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10 CFR 50.55a

RS-09-072
June 16, 2009

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Submittal of Relief Requests Associated with the Third Inservice Testing Interval

In accordance with 10 CFR 50.55a, "Codes and standards," paragraphs (a)(3)(i) and (a)(3)(ii), Exelon Generation Company, LLC (EGC), hereby requests NRC approval of the attached relief requests associated with the Third Inservice Testing (IST) Interval for Clinton Power Station (CPS), Unit 1. The third interval of the CPS, Unit 1, IST program will comply with the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (i.e., OM Code), 2004 Edition. The latest edition and addenda of the code incorporated by reference in 10CFR50.55a(b)(3) of the regulation is the 2004 Edition.

Proposed Relief Request No. 2201 requests use of ASME Code Case OMN-1, Revision 1 for the testing of active, non-skid mounted, ASME Class 1, 2 and 3 motor-operated valves (MOVs) in the CPS MOV testing program. Proposed Relief Request No. 2202 would extend the 5-year IST interval to a 6.5-year IST interval for the 16 safety relief valves at CPS. Proposed Relief Request No. 3201 requests use of an alternate method for waterleg pump testing. The bases for these relief requests are provided in Attachments 1, 2, and 3, respectively.

EGC requests approval of these requests by June 16, 2010, to support implementation of the third 10-year IST interval.

There are no regulatory commitments contained within this letter.

Should you have any questions concerning this letter, please contact Mr. Mitchel A. Mathews at (630) 657-2819.

Sincerely,

Jeffrey L. Hansen
Manager – Licensing
Exelon Generation Company, LLC

Attachments:

1. 10 CFR 50.55a Request Number 2201
2. 10 CFR 50.55a Request Number 2202
3. 10 CFR 50.55a Request Number 3201

1. ASME Code Component(s) Affected

All ASME Class 1, 2, and 3 motor-operated valves (MOVs) currently included in the Clinton Power Station (CPS) MOV Testing Program.

2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME), "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition (ASME OM Code-2004).

3. Applicable Code Requirement

ISTA-3130(b) requires that code cases be applicable to the edition and addenda specified in the test plan.

ISTC-3100 requires that any motor operated valve (MOV) that has undergone maintenance that could affect its performance after the preservice test be tested in accordance with ISTC-3310.

ISTC-3310 requires that a new reference value be determined or the previous reference value be reconfirmed by an inservice test after a MOV has been replaced, repaired, or has undergone maintenance that could affect the valve's performance.

ISTC-3510 requires that active Category A and B MOVs be exercised nominally every 3 months.

ISTC-3521 requires that active Category A and B MOVs be exercised during cold shutdowns if it is not practicable to exercise the valves at power, or that active Category A and B MOVs be exercised during refueling outages if it is not practicable to exercise the valves during cold shutdowns.

ISTC-3700 requires that valves with remote position indicators be observed locally at least once every 2 years to verify that valve operation is accurately indicated.

ISTC-5120 requires that MOVs be stroke-time tested when exercised in accordance with ISTC-3510.

4. Reason for Request

In accordance with 10 CFR 50.55a(a)(3)(i), relief is requested from the requirements of the OM Code, Subsection ISTC-3000, excluding ISTC-3600, "Leak Testing Requirements," and the requirements of Subsection ISTC-5120. The proposed alternative would provide an acceptable level of quality and safety.

5. Proposed Alternative and Basis for Use

EGC proposes to adopt the requirements of Code Case OMN-1 as revised in the 2006 Addenda to the ASME OM Code-2004 in lieu of the performance of stroke time testing and position indication testing as described by ASME OM ISTC 2004. The provision to allow for motor control center testing, as contained in Section 6.1 of Code Case OMN-1, is excluded from this request.

