TECHNICAL EVALUATION REPORT

CONTAINMENT LEAKAGE RATE TESTING

DAIRYLAND POWER COOPERATIVE
LACROSSE BOILING WATER REACTOR

NRC DOCKET NO. 50-409

NRC TAC NO. 08858

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FRC PROJECT C5257

FRC TASK 27

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CONTENTS

1. BACKGROUND

On August 5, 1975 [1], the NRC requested the Dairyland Power Cooperative (DPC) to review the containment leakage testing program at the LaCrosse Boiling Water Reactor (LACBWR) and to provide a plan for achieving full compliance with 10CFR50, Appendix J, including appropriate design modifications, changes to technical specifications, or requests for exemption from the requirements pursuant to 10CFR50.12, where necessary.

DPC replied in a letter dated September 9, 1975 [2]. This letter identified certain areas in which the containment leakage testing program at LACBWR did not conform to the requirements of Appendix J and provided DPC's planned action in each area, including piping changes, procedure development, technical specification changes, and requests for exemption from certain requirements. In response to the NRC requests for additional information related to these areas of nonconformance, DPC provided information or further justification for its exemption requests in letters dated December 21, 1976 [3], July 28, 1980 [4], and August 19, 1980 [5].

The purpose of this report is to provide technical evaluations of all outstanding submittals related to the implementation of 10CFR50, Appendix J, at LACBWR. Consequently, technical evaluations of DPC's planned actions to provide full compliance with Appendix J, including requests for exemption, are provided.

2. EVALUATION CRITERIA

Code of Federal Regulations, Title 10, Part 50 (10CFR50), Appendix J, Containment Leakage Testing, was specified by the NRC as containing the criteria for the evaluations. Where applied to the following evaluations, the criteria are either referenced or briefly stated, where necessary, in support of the determinations or conclusions. Furthermore, in recognition of plant-specific conditions that could lead to requests for exemption not explicitly covered by the regulations, the NRC directed that the technical review constantly emphasize the intent of Appendix J, that potential containment atmospheric leakage paths be identified, monitored, and maintained below established limits.

3. TECHNICAL EVALUATIONS

In Reference 2, DPC identified four basic areas of nonconformance between Appendix J and the containment leakage testing program at LACBWR. DPC also provided either planned action to achieve conformance with Appendix J or a request for exemption pursuant to 10CFR50.12 in each case. A brief summary of this information is provided below:

Description of Nonconformance	Planned Action/Request for Exemption
Containment isolation valves in 14 lines are not Type C tested as required by Appendix J.	Piping changes to be made or procedures to be developed to enable performance of Type C testing of these valves.
LACBWR Technical Specifications specify maximum allowable leakage rates for individual penetrations. The summation of these rates exceeds the 0.6 La maximum of Appendix J.	A Technical Specification change to be submitted to correct this deficiency.
LACBWR Technical Specifications do not require a repeat Type A test following local leakage measurements and repairs as specified in Appendix J.	An exemption from the requirements of Section III.A.1.(a) of Appendix J requested to permit continued back-correcting of Type A results using the results of local leakage testing.
Personnel and emergency airlocks at LACBWR are leak-tested at 4-month intervals and are not tested following each opening in the interval between 4-month tests.	An exemption from the requirements of Section III.D.2 of Appendix J requested regarding the requirement to leak-test airlocks after each opening.

Technical evaluations of each of these four areas of nonconformance, as modified by subsequent correspondence, are provided in the following subparagraphs.

3.1 TYPE C TESTING OF CONTAINMENT ISOLATION VALVES

In Reference 2, DPC stated that the LACBWR containment test program would be upgraded to conform with the Type C test requirements of Appendix J. DPC further stated that necessary piping changes would be made and procedures developed prior to or during the next scheduled refueling outage to enable performing Type C tests on all containment isolation valves previously not given Type C tests. DPC listed the 14 penetrations which contain the containment isolation valves not previously tested.

