Xcel Energy®

Monticello Nuclear Generating Plant
2807 W County Road 75
Monticello, MN 55362

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10 CFR 50.90

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Monticello Nuclear Generating Plant
Docket 50-263
Renewed Facility Operating License No. DPR-22

License Amendment Request: Revise Technical Specification Requirements for Testing the Main Steam Safety / Relief Valves

In accordance with 10 CFR 50.90, the Northern States Power Company – Minnesota (NSPM), doing business as Xcel Energy, Inc., requests a revision to the Monticello Nuclear Generating Plant (MNGP) Technical Specifications (TS). This license amendment request proposes to modify the TS surveillance requirements, in the specifications listed below, to provide an alternative means for testing the dual function, three-stage, Target Rock main steam safety / relief valves.

- Specification 3.4.3 Safety / Relief Valves (S/RVs)
- Specification 3.5.1 Emergency Core Cooling System (ECCS) – Operating
- Specification 3.6.1.5 Low-Low Set (LLS) Valves

These valves provide the overpressure protection safety function, and also provide the automatic depressurization and low-low set relief function. This license amendment request modifies the TS surveillance requirements by providing an alternative methodology utilizing a series of overlapping tests to demonstrate the required functioning, in lieu of manually actuating the valves during plant startup. Industry experience has shown that the current manual actuation surveillance test method increases the risk of leakage and spurious opening.

NSPM requests NRC approval of the proposed license amendment request by February 15, 2013, to support preparations for the spring 2013 Refueling Outage (RFO). NSPM will implement prior to startup from the 2013 RFO.

Enclosure 1 provides a description of the proposed changes and includes the technical evaluation and associated no significant hazards determination and environmental evaluations. Enclosure 2 provides a marked-up copy of the TS pages showing the proposed changes. Enclosure 3 provides a draft typed version of the TS Bases pages, for information.

The MNGP Plant Operations Review Committee has reviewed this application. In accordance with 10 CFR 50.91, a copy of this application, with enclosures, is being provided to the designated Minnesota Official.

Should you have questions regarding this letter, please contact Mr. Richard Loeffler at (763) 295-1247.

Summary of Commitments

This letter proposes no new commitments and does not revise any existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on February 2, 2012.

Nathan T Haskell for

Timothy J. O'Connor
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power Company – Minnesota

Enclosures (3)

cc: Administrator, Region III, USNRC
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC
Minnesota Department of Commerce

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1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, the Northern States Power Company – Minnesota (NSPM), doing business as Xcel Energy, Inc., proposes to revise the Monticello Nuclear Generating Plant (MNGP) Technical Specification (TS) requirements pertaining to surveillance testing of the main steam safety / relief valves (S/RVs).

This license amendment request (LAR) modifies the TS surveillance requirements by providing an alternative methodology where a series of overlapping tests will be utilized to demonstrate required functioning of the S/RVs, in lieu of manually actuating the S/RVs with steam during plant startup. Industry experience has shown that the surveillance test method of performing a manual actuation increases the risk of S/RV leakage and spurious opening. Providing an alternative to performance of a manual actuation at low reactor pressure and steam flow is desirable to decrease the potential for these occurrences. The affected specifications are:

- Specification 3.4.3 Safety / Relief Valves (S/RVs)
- Specification 3.5.1 Emergency Core Cooling System (ECCS) – Operating
- Specification 3.6.1.5 Low-Low Set (LLS) Valves

10 CFR 50.55a requests have been submitted in the past in conjunction with these types of LARs by licensees due to prior American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code editions / addenda requiring manual actuation of S/RVs during plant startup. NSPM recently submitted 10 CFR 50.55a inservice test (IST) requests for the MNGP fifth ten-year IST interval (Reference 1), scheduled to begin September 1, 2012. In the applicable code edition for the MNGP, that is, ASME OM Code, 2004 Edition; through 2006 Addenda, Mandatory Appendix I, the requirement to remotely actuate S/RVs following installation or maintenance has been modified to provide an alternative, consequently a 10 CFR 50.55a request is unnecessary. The ASME OM Code 2004 Edition; through 2006 Addenda, Mandatory Appendix I, will hereafter referred to as the 2004 ASME OM Code herein.

2.0 BACKGROUND

Safety relief valve RV-2-71E exhibited elevated tailpipe temperatures following manual actuation during startup from the spring 2011 Refueling Outage, which is indicative of leakage to the suppression pool. Due to this condition, MNGP shutdown on June 23, 2011, for a maintenance outage to replace this S/RV. Inspection and testing of safety relief valve RV-2-71E following removal indicated that the S/RV second stage was leaking and the pilot and main stages were not. It was determined that lifting safety

relief valve RV-2-71E during startup, as currently required, likely allowed debris to be trapped in the second stage seat thereby creating a leak path.