The NRC amended its regulations to incorporate by reference the 2004 Edition of the ASME Code for Operation and Maintenance of Nuclear Power Plants on September 10, 2008. In the latest 10 CFR 50.55(a)(b), it states in part, that Regulatory Guide (RG) 1.192, "Operating and Maintenance Code Case Acceptability, ASME Code", has been approved for incorporation by reference. In RG 1.192, it states within Table 2, "Conditionally Acceptable OM Code Cases," that the alternative rules of ASME Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants," Revision 0, when applied in conjunction with the provisions for leakage rate testing in ISTC-3600, may be applied with the following provisions:

1. The adequacy of the diagnostic test interval for each valve must be evaluated and adjusted as necessary but not later than 5 years or three refueling outages (whichever is longer) from initial implementation of ASME Code Case OMN-1.

2. When extending the exercise test intervals for high risk MOVs beyond a quarterly frequency, licensees shall ensure that the potential increase in core damage frequency and risk associated with the extension is small and consistent with the intent of the Commission's Safety Goal Policy Statement.

3. When applying risk insights as part of the implementation of OMN-1, licensees must categorize MOVs according to their safety significance using the methodology described in Code Case OMN-3, "Requirements for Safety Significance Categorization of Components Using Risk Insights for Inservice Testing of LWR Power Plants," with the conditions discussed in this regulatory guide or use other MOV risk-ranking methodologies accepted by the NRC on a plant-specific or industry-wide basis with the conditions in the applicable safety evaluations.

This conditional acceptance of OMN-1, Revision 0, per RG 1.192 is applicable in lieu of the provisions for stroke-time testing in Subsection ISTC of ASME OM Code-2004. Since RG 1.192 was last published, Code Case OMN-1 has been updated/modified to address and incorporate all of the original RG 1.192 listed provisions. EGC proposes to adopt the requirements of Code Case OMN-1, Revision 1, as presented in the ASME OMb Code, "Addenda to ASME OM Code-2004, Code for Operation and Maintenance of Nuclear Power Plants," for 2006, in lieu of the performance of stroke time testing and position indication testing as described by ASME OM Code Subsection ISTC of the 2004 Edition.

The CPS MOV testing program was developed as a result of NRC Generic Letter (GL) 89-10, "Safety Related Motor Operated Valve Testing and Surveillance," and GL 96-05, "Periodic Verification of Design Basis Capability of Safety Related Motor Operated Valves," utilizing Topical Report MPR-1807, "Joint BWR, Westinghouse and Combustion Engineering

Owners' Group Program on Motor-Operated Valve (MOV) Periodic Verification," Revision 2. CPS is currently utilizing MPR-2524-A, "Joint Owners' Group (JOG) Motor Operated Valve Periodic Verification Program Summary," (November 2006) as guidance for the MOV Program. The adoption of OMN-1 will consolidate testing between the station's IST and MOV Programs.

Section 4.2.5 "Alternatives to Stroke-Testing," of NUREG-1482, "Guidance for Inservice Testing at Nuclear Power Plants," Revision 1, states in part that as an alternative to MOV stroke-time testing, ASME developed Code Case OMN-1, which provides periodic exercising and diagnostic testing for use in assessing the operational readiness of MOVs, may be used. Section 4.2.5 recommends that licensees implement ASME Code Case OMN-1 as an alternative to the MOV stroke-time testing. The periodic exercising and diagnostic testing requirements in OMN-1 provide an improved method for assessing the operational readiness of MOVs.

Application of code cases is addressed in 10 CFR 50.55a(b)(6) through references to RG 1.192, which lists acceptable and conditionally acceptable code cases for implementation in IST programs. RG 1.192, Table 2, conditionally approves the use of Code Case OMN-1 and states that the code case is applicable to the 2000 Addenda and earlier editions and addenda of the Code. There is no technical reason for prohibiting the use of Code Case OMN-1 with ASME OM Code-2004. Therefore, Code Case OMN-1 provides an acceptable level of quality and safety for testing of MOVs and is an acceptable alternative for use in CPS IST program. This conclusion is consistent with the NRC position in NUREG-1482, Revision 1, and RG 1.192.

