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10 CFR 50.55a

NMP2L 2575

February 16, 2015

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

Nine Mile Point Nuclear Station, Unit 2
Renewed Facility Operating License No. NPF-69
NRC Docket No. 50-410

Subject: Request for Relief from ASME OM Code 5-Year Test Interval for Class 1 Safety Relief Valves (SRVs) (Relief Request MSS-VR-01, Revision 1)

Attached for your review is Relief Request MSS-VR-01, Revision 1 associated with the third Inservice Testing (IST) interval for Nine Mile Point Nuclear Station, Unit 2 (NMP2). The third interval of the NMP2 IST program complies with the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants, 2004 Edition with no Addenda. This relief request would implement ASME OM Code Case OMN-17. We request your approval by February 16, 2016.

There are no regulatory commitments in this letter.

If you have any questions concerning this letter, please contact Tom Loomis at (610) 765-5510.

Respectfully,

David T. Gudger
Manager - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Relief Request MSS-VR-01, Revision 1

cc: Regional Administrator, Region I, USNRC
USNRC Senior Resident Inspector, NMP
Project Manager, USNRC

ATTACHMENT

RELIEF REQUEST MSS-VR-01, REVISION 1

Proposed Alternative to the ASME OM Code 5-Year Test Interval for Class 1 Safety Relief Valves (SRVs) In Accordance with 10 CFR 50.55a(z)(1)

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1. ASME Code Component(s) Affected

Component ID	Class	Cat.	Label
2MSS*PSV120 1	C	MAIN STEAM	SRV
2MSS*PSV121 1	C	MAIN STEAM	SRV (ADS*)
2MSS*PSV122 1	C	MAIN STEAM	SRV
2MSS*PSV123 1	C	MAIN STEAM	SRV
2MSS*PSV124 1	C	MAIN STEAM	SRV
2MSS*PSV125 1	C	MAIN STEAM	SRV
2MSS*PSV126 1	C	MAIN STEAM	SRV (ADS)
2MSS*PSV127 1	C	MAIN STEAM	SRV (ADS)
2MSS*PSV128 1	C	MAIN STEAM	SRV
2MSS*PSV129 1	C	MAIN STEAM	SRV (ADS)
2MSS*PSV130 1	C	MAIN STEAM	SRV (ADS)
2MSS*PSV131 1	C	MAIN STEAM	SRV
2MSS*PSV132 1	C	MAIN STEAM	SRV
2MSS*PSV133 1	C	MAIN STEAM	SRV
2MSS*PSV134 1	C	MAIN STEAM	SRV (ADS)
2MSS*PSV135 1	C	MAIN STEAM	SRV
2MSS*PSV136 1	C	MAIN STEAM	SRV
2MSS*PSV137 1	C	MAIN STEAM	SRV (ADS)

*ADS = Automatic Depressurization System

Component/System Function

The ASME Code requires the reactor pressure vessel be protected from overpressure during upset conditions by self-actuated safety valves. As part of the nuclear pressure relief system, the size and number of Safety Relief Valves (SRVs) are selected such that peak pressure in the nuclear system will not exceed the ASME Code limits for the Reactor Coolant Pressure Boundary (RCPB).

The SRVs are Dikkers / Model G471-6/125.04 (18 SRVs Installed) in 4 steam lines. The SRVs are located on the main steam lines between the reactor vessel and the first isolation valve within the drywell. The SRVs are designed to actuate by either of two modes - the safety mode or the auto depressurization system (ADS) mode. In the safety mode, the valve will open when reactor pressure exceeds a specific spring set-pressure. In the auto depressurization mode, the valve will automatically open upon receipt of an overpressure signal (seven of the eighteen valves support this ADS function). The proposed changes do not impact either the safety mode of operation or the auto depressurization mode of operation.

2. Applicable Code Edition and Addenda

The Nine Mile Point Nuclear Station, Unit 2 (NMP2) Inservice Testing Program (IST) complies with the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code-2004 Edition, No Addenda.

3. Applicable Code Requirement(s)

- 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), "5-Year Test Interval," states that Class 1 pressure relief valves shall be tested at least once every 5 years.

