ATTACHMENT A

NIAGARA MOHAWK POWER CORPORATION

LICENSE NO. NPF-69

DOCKET NO. 50-410

Proposed Changes to Technical Specifications

The existing page 3/4 6-18 will be replaced with the attached revised page. This page has been retyped in its entirety with marginal markings to indicate changes to the text.

SURVEILLANCE REQUIREMENTS

4.6.2.1 (Continued)

d. At least once per 18 months by conducting a visual inspection of the exposed accessible interior and exterior surfaces of the suppression chamber.*

e. At least every outage requiring the performance of a Containment Integrated Leak Rate Test, as scheduled in conformance with the criteria specified in the 10CFR50 Appendix J Testing Program Plan described in Section 6.8.4.f, by conducting a drywell-to-suppression chamber bypass leak test at an initial differential pressure of 3 psi and verifying that the $A/\sqrt{K}$ calculated from the measured leakage is within the specified limit of 0.0054 square feet.

1. If any drywell-to-suppression chamber bypass leak test fails to meet the specified limit, the test schedule for subsequent tests shall be reviewed and approved by the Commission.

2. If two consecutive tests fail to meet the specified limit, a test shall be performed at least each refueling outage until two consecutive tests meet the specified limit, at which time the original test schedule may be resumed.

3. The provisions of Specification 4.0.2 do not apply.

f. During each refueling outage for which the drywell-to-suppression chamber bypass leak test in Specification 4.6.2.1.e is not conducted, by conducting a test of the four drywell-to-suppression chamber bypass leak paths containing the suppression chamber vacuum breakers at a differential pressure of at least 3 psi and

1. verifying that the total leakage area $A/\sqrt{K}$ contributed by all four bypass leak paths is less than or equal to 24% of the specified limit, and

2. the leakage area for any one of the four bypass leak paths is less than or equal to 12% of the specified limit.

* Includes each vacuum relief valve and associated piping.

ATTACHMENT B

NIAGARA MOHAWK POWER CORPORATION

LICENSE NO. NPF-69

DOCKET NO. 50-410

Marked Copy of Proposed Changes to Current Technical Specification

At least every outage requiring the performance of a Containment Integrated Leak Rate Test, as scheduled in conformance with the criteria specified in the 10CFR50 Appendix J Testing Program Plan described in Section 6.8.4.f, by

SURVEILLANCE REQUIREMENTS

4.6.2.1 (Continued)

d. At least once per 18 months by

1. Conducting a visual inspection of the exposed accessible interior and exterior surfaces of the suppression chamber.*

2. Conducting a drywell-to-suppression chamber bypass leak test at an initial differential pressure of 3 psi and verifying that the $A/\sqrt{K}$ calculated from the measured leakage is within the specified limit of 0.0054 → 10% of 0.054 square feet. If any drywell-to-suppression chamber bypass leak test fails to meet the specified limit, the test schedule for subsequent tests shall be reviewed and approved by the Commission.

If 2. If two consecutive tests fail to meet the specified limit, a test shall be performed at least every 9 months until two consecutive tests meet the specified limit, at which time the 18-month test schedule may be resumed.

each refueling outage

original

3. The provisions of Specification 4.0.2 do not apply.

f. During each refueling outage for which the drywell-to-suppression chamber bypass leak test in Specification 4.6.2.1.e is not conducted, by conducting a test of the four drywell-to-suppression chamber bypass leak paths containing the suppression chamber vacuum breakers at a differential pressure of at least 3 psi and

1. verifying that the total leakage area $A/\sqrt{K}$ contributed by all four bypass leak paths is less than or equal to 24% of the specified limit, and

2. the leakage area for any one of the four bypass leak paths is less than or equal to 12% of the specified limit.

* Includes each vacuum relief valve and associated piping.