3.0 DETAILED DESCRIPTION

The proposed TS change revises the applicable surveillance requirements to provide an alternative methodology[1] for testing the S/RVs. Applying this methodology, valve capability will be demonstrated by manually stroking the valve actuator during each refueling outage (or maintenance outage if an S/RV is replaced) without lifting the main valve disc off the seat and by crediting a series of overlapping tests, some of which are performed at an offsite test facility. The current surveillance requirements are summarized below:

	SURVEILLANCE	FREQUENCY
	----------NOTE---------- Not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. ----------	
(SR 3.4.3.2)	Verify each required S/RV opens when manually actuated.	24 months
(SR 3.5.1.12)	Verify each ADS valve opens when manually actuated.	24 months
(SR 3.6.1.5.1)	Verify each LLS valve opens when manually actuated.	24 months on a STAGGERED TEST BASIS for each valve solenoid

As indicated above, the current FREQUENCY for SR 3.4.3.2 and SR 3.5.1.12 is every "24 months." Also, the current FREQUENCY for SR 3.6.1.5.1 is "24 months on a STAGGERED TEST BASIS for each valve solenoid". Following approval the surveillance requirement frequencies will be aligned and testing will be performed "In accordance with the Inservice Testing Program."

Note each surveillance requirement is modified by a NOTE stating "Not required to be performed until 12 hours after reactor steam flow is adequate to perform the test". This note is unaffected by this LAR and is retained to allow the option to test the S/RVs by manual actuation during plant startup, if necessary.

1. The surveillance requirements retain the current capability for manual actuation during plant startup as an alternative method, but it is relegated to an available but rarely used secondary method (referred to as Method 2 in the TS Bases).

With these proposed changes the applicable surveillance requirements will state:

	SURVEILLANCE	FREQUENCY
	----------NOTE---------- Not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. ----------	
(SR 3.4.3.2)	Verify each required S/RV is capable of being opened.	In accordance with the Inservice Testing Program
(SR 3.5.1.12)	Verify each ADS valve is capable of being opened.	In accordance with the Inservice Testing Program
(SR 3.6.1.5.1)	Verify each LLS valve is capable of being opened.	In accordance with the Inservice Testing Program

The TS Bases for these specifications will be revised to describe this alternative method while retaining the current manual actuation method (see Enclosure 3).

The TS change (mark-ups) associated with this change are provided in Enclosure 2. The corresponding draft TS Bases (mark-ups) are provided in Enclosure 3, for information. TS Bases changes are issued in accordance with MNGP Specification 5.5.9, "Technical Specification (TS) Bases Control Program," following approval of a license amendment.

4.0 S/RV DESCRIPTION AND DESIGN / LICENSING FUNCTIONS

The MNGP reactor pressure relief system consists of eight S/RVs located on the main steam lines within the drywell between the reactor pressure vessel (RPV) and the inboard main steam isolation valves. Each S/RV is provided with discharge piping which vents into the suppression pool (torus) via a T-quencher sparger. The S/RVs protect the RPV from overpressurization. The size and number of S/RVs ensure that the peak pressure within the nuclear steam system will not exceed ASME Boiler and Pressure Vessel Code and USAS B31.1.0 limits.

The S/RVs are three-stage, Target Rock model 67F, designed to be self-actuating on overpressure or remotely operated with an air actuator. In the safety mode they self-actuate if reactor pressure exceeds the set pressure of approximately 1109 psig. Once self-actuated, the valves will remain open until reactor pressure decreases to approximately 30 psi below the setpoint. All the S/RVs fulfill the safety (overpressure protection) function.

S/RV Relief Mode

The S/RVs can be manually actuated with an air operator remotely from Control Room panels and four of these S/RVs can be actuated from the Alternate Shutdown System panel (i.e., remote shutdown panel).

Automatic Depressurization System (ADS)

The ADS, a part of ECCS, is an automatic actuation logic system that provides a backup to the High Pressure Coolant Injection (HPCI) System. Three S/RVs (RV-2-71A, C and D) perform the ADS function. The ADS is designed to depressurize the reactor during a small break Loss of Coolant Accident so the low pressure systems[(2)] can inject if HPCI fails or is unable to maintain RPV water level. The ADS valves can be opened automatically or manually. Since ADS does not provide coolant makeup to the reactor, ADS is considered only in conjunction with Low Pressure Coolant Injection (LPCI) or Core Spray operation as a backup to HPCI.

Low-Low Set System (LLS)

The LLS System is an automatic actuation logic that controls the opening and closing setpoint of three S/RVs (RV-2-71E, G and H) following a scram to maximize the time between lifts during pressurization transients. To assure that no more than one relief valve reopens following a reactor isolation event, three S/RVs are provided with lower opening and closing pressure setpoints. The lower setpoint causes the LLS valves to stay open longer, such that reopening of more than one S/RV is prevented on subsequent actuations. The LLS function prevents excessive short duration S/RV cycles with valve actuation at the relief setpoint.

