UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING REQUESTS FOR RELIEF FOR THE

THIRD 10-YEAR INTERVAL INSERVICE TESTING PROGRAM PLAN

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-220

1.0 INTRODUCTION

Title 10 of the *Code of Federal Regulations*, Section 50.55a (10 CFR 50.55a), requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the U.S. Nuclear Regulatory Commission (Commission and NRC) pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for the facility. Section 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to the Code requirements which are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

By letter dated June 23, 1999, Niagara Mohawk Power Corporation (NMPC or licensee) submitted the third 10-year interval IST program plan for pumps and valves for Nine Mile Point Nuclear Station, Unit 1 (NMP1). The third 10-year interval is scheduled to begin on December 26, 1999, and end on December 25, 2009. The program is developed in accordance with the requirements of the 1989 Edition of the ASME Code by implementation of the 1987 ASME/American Nuclear Standards Institute's Operations and Maintenance (OM) Standards, 1988 OMa Addenda, Part 6, "Inservice Testing of Pumps in Light-Water Reactor Power Plants," and Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants."

The NRC staff's findings with respect to authorizing alternatives and granting or denying the IST program relief requests are given below.

2.0 PUMP RELIEF REQUEST

2.1 RELIEF REQUEST PMP-RR-1

NMPC requests relief from the quarterly flow rate measurement requirements of OM-6 paragraph 5.1, for the reactor building closed loop cooling water (RBCLC) pumps (PMP-70-01, PMP-70-02, and PMP-70-03) and the emergency service water (ESW) pumps (PMP-72-03 and PMP-72-04). NMPC proposes to measure flow rate for each individual pump during cold shutdowns when heat loads permit the necessary system configuration.

NMPC also requests relief from the requirements of OM-6 paragraph 4.4 for both the RBCLC and ESW pumps. The Code requires that new reference values be determined following pump repair, replacement, or maintenance. NMPC proposes to establish the new reference values during the next cold shutdown.

NMPC requested relief from similar requirements of the 1983 Edition of the Code during the second 10-year interval of the IST program. The NRC staff granted that relief by letters and safety evaluations dated March 7, 1991, and January 10, 1995.

2.1.1 Licensee's Basis for Requesting Relief

NMPC states:

> *In accordance with 10CFR50.55a(f)(5)(i), relief is requested from the requirements of ASME/ANSI OMa-1988 Part 6, Sections 4.4 and 5.1 based on impracticality as described below. Similar Reliefs and Alternate Testing requirements were approved for the 2nd Ten-Year Program plan per the Safety Evaluation of March 7, 1991 (TAC No. 60450) and per the Safety Evaluation of January 10, 1995 (TAC NO. M90927).*
>
> *A. The Reactor Building Closed Loop Cooling (RBCLC) and the Emergency Service Water (ESW) systems are not fixed resistance systems.*
>
> *For the RBCLC system, no pump test loops nor individual pump flow instrumentation is installed. The system flow rate and the number of pumps running are a function of the system heat loads. During normal plant operations, system heat loads prevent removing the RBCLC system from service. Additionally, operating conditions do not permit single pump operation.*
>
> *The ESW installed test line piping configuration does not allow for temporary or permanent flow instrumentation to be installed (i.e., not enough straight runs of piping). Flow instrumentation can be utilized on the Service Water System inter-tie piping to test the ESW pumps. However, the ESW pumps operate at a lower pressure than the Service Water System. During normal plant operations, system heat loads prevent removing a Service Water header from service or depressurizing a header.*
>
> *Therefore, flow rate measurement for the RBCLC and ESW pumps during normal operation is not practical.*

Testing can be and is conducted during Cold Shutdown conditions. In most Cold Shutdown scenarios, it is possible to operate the RBCLC and ESW systems with a single pump and align the systems to achieve OM test conditions without adversely affecting Cold Shutdown plant operations.