Code Case OMN-1 was revised in the 2006 Addenda to the ASME OM Code-2004. Most of the revisions are enhancements such as clarification of valve remote position indication requirements and ball/plug/diaphragm valve test requirements, and the expansion of risk-informed provisions. However, there was one significant revision in Section 6.1, "Acceptance Criteria," that states that motor control center (MCC) testing is acceptable if correlation with testing at the MOV has been established. MCC diagnostic testing was not specifically addressed in the original version of OMN-1. Historically, diagnostic testing of MOVs has been conducted using at-the-valve tests. Although there may be potential benefits of testing conducted at the MCC, the ASME OM Code does not address any method for the correlation of MCC-based measurements to diagnostic test measurements conducted at-the-valve. For these reasons, EGC has excluded the provision for MCC testing from this relief request. Therefore, the MCC test method will not be used as an acceptance criterion to determine the operational readiness of MOVs.

Technical Position

The following positions describe how EGC interprets and complies with the various requirements of OMN-1 (ASME OMb Code-2006).

1. OMN-1, Section 3.1 allows for the use of testing that was conducted prior to the implementation of OMN-1 if it meets the requirements of the Code Case. EGC intends to utilize the testing credited under its GL 89-10/96-05 responses to satisfy

the requirement for a one-time test to verify the capacity of each individual or group of MOV's safety-related design basis requirements.

2. OMN-1, Section 3.2 requires that each MOV be tested during the preservice test period or before implementing inservice inspection. EGC intends to utilize the testing credited under its GL 96-05 response to satisfy this requirement.

3. OMN-1, Section 3.3(b) states that inservice tests shall be conducted in the as-found condition, and activities shall not be conducted if they might invalidate the as-found condition for inservice testing. CPS maintenance activities that would affect the as found condition of the valve, such as motor operator preventive maintenance or stem lubrication, are typically scheduled to occur in conjunction with the performance of the MOV Periodic Verification Testing, and are performed after as-found testing. Any other activities that could affect the as-found test results are not performed until after the as found testing has been conducted.

4. OMN-1 Section 3.3(c) requires the inservice test program to include a mix of static and dynamic MOV performance testing. CPS has utilized the JOG program's mix of static and dynamic MOV performance testing (i.e., MPR-2524-A) to develop its current MOV testing program. Additionally, CPS will continue to utilize the existing engineering standards, which are consistent with the JOG standards, to justify any changes to the mix of required MOV performance testing. The use of such an evaluation will serve to ensure CPS continues to meet this requirement.

5. OMN-1, Section 3.3(e) requires that Remote Position Indication shall be verified locally during inservice testing or maintenance activities. EGC will continue to verify the operability of each MOV's position indication system as part of each MOV's diagnostic test. In addition, the function of each MOV's position indication system will be verified during the performance of maintenance activities affecting remote position indication.

6. OMN-1, Section 3.3.1(b) requires MOV inservice testing to be conducted every 2 refueling cycles or 3 years (whichever is longer), if insufficient data exists to determine inservice test frequencies. CPS has sufficient MOV testing data to justify its current testing frequencies, and therefore meets this requirement. If in the future, modification or replacement results in the necessity to re-baseline a valve or group of valves, the requirements of OMN-1, Section 3.3.1(b) or 3.7.2.2(c) as applicable, will be followed.

7. OMN-1, Section 6.4.4 requires that calculations for determining the MOV's functional margin are evaluated to account for potential performance-related degradation. The CPS MOV Program, including the corporate MIDAS Software (or similar updated product), takes into account performance-related degradation, to calculate valve margin.

8. The provision of motor control center testing contained in Section 6.1 ("Acceptance Criteria") is excluded from this request ("i.e., Motor control center testing is acceptable if correlation with testing at the MOV has been established").

6. Duration of Proposed Alternative

The proposed alternative identified in this relief request shall be utilized during the Third 10-Year IST Interval or until the NRC publishes the version of Code Case OMN-1 found in the 2006 addenda to ASME OM Code-2004 in a future revision of Regulatory Guide 1.192.