In Reference 3, DPC provided additional details relative to the design changes and procedures to be developed in conjunction with upgrading the Type C test program. In this submittal, DPC indicated that the testing procedure for several lines (which could not be completely drained of water) required that the lines be pressurized with air but that the leakage be measured by water collection. The water leakage would then be multiplied by the ratio of the test pressure divided by atmospheric pressure (66.7/14.7 = 4.54) to convert it to an equivalent air leakage rate expanded to standard conditions. These lines include the following:

Demineralized water
Condensate demineralizer to seal injection reservoir makeup
High pressure service water
Retention tank pump discharge (control valve)
Decay heat startup water removal*
Shutdown condenser vent to off-gas*
Primary purification resin sluice*
Alternate core spray.*

Evaluation. Except for the eight penetrations which DPC indicated would be tested by converting water leakage to equivalent air leakage, DPC's plans to modify certain lines and test isolation valves with air as a test medium are in accordance with the provisions of Appendix J. In References 4 and 5, however, DPC provided still further justification as to possible exemptions from Type C testing requirements for certain valves based upon the design of the systems involved and their ability to remain water-filled throughout the post-accident period. Valves in this category include those in the demineralized water system, high pressure service water system, decay heat startup water removal system, and the primary purification resin sluice system. Evaluations of each of these requests for exemption are provided separately in the following subparagraphs. In Reference 5, DPC stated that the remaining valves would be tested in the future using air as a medium and, therefore, are no longer considered in this report.

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*Only those portions which cannot be water drained.

3.1.1 Type C Testing of Demineralized Water Isolation Valves

In Reference 4, DPC stated:

> The demineralized water system is utilized in post accident situations. It provides a water supply to the shutdown condenser and the overhead storage tank (which supplies the high pressure core spray system). The normal operating pressure of the demineralized water system is 95 psig. When system pressure drops a second demineralized water transfer pump is started automatically to maintain pressure. The demineralized water system isolation valve, No. 67-26-001, is tested for leakage using Type C testing criteria.
>
> As the demineralized water system is designed to remain functional following a postulated loss of coolant accident, it is proper to test this system for leakage with water as the medium. Demineralized water system pressure exceeds the post accident containment pressure; therefore, any leakage would be into the containment section of the system and not to the outside atmosphere. The inventory of water available without additional makeup to the demineralized water pumps to maintain system pressure is approximately 22,000 gallons.
>
> The acceptance criteria on the Type C leakage test is 0.62 gallons per hour. The water supply required to compensate for the acceptable leakage during the 30 days following an incident is 446 gallons. Therefore, the available fluid inventory is sufficient to maintain a water seal on this isolation valve during and following an accident and hydrostatic testing of the valve is the proper method.

Evaluation. Section III.C.2 of Appendix J requires that Type C testing be performed with air or nitrogen as a test medium unless the valve is pressurized with fluid from a seal system to a pressure of not less than 1.10 Pa. In this case, Appendix J requires that such valves be demonstrated to have fluid leakage rates which do not exceed technical specifications and that the installed fluid seal-water system have sufficient inventory to assure the sealing function for at least 30 days at 1.10 Pa.

In the case of the demineralized water system, the isolation valves are not sealed by an installed seal-water system but are effectively sealed by the demineralized water system itself. By satisfactory performance of the hydraulic test, DPC will be demonstrating that the demineralized water system meets the requirements of a seal-water system in accordance with Section III.C.3 of Appendix J. Consequently, DPC's request for exemption in the case of the demineralized water system is acceptable since it meets the requirements of Appendix J for seal-water systems. Appendix J does not require testing with air or nitrogen, nor does it require the addition of test results to the total Type B and C leakage in order to satisfy local leakage rate testing criteria where a valve is sealed by a seal-water system. Therefore, the substitution of a hydraulic test for the required pneumatic test is an acceptable exemption to the requirements of Appendix J.