B. *In order to permit rework/repair/replacement of a RBCLC or an ESW pump while the plant remains operating at power, the determination of a new reference value for all parameters, prior to returning the pumps to an operable condition, is not practical.*

The Basis for Relief of the "Frequency of flow rate (Q_F) measurement" is applicable to the post rework/repair/replacement of an RBCLC or ESW pump. If new reference values must be determined prior to returning the pumps to an operable condition, a plant shutdown to Cold Shutdown is required.

2.1.2 Licensee's Proposed Alternative Testing

NMPC proposes that:

A. Quarterly, vibration (V) and pump differential pressure (ΔP) shall be measured for each pump. During Cold Shutdowns, flow rate (Q_F) shall be measured.

B. Pump rework/repair/replacement will be performed in accordance with vendor specifications and maintenance procedures. The post maintenance test results will be evaluated by Engineering to ensure the pump will meet its Safety Related function. Quarterly, until new reference values can be established at the next Cold Shutdown, vibration (V) and pump differential pressure (ΔP) shall be measured and evaluated.

At the next Cold Shutdown, new reference values will be established for pump differential pressure (ΔP), flow rate (Q_F), and vibration (V).

2.1.3 NRC Staff's Evaluation

NMPC requests relief from the quarterly flow rate measurement requirements of OM-6 paragraph 5.1 for the RBCLC pumps (PMP-70-01, PMP-70-02, and PMP-70-03) and the ESW pumps (PMP-72-03 and PMP-72-04). NMPC proposes to measure flow rate for each individual pump during cold shutdowns when heat loads permit the necessary system configuration.

Neither the RBCLC system nor the ESW system contain instrumented pump test loops. Individual pump flow rate must be determined by measuring system flow rate. System heat removal requirements cannot be satisfied running just one pump during power operations. Therefore, it is impractical to measure individual pump flow rate quarterly as required by the Code.

Installation of individual flow instrumentation for each pump would require system redesign and modification, which would be costly and burdensome on NMPC. This would still not permit using a single pump or establishing reference conditions during quarterly testing. With two or more pumps operating, the pump differential pressure would be affected by the other pumps

and would be difficult to use to evaluate pump degradation even if the individual pump flow rates are known.

NMPC's alternative to measure vibration and pump differential pressure quarterly, and to measure flow rate during cold shutdowns provides reasonable assurance of pump operational readiness and permits timely detection of performance degradation.

NMPC also requests relief from the requirements of OM-6 paragraph 4.4 for both the RBCLC and ESW pumps. The Code requires that new reference values be determined following pump repair, replacement, or maintenance. NMPC proposes to establish the new reference values during the next cold shutdown.

After pump repair, replacement, or maintenance, the Code requires that new reference values be determined, or the previous value reconfirmed, by running an inservice test before declaring the pump operable. For the same reasons discussed above, performing an inservice test during power operations is impractical. NMPC's proposed alternative to establish new reference values during the next cold shutdown will provide adequate assurance of the pumps' performance. The length of time before establishing new reference values is sufficiently short to enable the NRC staff to conclude that severe pump degradation during this time is highly unlikely.

2.1.4 Conclusion

The NRC staff hereby grants relief from the requirements of OM-6 paragraphs 5.1 and 4.4 for the RBCLC pumps and ESW pumps pursuant to 10 CFR 50.55a(f)(6)(i). The alternative testing methods provide reasonable assurance of the pumps' operational readiness. On the basis of the impracticality of complying with the Code and the burden on the licensee if those requirements were imposed, the NRC staff grants the relief as requested in Pump Relief Request PMP-RR-1 for NMP1's third 10-year IST interval.

3.0 VALVE RELIEF REQUESTS

3.1 RELIEF REQUEST GEN-VR-1

NMPC requests relief from the individual stroke time testing requirements of OM-10 paragraphs 4.2.1.4, the individual stroke time acceptance criteria of paragraph 4.2.1.8, and the individual corrective action requirements of paragraph 4.2.1.9. Relief is requested for the pneumatically operated valves in the combustible gas control and H_2-O_2 monitoring systems. Instead of comparing measured stroke times to the valves' previous stroke time measurements, NMPC proposes to establish group reference stroke time values and base corrective actions upon the variations between the measured and the group reference values.