7. Precedents

Similar relief has been approved for LaSalle County Station, Units 1 and 2, Relief Request RV-02, in NRC Safety Evaluation Report, dated September 26, 2007 (Reference 1), and Peach Bottom Atomic Power Station, Units 2 and 3, Relief Request GVRR-1, in NRC Safety Evaluation, dated September 3, 2008 (Reference 2).

8. References

1. Letter from R. Gibbs (U.S. NRC) to C. M. Crane (EGC), "Relief Requests for the LaSalle County Station, Units 1 and 2, Third 10-Year Pump and Valve Inservice Testing Program (TAC Nos. MD5988, MD5989, MD5992, MD5993, MD5994, MD5995)," dated September 26, 2007
2. Letter from H. K. Chernoff (U.S. NRC) to C. G. Pardee (EGC), "Peach Bottom Atomic Power Station, Units 2 and 3 – Requests for Relief Associated with the Fourth Inservice Testing Interval (TAC Nos. MD7461 and MD7462)," dated September 3, 2008

1. ASME Code Component(s) Affected

Components: 1B21-F041A, 1B21-F041B, 1B21-F041C, 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F041L, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D, 1B21-F047F, 1B21-F051B, 1B21-F051C, 1B21-F051D, 1B21-F051G

Description: Clinton Power Station (CPS) Main Steam Line Safety Relief Valves (SRVs), Dikkers Valves Model G-471

2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers, "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition (ASME OM Code-2004)

3. Applicable Code Requirement

ASME OM Code mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," Section I-1320, "Test Frequencies, Class 1 Pressure Relief Valves," paragraph (a).

This section states that all Class 1 pressure relief valves shall be tested at least once every 5 years starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each 5-year interval; however, a minimum of 20% of the valves from each valve group shall be tested within any 24-month interval. This 20% shall consist of valves that have not been tested during the current 5-year interval, if they exist. The test interval for any individual valve shall not exceed 5 years.

4. Reason for Request

10 CFR 50.55a(f)(4) directs a licensee to meet inservice testing requirements for ASME Code Class 1 valves set forth in the ASME OM Code and addenda. The third 10-year inservice testing (IST) interval for CPS is based on the ASME OM Code-2004; specifically, Mandatory Appendix I, which contains requirements to augment the rules of Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants."

ISTC-3200, "Inservice Testing," states that inservice testing shall commence when the valves are required to be operable to fulfill their required function(s). ISTC-5240, "Safety and Relief Valves," directs that safety and relief valves meet the inservice testing requirements set forth in Mandatory Appendix I of the ASME OM Code. Appendix I, Section I-1320 of the ASME OM Code states that Class 1 pressure relief valves shall be tested at least once every 5 years, starting with initial electric power generation.

The Dikkers Model G-471 SRVs have shown exemplary test history at CPS, as described in Section 5 below. However, given the current 24-month operating cycle for CPS, Exelon Generation Company, LLC (EGC) is required to remove and test fifty percent (i.e., eight of 16) of the SRVs every refueling outage, so that all valves are removed and tested every two refueling outages. This ensures compliance with the ASME OM Code requirements for testing Class 1 pressure relief valves every five years. Approval of extending the test interval to 6.5 years would reduce the minimum number of SRVs tested at CPS over three refueling outages by eight.

Without relief, the incremental outage work due to the inclusion of the eight additional SRVs would be contrary to the principles of maintaining exposure to radiation as low as reasonably achievable (ALARA), in that the removal and replacement of an additional eight SRVs over three refueling outages will result in approximately 5.6 person-rem of additional cumulative radiation exposure. In addition, as discussed below, historical SRV test results for the Dikkers Model G-471 SRVs indicate that the CPS SRVs continue to perform well. Therefore, this additional cumulative radiation exposure represents a hardship for CPS without a compensating increase in the level of quality or safety.

