



**Consumers
Power**

**POWERING
MICHIGAN'S PROGRESS**

Palisades Nuclear Plant: 27780 Blue Star Memorial Highway, Covert, MI 49043

January 10, 1996

U S Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT
REQUEST FOR EXEMPTION FROM 10CFR50 APPENDIX J AND TECHNICAL
SPECIFICATIONS CHANGE REQUEST - LOCAL LEAK RATE TESTING OF THE
EMERGENCY ESCAPE AIRLOCK

Pursuant to the requirements of 10 CFR 50.12, "Specific exemptions", an exemption from certain requirements of 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors," is hereby requested for the Palisades Plant. This request concerns the local leak test requirements for the Emergency Escape Airlock in the Palisades containment building. We request that the NRC use the information provided herein as the basis for issuing an exemption from the requirement to perform pressure testing after all airlock door openings as imposed by 10 CFR Part 50, Appendix J, III.D.2.(b)(ii) and III.D.2.(b)(iii). The exemption request and the justification for approving the exemption are provided as Attachment 1.

A change to the Palisades Technical Specifications is also requested. This change is needed to incorporate new test requirements for the Emergency Escape Airlock, as proposed in the exemption request, and to add an acceptance criterion for an airlock door seal contact check. This Technical Specification Change Request is provided as Attachment 2.

The exemption and associated changes to the Technical Specifications are necessary due to the design of the Palisades Emergency Escape Airlock doors. Full airlock pressure testing requires the installation of a strongback on the inner door. Restoration from a full airlock pressure test requires the outer door to be opened to permit the removal of the inner door strongback. In addition, during test restoration, the inner and outer doors are opened (one at a time) to allow

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inspection and adjustment of the seals to correct the effects of strongback clamping forces on the inner door and the high pressure seating effects on the outer door. Since between-the-seals testing is not practical for the Palisades design, each door opening would again invoke the Appendix J and Technical Specifications requirement for another full pressure test. Thus an endless iteration of testing activities would occur.

The alternative proposed for verification of Emergency Escape Airlock door seal functionality after an airlock test is to continue with the present successful procedural practice of testing for proper door seal contact in lieu of a between-the-seals test during restoration from an airlock pressure test. This seal contact verification is completed after the removal of the door strongback, following full pressure testing, and just prior to final closure of the airlock doors. The performance of the door seal contact check has resulted in the successful completion of subsequent Emergency Escape Airlock full pressure tests since the procedural practice began in 1987.

Attachment 3 to this submittal contains the proposed Technical Specification and basis document pages and Attachment 4 contains the existing Technical Specification and basis document pages marked up to show the proposed changes.

This request is a follow up to CPCo letters dated June 30, 1989 and May 22, 1989, which provided responses to a proposed Notice Of Violation in NRC Inspection Report 89-009, dated April 21, 1989. A Technical Specifications Change Request on this subject was originally submitted on March 25, 1991 and supplemented on May 1, 1991. After discussion with the NRC, that request was withdrawn on July 29, 1991 pending completion of additional testing and evaluation which has been completed and is discussed in Attachment 5.

SUMMARY OF COMMITMENTS

This letter contains no new commitments and makes no revisions to existing commitments.



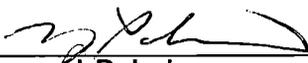
Richard W Smedley
Manager, Licensing

CC Administrator, Region III, USNRC
Project Manager, NRR, USNRC
NRC Resident Inspector - Palisades

5 Attachments

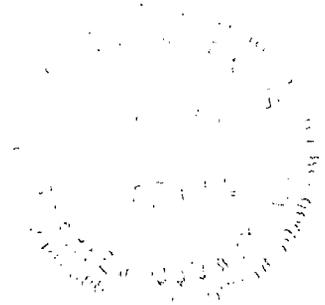
CONSUMERS POWER COMPANY

To the best of my knowledge, the contents of this document entitled "Request for Exemption from 10CFR50 Appendix J and Technical Specifications Change Request - Local Leak Rate Testing of the Emergency Escape Airlock" are truthful and complete.

By 
Thomas J Palmisano
Plant General Manager

Sworn and subscribed to before me this 10th day of January 1996.