ATTACHMENT C

NIAGARA MOHAWK POWER CORPORATION

LICENSE NO. NPF-69

DOCKET NO. 50-410

Supporting Information and no Significant Hazards Consideration Analysis

INTRODUCTION

The Nine Mile Point Unit 2 (NMP2) containment is of the Mark II design, having a drywell located over a suppression chamber. The drywell and suppression chamber are separated by a diaphragm slab. The suppression chamber contains a pool of water which serves as a heat sink for energy released by various operational events and accidents. One hundred and twenty-one (121) downcomers and eighteen (18) Main Steam Safety/Relief Valve (SRV) discharge lines penetrate the diaphragm slab and terminate at a pre-designed submergence within the pool. During a Loss of Coolant Accident (LOCA) inside containment, the containment design directs steam from the drywell to the suppression pool by means of the downcomers through the pool of water to limit the maximum containment pressure response to less than the design value of 45 pounds per square inch gauge (psig). Four sets of two vacuum breakers ensure that the differential pressure between the drywell and suppression chamber does not exceed the design of the diaphragm slab in the upwards direction. The effectiveness of the containment design requires that the leak path from the drywell to the suppression chamber airspace be minimized. Steam that enters the suppression pool airspace through leak paths will bypass the suppression pool and can result in a rapid post-LOCA increase in containment pressure depending on the size of the bypass flow area. Technical Specification (TS) surveillance 4.6.2.1 currently requires that this bypass leakage be measured every 18 months to ensure that it remains within analyzed values.

Niagara Mohawk Power Corporation (NMPC) has determined that drywell-to-suppression chamber bypass leakage from pathways other than through drywell floor penetrations containing the suppression chamber vacuum breakers is negligible based on engineering evaluations, design features and fabrication specifications for drywell-to-suppression chamber components. The results of actual bypass leak tests also supports this conclusion. Performing the drywell-to-suppression chamber bypass leak test every 18 months (refueling outage) results in excessive and unnecessary pressurization cycles of the containment. The bypass leak test also limits the flexibility of outage planning as personnel are not permitted to work inside the containment while it is pressurized for bypass leakage testing.

NMPC proposes to increase the interval between bypass leakage tests to an interval corresponding to that required for the Containment Integrated Leak Rate Test in order to reduce containment pressurization cycles. Since this change introduces the possibility that degradation of bypass leakage through the drywell floor penetration containing the vacuum breakers could go undetected during the proposed extension, NMPC is also proposing to

add a surveillance requirement for testing of the bypass leak paths containing the suppression chamber vacuum breakers to be performed during refueling outages when the bypass leak test is not performed. Stringent acceptance criteria for the proposed test have been proposed to ensure that degradation of the bypass leak paths do not impact the containment performance. These tests can be performed without pressurizing the containment, and, therefore, reduces the number of containment pressurization cycles and allows for more flexibility in outage planning and more effective use of resources.

EVALUATION

The proposed Technical Specification changes will extend the surveillance interval for the drywell to suppression chamber bypass leak test from 18 months to an interval corresponding to that required for the Containment Integrated Leak Rate Test. The proposed Technical Specification revision references the 10CFR50 Appendix J Testing Program Plan, Specification 6.8.4.f, to ensure consistency with the previously submitted application for an amendment which would revise the Technical Specifications to incorporate Option B of 10CFR50 Appendix J. In addition, the proposed changes will add an additional surveillance requirement to perform testing of the four drywell floor penetrations containing the suppression chamber vacuum breakers during refueling outages when the bypass leak test is not performed. The proposed changes do not increase the consequences of an accident as previously evaluated. This is based on the evaluations described below which demonstrate that the overall impact, if any, on the plant primary containment integrity is negligible. Furthermore, the performance history for the previous NMP2 bypass leak tests do not indicate any time based failures. The proposed TS changes also include a change to the frequency of the bypass leak tests, if two consecutive bypass leak tests fail, from once every nine (9) months to once each refueling outage. This change has no impact on the probability that bypass leak path degradation will result in excessive bypass leakage since leak testing of the most likely source of bypass leak path degradation, the drywell floor penetrations containing the vacuum breakers, will be performed every refueling outage that the bypass leakage test is not performed.