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), EGC requests relief from the five-year test interval requirements of ASME OM Code, ISTC Appendix I Section I-1320, "Test Frequencies, Class 1 Pressure Relief Valves," paragraph (a), for the Dikkers Model G-471 SRVs at CPS. EGC requests that the test interval be increased from five years to 6.5 years. All other requirements of the ASME OM Code would be met. Compliance with the applicable requirements of the ASME OM Code for these SRVs results in hardship due to unnecessary personnel radiation exposure without a compensating increase in the level of quality or safety.

5. Proposed Alternative and Basis for Use

For the third 10-year IST interval at CPS, EGC proposes that ASME Class 1 pressure relief valves (i.e., Dikkers Model G-471 SRVs) shall be tested at least once every 6.5 years. A minimum of 20% of the pressure relief valves will be tested within any 24-month interval and this 20% shall consist of valves that have not been tested during the current 6.5 year interval, if they exist. The test interval for any individual valve shall not exceed 6.5 years.

All SRVs are located in the upper elevations of the CPS drywell. The major contributors to radiation exposure are the main steam lines, including the SRVs, along with High Pressure Core Spray system and Low Pressure Core Spray system piping passing through the area.

Removal of an installed SRV and installation of a replacement SRV requires installation of scaffolding, removal of insulation and various appurtenances on the SRV, and unbolting the SRV. Once unbolted, the SRV is maneuvered from its location in the upper drywell and lowered to the first elevation and transported through the drywell and containment equipment hatches. Each SRV weighs approximately 3050 pounds, and due to its size, a crew of five to seven personnel is required to safely move each valve.

EGC has evaluated the historical cumulative radiation exposure at CPS for removal and replacement of SRVs from the last five CPS refueling outages. The work evolutions necessary to remove and replace these valves each refueling outage, which includes the removal and replacement of eight SRVs, are conducted under equivalent radiological conditions and with the same personnel requirements. This historical cumulative radiation exposure data is provided in
Table 1.

Table 1: Cumulative Radiation Exposure

Refueling Outage	RF-7	C1R08	C1R09	C1R10	C1R11
Number of SRVs Replaced	16	16	8	8	8
Cumulative Person-Rem	8.062	8.837	12.139	5.325	4.9

Based on this data, EGC has concluded that the expected cumulative radiation exposure to remove and replace a single SRV would be approximately 0.7 person-rem. The outage-specific variability of cumulative radiation exposure is attributed to the location of a particular valve relative to its respective radiation field, the physical configuration of surrounding equipment for a particular valve, and the impact of outage-specific plant configurations. Therefore, absent the requested relief, replacement of eight incremental SRVs would result in approximately 5.6 additional person-rem over three refueling outages.

The data from the IST history for SRVs at CPS from 2001 to present indicates that 37 of 40, or 92.5% of the SRVs tested have successfully passed the ASME OM Code as-found acceptance criteria of plus or minus 3%. A majority of the valves tested had been installed for two operating cycles. Historical data also indicates that the as-found setpoints for 28 of 40 tests remained within the as-left tolerance of plus or minus 1%.

The as-found test data for the three SRV failures indicates that two of the three SRV test failures did not decrease the level of quality or safety, in that the as-found setpoint for one SRV was within 0.004% of the acceptance criteria, and one SRV exceeded the acceptance criteria in a negative, or more conservative direction. The three SRV failures that occurred were SRVs that were as-left setpoint tested using nitrogen by on-site personnel and then as-found setpoint tested by an off-site National Board Code Stamp-certified vendor using steam. CPS has since abandoned on-site nitrogen setpoint testing and refurbishment by on-site personnel, and opted to send the SRVs to a certified off-site vendor for as-found and as-left setpoint testing using steam. No failures have been noted following the transition to steam as the test medium for as-found and as-left testing.

In addition to the historical test results, the current CPS reload ASME overpressure analysis assumes that two SRVs are out of service, and all of the operable SRVs open to relieve pressure at the upper ASME Code limit of 1375 psig. This value is greater than the plus 3% of the SRV setpoint. These conservative assumptions provide additional assurance that the requested relief from the ASME OM Code requirement for the subject SRVs would not result in a decrease in the level of quality or safety.