NMPC requested relief from similar requirements of the 1983 Edition of the Code during the second 10-year interval of the IST program. In its letter and safety evaluation dated March 7, 1991, the NRC staff authorized the alternative testing.

3.1.1 Licensee's Basis for Requesting Relief

NMPC states:

In accordance with 10CFR50.55a(a)(3)(i), relief is requested from the requirements of ASME/ANSI OMa-1989 Part 10, Section 4.2.1, on the basis that the proposed alternatives would provide an acceptable level of quality and safety as described below. A similar relief and alternate testing requirements were approved for the 2nd Ten-Year program plan in the Safety Evaluation of March 7, 1991 (TAC NO. 60450).

These pneumatically operated valves are grouped together on common control switches. The groups are:

- *IV-201.1-09 & IV-201.1-11*
- *IV-201.1-14 & IV-201.1-16*
- *IV-201.7-08, IV-201.7-09, IV-201.7-10, & IV-201.7-11*
- *IV-201.2-109, IV-201.2-112, IV-201.2-110, IV-201.2-111, IV-201.7-01, & IV-201.7-02*

These arrangements have a common close light (green) for a group of valves and individual open lights (red) for each valve.

Reference values are established for each group by timing the valves for at least three exercises. The exercising is conducted over a sufficient interval to prevent erroneous data due to pre-conditioning. An individual reference value is developed for each valve in a group. A composite (group) reference value is developed by averaging the individual reference values. Typically, the individual valves reference values are within ½ second of the group reference value.

As needed, primarily after rework or repair, the individual reference values and the group reference value are re-established.

This group reference value is used as a common reference value for each valve in the group. The valve stroke-time test uses switch-actuation-to-red-light-out (closed indication) for open-to-close stroke time. The stroke-time of the slowest valve is observed and recorded. Typically, the slowest valve is not always the same component ID. If the slowest valve exceeds the acceptance criterion (i.e., ±50% of the group reference value), the group is declared inoperable. Corrective Action per OM 10 is then taken.

The group reference values are <10 seconds, significantly below the Technical Specification limiting value of 60 seconds. While some performance degradation is masked by this testing methodology, nuclear safety will not be compromised . Prior to any valve degrading and exceeding the limiting value of 60 seconds, the acceptance criterion would be significantly exceeded, and corrective action would be taken.

Individually stoke-timing of these valves is a burden, with no commensurate gain in nuclear safety. The proposed alternate testing method provides an adequate capability to monitor and detect individual valve degradation prior to exceeding the Technical Specification limiting value.

3.1.2 Licensee's Proposed Alternative Testing

NMPC proposes to:

- *Establish individual reference values, group reference values, and group acceptance criteria.*
- *Stroke-time (ST) the valve group, recording the slowest operating valve and the corresponding stroke-time.*
- *Compare the slowest valve stoke-time to the acceptance criterion to determine the valve group operability status.*
- *As necessary, take corrective actions for exceeding the acceptance criterion.*

3.1.3 NRC Staff's Evaluation

NMPC requests relief from the individual stroke time testing requirements of OM-10 paragraphs 4.2.1.4, the individual stroke time acceptance criteria of paragraph 4.2.1.8, and the individual corrective action requirements of paragraph 4.2.1.9. Relief is requested for the pneumatically operated valves in the combustible gas control and H_2-O_2 monitoring systems. Instead of comparing measured stroke times to the valves' previous stroke time measurements, NMPC proposes to establish group reference stroke time values and base corrective actions upon the variations between the measured and the group reference values.

Trending of stroke times for power operated valves, when based upon the stroke time measured for a valve during its previous test, can permit the gradual degradation of a valve over an extended period of time without taking any action until the limiting value of full-stroke time is exceeded. If the measured stroke time increases at a rate of 24% or less for valves with full-stroke times greater than or equal to 10 seconds, or 49% or less for valves with full-stroke times less than or equal to 10 seconds, then no additional testing or valve evaluation is required until the limiting value of full-stroke time is exceeded. Significant valve degradation can result before action is required to be taken.