3.1.2 Type C Testing of High Pressure Service Water System Isolation Valves

In Reference 4, DPC stated:

> The high pressure service water system is utilized in post accident situations. It provides a water supply to the shutdown condenser and the high pressure core spray system.
>
> The normal minimum operating pressure of the high pressure service water system is 85-90 psig. Four pumps can provide water makeup to this system directly from the Mississippi River and a fifth pump is used for pressure control. The high pressure service water isolation valve, No. 75-26-003, is leak tested using Type C test criteria.
>
> As the high pressure service water system is designed to remain functional following a postulated loss-of-coolant accident, it is proper to test this system for leakage with water as the medium. High pressure service water system pressure exceeds the post-accident containment pressure; therefore, any leakage would be into the containment section of the system and not to the outside atmosphere.
>
> The acceptance criteria on the Type C leakage test is 0.62 gallons per hour. The capacity of the pumps which can supply the system is thousands of gallons per minute. Therefore, the available fluid inventory is sufficient to maintain a water seal on this isolation valve during and following an accident and hydrostatic testing of this valve is the proper method.

Evaluation. Section III.C.2 of Appendix J requires that Type C testing be performed with air or nitrogen as a test medium unless the valve is pressurized with fluid from a seal system to a pressure of not less than 1.10

Pa. In this case, Appendix J requires that such valves be demonstrated to have fluid leakage rates which do not exceed technical specifications and that the installed fluid seal-water system have sufficient inventory to assure the sealing function for at least 30 days at 1.10 Pa.

In the case of the high pressure service water system, the isolation valves are not sealed by an installed seal-water system but are effectively sealed by the system itself. By satisfactory performance of the hydraulic test, DPC will be demonstrating that the system meets the requirements of a seal-water system in accordance with Section III.C.3 of Appendix J. Consequently, DPC's request for exemption in the case of the high pressure service water system is acceptable since it meets the requirements of Appendix J for seal-water systems. Appendix J does not require testing with air or nitrogen, nor does it require the addition of test results to the total Type B and C leakage in order to satisfy local leakage rate testing criteria where a valve is sealed by a seal-water system. Therefore, the substitution of a hydraulic test for the required pneumatic test is an acceptable exemption to the requirements of Appendix J.

3.1.3 Type C Testing of Decay Heat Startup Water Removal Isolation Valves

In Reference 5, DPC provided the following information relative to valve No. 56-25-001:

> The decay heat system is designed to remain intact and water-filled following a postulated loss-of-coolant accident; therefore, testing with water as a medium is more appropriate than testing with air or nitrogen since it more closely approximates the post-accident environment.
>
> The acceptance criteria on the Type C leakage test is 0.62 gallons per hour. The water supply required to compensate for the acceptable leakage for 30 days following an accident is 446 gallons. Primary coolant contained in the reactor vessel maintains a positive head of water on the decay heat startup water removal line due to the difference in elevation between the reactor vessel and the line. The decay heat system piping leading from the forced circulation pump suction line to the decay heat startup water removal valve holds approximately 750 gallons of water. Therefore, even if the reactor vessel water level fell below the forced circulation outlet nozzle during the transient, the available fluid

inventory, considering all available sources, is sufficient to maintain a water seal on this isolation valve during and following an accident. We have concluded that hydrostatic testing of the valve is the proper method.

In addition, IE Information Notice 80-20, "Loss of Decay Heat Removal Capability at Davis-Besse Unit 1 While in a Refueling Mode," cautions against losing decay heat removal capability. Since the decay heat system at LACBWR provides the primary method of removing decay heat from the reactor, it would not be beneficial to partially drain the system in order to test with air.

Evaluation. Section III.C.2 of Appendix J requires that Type C testing be performed with air or nitrogen as a test medium unless the valve is pressurized with fluid from a seal system to a pressure of not less than 1.10 Pa. In this case, Appendix J requires such valves be demonstrated to have fluid leakage rates which do not exceed technical specifications and that the installed fluid seal-water system have sufficient inventory to assure the sealing function for at least 30 days at 1.10 Pa.