CPS currently utilizes a National Board Code Stamp-certified off-site vendor to perform as-found and as-left testing, inspection, and refurbishment of the SRVs. An EGC-approved and qualified procedure is used for disassembly and inspection of the SRVs. This procedure requires that each SRV be disassembled and inspected upon removal from service, independent of the as-found test results. The procedure identifies the critical components that are required to be inspected for wear and defects, and the critical dimensions that are required to be measured during the inspection. If components are found worn or outside of the specified tolerance(s), the components are either reworked to within the specified tolerances, or replaced. All parts that are defective, outside-of-tolerance, and all reworked/replaced components are identified, and EGC is notified of these components by the off-site vendor. The SRV is then reassembled, the as-left test is performed, and the SRV is returned to CPS.

The ASME OM Sub-Group on Relief Valves developed Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves." Code Case OMN-17 allows owners to extend the test interval for safety and relief valves from 60 months to 72 months plus a six-month grace period. This code case imposes a special maintenance requirement to disassemble and inspect each safety and relief valve to verify that parts are free from defects resulting from the time related degradation or service induced wear prior to the start of the extended test interval. The purpose of this maintenance is to reduce the potential for setpoint drift. As noted above, EGC utilizes a National Board Code Stamp-certified off-site vendor to perform as-found and as-left testing, inspection, and refurbishment of the Dikkers Model G-471 SRVs for CPS. EGC has verified that the approved and qualified procedure that is used by the off-site vendor for disassembly, inspection, repair, and testing of the SRVs satisfies the special maintenance requirement specified in Code Case OMN-17.

All currently installed SRVs at CPS were disassembled, inspected, repaired, and tested in accordance with the qualified procedure, prior to installation, to verify that parts were free from defects resulting from time-related degradation or maintenance-induced wear. Therefore, currently installed SRVs at CPS comply with Code Case OMN-17.

Furthermore, each SRV removed from service at CPS will continue to be disassembled, inspected, repaired, and tested in accordance with the qualified procedure prior to reinstallation. Upon approval of the proposed relief request, the test interval (i.e., the frequency for disassembly, inspection, repair, and testing) for any SRV shall not exceed 6.5 years (i.e., 72 months plus a six-month grace period).

Based upon the estimated cumulative radiation exposure to comply with the ASME OM Code, coupled with historical SRV test results for Dikkers Model G-471 SRVs at CPS, EGC has concluded that compliance with the ASME OM Code would result in hardship, without a compensating increase in the level of quality or safety.

EGC submitted Relief Request No. 2210 on November 3, 2008 (Reference 1) for the remainder of the Second CPS 10-Year IST interval. The circumstances and basis for this request do not differ from those provided in Reference 1.

6. Duration of Proposed Alternative

The proposed alternative identified in this relief request shall be utilized during the Third 10-Year IST Interval.

7. Precedents

In Reference 2, the NRC reviewed and approved relief requests for both Dresden Nuclear Power Station (DNPS), Units 2 and 3, and Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2 to extend their main steam safety valve (MSSV) test interval duration for individual valves to 6.5 years for the remainder fourth 10-year IST interval. In Reference 3, the NRC reviewed and approved a relief request for Susquehanna Steam Electric Station (SSES), Units 1 and 2, to extend the MSSV test interval duration for individual valves to six years for the entire third 10-year IST interval. In Reference 4, the NRC reviewed and approved a relief request for Nine Mile Point Nuclear Power Station, Unit 2 (NMP2) to extend the MSSV test interval duration for individual valves to three refueling outages or approximately six years for the entire third 10-year IST interval. In all of these approvals, the NRC allowed for a total installed interval of at least six years.

In Reference 1, EGC requested relief for CPS similar to that approved in Reference 2. This request was for the Second CPS IST Interval.

