	X-310B	LPCI Test Line 1501-20B & 38B	987.134	493.567	0.0	0.0
34	X-311B	LPCI Suppression Spray 1501-18B & 19B	7228.108	3614.054	0.202	0.101
62	X-118	Equip Drain Sump 2001-5 & 6	8.783	4.392	8.783	4.392
63	X-117	Floor Drain Sump 2001-105 & 106	17.518	8.759	17.518	8.759
64	X-317A	HPCI Suction Cooling 2301-45 & 74	2611.707	0.0	23.308	0.0
65**	X-101	Personnel Lock	12.693	6.347	12.693	6.347
		TOTAL THRU LEAKAGE FOR PAGE		10,365.724		52.657

*Indicates waterhead present on one side of valve
* Tested at 10 PSIG; corrected to 48 PSIG

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Primary Isolat Cov Valves

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
66	X-149A	Core Spray to Rx 1402-24A & 25A	1.083	0.542	14.485	0.0
67	X-310A	Core Spray Test Line 1402-4A, 8A, 24A, & 36A	0.476	0.232	0.476	[illegible]
68	X-149B	Core Spray to Rx 1402-24B & 25B	0.0	0.0	0.0	0.0
69	X-310B	Core Spray Test Line 1402-4B, 8B, 24B, & 36B	2.922	1.461	2.922	1.461
71	X-108	Rx Cond Supply 1301-1 & 2	0.0	0.0	0.0	0.0
72**	X-107	Rx Cond Return 1301-3 & 4*	≤18.936	≤18.936	≤18.936	≤18.936
73	X-313A	Torus Drain (East)	2.633	1.317	2.633	1.317
74	X-313B	" (West)	13.812	6.906	13.812	6.906
92	X-115A	HPCI Supply 2301-4 & 5	0.0	0.0	0.0	0.0
93	X-312	HPCI Drain 2301-34 & 71	18.727	9.364	18.727	9.364
94	X-106	RCIC Drain 220-1 & 2	0.0	0.0	0.0	0.0
95	X-113	Cleanup Supply 1201-*1, 2, & 3	0.0	0.0	0.0	0.0
97	X-101	DW CAM Return 9208A	0.237	XX	0.237	XX
98	X-101	" 9205B	0.183	0.183	0.183	0.183
99	X-101	DW CAM Supply 9207A	0.536	0.536	0.536	0.536
100	X-101	" " 9207B	0.699	XX	0.699	XX
101	X-122	Rx Water Sample 220-4* & 45	0.054	0.054	0.054	0.054
102	X-111A X-111B	SD Cooling Supply 1001-1A, 1B, 2A, 2B, & 2C	0.0	0.0	0.0	0.0
105	X-147	Rx Head Cooling 205-2-7 & flange	53.779	XX	0.0	0.0
106	X-147	" 205-2-4 & flange	0.310	0.310	0.310	XX
107	X-116B	LPCI Check 1501-25B & 26B*	56.632	XX	0.0	XX
		TOTAL THRU LEAKAGE FOR PAGE		39.846		38.995

*Indicates waterhead present on one side of valve

** Indicates max. leakage

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Primary Inject. Car. Valves

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED		INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
108	X-116B	LPCI Injection	1501-22B, 26B* & 1001-5B	0.635	0.635	0.635	0.635
109	X-116A	"	1501-22A, 26A* & 1001-5A	0.683	0.683	0.683	0.6[illegible]
110	X-116A	LPCI Check	1501-25A & 26A*	29.137		3.974	
111	X-130	SBLC	1101-1 & 16	7.182		7.182	
112	X-130	"	1101-1 & 15	21.707		21.707	
113	X-126 X-204	N2 Makeup	1601-57, 58 & 59	0.0	0.0	0.0	0.0
114	X-144	CRD Return Line	301-95 & 99*				
115	X-144	"	301-98 & 99*				

TOTAL THRU LEAKAGE FOR PAGE: 1.318 (initial) 1.318 (final)

LIMIT 178.29 SCFH

% of limit .5737 (initial) — % of limit .52.15 (final)