In the case of the decay heat system, the isolation valves are not sealed by an installed seal-water system but are effectively sealed by the system itself. By satisfactory performance of the hydraulic test, DPC will be demonstrating that the system meets the requirements of a seal-water system in accordance with Section III.C.3 of Appendix J. Consequently, DPC's request for exemption in the case of the decay heat system is acceptable since it meets the requirements of Appendix J for seal-water systems. Appendix J does not require testing with air or nitrogen, nor does it require the addition of test results to the total Type B and C leakage in order to satisfy local leakage rate testing criteria where a valve is sealed by a seal-water system. Therefore, the substitution of a hydraulic test for the required pneumatic test is an acceptable exemption to the requirements of Appendix J.

3.1.4 Type C Testing of Primary Purification Resin Sluice Isolation Valves

In Reference 5, DPC provided the following information relative to Valve Nos. 54-24-019, 54-24-020, 54-24-021, and 54-24-022:

The primary purification system would be utilized in a post-accident situation to remove dissolved and suspended solids and obtain optimum reactor water quality.

As the system is designed to remain intact and water-filled following a postulated loss-of-coolant accident, testing with water as the medium is more appropriate than testing with air or nitrogen since it more closely approximates the post-accident environment.

The acceptance criteria on the Type C leakage test is 0.62 gallons per hour. Water enters the primary purification system from the bottom of the reactor vessel. The resin sluice line isolation valves are at low points in the system; therefore, the reactor vessel maintains a hydrostatic head of water on the system and a water seal on the isolation valves and hydrostatic testing of the valves is the proper method.

Evaluation. Section III.C.2 of Appendix J requires that Type C testing be performed with air or nitrogen as a test medium unless the valve is pressurized with fluid from a seal system to a pressure of not less than 1.10 Pa. In this case, Appendix J requires that such valves be demonstrated to have fluid leakage rates which do not exceed technical specifications and that the installed fluid seal-water system have sufficient inventory to assure the sealing function for at least 30 days at 1.10 Pa.

In the case of the primary purification system, the isolation valves are not sealed by an installed seal-water system but are effectively sealed by the system itself. By satisfactory performance of the hydraulic test, DPC will be demonstrating that the primary purification system meets the requirements of a seal-water system in accordance with Section III.C.3 of Appendix J. Consequently, DPC's request for exemption in the case of the primary purification system is acceptable since it meets the requirements of Appendix J for seal-water systems. Appendix J does not require testing with air or nitrogen, nor does it require the addition of test results to the total Type B and C leakage in order to satisfy local leakage rate testing criteria where a valve is sealed by a seal-water system. Therefore, the substitution of a hydraulic test for the required pneumatic test is an acceptable exemption to the requirements of Appendix J.

3.2 ACCEPTANCE CRITERIA FOR TYPE B AND C TESTING

In Reference 2, DPC stated that the LACBWR Technical Specifications specified maximum allowable leak rates for individual penetrations and containment isolation valves. The summation of these allowable leak rates exceeds the 0.6 La limit specified in Sections III.B.3 and III.C.3 of Appendix J. To correct this deficiency, DPC stated that a Technical Specifications change would be submitted.

Evaluation. Sections III.B.3 and III.C.3 of Appendix J require that the total local leakage rate from Type B and C testing not exceed 0.6 La (60% of the maximum allowable leakage rate at a pressure of Pa). Since DPC has agreed to modify the LACBWR Technical Specifications to conform to this requirement, no further evaluation of this deficiency is required.

3.3 SEQUENCING OF REPAIRS DURING TYPE A TESTING

In Reference 2, DPC stated that Section 5.2.1.1.(c) of the LACBWR Technical Specifications was in conflict with Appendix J with regard to the sequencing of repairs during Type A testing. Section 5.2.1.1.(c) reads as follows:

> Corrective Actions: If repairs are necessary to meet the acceptance criteria of (b) above, the Type A test need not be repeated, provided local measured leakage reductions achieved by repairs of individual leaks reduce the containment's overall measured leakage rate sufficiently to meet the acceptance criteria.

DPC stated that it did not consider it necessary to change this specification and, therefore, requested an exemption from the requirements of Section III.A.1.(a) of Appendix J.