NMPC has proposed to establish power operated valve group stroke time reference values and to evaluate acceptance based upon deviation from this reference. If the slowest valve in the group exceeds the acceptance criterion (±50% of the group reference value), the group is declared inoperable and corrective actions per OM-10 are then taken. The acceptance criterion is consistent with the requirements of OM-10 paragraph 4.2.1.8(d) which state that valves with reference stroke times less than or equal to 10 seconds shall exhibit no more than ±50% change in stroke time when compared with the reference value.

Application of acceptance criteria and corrective actions that are consistent with Code requirements, in conjunction with NMPC's proposal to base acceptance on group reference values, gives adequate assurance of operational readiness and provides a reasonable

alternative to the Code requirements. This is more conservative than the Code requirements and provides an acceptable level of quality and safety because it will not permit the gradual increase in valve stroke time without requiring corrective action.

3.1.4 Conclusion

Pursuant to 10 CFR 50.55a(a)(3)(i), the NRC staff hereby authorizes relief from the requirements of OM-10 paragraphs 4.2.1.4, 4.2.1.8, and 4.2.1.9 for the specified pneumatically operated valves in the combustible gas control and H_2-O_2 monitoring systems. This alternative testing method provides an acceptable level of quality and safety. The NRC staff authorizes the relief as requested for general valve relief request GEN-VR-1 for NMP1's third 10-year IST interval.

3.2 RELIEF REQUEST GEN-VR-2

NMPC requests relief from the accumulator volume requirements of OM-1 paragraphs 4.1.1.2 and 4.1.2.2 for Class 2 and 3 safety and relief valves used in steam or other compressible fluid service. NMPC proposes, as an alternative, to use the requirements of Appendix I of the 1995 OM Code, paragraphs 4.1.1(b) and 4.1.2(b).

3.2.1 Licensee's Basis for Requesting Relief

NMPC states:

> *The proposed alternative is justified on the basis that it provides an acceptable level of quality and safety.*
>
> *OM-1, as incorporated by reference in ASME Section XI 1989 Edition, specifically requires a minimum accumulator size for relief valve testing. The applicable Code used for relief valve testing prior to OM-1 was PTC 25.3-1976, as required by IWV-3512 of ASME Section XI, 1983 Edition, Summer 1983 Addenda. The PTC did not specify an accumulator volume for bench testing. Instead it stated that "bench testing may also be permitted with test stands having limited accumulator volume and/or pressure source capacity." The PTC goes on to specify that these bench tests may only be used for determination of the valve set-pressure and valve leakage.*
>
> *Appendix I of OM-1995 (through OMb-1997 Addenda) and Appendix I of OM-1998, while not currently endorsed by the NRC, deleted the accumulator volume calculation and specify in Sections I 4.1.1(b) and I 4.1.2(b) that, "The volume of the accumulator drum and the pressure source flow rate shall be sufficient to determine the valve set-pressure."*
>
> *NMPC believes that the purpose of the minimum accumulator volume specified in OM-1 is to ensure that there is sufficient pressure and flow to prevent seat or disc damage during setpoint testing due to valve "chattering." NMPC proposes that a physical volume identifiable as an "accumulator" is not necessary to satisfy the requirement in OM-1995 that "the volume of the accumulator drum and the pressure source flow rate shall be sufficient to determine the valve set-pressure."*

Set-pressure testing of relief valves conducted during the first two intervals on a test bench without an accumulator demonstrated satisfactory valve set-pressure characteristics. The test bench used is connected to a high pressure (at least double the relief valve set pressure) air cylinder through a pressure regulator and a needle test valve. The test procedure requires at least two consecutive "pops" within 3% of the valve set-pressure. This demonstrates that the test bench volume, combined with the air cylinder volume and flow rate, is sufficient to determine the valve set-pressure. Additionally, the post-testing seat leakage required by OM-1 will demonstrate that no valve seat or disc damage has occurred during set-pressure testing. Previous relief valve testing performed at Nine Mile Point Unit 2 to OM-1 testing requirements, except utilization of a test bench without an accumulator, has demonstrated satisfactory test performance based on consecutive lifts within 3% with no excessive post-lift seat leakage.