Alora M Davis, Notary Public
Berrien County, Michigan
(Acting in Van Buren County, Michigan)
My commission expires August 26, 1999



[SEAL]

ATTACHMENT 1

**CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255**

**EXEMPTION REQUEST - 10CFR50, APPENDIX J
PRESSURE TESTING OF THE EMERGENCY ESCAPE AIRLOCK**

CONSUMERS POWER COMPANY
Docket 50-255
Request for Exemption to 10 CFR Part 50, Appendix J
License DPR-20

As described in the following discussion, it is requested that an exemption be granted to Facility Operating License DPR-20, Docket 50-255 to permit an alternative method of Emergency Escape Airlock testing. This method differs from 10 CFR Part 50, Appendix J, Section III.D.2.(b).

DESCRIPTION OF EMERGENCY ESCAPE AIR LOCK

The Emergency Escape Airlock was designed and installed prior to the August 1971 issuance of 10 CFR 50 Appendix J. The Emergency Escape Airlock connects the containment building with the roof of the auxiliary building at the 625' elevation. The airlock consists of a steel cylinder with doors at each end interlocked so that only one door can be open at any time. The airlock is designed to withstand all containment conditions with either or both doors closed. The doors open towards the interior of containment and the door directly in contact with the containment atmosphere is designated as the inner door.

Double gaskets or seals are provided to seal each door. The seal material currently in use is an ethylene-propylene-diamine-monomer (EPDM), which has been selected because of its combined properties of resistance to radiation, sealing capabilities, and resistance to high temperatures. The airlock barrel may be pressurized to test its leak tightness without pressurizing the containment building. The escape lock doors each have two latching pins centered at the top and bottom of the door, (corresponding to 12 o'clock and 6 o'clock positions).

The Emergency Escape Airlock door latching pins only serve to position the door against the stationary bulkhead. The door's design relies on the increase in containment pressure during a postulated event to provide sufficient closing force to produce an effective seal. The two latching pins by themselves do not provide an adequate circumferential closing force to allow meaningful door seal pressure testing.

DESCRIPTION OF PRESENT SURVEILLANCE TEST

During a design basis accident, the pressure applied to the doors forces them against the seals. During airlock pressure testing, a strongback is necessary to simulate this pressure on the inner door and to protect the inner door locking pins from the forces generated by the internal test pressure in the barrel. The use of a door strongback to complete between-the-seals testing or full airlock pressure testing (inner door only) is required and was part of the original design of the doors. This design does not permit unrestrained between-the-seals testing.

Past Technical Specification surveillance testing for both the Personnel Airlock and the Emergency Escape Airlock has shown that testing at containment design pressure with strongbacks in place causes the seals to take a set that reflects the shape of the seal grooves. The applied pressure actually forces the metal sealing surface of the door against the outer edge of the airlock bulkhead. With strongbacks installed or test pressure applied, the male portion of the door seal (the

seal bead) will be pressed approximately three-eighths of an inch into the seal. The seal will remain in this compressed condition for the 12 to 24 hour period while the test is being performed, causing the seal to take a set in the seal groove of the airlock bulkhead. After completion of the full pressure test, the doors must be opened to remove the strong back and to verify seal contact with the door seal bead in order to assure that the seals rebound to their pre-test condition. Seal adjustment may be required after testing because the force of the strongbacks on the inner door and the force due to the test pressure on the outer door draws the seal bead on the doors further into the seal groove than obtained with normal door closure forces.

Past test performances have shown that once the strongbacks are removed, the seals may not completely rebound to their pre-test position. After full pressure testing of the airlock, a seal contact check is performed as part of the surveillance test. If the seal contact check reveals gaps, seal adjustment is performed to ensure that the seal material rebounds to its pre-test condition. Seal adjustment is considered a normal part of restoration from testing and is controlled by procedure.

The seal contact check consists of applying a thin layer of grease on the seal face and then closing and reopening the airlock door. This will result in a pattern in the grease that is representative of the door seal bead mating with the seal. If the grease pattern does not show adequate contact, the seals are adjusted in the area of the gap. This is done by lifting the seals slightly out of their groove so that the seal expands to its pre-test position. Following adjustment, a final seal contact check is performed to verify the integrity of the sealing surface. The practice of verifying acceptable seal contact following performance of the airlock leak test and the acceptance criteria for this verification have been incorporated into the maintenance program. This practice has proven to be effective through successful results during ILRTs and 6 month full airlock pressure tests. Similarly, positive results from post-test seal adjustments have also been obtained with the Personnel Airlock Door although an unrestrained between-the-seals test can be done and therefore is performed on those doors as a final test.