5.0 OPERATING EXPERIENCE

Experience across the industry and at MNGP has shown that manual actuation of S/RVs during plant operation (start-up) can lead to valve seat leakage. Steam discharge from the S/RVs is routed to the suppression pool (torus), and the increased heat and fluid additions to the suppression pool require more frequent suppression pool cooling and pump-down operations. Main stage seat leakage also tends to mask the indications of pilot or second stage seat-leakage. Pilot or second stage leakage can cause maloperation of the S/RV, including spurious actuation and/or failure to reclose after actuation. Excessive leakage of any stage requires plant shutdown to replace the leaking S/RV.

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2. The low pressure systems are the LPCI mode of Residual Heat Removal (RHR) and Core Spray.

The Boiling Water Reactor Owners' Group (BWROG) Evaluation of NUREG-0737, "Clarification of TMI Action Plan Requirements," Item II.K.3.16, "Reduction of Challenges and Failures of Relief Valves," recommends that the number of S/RV openings be reduced as much as possible and that unnecessary challenges should be avoided. NUREG-1482, Rev. 1, "Guidelines for Inservice Testing at Nuclear Power Plants," Paragraph 4.3.2.1 states:

> In recent years, the NRC staff has received numerous requests for relief and/or TS changes related to the stroke testing requirements for BWR dual-function main steam safety/relief valves (S/RVs). Both Appendix I to the OM Code and the plant-specific TSs require stroke testing of S/RVs after they are reinstalled following maintenance activities. Several licensees have determined that in situ testing of the S/RVs with reactor pressure can contribute to undesirable seat leakage of the valves during subsequent plant operation and have received approval to perform testing at a laboratory facility coupled with in situ tests and other verifications of actuation systems as an alternative to the testing required by the OM Code and TS.

NUREG-0123, "Standard Technical Specifications for General Electric Boiling Water Reactors," and NUREG-0626, "Generic Evaluation of Feedwater Transients and Small Break Loss-of-Coolant Accidents in GE-Designed Operating Plants and Near-Term Operating License Applications," also recommend reducing the number of challenges to the S/RVs. The proposed changes in testing are consistent with the recommendations within the NUREGs discussed above.

6.0 TECHNICAL EVALUATION

The manual actuation test currently prescribed in the surveillances for the safety / relief valves and for the ADS and LLS functions of those valves demonstrate the mechanical operation of the S/RVs. The pertinent 2004 OM Code[3] requirements, however, have changed from the previous editions and now permit the "valve disk stroke capability [to] be verified by mechanical examination or tests".[4] Overlapping tests can now be credited to individually test S/RV components. NSPM requests to revise the TS to reflect the testing provisions of the 2004 OM Code, while retaining the current TS capability to manually actuate as an alternative in the surveillance requirements. Additionally, NSPM proposes to revise the surveillance frequency for these surveillances from nominally 24 months to "In accordance with the Inservice Testing Program".[5]

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3. MNGP is transitioning to this code edition for the fifth ten-year IST interval scheduled to begin on September 1, 2012.
4. 2004 ASME OM Code Appendix I, paragraph I-3410(c).
5. Testing of the LLS valve solenoids on a STAGGERED TEST BASIS is eliminated. The solenoids will be tested "In accordance with the Inservice Testing Program."

Previous editions of the OM Code, required that S/RVs with auxiliary actuating devices that have been maintained or refurbished in place, removed for maintenance and testing, or both, and reinstalled be remotely actuated at reduced or normal system pressure to verify open and close capability of the valve before resumption of electric power generation. Paragraph I-3410(d) was revised in the 2004 edition of the ASME OM Code and no longer requires that S/RVs be opened and closed at reduced or normal system pressure following maintenance. Also, Paragraph I-3410(d) of the Code requires that each S/RV removed for maintenance or testing and reinstalled shall have the electrical and pneumatic connections verified either through mechanical / electrical inspection or test. Additionally, the 2004 OM Code does not require that an S/RV be tested as a unit. For example, the auxiliary actuating device can be tested independently of the main disk assembly.

6.1 Providing an Alternative to the Current Manual Actuation Test Methodology

The manual actuation tests currently prescribed in SR 3.4.3.2, SR 3.5.1.12 and SR 3.6.1.5.1 provide a demonstration of the mechanical operation of the S/RVs, and overlap with other testing to demonstrate the functions of the S/RVs can be performed. Manual actuation is currently performed once per operating cycle, i.e., at a nominal frequency of once every 24 months, corresponding to start-up from refueling outages. This S/RV manual actuation lift test is credited with demonstrating the mechanical functioning of the valve for the relief mode and for the automatic depressurization and low-low set relief functions.