- Paragraph I-1320(b)(2) requires that for replacement of a full complement of valves, the valves removed from service shall be tested within 12 months of removal from the system.

- Relief Request MSS-VR-01 was previously authorized by Reference 1. This authorized alternative to ASME OM Code-2004, Mandatory Appendix I, paragraph I-1320, requires that Class 1 pressure relief valves be tested at least once every three refueling cycles. 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 three cycle interval, if they exist. The test interval for any individual valve shall not exceed three refueling cycles. However, this relief did not authorize an additional 6 months grace as provided in OMN-17.

4. Reason for Request

By letter dated December 29, 2008 (Reference 1), the NRC authorized Relief Request MSS-VR-01 for NMP2 to increase the SRV test interval from 5 years to 3 refueling cycles (approximately 6 years), but did not include the 6 month grace. Revision 1 of request MSS-VR-01 would replace the currently approved test interval of "3 refueling cycles (approximately 6 years)" with a test interval of "6 years," and would allow a 6-month grace period for performing the tests. These revisions are consistent with the test interval and grace period described in American Society of Mechanical Engineers (ASME) Code Case OMN-17. Due to outage scheduling, the additional 6-months is necessary to avoid unnecessary testing.

Section ISTC-3200, "Inservice Testing," states that inservice testing shall commence when the valves are required to be operable to fulfill their required function(s). Section ISTC-5240, "Safety and Relief Valves," directs that safety and relief valves shall meet the inservice testing requirements set forth in Appendix I of the ASME OM Code. Appendix I, Section I-1320(a) 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. This section also states a minimum of 20% of the pressure relief valves are tested within any 24-month interval and that the test interval for any individual valve shall not exceed 5 years. The required tests ensure that the SRVs, which are located on each of the main steam lines between the reactor vessel and the first isolation valve within the drywell, will open at the pressures assumed in the safety analysis.

The SRVs have shown acceptable test history at NMP2 as described in Section 5 below.

However, given the current 24-month operating cycle at NMP2, Exelon Generation Company, LLC (Exelon) is required to remove and test approximately half of the SRVs every refueling outage in order to ensure that all valves are removed and tested in accordance with the ASME OM Code requirements. This ensures compliance with the ASME OM Code requirements for testing Class 1 pressure relief valves within a 5 year interval. With the current 5 year interval, NMP2 is required to remove all 18 SRVs over 2 refuel cycles (i.e., 4 years). Approval of extending the test interval to 6.5 years would reduce the number of SRVs removed during an individual outage, such that the full scope of 18 SRVs are replaced over 3 refuel cycles (i.e., 6 years, plus 6 months grace). Without Code relief, the incremental outage work due to the inclusion of the additional 2 - 3 SRVs per outage would be contrary to the principle of maintaining radiation dose As Low As Reasonably Achievable (ALARA). The removal and replacement of the additional 2 - 3 SRVs per outage without Code relief results in an additional exposure of approximately 2 - 4 Rem each outage. Additionally, the grace period allows for flexibility in the scheduling of as-left set and as-found set-pressure testing, which is based on a test to test frequency.

In accordance with 10 CFR 50.55a(z)(1), Exelon requests approval of an alternative to the 5 year test interval requirements of ASME OM Code, Appendix I, Section I-1320(a) for the SRVs at NMP2. Exelon requests that the test interval be increased from 5 years to 6.5 years. All other requirements of the applicable ASME OM Code would be met.

5. Proposed Alternative and Basis for Use

As an alternative to the Code required 5-year test interval per Appendix I, paragraph I-1320(a), Exelon proposes that the subject Class 1 pressure relief valves be tested at least once every three refueling cycles (approximately 6 years/72 months) with a minimum of 20% of the valves tested within any 24-month interval. This 20% would consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve would not exceed 72 months except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods and certification of the valve prior to installation.