*Indicates waterhead present on one side of valve

APPENDIX B

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Double Gasketed Seals

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
9	1601-32A	Torus Vac Breaker Flange	16.171	8.096	4.614	2.307
10	1601-32B	"	146.041	73.021	0.0	0.0
11	1601-32C	"	19.287	9.644	0.069	0.035
12	1601-32D	"	48.859	24.430	0.0	0.0
13	1601-32E	"	0.0	0.0	0.035	0.018
14	1601-32F	"	0.0	0.0	0.069	0.035
15	1601-33A	"	1.947	0.975	0.0	0.0
16	1601-33B	"	26.031	13.016	0.139	0.070
17	1601-33C	"	243.849	121.925	0.052	0.026
18	1601-33D	"	121.701	60.851	0.0	0.0
19	1601-33E	"	40.716	20.358	2.018	1.009
20	1601-33F	"	52.349	26.175	0.374	0.187
25		Daywell Head Flange	0.105	0.053		
26	X-100	Equipe Hatch	0.007	0.004		
27	X-306B	Torus Access Hatch (West)	0.0	0.0	0.0	0.0
28	X-306A	" (East)	0.0	0.0	0.0	0.0
35	X-136F	TIP Fluid Monitor Flange	0.509	0.255	0.509	0.255
36	X-136E	"	0.455	0.228	0.455	0.228
37	X-136J	"	0.034	0.017	0.034	0.017
38	X-136H	"	0.0	0.0	0.0	0.0
39	X-136C	"	0.0	0.0	0.0	0.0
		TOTAL THRU LEAKAGE FOR PAGE		359.042		4.184

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Double Gasketed Seals (cont.)

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
40	X-136G	TIP Tubes Manifold Flange	0.017	0.009	0.017	0.009
41	X-136A	"	0.0	0.0	0.0	0.0
42	X-136D	"	0.052	0.026	0.052	0.026
43	X-136B	"	0.052	0.026	0.052	0.026
70	X-137	Drywell Head Manhole	0.0	0.0	0.0	0.0
77	X-102	CRD Removal Hatch	0.0	0.0	0.0	0.0
80	#8	Steam Dryer Inspection Hatch	0.0	0.0	0.0	0.0
81	#7	"	0.0	0.0	0.0	0.0
82	#6	"	0.0	0.0	0.0	0.0
83	#5	"	0.0	0.0	0.0	0.0
84	#4	"	0.020	0.010	0.020	0.010
85	#3	"	0.0	0.0	0.0	0.0
86	#2	"	0.0	0.0	0.0	0.0
87	#1	"	0.0	0.0	0.0	0.0
96	X-135E	Spare Flange	0.034	0.017	0.034	0.017
103	X-313A	Torus Drain Line Flange (East)	0.807	0.404	3.345	0.0
104	X-313B	" " (West)	0.0	0.0	0.0	0.0

TOTAL THRU LEAKAGE FOR PAGE 0.491 0.088

*Indicates waterhead present on one side of valve

LIMIT 58.76 SCFH

% of limit 511.87

% of limit 7.27

APPENDIX C

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Electrical

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
44	X-202S	Rod Pos Ind.	6.017	3.009	6.017	3.009
45	X-202X	Core Vibration Meter	0.0	0.0	0.0	0.0
46	X-204H	Neutron Monitor Lig	0.0	0.0	0.0	0.0
47	X-202W	Rod Pos Ind	0.331	0.166	0.331	0.166
48	X-202S	Rod Pos Ind	217.234	0.0	0.0	0.0
49	X-202Q	LV Power & Control	6.039	3.020	0.279	0.140
50	X-202N	Neutron Monitor Lig	0.0	0.0	0.0	0.0
51	X-202S	Neutron Monitor Lig	0.0	0.0	0.0	0.0
52	X-202F	LV Power & Control	1.326	0.663	1.326	2.663
53	X-202D	HV Power	0.0	0.0	0.0	0.0
54	X-202B	HV Power	0.0	0.0	0.0	0.0
55	X-204T	Rod Pos Ind	0.0	0.0	0.0	0.0
56	X-204S	LV Power & Control	11.342	5.671	0.327	0.164
57	X-204Q	HV Power	0.0	0.0	0.0	0.0
58	X-204P	HV Power	0.0	0.0	0.0	0.0
59	X-203B	LV Power & Control	12.652	6.326	1.644	0.822
60	X-205E	LV Power & Control	0.0	0.0	0.0	0.0
61	X-200B	LV Power & Control	0.645	0.323	0.645	0.323
75	X-203A	Rod Pos Ind	1.341	0.671	1.341	0.671
76	X-200A	LV Power & Control	9.242	4.621	0.0	0.0
78	X-204E	Neutron Monitor Lig	0.165	0.083	0.165	0.083
		TOTAL THRU LEAKAGE FOR PAGE		24.550		6.053