In lieu of performing a manual actuation of each S/RV once per cycle it is proposed in accordance with the 2004 OM Code to credit overlapping code and TS surveillance requirements (testing) to ensure the capability of the S/RV to open.[6] The proposed revision to the SRs provides an alternative to the current requirement to demonstrate the capability of the relief valves to open when manually actuated during plant startup. This alternative provides another option to satisfy the surveillance requirements allowing a determination to be made that the valve is capable of being opened. Crediting of other testing and verification of electrical and pneumatic connections is in accordance with the 2004 Edition of the ASME OM Code, paragraph I-3410(d). The proposed revisions to the TS Bases describe the testing that will occur to verify the opening capability of the valve. The combination of testing the S/RV actuator and solenoid valves and verifications of the capability of the S/RV to open provide a complete verification of the functional capability and is in accordance with 2004 Edition of the ASME OM Code. This testing is described in more detail below.

- Setpoint testing is performed using steam at an offsite test facility as part of certification testing for each S/RV assembly, at intervals determined in

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6. Manual actuation testing will however, be retained as an alternative in the TS surveillance requirements.

accordance with the IST Program. The 2004 Edition of the ASME OM Code, Appendix I, Subsection I-3410, "Class 1 Main Steam Pressure Relief Valves with Auxiliary Actuating Devices," addresses the testing required on refurbished main steam pressure relief valves with auxiliary actuating devices.(7) Specifically paragraph I-3410(c) states:

> Refurbished equipment shall be subjected to the test(s) specified in I-3310,[8] as applicable. If disassembly includes valve disk (main) components, then valve disk stroke capability shall be verified by mechanical examination or tests.

Certification testing is performed for each S/RV assembly at an offsite test facility. In addition to demonstrating that the S/RV pilot stage will actuate on high steam pressure in the safety mode, this test overlaps with actuator functional testing to demonstrate the valve assembly will actuate in the relief mode (i.e., a manual lift via the actuator). After completion of certification testing, S/RV assemblies will be shipped to the plant without disassembly or alteration of valve components.

- Receipt inspection will be performed in accordance with the requirements of the NSPM quality assurance program. The storage requirements in effect at the MNGP will ensure the valves are protected from exposure to the environment, airborne contamination, acceleration forces, and physical damage. Prior to installation the valve will again be inspected for foreign material.

- Once the S/RV is installed and insulated, in accordance with paragraph I-3410(d), the S/RV assembly will be pneumatically and electrically connected. Proper connections will be verified in accordance with procedures. Also, electrical power to the control panel and signals causing application of power to the S/RV solenoid(s) will be verified to be present at the control panels per procedure.

- The simulated automatic actuation tests specified in SR 3.5.1.11 and SR 3.6.1.5.2, and additional surveillances associated with Specification 3.3.5.1, "ECCS Instrumentation," and Specification 3.3.6.3, "LLS Instrumentation," demonstrate the ability of the various logics and controls to actuate the S/RVs up to the point of energizing the solenoids. These

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7. Main stage operation is verified every five years in accordance with Appendix I, paragraph I-1320(a), "Test Frequencies, Class 1 Pressure Relief Valves." A minimum of 20% of the valves will be tested in a 24-month interval. (If ASME OM Code Case OMN-17 was authorized, testing is required every six years.)
8. Appendix I, Subsection I-3310, "Class 1 Main Steam Pressure Relief Valves with Auxiliary Actuating Devices" provides a set of requirements that must be met during maintenance or set-pressure adjustment.

surveillance tests are performed at a nominal 24-month FREQUENCY (i.e. once per operating cycle) in accordance with the Monticello TS, and are unaffected by this LAR.

- S/RV actuator and solenoid valve functional testing will be performed in situ to verify the electrical and pneumatic connections at intervals determined in accordance with the IST Program. The 2004 OM Code, Appendix I, paragraph I-3410(d) states:

  > Each valve with an auxiliary actuating device that has been removed for maintenance or testing and reinstalled after meeting the requirements of I-3310,[8] shall have the electrical and pneumatic connections verified either through mechanical / electrical inspection or test prior to the resumption of electric power generation.

  In the actuator and solenoid valve functional test, the solenoid valve will be connected to the actuator. The solenoid valve will be energized, which pneumatically strokes the actuator. This dry lift test verifies the movement of the actuator stem and proper operation of the solenoid valve(s). S/RV actuator and solenoid valve functional testing are performed once per fuel cycle in accordance with the IST Program. Performance of this testing, along with the functional lift of the actuator at the test facility, and the simulated automatic actuation tests specified in SR 3.5.1.11 and SR 3.6.1.5.2 demonstrates the S/RV assembly will actuate in the relief mode.

6.2 Use of Overlapping Surveillance Tests

SR 3.0.1 Bases states in part, "Surveillances may be performed by means of any series of sequential, overlapping, or total steps provided the entire Surveillance is performed within the specified frequency." Whereas the above steps demonstrate the required safety functions, and the testing frequency is in accordance with the IST Program, which provides the applicable 2004 OM Code testing requirements, the proposed testing satisfies this bases statement.