As-found testing using steam and subsequent valve maintenance are currently performed at an off-site test facility. Subsequent to completion of as-found testing, each SRV in the removed complement is disassembled to perform inspections and a complete valve overhaul. Any SRV that failed the as-found set-pressure test is inspected to determine the cause of the test failure. Valve overhaul is performed to ensure that parts are free of defects resulting from time related degradation or service induced wear. All identified adverse conditions are corrected, the disc and seats are lapped, and the valve is reassembled. Each SRV is then recertified for service through inspection and testing consistent with ASME OM Code requirements, including set-pressure, seat tightness, stroke time and disc lift verifications, solenoid coil pick up/drop out, and air actuator integrity tests.

After recertification testing, the SRVs are stored at the test facility for future use. The storage area is inspected and maintained to ANSI/ASME N45.2.2 requirements, which will minimize the potential for any valve degradation.

The SRV as-found set-pressure test data in Table 1 and Table 2 demonstrates that the maintenance practices previously employed by NMP2 were effective. In the Spring 2010, prior to the Refueling Outage 12 (RFO12), testing of the SRVs began at an offsite testing facility. These results are reflected in Table 2.

Only one as-found set-pressure test failure (2002) has been experienced during the time period encompassed by the data in Table 1. Note that testing performed on SRVs removed during these refueling outages utilized nitrogen, with a correlated set-pressure. The data in Table 1 also illustrates that SRVs that have exceeded 6 years between tests have still demonstrated acceptable as-found set-pressure test results.

Additionally, there were a total of four as-found set-pressure failures experienced in 2010 (Table 2), which was determined not to be a result of set-pressure drift or a hardware degradation issue, rather the cause was determined to be common among the four SRVs which was due to minor inaccuracies associated with the correlation used to establish the as-left set-pressure using nitrogen, and the as-found set-pressure using saturated steam.

During RFO13 (Spring of 2012) and RFO14 (Spring of 2014), there were no as-found set-pressure failures (Table 3).

As noted previously, Relief Request MSS-VR-01 was approved in Reference 1, and permitted a test interval of "3 refueling cycles (approximately 6 years)." Revision 1 to this relief request merely allows an additional 6 months grace as provided in OMN-17.

Based on the above valve performance history and SRV maintenance practices, there is continued assurance of valve operational readiness, as required by ASME OM Code-2004, Mandatory Appendix I, paragraph I-1310(b). Therefore, this proposed alternative to include the 6-month grace will continue to provide assurance of the valves' operational readiness and provides an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1).

6. Duration of Proposed Alternative

This proposed alternative is requested for the remainder of the NMP2 third 10-year Inservice Testing Program interval, which began on January 1, 2009 and is scheduled to end on December 31, 2018.

7. Precedents

1. Peach Bottom Atomic Power Station, Units 2 and 3 Relief Request 01A-VRR-3 was approved in a Nuclear Regulatory Commission Safety Evaluation Report dated April 30, 2014 (ML14094A051).

2. Quad Cites Nuclear Power Station, Units 1 and 2 Relief Request RV-05 was approved in a Nuclear Regulatory Commission Safety Evaluation Report dated February 14, 2013 (ML13042A348).

8. References

1. Letter from M. Kowal (U.S. Nuclear Regulatory Commission) to K. Polson (Nine Mile Point Nuclear Station, LLC), "Nine Mile Point Nuclear Station – Safety Evaluation of Relief Requests for the Unit No. 1 Fourth 10-Year and Unit No. 2 Third 10-Year Pump and Valve Inservice Testing Program (TAC Nos. MD9202 AND MD9203)," dated December 29, 2008.

Table 1
Main Steam SRVs Test Results for NMP2 Refueling Outages RFO7 (2000) through RFO11 (2008)[1]