This proposed relief request is consistent with the DNPS, QCNPS, SSES and NMP2 precedents, in that it will establish a test interval that would enable EGC to maintain a Dikkers Model G-471 SRV in service for three operating cycles, while also allowing adequate time to transport, test, and refurbish an SRV, at an external facility prior to reinstallation.

8. References

1) Letter from Mr. J. L. Hansen, (Exelon Generation Company, LLC) to the U. S. NRC, “Request for Relief from ASME OM Code 5-year Test Interval for Safety Relief Valves (Relief Request No. 2210),” dated November 3, 2008 (Accession Number ML083090066)

2) Letter from U. S. NRC to Mr. Charles G. Pardee (Exelon Generation Company, LLC), "Dresden Nuclear Power Station Units 2 and 3 – Relief Request No. RV-02C from 5-Year Test Interval for Main Steam Safety Valves (TAC Nos. MD8150 and MD8151) and Quad Cities Nuclear Power Station, Relief Requests No. RV-30E and RV-30F from 5-Year Test Interval for Main Steam Safety Valves (TAC Nos. MD6682, MD6683, MD8241, and MD8242)," dated June 27, 2008

3) Letter from U. S. NRC to Mr. B. L. Shriver (PPL Susquehanna, LLC), "Susquehanna Steam Electric Station Units 1 and 2 -Third 10-year Interval Inservice Testing (IST) Program Plans (TAC Nos. MC3382, MC3383, MC3384, MC3385, MC3386, MC3387, MC3388, MC3389, MC4421, MC4422)," dated March 10, 2005

4) Letter from U. S. NRC to Mr. J. H. Mueller (Niagara Mohawk Power Corporation), "Nine Mile Point Nuclear Power Station, Unit No. 2 – Alternative to American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Regarding Inservice Testing of Main Steam Safety/Relief Valves (TAC No. MB0290)," dated April 17, 2001

1. ASME Code Component(s) Affected

1E12-C003, Residual Heat Removal (RHR) Loop B/C Waterleg Pump (Class 2)
1E21-C002, Low Pressure Core Spray (LPCS) and RHR A Waterleg Pump (Class 2)
1E51-C003, Reactor Core Isolation Cooling (RCIC) Waterleg Pump (Class 2)

2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME), "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition (ASME OM Code-2004).

3. Applicable Code Requirement

Table ISTB-3000-1 specifies the parameters to be measured during IST.

ISTB-3300, "Reference Values," paragraph (e)(2) states, "Reference values shall be established within ±20% of pump design flow for a Group A test, if practicable. If not practicable, the reference point flow rate shall be established at the highest practical flow rate."

ISTB-3400, "Frequency of Inservice Tests," states, "An inservice test shall be run on each pump as specified in Table ISTB-3400-1." Table ISTB-3400-1, "Inservice Test Frequency," specifies that a Group A pump test shall be performed on a quarterly frequency.

ISTB-5121 requires that Group A tests shall be conducted with the pump operating at a specified reference point. ISTB 5121(b) requires that the resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to its reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.

Group A pumps are pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations.

4. Reason for Request

The waterleg pumps are continuously-running pumps whose safety function is to keep their supported system's pump discharge header piping in a filled condition. This function prevents water hammer and the delay of flow to the reactor upon the supported system's pump start. The actual output and hydraulic performance of the waterleg pumps are not critical to their safety function, as long as the waterleg pumps are capable of maintaining their associated system's pump discharge piping full of water. The amount of flow delivered by each waterleg pump is dependent upon each supported system's leakage rate.

The suction pressure for these waterleg pumps is essentially constant; however, quarterly monitoring of discharge pressure and bearing vibration in accordance with Position 9, "Pump Testing Using Minimum-Flow Return Lines With or Without Flow Measuring Devices," of Generic Letter (GL) 89-04, "Guidance On Developing Acceptable Inservice Testing Programs," dated April 3, 1989, will be performed to monitor for pump degradation and to assess pump performance (Reference 1). The flowrate for each of these waterleg pumps varies little during normal operation, and testing of these pumps at a predetermined reference point as described in ISTB-5121(b) is not necessary to detect pump degradation or to establish that these pumps can perform their safety function.