The proposed testing uses overlapping tests to verify the S/RV functions properly at operating conditions and is capable of being opened when installed in the plant. The use of overlapping tests to demonstrate OPERABILITY of active components is similar to applications elsewhere in the TS for other systems and components. The proposed alternative S/RV testing methodology tests the active components, and therefore, makes unnecessary the cycling of the S/RVs during startup with reactor steam.

6.3 S/RV and Solenoid Valve Test Frequencies

The current manual actuation FREQUENCY for each S/RV specified in SR 3.4.3.2 (S/RV relief mode) and SR 3.5.1.12 (ADS) is once every "24 months". The current FREQUENCY for manual actuation of each S/RV specified in SR 3.6.1.5.1 (LLS) is once every "24 months on a STAGGERED TEST BASIS for each valve solenoid".

Testing of the ADS and S/RV solenoids in SR 3.4.3.2 and SR 3.5.1.12 is currently performed at the same 24 month frequency, as specified above, since the solenoids actuate the S/RVs. Unlike the S/RV or ADS valves (which have one solenoid), the three LLS valves have two solenoids. Testing of the LLS solenoid valves is currently specified in SR 3.6.1.5.1 as performed once per "24 months on a STAGGERED TEST BASIS for each valve solenoid" (i.e., each solenoid is tested at a nominal 48 month frequency).

It is proposed to perform these surveillances "In accordance with the Inservice Testing Program". Specifying the required frequency through the IST Program is not a new technique, but occurs throughout the TS (e.g., SR 3.4.3.1 for verifying the safety function lift setpoints of the S/RVs). Performing testing in accordance with the IST Program retains appropriate legal control over the testing methodology and specified FREQUENCY, since performance is required and is governed by a code adopted into the regulation, i.e., 10 CFR 50.55a. Also, future OM Code changes could then be adopted without requiring a corresponding TS change, allowing NRC endorsed code changes to be more rapidly put in place. Additionally, this will allow crediting IST Program tests performed at frequencies other than 24-months.

The proposed testing frequency for the LLS valve solenoids is more frequent than that currently specified in SR 3.6.1.5.1 but is desirable since it aligns S/RV and S/RV solenoid valve testing performances to occur at the same frequency under the IST Program. This proposed LLS solenoid test frequency is more conservative than current TS requirements.

6.4 Foreign Material Exclusion Program

The current TS Bases for the affected SRs state that in-situ testing verifies the S/RV discharge line is not blocked. The TS Bases state:

> A manual actuation of each ADS [or required S/RV or LLS, respectively] valve is performed to verify that the valve and solenoid are functioning properly and that no blockage exists in the S/RV discharge lines.[9]

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9. Wording is almost the same for the ADS and LLS, and very similar for the S/RV surveillances TS Bases.

However, the probability of blocking an S/RV discharge line and preventing S/RV discharge, or ADS depressurization, or proper LLS operation is considered to be extremely remote. Following the initial demonstration during plant startup testing, improper valve functioning or blockage would arise only through S/RV assembly errors or the introduction of foreign material into the piping system. The NSPM Foreign Material Exclusion (FME) program provides the necessary requirements and guidance to prevent and control introduction of foreign materials into structures, systems, and components. These requirements are incorporated into specific S/RV maintenance procedures for S/RV refurbishment, testing, and change-out. These maintenance procedures and FME procedures and practices are sufficient to ensure proper mechanical functioning and unobstructed steam flow capability without periodic actuation testing.

6.5 Conclusion

Specific MNGP experience in addition to industry experience has shown that the current TS required surveillance testing method increases the risk for S/RV leakage during power operation. The alternate testing method proposed within this LAR allows surveillance of the relief mode of operation of the S/RVs to be performed without physically lifting the valve disk off its seat at power. The proposed testing alternative reduces the risk of seat leakage by eliminating unnecessary valve stroking after performing the required ASME OM Code setpoint testing.

7.0 REGULATORY ANALYSIS

The components necessary to manually actuate the S/RVs will continue to be tested, and full functionality of the S/RVs will be demonstrated, while minimizing the potential for creating seat leakage caused by cycling the valve. In addition, Criterion 3 of 10 CFR 50.36(c)(2)(ii) will continue to be met since full functionality of the S/RVs will be tested under the proposed methodology. The applicable regulatory requirements, together with the no significant hazards determination and environmental evaluations are provided in the following sections.

7.1 No Significant Hazards Determination

In accordance with the requirements of 10 CFR 50.90, the Northern States Power Company – Minnesota (NSPM) requests an amendment to facility Renewed Operating License DPR 22, for the Monticello Nuclear Generating Plant (MNGP) to revise the applicable Technical Specification (TS) surveillance requirements to provide an alternative methodology for testing the main steam line safety relief valves (S/RVs).

The NSPM has evaluated the proposed changes to the TS in accordance with 10 CFR 50.91 against the standards in 10 CFR 50.92 and has determined that the operation of the MNGP in accordance with the proposed amendment presents no significant hazards. NSPM's evaluation against each of the criteria in 10 CFR 50.92 follows.