SRV Tested	Serial No.	Set-Pressure (psig)	As-Found Set-Pressure Test Results (psig)	Correlated Set-Pressure (psig)	Correlated Max Set-Pressure +3% (psig)	Correlated Min Set-Pressure -3% (psig)	Accept/ Reject	Time from Last Test (Years)
Refueling Outage 11, April 2008								
2MSS*PSV126	160965	1195	1212	1215	1248	1181	Accept	6.77
2MSS*PSV127	160956	1205	1220	1224.9	1258.7	1190.9	Accept	6.79
2MSS*PSV128	160972	1165	1162	1184	1217	1151	Accept	8.42
2MSS*PSV131	160961	1175	1200	1194	1227	1161	Accept	6.77
2MSS*PSV132	160915	1185	1182	1205	1238	1171.4	Accept	6.77
2MSS*PSV135	160964	1195	1197	1215	1248	1181	Accept	10.1
Refueling Outage 10, April 2006								
2MSS*PSV120	160935	1185	1203	1205	1238	1171	Accept	6.44
2MSS*PSV121	160966	1195	1224	1215	1248	1181	Accept	6.40
2MSS*PSV122	160951	1185	1222	1204	1238	1171	Accept	8.11
2MSS*PSV125	160968	1185	1194	1205	1238	1171	Accept	8.12
2MSS*PSV129	160971	1205	1225	1225	1258	1191	Accept	6.42
2MSS*PSV133	160958	1165	1176	1184	1217	1151	Accept	4.78
Refueling Outage 9, April 2004								
2MSS*PSV123	160960	1175	1191	1195.2	1228	1162	Accept	7.19
2MSS*PSV124	160974	1175	1193	1195.2	1228	1162	Accept	4.43
2MSS*PSV130	160936	1195	1193	1215.5	1249	1181	Accept	7.21
2MSS*PSV134	160954	1205	1225	1225	1259	1191.6	Accept	7.92
2MSS*PSV136	160973	1175	1189	1195.2	1228	1162	Accept	6.11
2MSS*PSV137	160905	1205	1239	1225.7	1259.7	1191.6	Accept	6.12
Refueling Outage 8, March 2002								
2MSS*PSV121	160939	1195	1219	1214	1248	1180	Accept	4.09
2MSS*PSV126	160967	1195	1189	1214	1247	1180	Accept	5.88
2MSS*PSV127	160955	1205	1201	1224	1258	1190	Accept	5.90
2MSS*PSV128	160903	1165	1176	1184	1216	1151	Accept	4.08
2MSS*PSV129	160904	1205	1220	1224	1258	1190	Accept	4.08
2MSS*PSV132	160953	1185	1181	1204	1237	1171	Accept	5.16
2MSS*PSV134	160970	1205	1192	1224	1258	1190	Accept	5.18
2MSS*PSV135[2]	160976	1195	1170	1214	1247	1180	Reject	5.16
2MSS*PSV131[2]	160962	1175	1186	1194	1227	1161	Accept	5.17
2MSS*PSV133[2]	160959	1165	1169	1184	1216	1151	Accept	5.18

Table 1 (Continued)

SRV Tested	Serial No.	Set-Pressure (psig)	As-Found Set-Pressure Test Results (psig)	Correlated Set-Pressure (psig)	Correlated Max Set-Pressure +3% (psig)	Correlated Min Set-Pressure -3% (psig)	Accept/ Reject	Time from Last Test (Years)
Refueling Outage 7, March 2000								
2MSS*PSV120	160915	1185	1219	1204	1238	1171	Accept	3.90
2MSS*PSV121	160965	1195	1231	1215	1248	1181	Accept	3.90
2MSS*PSV122	160950	1185	1222	1204	1238	1171	Accept	3.94
2MSS*PSV123	160963	1175	1208	1194	1227	1161	Accept	3.92
2MSS*PSV124	160906	1175	1189	1194	1227	1161	Accept	3.92
2MSS*PSV125	160952	1185	1220	1204	1238	1171	Accept	3.90
2MSS*PSV128	160958	1165	1193	1184	1217	1151	Accept	3.94
2MSS*PSV129	160956	1205	1214	1225	1258	1191	Accept	3.16
2MSS*PSV135	160975	1195	1244	1215	1248	1181	Accept	3.88
2MSS*PSV136	160961	1175	1221	1194	1227	1161	Accept	3.93
2MSS*PSV137	160954	1205	1222	1225	1259	1191	Accept	3.88

Notes: (1) Testing was performed at the NMP2 onsite test facility using nitrogen as the test medium.