During a LOCA inside containment, potential leakage paths between the drywell and suppression chamber airspace could result in excessive containment pressures, since the steam flow into the airspace would bypass the heat sink capabilities of the suppression pool. The containment pressure response to the postulated bypass leakage can be mitigated by manually actuating the suppression chamber sprays. Accordingly, since the sprays are manually actuated, an analysis was performed to show that the operator has sufficient time to initiate the sprays prior to exceeding the containment design pressure. This analysis is summarized in Section 6.2.1.1.3 of the NMP2 Updated Final Safety Analysis Report (UFSAR). The analysis is based on a small break LOCA inside containment at normal reactor coolant system pressure. The analysis concludes that the containment design pressure of 45 psig is not exceeded with containment sprays manually initiated within 30 minutes from the onset of the small break LOCA assuming a drywell to suppression chamber bypass flow area (i.e., $A/\sqrt{K}$) equal to 0.054 square feet. The Technical Specification conservatively specifies a maximum allowable bypass area of 10% of the design value of 0.054 square feet. The drywell-to-suppression chamber bypass test currently required by the Technical Specifications verifies that the actual bypass flow area

is less than or equal to the TS limit. The bypass leakage test ensures that degradation in the measured bypass area is identified and corrected to ensure containment integrity during a Loss of Coolant Accident (LOCA).

Since these proposed TS changes introduce the possibility that a degradation in the bypass leakage rate could go undetected during the proposed extension of the bypass leak test interval, three potential bypass leakage categories were identified and evaluated:

1. Direct leakage pathways, other than those associated with the penetrations containing the suppression chamber vacuum breaker assemblies, such as diaphragm floor penetrations (e.g., downcomer and SRV discharge line penetrations), cracks in the diaphragm floor and/or liner plate, and cracks in the downcomers and SRV discharge lines that pass through the suppression chamber airspace;

2. Leakage through cross-connected piping systems external to the containment; and

3. Leakage through the four drywell floor penetrations containing the suppression chamber vacuum breaker assemblies.

The conclusion of this evaluation determined that leakage from pathways other than the drywell floor penetrations containing the suppression chamber vacuum breaker assemblies is negligible. This conclusion is based on engineering analyses and the design features and fabrication specifications for drywell to suppression chamber components. Previous NMP2 bypass leakage tests further verify this conclusion.

Several plant design features confirm that direct bypass leakage from other than the vacuum breaker assemblies is negligible and will continue to be negligible for the proposed increased duration between tests. All pressure boundary penetrations between the drywell and the suppression chamber are welded. All pressure boundary penetrations between the drywell and suppression chamber have been fabricated, erected, and inspected in accordance with the American Society of Mechanical Engineers (ASME) Code, Section III. The Technical Specifications require that the integrity of these components be visually inspected at least once every 18 months. This provides additional assurance against degradation of the bypass leakage paths.

A review of the potential bypass flow paths between the drywell and suppression chamber airspace by means of cross-connected piping system external to the containment was performed. Based on the information below, NMPC has concluded that the potential leakage from these lines has minimal affect on the bypass leakage area.

The systems with piping external to the containment that are a potential source of bypass leakage are:

1. Containment vent and purge lines

2. Drywell and suppression chamber spray lines

3. Containment atmosphere sampling lines

4. Hydrogen recombiner lines

The following discussion demonstrates that the potential bypass leakage from the above cross-connected piping systems flow path is negligible compared to the TS allowable bypass leak area of 0.0054 square feet based on the following evaluation.

The cross-connected piping is isolated from containment by drywell and suppression chamber containment isolation valves. All flow paths have multiple, in-series containment isolation valves that are tested to meet stringent leakage criteria as specified in 10CFR50, Appendix J. TS require performance of periodic Local Leak Rate Tests (LLRT) to ensure that the valves comply with Appendix J Type C test criteria. Therefore, leakage from the drywell to the suppression chamber airspace can only occur through multiple failure of the leak tightness of primary containment isolation valves.