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   The proposed change revises the applicable TS surveillance requirements (SRs) to provide an alternate means for testing the main steam line S/RVs, and for testing the automatic depressurization system (ADS) and low-low set (LLS) functions of these valves. S/RV testing provides assurance that they are capable of depressurizing the reactor pressure vessel (RPV) in the safety and relief modes. This protects the RPV from over pressurization, and for ADS operation allows the Low Pressure Coolant Injection and Core Spray systems to inject into the RPV as designed. The LLS relief logic prevents excessive short duration relief valve cycles and avoids induced thrust loads on the relief valve discharge line for subsequent actuations.

   Accidents are initiated by malfunctions of plant equipment, or catastrophic failure of plant structures, systems, or components (SSCs). The proposed change involves the manner in which the S/RVs are tested and has no effect on the types or amounts of radiation released or the predicted offsite doses in the event of an accident. The proposed alternative S/RV testing methodology provides an equivalent level of assurance that the S/RVs are capable of performing their intended safety functions.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   The proposed TS changes do not affect the design function, operation, or accident performance of the S/RVs, nor any plant SSC previously evaluated. They do not install any new equipment, and the installed equipment is not being operated in a new or different manner. The proposed change in testing methodology will ensure that the S/RVs

remain capable of performing their safety functions and meet the requirements of the American Society of Mechanical Engineers Boiler and Operation and Maintenance Code. No setpoints are being changed which would alter the dynamic response of plant equipment. Accordingly, no new failure modes are introduced.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed change allows the testing of the manual actuation electrical circuitry, including the solenoid, without causing the S/RV to open. The S/RVs will be manually actuated prior to plant installation. Therefore, all modes of S/RV operation will be tested prior to entering the mode of operation requiring the valves to perform their safety functions. The proposed change does not affect the valve setpoint or operational criteria that directs the relief valves to be manually opened during plant transients. There are no changes to the operability requirements for equipment, the S/RVs, assumed to operate for accident mitigation.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, the NSPM has determined that operation of the facility in accordance with the proposed change does not involve a significant hazards consideration as defined in 10 CFR 50.92(c), in that it does not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

7.2 Applicable Regulatory Requirements

10 CFR 50.36, "Technical specifications," provides the regulatory requirements for the content required in the TSs. As stated in 10 CFR 50.36, the TS include surveillance requirements to assure the limiting conditions for operation (LCO) (and associated remedial actions) are met. The proposed TS changes revise the surveillance requirements associated with testing the main steam S/RVs for the safety (overpressure protection) and relief modes (automatic actuation associated with ADS and LLS).

MNGP was designed largely before the publishing of the 70 General Design Criteria (GDC) for Nuclear Power Plant Construction Permits proposed by the Atomic Energy Commission (AEC) for public comment in July 1967, and constructed prior to the 1971 publication of Appendix A, "General Design Criteria for Nuclear Power Plants", to 10 CFR Part 50. As such, the MNGP was not licensed to the Appendix A GDC's.

The MNGP USAR, Section 1.2, lists the Principal Design Criteria (PDCs) for the design, construction, and operation of the plant. MNGP USAR Appendix E provides a plant comparative evaluation with the proposed AEC 70 design criteria. It was concluded the plant conforms to the intent of the GDCs. Applicable GDC's and PDCs are discussed below.

A. The principal criteria for design, construction, and operation of MNGP associated with the S/RVs and the various modes of operation (i.e., safety, relief, ADS and LLS) are summarized below.

- PDC 1.2.1.b – General Criteria The plant is designed is such a way that the release of radioactive materials to the environment is limited, so that the limits and guideline values of published regulations pertaining to the release of radioactive materials are not exceeded.

- PDC 1.2.3.d – Reactor Core Cooling Independent means are provided to prevent overpressure conditions which could jeopardize the integrity of the reactor primary system or reactor core cooling systems.

- PDC 1.2.10 – Separation of Safety Systems Systems and equipment provided for the prevention of and the mitigation of the consequences of accidents are provided in such redundancy and physical separation that the accident will not preclude operation of sufficient equipment to effectively control the effects of the accident.