DESCRIPTION OF PROPOSED EXEMPTION AND ALTERNATIVE TESTING

10 CFR Part 50, Appendix J, II.G defines Type B tests as "tests intended to detect local leaks and to measure leakage across each pressure-containing or leakage-limiting boundary ..." which includes air lock door seals. An exemption is requested from 10 CFR Part 50, Appendix J, III.D.2.(b)(ii) and III.D.2.(b)(iii), for Type B testing of our Emergency Escape Airlock. This exemption is specifically needed because the current pressure testing process for the Emergency Escape Airlock requires opening the doors after the test is completed which would then require another test. For this reason, procedural controls are in place to preclude the use of the Emergency Escape Airlock without subsequent full pressure testing.

The exemption request is necessary due to the original design of the Emergency Escape Airlock. During special testing in 1992 (see Attachment 5), it was shown that the annulus between the door seals could not be successfully tested without the door strongback installed even at pressures as low as 2 psig. This testing, along with information from the vendor, confirms that between-the-seal pressure

testing on the Emergency Escape Airlock doors cannot be properly measured or evaluated if the door strongbacks are not installed. Similarly, the inner door does not fully seal with the reverse direction pressure of a full airlock pressure test unless the strongback is installed.

Since the removal of the inner door strongback after pressure testing requires the outer door to be opened, a between-the-seals test of the outer door would be required by the regulation. This test would require the installation of a strongback on the outer door. Either full pressure testing or the pressure induced by the strongback may cause the seals to take a set. It is therefore necessary to open both doors (one at a time) after any pressure testing to ensure full seal contact.

As an alternative to a final pressure test required by Appendix J for verification of door seal functionality, a final door seal contact verification is proposed. This seal performance verification is completed following the full pressure airlock test, after the removal of the inner door strongback, and just prior to final closure of the airlock doors. The requested exemption would not affect compliance with the present requirement to perform a full pressure Emergency Escape Airlock test at six month intervals. It would also not affect the requirement to perform a full pressure Emergency Escape Airlock test within 72 hours of opening either door during periods when containment integrity is required. It merely recognizes that, after successful testing, the doors will be reopened as necessary to remove door strongbacks while preserving containment integrity (if required); and then prior to final closure of each door, the seal contact will be verified on the door seals. This seal contact check replaces the pressure test required by Appendix J for the door opening(s) associated with this test restoration.

REGULATORY BASIS FOR SPECIFIC EXEMPTION

The exemption request from Appendix J air lock door testing requirements will not present an undue risk to the public health and safety, as required by 10 CFR Part 50.12(a)(1). Special circumstances are present pursuant to 10 CFR 50.12(a)(2)(ii) and 10 CFR 50.12(a)(2)(iii) since:

- 1) The underlying purpose of the Appendix J air lock door seal testing requirements is still achieved through the performance of the proposed alternate seal contact verification checks.
- 2) Full compliance with the testing requirements would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted.

BASES FOR EXEMPTION

10 CFR 50.12(a)(1) - NO SIGNIFICANT RISK TO PUBLIC HEALTH AND SAFETY

The present test methods verify the design function capability of the escape lock door seals and provide adequate protection for public health and safety. The Emergency Escape Airlock is fully capable of performing its design function during normal operation and under the conditions present during a design basis accident.

The doors have a successful history of meeting the 6 month periodic full pressure test requirements and ILRTs. Based on those results, the airlock doors have been proven to function as designed using current methods of testing and maintenance, including seal contact checks. Alternatives would only provide the same level of protection for public health and safety as currently exists. Continuing with our current methods of testing will not result in undue risk to public health and safety and is consistent with the common defense and security.

10 CFR 50.12(a)(2)(ii)- APPLICATION OF THE REGULATION IS NOT NECESSARY TO ACHIEVE THE UNDERLYING PURPOSE OF THE RULE

In a letter on this issue dated July, 29,1991, we informed the NRC that we would perform additional low pressure between-the-seals testing on the escape lock door seals. Special Test T-317, "Escape Air Lock Between-the-Seals Test", was completed on March 20, 1992, to measure seal leak rates at low initial pressures and without the door strongbacks installed. The trial tests were performed at pressures lower than the Palisades Technical Specification test pressure requirement of 10 psig. With the annulus between the door seals pressurized to as low as 2 psig without the door strongback installed, the test pressure still dropped off immediately. This indicates that the leak rates for between-the-seals testing on the Emergency Escape Airlock can not be properly evaluated against meaningful acceptance criteria if the door strongbacks are not installed. The test results indicate that meaningful between-the-seals testing is not possible with the present design of the escape air lock.