*Indicates waterhead present on one side of valve

LIMIT 178.29 SCFH

% of limit 13.77

% of limit 3.39

APPENDIX D

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Bellows Seals

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
79	X-105A	Main Steam Line	0.0	0.0	0.0	0.0
	X-105B	"	0.0	0.0	0.0	0.0
	X-105C	"	211.823	0.0	0.0	0.0
	X-105D	"	0.0	0.0	0.0	0.0
	X-106	Main Steam Line Drain	0.0	0.0	0.0	0.0
	X-107A	Primary Recirculation	0.0	0.0	0.0	0.0
	X-107B	"	0.0	0.0	0.0	0.0
	X-108A	Aux Condensate Supply	0.0	0.0	0.0	0.0
	X-108B	Aux Condensate Return	0.0	0.0	0.0	0.0
	X-111A	Drywell Cooling Supply	0.0	0.0	0.0	0.0
	X-111B	"	0.0	0.0	0.0	0.0
	X-113	Sweep Supply	0.0	0.0	0.0	0.0
	X-115A	HPCI Suct.	0.0	0.0	0.0	0.0
	X-116A	LPCI Injection	0.0	0.0	0.0	0.0
	X-116B	"	0.0	0.0	0.0	0.0
	X-123	RRCCW Inlet	21.941	10.771	0.0	0.0
	X-124	RRCCW Outlet	0.0	0.0	0.0	0.0
	X-125	Vent Line Drywell	0.023	0.012	0.023	0.012
	X-126	Vent & Drywell	0.0	0.0	0.0	0.0
	X-130	Inst. Air to D.W.	0.0	0.0	0.0	0.0
	X-144	CRD Return	0.884	0.442	0.884	0.442
		TOTAL THRU LEAKAGE FOR PAGE		11.425		0.454

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Bellows Seals (cont)

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
79	X-147	Rx Head Cooling	0.0	0.0	0.0	0.0
}	X-149A	Core Spray	0.0	0.0	3.465	1.[illegible]
	X-149B	" "	0.047	0.023	2.325	1.163

TOTAL THRU LEAKAGE FOR PAGE: 0.023 (initial thru leakage); 2.896 (final thru leakage)

*Indicates waterhead present on one side of valve

LIMIT 178.29 SCFH — % of limit 6.42 — % of limit 1.38

APPENDIX E

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: MSIV

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
1	X-105A	MSIV 203-2A	1.382	1.382	1.382	1.382
2	X-105B	203-2B	1.348	1.348	1.348	1.348
3	X-105C	203-2C	154.485		0.0	
4	X-105D	203-2D	0.0	0.0	0.0	0.0
88	X-105B	203-1B	9.977		9.977	
89	X-105A	203-1A	2.858		2.858	
90	X-105D	203-1D	1.390		1.390	
91	X-105C	203-1C	105.730	105.730	0.0	0.0

TOTAL THRU LEAKAGE FOR PAGE 108.460 2.730

*Indicates waterhead present on one side of valve
#2 MSIV's are tested at 25 PSIG; corrected to 48 PSIG

LIMIT 178.29 SCFH

% of limit 60.83

% of limit 1.53