Evaluation. Section III.A.1.(a) of Appendix J requires that the Type A test be performed as close to the "as is" condition as possible. Where excessive leakage prevents compliance with the acceptance criteria of the Type A test, Appendix J requires that the test be terminated, leakage measured by local methods, repairs made, and a subsequent Type A test performed. The purpose of this requirement is twofold. First, a satisfactory completion of a

Type A test is essential to ensure that actual leakage rates do not exceed those rates assumed by accident analyses. Second, the "as is" condition of the containment must be measured to obtain an indication of the ability of the containment to remain leaktight for purposes of determining subsequent testing frequency.

DPC basically contends that the second Type A test is not necessary and that the results of local leakage testing can be utilized to back-correct the results of the first Type A test in order to verify acceptability. FRC concurs that a second Type A test is not necessary to achieve the objective of Appendix J, provided that the results of the local leakage test are not used such that nonconservative Type A results are determined. Since local testing procedures are designed to measure the maximum local leakage rate, subtracting these results from the measured leakage rate of the Type A test to determine acceptability can result in a nonconservative assessment of actual containment integrated leakage. For example, measured local leakage rates may not represent only containment outleakage but may represent some outleakage and some leakage into the containment (e.g., through valve packing of a valve within the containment). If this measured leakage rate is subtracted from the Type A results, a nonconservative assessment of integrated leakage is obtained.

The following procedure is considered to be an acceptable method for back-correcting Type A results without introducing a nonconservative assessment of integrated leakage:

> Where excessive leakage is experienced during a Type A test, significant leaks must be found and isolated from the test. Penetrations so isolated must be capable of local leakage testing. Once these leaks have been isolated, the Type A test is continued. Following the Type A test, local leakage rates must be measured before and after repairs to each isolated leakage path. The results of the Type A test are then back-corrected utilizing the conservative assumption that all measured local leakage is in a direction out of the containment. The local leakage measurements before the repair are added to the Type A results to determine the "as is" condition while the after-repair measurements determine the final acceptability of the test. For a satisfactory Type A test, the sum must be less than 75% of the maximum allowable leakage rate, La.

FRC finds that DPC's current Technical Specification at LACBWR, Section 5.2.1.1.(c), is unacceptable since it can result in a nonconservative assessment of containment integrated leakage. This specification should be modified to require back-correcting by a conservative method. DPC should propose such a technical specification.

3.4 PERSONNEL AND EMERGENCY AIRLOCK TESTING

In Reference 2, DPC requested an exemption from the Type B testing requirements for containment airlocks to permit continued leak testing at 4-month intervals but not after each opening. DPC stated that since access to the LACBWR containment is necessary for plant operation, both airlocks are used several times each day, making leak testing after each opening an impractical requirement.

Following a letter from the NRC dated December 8, 1976 [6], in which the NRC stated that a 4-month test interval could allow an airlock to be in a failed condition for an unacceptably long period of time before the failure is detected and repaired, DPC submitted further justification in Reference 3 for its request for exemption. In Reference 3, DPC stated:

> Each of the two (2) personnel airlocks in the LACBWR containment has been individually leak tested in accordance with Section 5.2.1.2 of the LACBWR Technical Specification twenty-six (26) times over the past 9 1/2 years and six (6) additional times as part of Type A containment leak tests. All airlock door seals have proven leak tight during all Type A tests. None of the emergency airlock local leak tests have failed because of leakage through a door seal.
>
> Only one main personnel airlock leak test has failed to meet the acceptance criteria because of leakage through a door seal. In this case, the inner door seal became partially extruded when the airlock was being pressurized. The airlock was successfully retested after a new seal was installed and additional strongbacks to provide more uniform support of the door were fabricated and installed. The inner door is designed to seal against pressure from inside containment, and, therefore, strongbacks are needed to hold the door in position when it is pressurized in the reverse direction from inside the airlock. Since the test failed because insufficient compression was maintained on the inner door seal by the strongback, it is evident that this failure cannot be attributed to a defective door seal.