The present practice ensures proper door seals contact prior to final door closure. The performance of this door seal contact check has led to the successful completion of subsequent Emergency Escape Airlock full pressure tests since the procedural practice began in 1987.

The underlying purpose of between-the-seals testing is to verify the seal integrity after an airlock door is opened. The seal contact check and adjustment performed on the Emergency Escape Airlock door seals serve this purpose and ensure the doors are sealing properly. Therefore, application of the regulation to perform between-the-seals pressure tests after full pressure testing is not necessary to achieve the underlying purpose of the rule.

10 CFR 50.12(a)(2)(iii)- COMPLIANCE WOULD RESULT IN UNDUE HARDSHIP OR OTHER COSTS THAT ARE SIGNIFICANTLY IN EXCESS OF THOSE CONTEMPLATED WHEN THE REGULATION WAS ADOPTED

In the July, 29,1991 letter on this issue, we informed the NRC that we would also investigate modifications to the existing Emergency Escape Airlock doors in an attempt to identify other methods of complying with the Appendix J requirements. Since that time we have evaluated possible modifications to the escape lock to facilitate between-the-seals testing. The modifications that were considered were:

1. Modify the seal design or change the seal material.

A proposal was received from the airlock vendor to perform testing of different seal shapes and materials. This was later withdrawn. They believe,

and we concur, that the seal material and shape currently in use are reliable and adequate to maintain containment integrity. Simply changing the seal material or shape would be unlikely to allow meaningful between-the-seals tests with strongbacks removed.

2. Perform door modifications by removing the doors and altering the sealing surfaces.

Minor modifications were considered for the door mechanisms in conjunction with reconfigured sealing surfaces. This modification has never been performed by the airlock vendor and would be experimental. There is no guarantee that these efforts would be successful in allowing Palisades to perform between-the-seals testing. The cost of this modification is estimated to be roughly equal to performing an airlock retrofit, as described following.

3. Perform an airlock retrofit which would include removing and replacing the doors, the ends of the bulkhead, and the door mechanisms.

The doors would be replaced with the doors of a design whose seals can be tested per Appendix J without additional restraint or subsequent seal restoration. The mechanisms would be updated for smoother operation but their function would not be altered.

The only viable alternative found was the replacement of the air lock doors which has been estimated to cost a minimum of \$ 700,000. The cost of performing the modification is not warranted because no increase in plant or public safety would be realized. The other modifications to the present doors or seals do not ensure adequate performance improvement for unrestrained between-the-seals testing.

ATTACHMENT 2

**CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255**

**TECHNICAL SPECIFICATION CHANGE REQUEST - SECTION 4.5.2
LICENSE DPR-20
LOCAL LEAK RATE TESTING ON THE EMERGENCY ESCAPE AIRLOCK**

CONSUMERS POWER COMPANY
Docket 50-255
Request for Change to the Technical Specifications
License DPR-20

It is requested that the Technical Specifications contained in the Facility Operating License DPR-20, Docket 50-255, issued to Consumers Power Company on February 21, 1991, for the Palisades Plant be changed as described below:

I. Discussion of Proposed Change:

It is proposed that Section 4.5.2 of the existing Palisades Technical Specifications (TS), dealing with Local Leak Detection Tests, be revised. The proposed change incorporates the tests of the Emergency Escape Airlock that are the subject of the exemption request included with this submittal.

The current TS 4.5.2 requires an airlock pressure test to be performed within 72 hours of each door opening at a pressure of not less than 10 psig. For the Emergency Escape Airlock only, restoration of the airlock after testing requires that the airlock doors be opened. For this opening, a seal contact check is proposed in lieu of a between-the-seals test just prior to the final door closure after restoring from the full pressure test.

TS 4.5.2(b) states an acceptance criterion for airlock between-the-seals pressure tests (applicable only to the Personnel Airlock). An additional acceptance criterion is proposed for the Emergency Escape Airlock door seal contact check.

In addition, the action statements in TS 4.5.2(c)(3) currently discuss the action needed if a between-the-seals test fails to meet the acceptance criterion. For the seal contact check on the Emergency Escape Airlock doors, the same 7 day LCO action is proposed.

The basis statement for TS 4.5 is also modified to reflect the above changes.