(2) SRV 2MSS*PSV135 (SN 160976) failed the as-found set-pressure test (relieved early) during Refueling Outage 8. Two additional valves (2MSS*PSV131 (SN 160962) and 2MSS*PSV133 (SN 160959)) were tested per Code requirements, and both passed. The cause for this failure was determined to be set-pressure drift. Minor adjustments were made to restore the set-pressure to the acceptance range. No additional causes for the set-pressure drift were found during valve maintenance. The valve was refurbished and re-certified.

Table 2
Main Steam SRVs Test Results for NMP2 Refueling Outage RFO12 (2010) (1)

SRV Tested	Serial No.	Set-Pressure (psig)	As-Found Set-Pressure Test Results (psig)	Max Set-Pressure +3% (psig)	Min Set-Pressure -3% (psig)	Accept/ Reject	Time from Last Test (Years)
Refueling Outage 12, April 2010(1)							
2MSS*PSV120	160953	1185	1229	1220.5	1149.4	Reject	7.38
2MSS*PSV121	160967	1195	1226	1230.9	1159	Accept	7.29
2MSS*PSV122	160952	1185	1217	1220.5	1149.4	Accept	9.76
2MSS*PSV123	160914	1175	1193	1210	1139.7	Accept	13.03
2MSS*PSV124	160906	1175	1212	1210	1139.7	Reject	9.70
2MSS*PSV125	160950	1185	1220	1220.5	1149.4	Accept	9.75
2MSS*PSV126	160939	1195	1229	1230.9	1159	Accept	7.44
2MSS*PSV127	160905	1205	1234	1241	1174.4	Accept	5.30
2MSS*PSV128	160903	1165	1196	1199.9	1130	Accept	7.46
2MSS*PSV129	160904	1205	1234	1241	1174.4	Accept	7.46
2MSS*PSV130	160976	1195	1226	1230.9	1159	Accept	7.4
2MSS*PSV131	160974	1175	1192	1210	1139.7	Accept	5.29
2MSS*PSV132	160969	1185	1197	1220.5	1149.4	Accept	3.31
2MSS*PSV133	160959	1165	1214	1199.9	1130	Reject	7.44
2MSS*PSV134	160955	1205	1211	1241	1174.4	Accept	7.39
2MSS*PSV135	160936	1195	1222	1230.9	1159	Accept	5.30
2MSS*PSV136	160962	1175	1204	1210	1139.7	Accept	7.46
2MSS*PSV137	160970	1205	1245	1241	1174.4	Reject	7.36

Notes: (1) All 18 SRVs were removed and replaced with pre-tested valves in Refueling Outage 12 (2010). The testing was performed at an offsite test facility using saturated steam as the test medium.

Table 3
Main Steam SRVs Test Results for NMP2 Refueling Outages RFO13 (2012) and RFO14 (2014)

SRV Tested	Serial No.	Set-Pressure (psig)	As-Found Set-Pressure Test Results (psig)	Max Set-Pressure +3% (psig)	Min Set-Pressure -3% (psig)	Accept/ Reject	Time from Last Test (Years)
Refueling Outage 14, March 2014							
2MSS*PSV122	160935	1185	1181	1220.55	1149.45	Accept	4
2MSS*PSV123	160963	1175	1170	1210.25	1139.75	Accept	4
2MSS*PSV126	160964	1195	1164	1230.85	1159.15	Accept	4
2MSS*PSV134	160954	1205	1201	1241.15	1168.85	Accept	4
2MSS*PSV135	160975	1195	1199	1230.85	1159.15	Accept	4
2MSS*PSV137	160957	1205	1190	1241.15	1168.85	Accept	4
Refueling Outage 13, April 2012							
2MSS*PSV129	160956	1205	1207	1241.15	1168.85	Accept	2
2MSS*PSV130	160965	1195	1196	1230.85	1159.15	Accept	2
2MSS*PSV131	160961	1175	1166	1210.25	1139.75	Accept	2
2MSS*PSV132	160915	1185	1182	1220.55	1149.45	Accept	2
2MSS*PSV133	160972	1165	1139	1199.95	1130.05	Accept	2
2MSS*PSV136	160960	1175	1168	1210.25	1139.75	Accept	2