In addition to the above testing, the emergency and main personnel airlock door seals are inspected, cleaned, and lubricated quarterly in accordance with the preventive maintenance program.

The double doors on each airlock are mechanically interlocked so that one door must be fully closed and latched before the other door can be unlatched and opened. The outer door of the main personnel airlock and the entrance door to the emergency airlock building are kept locked during all non-regular working hours (i.e., night, weekends, holidays). Additionally, position indication is provided in the control room for each airlock door. A door is indicated open unless it is fully closed and latched.

The present 4-month test interval for a 52 psig test of the airlocks specified in Section 5.2.1.2(d) of the LACBWR Technical Specifications exceeds the 6-month test interval required by Appendix J. It is proposed that the 4-month test interval continue to be used in lieu of the 6-month test interval if an exemption is granted.

The LACBWR airlock doors are of the single seal design (see attached sketch) and cannot be tested above 1.0 psig without installing strongbacks. Therefore, continuous monitoring of the airlock door seals or frequent testing of the airlocks is not practical without a major modification to the door seal design. Since the existing design has proved to be reliable, we believe it would be imprudent to change it.

Evaluation. Sections III.B.2 and III.D.2 of Appendix J require that containment airlocks be tested at peak calculated accident pressure (Pa) at 6-month intervals and after each opening in the interim between 6-month tests. These requirements were imposed because airlocks represent potentially large leakage paths which are more prone to human error than other containment penetrations. Type B penetrations (other than airlocks) require testing in accordance with Appendix J at intervals not to exceed 2 years.

Appendix J was published in 1973. A compilation of airlock events from Licensee Event Reports submitted since 1969 shows that airlock testing in accordance with Appendix J has been effective in prompt identification of airlock leakage but that rigid adherence to the after-each-opening requirement may not be necessary.

Since 1969, there have been approximately 70 reported instances in which airlock testing results have exceeded allowable leakage limits. Of these events, 25% were the result of leakage other than that resulting from improper seating of airlock door seals. These failures were generally caused by leakage past door-operating mechanism handwheel packing, door-operating cylinder shaft seals, equalizer valves, or test lines. These penetrations are not unlike other Type B or Type C containment penetrations except that they may be operated more frequently. Since airlocks are tested at a pressure of Pa every 6 months, these penetrations are tested, at a minimum, four times more frequently than typical Type B or C penetrations. The 6-month test is therefore considered to be both justified and adequate for the prompt identification of this leakage.

Improper seating of the airlock door seals, however, is not only the most frequent cause of airlock failures (the remaining 75%), but also represents the largest potential leakage path. While testing at a pressure of Pa after each opening will identify seal leakage, seal leakage can also be identified by alternative methods such as pressurizing between double-gasketed door seals (for airlocks designed with this type of seal) or by pressurizing the airlock to pressures other than Pa. Furthermore, experience gained in the testing of airlocks, since the issuance of Appendix J, indicates that the use of one of these alternative methods may be preferable to the full-pressure test of the entire airlock.

Airlocks in reactor plants designed prior to the issuance of Appendix J often do not have the capability to be tested at Pa without the installation of strong- backs or the performance of mechanical adjustments to the operating mechanisms of the inner doors. This is because the inner doors are designed to seat with accident pressure on the containment side of the door; therefore, the operating mechanisms were not designed to withstand accident pressure in the opposite direction. When the airlock is pressurized for a local airlock test (i.e., pressurized between the doors), pressure is exerted on the airlock side of the inner door, causing the door to unseat and preventing the conduct of a meaningful test. The strongback or mechanical adjustments prevent the unseat- ing of the inner door, allowing the test to proceed. The installation of strongbacks or the performance of mechanical adjustments is time consuming (often taking several hours), may result in additional radiation exposure to operating personnel, and may also cause degradation to the operating mechanism of the inner door with consequential loss of reliability of the airlock. In addition, when conditions require frequent openings over a short period of time, testing at Pa after each opening both becomes impractical (tests often take from 8 hours to several days) and accelerates the rate of exposure of personnel and degradation of mechanical equipment.