II. Reasons for Change

10 CFR Part 50, Appendix J, III.D.2.(b) requires pressure testing of the Emergency Escape Airlock at a pressure of $\geq P_a$ (55 psig) at 6 month intervals and after openings during periods where containment integrity is not required. It also requires pressure testing within 72 hours after any opening during periods when containment integrity is required at a pressure of $\geq P_a$ or at the pressure specified in the Technical Specifications (≥ 10 psig). The present Technical Specifications reflect these requirements.

The original design of the Emergency Escape Airlock does not permit pressure testing at the pressures designated without installation of a strongback on the inner door (or on both doors if between-the-seals testing is done). The doors require pressure from the containment side to effect a seal. The strongback provides this force during testing which involves pressure opposing the containment side pressure. The strongback removal requires the outer airlock door to be opened.

Palisades had previously considered the door opening to remove the strongback and the opening of both outer and inner doors to check the seal contact to be part of the test restoration. This restoration verifies that the seals have not taken an unacceptable set due to the test and corrects any deficiencies. This approach has resulted in successful pressure testing since 1987 when the practice began.

As a result of a Notice of Violation reported in the NRC's Inspection Report 89009, it became clear that opening airlock doors for test restoration also created the need for an additional pressure test per 10 CFR Part 50, Appendix J, III.D.2.(b)(iii). Literal compliance, therefore, would result in continuous iterative testing. An exemption request is therefore submitted with this Technical Specifications Change Request. If approved, the exemption would allow alternate testing which varies from the requirements in 10 CFR Part 50, Appendix J. This Technical Specifications Change Request would incorporate this alternative testing and the acceptance criteria as new requirements.

III. Analysis of No Significant Hazards Consideration

Consumers Power Company finds the activities associated with this proposed Technical Specifications change involve no significant hazards and accordingly, a no significant hazards determination per 10 CFR Part 50.92(c) is justified. The seal contact check, which is discussed in the exemption request, provides assurance that there will be no increase in the amount of effluents or radiation emitted at Palisades.

The following evaluation supports the finding that operation of the facility in accordance with the proposed change to the Technical Specifications would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change does not alter any plant operating conditions, operating practices, equipment design, equipment settings, or equipment capabilities. Therefore, operation of the facility in accordance with the proposed change will not involve an increase in the probability of an accident. This determination is made because the full pressure test and the seal contact check provides reasonable assurance that the Emergency Escape Airlock doors will act as designed to maintain containment integrity. Procedures are established to test seal integrity with full pressure airlock test and to verify the seal contact following the test. Acceptance criteria are established for each evolution. Failure to meet the acceptance criteria would result in corrective action to restore the Emergency Escape Airlock to the intended condition.

The proposed change defines the pressure tests required for the Emergency Escape Airlock and specifies the method used to restore

the airlock door seals after full pressure testing. Due to the design of the airlock, the doors must be opened after testing. This change recognizes the practice of verifying the final integrity of the airlock by verifying door seal contact. Since the pressure test does not load the door seals in the same direction as a design basis accident, this seal contact check provides better assurance that the door is sealed than alternative pressure tests. The Emergency Escape Airlock continues to be capable of performing its design function and the consequences of those accidents previously evaluated will not increase.

2. Create the possibility of a new or different kind of accident from any previously evaluated.

The proposed change does not alter any plant operating conditions, operating practices, equipment design, equipment settings, or equipment capabilities. Therefore, operation of the facility in accordance with the proposed change will not create the possibility of a new or different kind of accident from any previously evaluated.

3. Involve a significant reduction in a margin of safety.

The proposed change requires testing of the Emergency Escape Airlock at full pressure ($\geq P_a$) rather than a reduced pressure between-the-seals test. This reduced pressure test is allowed by the existing Technical Specifications when the door is opened during periods when containment integrity is required. The door seal contact check and restoration will provide assurance that the Emergency Escape Airlock is capable of performing its design function after the doors are opened during recovery from full pressure testing. Implementation of these test requirements and meeting the acceptance criteria will ensure that containment integrity with respect to the Emergency Escape Airlock will be maintained. Therefore, there will be no reduction in the margin of safety.

IV. Conclusion

The Palisades Plant Review Committee has reviewed this Technical Specifications Change Request and has determined that proposing this change does not involve an unreviewed safety question. Further, the change involves no significant hazards consideration. This change has been reviewed by the Nuclear Performance Assessment Department.

ATTACHMENT 3

**CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255**

**TECHNICAL SPECIFICATIONS CHANGE REQUEST
LICENSE DPR-20
LOCAL LEAK RATE TESTING OF THE EMERGENCY ESCAPE AIRLOCK**

Proposed Pages

3 Pages