A bounding analysis has been performed to evaluate the significance of potential bypass leakage area from the cross-connected lines. The TS allowable leakage from the 10CFR50, Appendix J, Type B and C testing boundaries is 60% of the allowed leakage, La. A conservative estimate of the potential bypass leakage can be determined by assuming that the total TS allowable leakage is bypassed to the suppression chamber airspace. The 0.6 La is a bounding leakage rate since it includes all valves and penetrations subject to Type B and C testing rather than just the containment isolation valves located in the potential bypass leakage paths. In support of this bounding analysis, the equivalent leakage area (i.e., $A/\sqrt{K}$) for a leakage rate of 0.6 La (494.64 standard cubic feet per hour)-(SCFH) at the safety analysis peak accident primary containment pressure of 45 psig was calculated to be 0.0000587 square feet, which is equal to 1.09% of the TS allowable bypass leakage area of 0.0054 square feet. In comparison, the average total LLRT results for the first four NMP2 refueling outages is 139.854 SCFH, and the equivalent leakage area corresponding to this average leakage is 0.0000166 square feet, which is equal to 0.31% of the TS allowable leakage area of 0.0054 square feet. NMPC, therefore, concludes that bypass leakage through cross-connected piping systems is insignificant.

The results of previous bypass leakage tests indicate that the maximum equivalent bypass leakage area is less than 0.005 square feet. The current bypass leakage test is performed by recording the differential pressure between the drywell and suppression chamber every 10 minutes over a period of at least 30 minutes to ensure an accurate trend is plotted. This trend plot is then compared to a slope of 0.00714 pounds per square inch per minute (psig/min), which corresponds to a value for $A/\sqrt{K}$ of 0.005 square feet. A slope of less than or equal to 0.00714 psig/min satisfies the test requirements. The results have been consistent, with the slopes nearly zero, for the previous bypass leakage tests since commercial operation, indicating that bypass leakage through any and all potential pathways is negligible. Furthermore, the consistency and repeatability of the results indicates that there is no significant time based degradation for bypass leakage. This is expected as most of the potential leakage paths, except for the drywell floor penetrations containing the suppression chamber vacuum breakers, involve passive components or design features.

NMPC has also reviewed summary results from the Susquehanna, LaSalle, and Limerick drywell-to-suppression pool bypass tests. All these plants have a Mark II containment similar to NMP2. The measured bypass leakage areas for these plants range from 0.0% to

17.6% of the TS allowable value, while the average leakage areas range from 0.69% to 2.4% of the TS allowable value. These results are consistent with those obtained at NMP2 and further demonstrate that bypass leakage is negligible.

The most likely source of potential drywell to suppression chamber bypass leakage are the four drywell floor penetrations containing the suppression chamber vacuum breakers. The vacuum breakers incorporate several design features to minimize the potential for bypass leakage:

1. An elastomer seal is installed on disk to mate with the valve body seat to enhance the leak tightness of the disk/valve body interface.

2. The valve body seat design includes a magnetic latch that assists in maintaining the disk/body seal.

3. The closing direction of the disk allows drywell-to-suppression chamber differential pressure during a LOCA to apply a closing force to the disk to provide better valve seating.

4. The vacuum breakers incorporate a sensitive valve disk position indication system. The position indication system design provides an open valve indication in the control room to ensure an adverse vacuum breaker position will be detected.

Although these potential leakage paths are designed to ensure leak tightness, they contain active components, and their susceptibility to leakage is greater than passive structural components. Therefore, this change request includes a proposed requirement to perform a test on each of these four bypass leakage pathways during each refueling outage when the bypass leak test would not be required. This proposed test will be conducted at a drywell to suppression chamber differential pressure of 3.0 psi (i.e., the same differential pressure as required for the bypass leak test) by either pressurizing the drywell side or inducing a vacuum on the suppression chamber side of the vacuum breakers.

Although the drywell floor penetrations containing the suppression chamber vacuum breakers are expected to be the dominant source of any bypass leakage, the acceptance criteria for the proposed surveillance test has been conservatively established to provide ample margin to account for leakage through other pathways. The total allowed leakage area for all four of these penetrations is 24% of the TS limit for bypass leakage area, and the leakage area limit for any one of the four penetrations is 12% of the TS limit for bypass leakage. The 76% margin to the TS limit is sufficiently high to accommodate expected leakage from other sources, particularly since there is a factor of 10 margin between the TS limit and design limits. The limit for any one penetration has been established to identify any penetration exhibiting a leakage area significantly higher than expected.