To summarize, the test method provided by the relief valve test bench without an accumulator is consistent with the test method prescribed by the 1983 ASME Section XI, OM-1995, and OM-1998. Only OM-1 (endorsed by ASME Section XI, 1989 Edition and 10CFR50.55a) requires a specific accumulator volume for the relief valve test bench. The use of the safety/relief valve test bench without an accumulator provides a set-pressure testing method consistent with the requirements of PTC 25.3-1976 and OM-1995.

Therefore, the proposed alternative is justified based on the fact that it provides an acceptable level of quality and safety. Similar alternate testing was approved for Nine Mile Point Unit 2 in NRC letter dated April 2, 1999; Subject: Alternative GVRR-6 Regarding Inservice Testing of Safety and Relief Valves in Steam or Compressible Fluid Service, Nine Mile Point Nuclear Station, Unit No. 2 (TAC NO. MA5052) with attached SER.

3.2.2 Licensee's Proposed Alternative Testing

NMPC proposes:

Pursuant to 10 CFR 50.55a(3), for safety valves and relief valves used in compressible fluid service (air and steam), a test device shall be acceptable if, in accordance with OM-1995 Sections I 4.1.1(b) and I 4.1.2(b), the combination of accumulator volume under the valve inlet and pressure source flow rate is sufficient to determine the valve set-pressure. With the exception of the accumulator volume requirements, all other aspects of safety valve and relief valve testing shall be conducted in accordance with OM-1987, Part 1 ("OM-1").

3.2.3 NRC Staff's Evaluation

NMPC proposes a generic alternative to the Code requirements for all Class 2 and 3 safety and relief valves used for steam or other compressible fluid service. The function of safety and relief valves is to provide over-pressure protection to the associated systems. The Code, OM-1 paragraphs 4.1.1.2 and 4.1.2.2, requires that a minimum accumulator volume, below the valve inlet, be calculated by multiplying the valve capacity by the time needed to open and dividing by 10.

More recent editions of the Code eliminate the need to calculate a minimum accumulator volume. ASME OM Code-1995, Appendix I, paragraphs 4.1.1(b) and 4.1.2(b) state that the volume of the accumulator drum and pressure source flow rate shall be sufficient to determine the valve set pressure. NMPC proposes to use this alternative testing method.

The NRC staff has determined that, when using the alternative described by NMPC, it is not necessary to specify a minimum size accumulator. The alternative testing method involves consecutive lifts within 3% of the valve set pressure and is conducted without damaging the valves. The NRC staff finds that this alternative method is adequate for establishing the setpoint of safety and relief valves and affords equivalent protection as that provided by ASME OM-1 Code-1987 paragraphs 4.1.1.2 and 4.1.2.2.

3.2.4 Conclusion

Pursuant to 10 CFR 50.55a(f)(4)(iv), the NRC staff hereby approves relief from the accumulator volume requirements of OM-1 paragraphs 4.1.1.2 and 4.1.2.2 for Class 2 and 3 safety and relief valves used in steam or other compressible fluid service. The alternative method proposes the use of the 1995 Edition of ASME OM Appendix I, paragraphs 4.1.1(b) and 4.1.2(b) which has been incorporated by reference into 10 CFR 50.55a (64 Federal Register 51370).

3.3 RELIEF REQUEST CRS-VR-1

NMPC requests relief from the testing requirements of OM-10 paragraph 4.3.2.4(c). The Code requires that each check valve be disassembled each refueling outage. NMPC proposes to disassemble and inspect one of the two core spray check valves each refueling outage.