B. The applicable 70 draft AEC General Design Criteria (AEC-GDC) are:

- AEC-GDC 9 – Reactor Coolant Pressure Boundary The reactor coolant system shall be designed and constructed so as to have an exceedingly low probability of gross rupture or significant leakage throughout its design lifetime. (USAR Appendix E)

- AEC-GDC 34 – Reactor Coolant Pressure Boundary Rapid Propagation Failure Prevention The ASME and USASI Codes are used as the established and acceptable criteria for design, fabrication, and operation of components of the reactor primary pressure system. (USAR Appendix E)

AEC-GDC 37 – Engineered Safety Features Basis for Design
Engineered safety features shall be provided in the facility to back up the safety provided by the core design, the reactor coolant pressure boundary, and their protection systems. As a minimum, such engineered safety features shall be designed to cope with any size reactor pressure boundary break up to and including the circumferential rupture of any pipe in that boundary assuming unobstructed discharge from both ends. (USAR Appendix E)

- AEC-GDC 41 – Engineered Safety Features Performance Capability
Engineered safety features such as emergency core cooling and containment heat removal systems shall provide sufficient performance capability to accommodate partial loss of installed capacity and still fulfill the required safety function. As a minimum, each engineered safety feature shall provide this required safety function assuming a failure of a single active component. (USAR Appendix E)

- AEC-GDC 44 – Emergency Core Cooling System Capability At least two emergency core cooling systems, preferably of different design principles, each with a capability for accomplishing abundant emergency core cooling, shall be provided. Each emergency core cooling system and the core shall be designed to prevent fuel and clad damage that would interfere with the emergency core cooling function and to limit the clad metal-water reaction to negligible amounts of all sizes of breaks in the reactor coolant pressure boundary, including the double-ended rupture of the largest pipe. The performance of each emergency core cooling system shall be evaluated conservatively in each area of uncertainty. The systems shall not share active components and shall not share other features or components unless it can be demonstrated that (a) the capability of the shared feature or components to perform its required function can be readily ascertained during reactor operation, (b) failure of the shared feature or component does not initiate a loss-of-coolant accident, and (c) capability of the shared feature or component to perform its required function is not impaired by the effects of a loss-of-coolant accident and is not lost during the entire period this function is required following the accident. (USAR Appendix E)

C. While not part of the MNGP licensing basis the applicable 10 CFR 50, Appendix A – General Design Criteria are:

- GDC 15 – Reactor coolant system design. The reactor coolant system and associated auxiliary, control, and protection systems shall be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary are not exceeded during any

condition of normal operation, including anticipated operational occurrences.

- GDC 35 – Emergency core cooling. A system to provide abundant emergency core cooling shall be provided. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant at a rate such that (1) fuel and clad damage that could interfere with continued effective core cooling is prevented and (2) clad metal-water reaction is limited to negligible amounts.

  Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure.

- GDC 37 – Testing of emergency core cooling system. The emergency core cooling system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leak tight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

The NSPM has evaluated the proposed changes against the applicable regulatory requirements and acceptance criteria. The analysis concludes that the proposed TS changes will continue to assure that the design and licensing requirements associated with the S/RVs and their associated functions (i.e., safety, relief, ADS and LLS) are met. Based on this, there is reasonable assurance that the health and safety of the public, following approval of this TS change, is unaffected.

8.0 ENVIRONMENTAL EVALUATION

The NSPM has determined that the proposed change would not revise a requirement with respect to installation or use of a facility or component located within the restricted area, as defined in 10 CFR 20, nor would it change an inspection or surveillance requirement. The proposed amendment does not involve (i) a significant hazards consideration, or (ii) authorize a significant

change in the types or a significant increase in the amounts of any effluent that may be released offsite, or (iii) result in a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for a categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, NSPM concludes that pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

9.0 PRECEDENT

While not a comprehensive list, the NRC has granted similar license amendments and 10 CFR 50.55a relief to the following plants:

- Hatch Nuclear Plant; Units 1 and 2 (Reference 2)
- Peach Bottom Atomic Power Station; Units 2 and 3 (Reference 3)
- LaSalle County Station; Units 1 and 2 (Reference 4)
- Clinton Power Station (Reference 5)
- Dresden Nuclear Power Station; Units 2 and 3 (Reference 6)
- Quad Cities Nuclear Power Station; Units 1 and 2 (Reference 6)
- Oyster Creek Nuclear Generating Station (Reference 7)
- Fitzpatrick Nuclear Power Plant (Reference 8)

Testing approved for plants that use three-stage Target Rock S/RVs include an in-situ actuator test without steam (dry lift test), which is included herein. The wording of the surveillance requirement has evolved from requiring that the "actuator strokes when manually actuated" or "opens when manually actuated" (wording also dependent on S/RV type), to the more general wording of "the valve is capable of being opened". For plants not having a LLS System, there is no corresponding specification, and hence LLS related TS changes were not required.

10.0 REFERENCES

1. Letter from NSPM to U. S. NRC, "10CFR50.55a Requests Associated with the Fifth Inservice Testing Ten-Year Interval," (L-MT-11-055), dated September 28, 2011.

2. Letter from U. S. NRC to H. L. Sumner (Southern Nuclear Operating Company, Inc.), "Issuance of Amendments – Edwin I. Hatch Nuclear Plant, Units 1 and 2," (TAC Nos. M97702 and MM97703)," dated September 5, 1997.