If a satisfactory test of the airlock door seals is performed within 72 hours of opening or every 72 hours during periods of frequent openings whenever containment integrity is required, the intent of Appendix J is satisfied and the undesirable effects of testing after each opening are reduced. The test of the airlock door seals may be performed by pressurizing the space between the double-gasketed seals (if so equipped) or by pressurizing the entire airlock to a pressure less than Pa that does not require the installation of strongbacks or performance of other mechanical adjustments. If the reduced-pressure airlock test is employed, the results of this test must be conservatively extrapolated to the results of the Pa air test. Furthermore, since Reference 3 was written, Section III.D.2 of Appendix J has been revised (effective October 1980). The revised Section III.D.2 substitutes 72-hour testing for the formerly required after-each-opening testing and also provides for reduced-pressure airlock testing or testing between double-gasketed seals, when meeting the 72-hour requirement.

DPC has stated that the airlock door seals at LACBWR are of single-gasket design, the airlocks can not be pressurized above 1 psig without installing strongbacks on the inner door, and the seals have proven reliable in airlock testing since 1967. DPC contends that with these conditions, any after-each-opening testing requirement is impractical in view of the daily use of these airlocks. Nevertheless, the experience gained by airlock testing at all operating reactors over approximately the same period of time, as discussed above, indicates that some verification of door seal integrity within 72 hours of opening or every 72 hours during periods of frequent openings is essential to prevent extended periods of reactor operation with undetected door seal failure.

Consequently, FRC finds that DPC's proposal to test airlocks every 4 months and not after each opening or every 72 hours during periods of frequent openings is an unacceptable alternative to the requirements of Appendix J. The possibility that a failed seal could remain undetected for up to 120 days goes far beyond the objective of the Appendix J testing program. DPC should provide an airlock testing program in conformance with the testing requirements of Section III.D.2, as revised in October 1980.

4. CONCLUSIONS

Technical evaluations of all outstanding submittals related to the implementation of the requirements of 10CFR50, Appendix J, at LACBWR have been provided in Section 3 of this report. The conclusions of these evaluations are presented below:

- o Hydraulic testing of demineralized water system isolation valve No. 67-26-001 is an acceptable exemption to the pneumatic testing requirements of Appendix J, since the hydraulic testing is used to verify an effective water seal on this valve in accordance with Appendix J.

- o Hydraulic testing of high pressure service water system isolation valve No. 75-26-003 is an acceptable exemption to the pneumatic testing required by Appendix J, since the hydraulic testing is used to verify an effective water seal on this valve in accordance with Appendix J.

- o Hydraulic testing of decay heat startup water removal isolation valve No. 56-25-001 is an acceptable exemption to the pneumatic testing requirements of Appendix J, since the hydraulic testing is used to verify an effective water seal on this valve in accordance with Appendix J.

- o Hydraulic testing of primary purification resin sluice isolation valve Nos. 54-24-019, 54-24-020, 54-24-021, and 54-24-022 is an acceptable exemption to the pneumatic testing requirements of Appendix J, since the hydraulic testing is used to verify an effective water seal on these valves in accordance with Appendix J.

- o DPC's proposal to modify the Technical Specifications at LACBWR to specify a maximum total leakage of 0.6 La for Type B and Type C testing is acceptable, since this conforms to the requirements of Appendix J.

- o Section 5.2.1.1.(c) of the LACBWR Technical Specifications is unacceptable because it can result in a nonconservative assessment of the containment integrated leakage rate. This section should be modified to require back-correcting by a conservative method.

- o DPC's request to test containment airlocks every 4 months and not after each opening is an unacceptable alternative to the requirements of Appendix J. A reduced pressure test of airlock door seals or other positive means to verify the integrity of the seals within 72 hours of opening or every 72 hours during periods of frequent openings is necessary to satisfy the testing requirements of Appendix J.

5. REFERENCES

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