3.3.1 Licensee's Basis for Requesting Relief

NMPC states:

> *These valves have no provision for monitoring obturator position. Additionally, the core spray header drain line connects directly with the torus atmosphere, so there are no connections available for valve testing. Due to the valve size (0.75"), quarterly pump testing does not positively verify valve degradation since the effect of the valve position on pump performance is not known. However, the quarterly pump testing does verify system performance and availability.*
>
> *Partial stroke in the reverse direction is not practical.*
>
> *The Code provides that, if disassembly and inspection is the only method available to verify the operation of a check valve, the disassembly and inspection may be performed on a refueling basis.*

3.3.2 Licensee's Proposed Alternative Testing

NMPC proposes:

> *The opening and closing ability of these two check valves shall be verified individually for each valve by disassembly and inspection on an alternating basis during each refueling outage. The disassembly and inspection shall be performed in accordance with GL 89-04, Position 2.*

3.3.3 NRC Staff's Evaluation

The valves for which NMPC seeks relief, CKV-81-169 and CKV-81-170, function as core spray header vacuum breaker check valves. OM-10 paragraph 4.3.2 requires that the check valves be exercised nominally every 3 months. As an alternative to demonstrating valve obturator movement, the Code allows disassembly every refueling outage to determine operability of the valves (OM-10 paragraph 4.3.2.4(c)). NMPC proposes to disassemble and inspect one of the two valves each refueling outage. The valve to be tested will alternate each refueling outage.

The NRC staff's Position 2 of GL 89-04 allows for the employment of a sample disassembly and inspection plan for groups of identical valves in similar applications. The sample disassembly and inspection plan involves grouping similar valves and testing one valve in each group during each refueling outage. Guidelines for this plan are stated in Appendix A of NUREG-1482. The sampling technique requires that each valve in the group be of the same design and have the same service conditions, including valve orientation. Additionally, at each disassembly, NMPC must verify that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound. Also, if the disassembly is to verify the full-stroke capability of the valve, the disc should be manually exercised.

A different valve of each group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in that group must also be disassembled, inspected and manually full-stroke exercised during the same outage. Once this is complete, the sequence of disassembly must be repeated.

The 1995 ASME OM Code, paragraph ISTC 4.5.4(c) allows for a sample disassembly examination program to be used to verify valve obturator movement. The sample disassembly examination program shall group check valves of similar design, application, and service condition and require a periodic examination of one valve from each group.

NMPC's proposed alternative is consistent with paragraph ISTC 4.5.4(c) and Position 2 of GL 89-04.

3.3.4 Conclusion

Pursuant to 10 CFR 50.55a(f)(4)(iv), the NRC staff hereby approves the proposed alternative to the requirements of OM-10 paragraph 4.3.2.4(c). This alternative meets the requirements of the 1995 ASME OM Code, paragraph ISTC 4.5.4(c), which has been incorporated by reference into 10 CFR 50.55a (64 Federal Register 51370).

3.4 RELIEF REQUEST CTN-SP-VR-1

NMPC requests relief from the testing requirements of OM-10 paragraph 4.3.2.4(c). The Code requires that each check valve be disassembled each refueling outage. NMPC proposes a sample disassembly and inspection program for check valves in the containment spray system.

3.4.1 Licensee's Basis for Requesting Relief

NMPC states:

> *These valves have no provisions for determining obturator position. Full stroke exercising of these valves, using system pumps, requires spraying torus water into the primary containment. During any mode, spray-down of the primary containment is undesirable and would result in costly and burdensome cleanup and cause equipment damage. During the 2nd ten-year interval, this justification was approved as a relief request per the Safety [E]valuation of March 7, 1991 (TAC NO. 60450).*
>
> *Partial stroke exercising is not practical due to system configuration.*
>
> *Full stroke exercising is impractical during cold shutdowns. Full stroke testing would result in the spray-down of the primary containment with torus water. Partial-stroke exercising with air requires entry into the primary containment, which is inerted with nitrogen. Deinerting to perform inservice testing is not required. (NUREG-1482, Section 3.1.1.3)*

3.4.2 Licensee's Proposed Alternative Testing

NMPC proposes:

> *Valves CKV-80-17, CKV-80-18, CKV-80-37, CKV-80-38, CKV-80-65 and CKV-80-67 will be part stroke exercised (PE) with compressed air during refueling outages.*
>
> *System configuration prevents detection of sufficient flow through valves CKV-80-19, CKV-80-39, CKV-80-66 and CKV-80-68 to credit partial stroke when using air (e.g. most flow goes to the drywell, making detection in the torus very difficult).*
>
> *Due to limited access to the torus, the partial exercise of check valves CKV-80-65 and CKV-80-67 will be coordinated with the nozzle air flow test and will be done on an alternating outage schedule (e.g., flow through CKV-80-65 for the nozzle test will be performed at one refueling outage, and flow through CKV-80-67 will be performed in the following outage).*
>
> *The valves will be disassembled and inspected at a nominal frequency of six years (every third refueling outage) to satisfy OM-10 Section 4.3.2 exercising requirements. At least one valve from each group (CKV-80-17, CKV-80-18, CKV-80-37, CKV-80-38; and CKV-80-19, CKV-80-39, CKV-80-66, CKV-80-68; and CKV-80-65, CKV-80-67) will be examined during refueling outages. (Generic Letter 89-04, Position 2)*

3.4.3 NRC Staff's Evaluation

The check valves for which NMPC seeks relief, CHV-80-17, CKV-80-18, CKV-80-19, CKV-80-37, CKV-80-38, CKV-80-39, CKV-80-65, CKV-80-66, CKV-80-67, and CKV-80-68, are

in the containment spray system. OM-10 paragraph 4.3.2 requires that the check valves be exercised nominally every 3 months. As an alternative to demonstrating valve obturator movement, the Code allows disassembly every refueling outage to determine operability of the valves (OM-10 paragraph 4.3.2.4(c)). NMPC proposes to disassemble and inspect one valve in each of the three groups each refueling outage. The valve to be tested will alternate each refueling outage.

The NRC staff's Position 2 of GL 89-04 allows for the employment of a sample disassembly and inspection plan for groups of identical valves in similar applications. The sample disassembly and inspection plan involves grouping similar valves and testing one valve in each group during each refueling outage. NMPC proposes the following valve groups: (CKV-80-17, CKV-80-18, CKV-80-37, CKV-80-38), (CKV-80-19, CKV-80-39, CKV-80-66, CKV-80-68), and (CKV-80-65, CKV-80-67). Guidelines for this plan are stated in Appendix A of NUREG-1482. The sampling technique requires that each valve in the group be of the same design and have the same service conditions, including valve orientation. Additionally, at each disassembly, NMPC must verify that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound. Also, if the disassembly is to verify the full-stroke capability of the valve, the disc should be manually exercised.

A different valve of each group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in that group must also be disassembled, inspected and manually full-stroke exercised during the same outage. Once this is complete, the sequence of disassembly must be repeated.

The 1995 ASME OM Code, paragraph ISTC 4.5.4(c) allows for a sample disassembly examination program to be used to verify valve obturator movement. The sample disassembly examination program shall group check valves of similar design, application, and service condition and require a periodic examination of one valve from each group.

NMPC's proposed alternative is consistent with paragraph ISTC 4.5.4(c) and Position 2 of GL 89-04.

3.4.4 Conclusion

Pursuant to 10 CFR 50.55a(f)(4)(iv), the NRC staff hereby approves the proposed alternative to the requirements of OM-10 paragraph 4.3.2.4(c). This alternative meets the requirements of the 1995 OM Code, paragraph ISTC 4.5.4(c) which has been incorporated by reference into 10 CFR 50.55a (64 Federal Register 51370).

4.0 CONCLUSION

The NRC staff grants relief for PMP-RR-1 for NMP1's third 10-year interval pursuant to 10 CFR 50.55a(f)(6)(i). In making this determination, the NRC staff has considered the impracticality of performing the required testing and the burden on NMPC if the requirements were imposed.

The NRC staff authorizes the proposed alternative to the Code requirements described in GEN-VR-1 pursuant to 10 CFR 50.55a(a)(3)(i) based upon the alternatives providing an acceptable level of quality and safety. The NRC staff authorizes the alternatives for NMP1's third 10-year interval.

The NRC staff approves the proposed alternatives to the Code requirements described in GEN-VR-2, CRS-VR-1 and CTN-SP-VR-1 pursuant to 10 CFR 50.55a(f)(4)(iv).

Principal Reviewer: M. Kotzalas

Date: December 14, 1999