The proposed alternative provides an acceptable level of quality and safety.

5. Proposed Alternative and Basis for Use

The CPS waterleg pumps will be monitored for degradation on a quarterly basis by observing pump discharge pressure and bearing vibration during normal operating conditions. This testing will be performed without varying the resistance of the system as discussed in ISTB-5121(b). These parameters will then be evaluated and trended to assess the pump's performance. The measurement and trending of these parameters under these conditions will provide satisfactory indication of the operational readiness of the pumps and detect degraded performance. These waterleg pumps will be full flow tested every 24 months in conjunction with the comprehensive pump test performed in accordance with the requirements specified in ISTB-5123, "Comprehensive Test Procedure."

In addition to this quarterly testing, each of these waterleg pump's supported system pump discharge headers have sensors that continuously monitor header pressure, and provide an alarm in the main control room when their low pressure setpoint is reached. This will provide indication that the associated waterleg pump is no longer performing its safety function, and allow CPS operators to respond according to station procedures. Moreover, these pumps are currently being monitored under the CPS Vibration Monitoring Program, which is not currently required by any Federal, state or industry mandate. Because rotating equipment faults that can be detected by vibration monitoring will show up any time the equipment is operating, returning these pumps to a fixed set of operating conditions is not necessary to detect such faults. Lastly, each of these waterleg pump's supported system pump discharge header is verified to be filled with water on a monthly basis in accordance with Surveillance Requirements (SRs) in the CPS Technical Specifications (TS). Any indication that the supported system's pump discharge header piping is not filled with water would provide timely indication that the associated waterleg pump's performance has degraded.

In summary, using the provisions of this relief request as an alternative to the requirements of ISTB-3300(e)(2), ISTB-3400, and ISTB-5121(b), provides a reasonable alternative to the ASME OM Code requirements, and an acceptable level of quality and safety. The actual output and hydraulic performance of the waterleg pumps are not critical to their safety function, as long as the pumps are capable of maintaining their supported system's pump discharge header piping full of water. Alarms would promptly alert plant operators whenever the waterleg pumps do not maintain the piping pressure above a set alarm level. In addition, vibration data trending toward unacceptable values would indicate degradation in pump performance, and allow time for CPS personnel to plan and take corrective actions before the pumps fail.

Therefore, the proposed alternative provides a reasonable assurance of operational readiness of the subject waterleg pumps because (1) discharge pressure and bearing vibration are measured and trended, (2) alarms are present in the Main Control Room, which provide continuous monitoring for degradation in the pressure of the supported system's pump discharge header, and (3) monthly venting of supported system's pump discharge header piping according to CPS TS will verify that the associated waterleg pump is performing its safety function.

6. Duration of Proposed Alternative

The proposed alternative identified in this relief request shall be utilized during the Third 10-Year IST Interval

7. Precedents

In Reference 2, the Perry Nuclear Power Plant submitted Request Number PR-1, Revision 0, to request relief from quarterly testing waterleg pumps associated with the Residual Heat Removal, Low Pressure Core Spray, High Pressure Core Spray, and Reactor Core Isolation Cooling systems. This request is similar to that request approved by the NRC in a safety evaluation report dated August 9, 1999 (Reference 3).

8. References

1. Generic Letter 89-04, "Guidance On Developing Acceptable Inservice Testing Programs," dated April 3, 1989

2. Letter from Mr. M. Bezilla (First Energy Nuclear Operating Company) to U. S. NRC, "Eight Separate In-Service Testing Program 10 CFR 50.55a Requests in Support of the Third Ten-Year Interval," dated November 18, 2008. (Accession Number ML083370198)

3. Letter from U. S. NRC, "Safety Evaluation of the Inservice Testing Program Second Ten-Year Interval for Pumps and Valves – Perry Nuclear Power Plant (TAC MA3328), dated August 9, 1999