The analysis of this proposed TS change is consistent with the observations and conclusions contained in NUREG-1493, "Performance-Based Containment Leakage-Test Program." Specifically, for the purpose of the following discussion, the currently required bypass leakage test is analogous to the Containment Integrated Leak Rate Test (Type A test). Also, the proposed surveillance test of the vacuum breaker penetration pathways is analogous to a Local Leak Rate Test (Type C test). As noted in Section 4.1 of NUREG-

1493, "The percentage of containment leakages that can be detected only by integrated containment leakage testing is very small." Since the drywell-to-suppression chamber interface is designed to the same criteria as the containment, the observations and conclusions in NUREG-1493 regarding test efficacy are applicable to bypass leakage testing, and are consistent with the results of Niagara Mohawk's evaluation of this proposed TS revision. Specifically, the extension of the bypass test interval, when combined with the more frequent testing of the pathways most likely to contribute to degradation of the bypass leak path, does not result in a significant reduction in the integrity or safety of the primary containment.

CONCLUSIONS

Drywell to suppression chamber bypass leakage from pathways other than the drywell floor penetrations containing the suppression chamber vacuum breakers is negligible based on engineering evaluations, design features and fabrication specifications for drywell to suppression chamber components. The proposed Technical Specification changes to extend the surveillance interval for the drywell to suppression chamber bypass leak test to an interval corresponding to that required for the Containment Integrated Leak Rate Test and to add an additional surveillance requirement to perform testing of the drywell floor penetrations containing the suppression chamber vacuum breakers have negligible impact on the plant primary containment integrity.

NO SIGNIFICANT HAZARDS CONSIDERATION ANALYSIS

10CFR50.91 requires that at the time a licensee requests an amendment, it must provide to the Commission its analysis using the standards in Section 50.92 about the issue of no significant hazards consideration. Therefore, in accordance with 10CFR50.91 and 10CFR50.92, the following analysis has been performed.

The operation of Nine Mile Point Unit 2, in accordance with the proposed amendment, will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed TS changes involve the drywell-to-suppression chamber bypass leak test frequency. There are no physical or operational changes to the plant as a result of these proposed TS revisions. Furthermore, the primary containment acts as an accident mitigator and not as an accident initiator. Therefore, the proposed TS changes do not affect the probability of any previously evaluated accident.

The continued testing of bypass leakage pathways containing the suppression chamber vacuum breakers on a refueling frequency, and the continued requirement for visual inspection of containment structural features assures that the bypass leakage path will not degrade beyond the TS allowable limit during the interval between performance of the bypass leakage test. Therefore, radioactivity release following an accident will not be increased since the pressure suppression capability of the containment is not reduced from the existing design, and there will be no significant increase in the consequences of any accident previously evaluated.

The operation of Nine Mile Point Unit 2, in accordance with the proposed amendment, will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed TS changes involve the drywell to suppression chamber bypass leak test frequency. There are no physical or operational changes as a result of these proposed TS changes. These proposed TS changes also include a requirement to continue performing a surveillance test on the bypass leakage pathways containing the vacuum breaker assemblies each refueling outage for which the drywell-to-suppression chamber test is not conducted. This test, along with the visual inspection required every refueling cycle, will ensure that acceptable bypass leakage is maintained during those intervals when the bypass leak test is not required. Accordingly, the possibility of a new or different type of accident is not introduced. Therefore, the proposed TS changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

The operation of Nine Mile Point Unit 2, in accordance with the proposed amendment, will not involve a significant reduction in a margin of safety.

The drywell to suppression chamber bypass leak test data obtained during previous testing at NMP2 demonstrates conformance, by a large margin, to the TS and design leakage requirements. The test data and engineering evaluations indicate that there is negligible risk that the bypass leakage will change adversely in future years. Furthermore, the proposed test frequency is judged to be acceptable based on the small risk of bypass leakage through paths other than those containing the suppression chamber vacuum breakers.

A test of the bypass leak pathways containing the vacuum breakers will be used to verify acceptable bypass leakage during those outages when the bypass leak test is not performed. The proposed test of the bypass leak pathways containing the vacuum breakers, with stringent acceptance criteria, combined with the other negligible potential leakage areas provide an acceptable level of assurance that the bypass leakage can be measured. This capability ensures that an adverse condition can be detected and corrected such that the existing level of confidence that the primary containment will function as required during a LOCA is maintained. Therefore, the proposed TS changes do not involve a significant reduction in the margin of safety.