3. Letter from M. C. Thadani (U. S. NRC) to G. D. Edwards (PECO Energy Company), "Peach Bottom Atomic Power Station, Unit Nos. 2 and 3, Technical Specifications Revision Relating to the Surveillance of the Safety Relief Valves (TAC Nos. MA1741 and MA1 742)," dated October 5, 1998.

4. Letter from U. S. NRC to O. D. Kingsley (Exelon Generation Company, LLC), "LaSalle County Station, Units 1 and 2 – Issuance of Amendments (TAC Nos. MB2253 and MB2254)," dated December 13, 2001. (ADAMS Accession Number ML013170087)

5. Letter from U. S. NRC to O. D. Kingsley (Exelon Generation Company, LLC), "Clinton Power Station, Unit 1 – issuance of Amendment (TAC No. MB2256)," dated March 19, 2002. (ADAMS Accession Number ML020660026)

6. Letter from U. S. NRC to C. M. Crane (Exelon Generation Company, LLC), "Dresden Nuclear Power Station, Units 2 and 3 and Quad Cities Nuclear Power Station, Units 1 and 2 – Issuance of Amendments for Main Steam Line Relief Valves and Associated Relief Requests (TAC Nos. MC1792, MC1793, MC1794 and MC1795)," dated October 19, 2004. (ADAMS Accession Number ML042600563)

7. Letter from U. S. NRC to C. M. Crane (Exelon Generation Company, LLC), "Oyster Creek Nuclear Generating Station – Issuance of Amendment Re: Revision to Electromatic Relief Valve Surveillance Requirement (TAC No. MC8671)," September 1, 2006. (ADAMS Accession Number ML062200114)

8. Letter from U. S. NRC to V. P. Operations (Entergy Nuclear Operations, Inc.), "James A. Fitzpatrick Nuclear Power Plant -Issuance of Amendment Regarding Testing of Safety/Relief Valves (TAC No. ME2810)," dated July 21, 2010. (ADAMS Accession Number ML101750325)

ENCLOSURE 2

MONTICELLO NUCLEAR GENERATING PLANT

LICENSE AMENDMENT REQUEST

REVISE TECHNICAL SPECIFICATION REQUIREMENTS FOR TESTING THE MAIN STEAM SAFETY RELIEF VALVES

MARKED-UP TECHNICAL SPECIFICATION PAGES

(3 pages follow)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.3.1	Verify the safety function lift setpoints of the required S/RVs are 1109 ± 33.2 psig. Following testing, lift settings shall be 1109 ± 11.0 psig.	In accordance with the Inservice Testing Program
SR 3.4.3.2	----------NOTE---------- Not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. ---------- Verify each required S/RV ~~opens when manually actuated.~~ is capable of being opened.	~~24 months~~ In accordance with the Inservice Testing Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.5.1.10	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.11	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the ADS actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.12	----------NOTE---------- Not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. ---------- Verify each ADS valve ~~opens when manually actuated.~~ is capable of being opened.	~~24 months~~ In accordance with the Inservice Testing Program
SR 3.5.1.13	Verify automatic transfer capability of the LPCI swing bus power supply from the normal source to the backup source.	24 months

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.5.1	----------NOTE---------- Not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. ----------	
	Verify each LLS valve ~~opens when manually actuated.~~ is capable of being opened.	~~24 months on a STAGGERED TEST BASIS for each valve solenoid~~ In accordance with the Inservice Testing Program
SR 3.6.1.5.2	----------NOTE---------- Valve actuation may be excluded. ----------	
	Verify the LLS System actuates on an actual or simulated automatic initiation signal.	24 months

ENCLOSURE 3

MONTICELLO NUCLEAR GENERATING PLANT

LICENSE AMENDMENT REQUEST

REVISE TECHNICAL SPECIFICATION REQUIREMENTS FOR TESTING THE MAIN STEAM SAFETY RELIEF VALVES

DRAFT TECHNICAL SPECIFICATION BASES PAGES

(FOR INFORMATION)

(14 pages follow)

BASES

ACTIONS (continued)

The 14 day Completion Time to restore the inoperable required S/RVs to OPERABLE status is based on the relief capability of the remaining S/RVs, the low probability of an event requiring S/RV actuation, and a reasonable time to complete the Required Action.

B.1 and B.2

With less than the minimum number of required S/RVs OPERABLE, a transient may result in the violation of the ASME Code limit on reactor pressure. If the safety function of the inoperable required S/RVs cannot be restored to OPERABLE status within the associated Completion Time of Required Action A.1, or if the safety function of three or more required S/RVs is inoperable, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1

This Surveillance requires that the required S/RVs will open at the pressures assumed in the safety analysis of Reference 1. The demonstration of the S/RV safety lift settings must be performed during shutdown, since this is a bench test, to be done in accordance with the Inservice Testing Program. The lift setting pressure shall correspond to ambient conditions of the valves at nominal operating temperatures and pressures. The S/RV setpoint is ± 3% for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift.

Insert A1 →

SR 3.4.3.2

A manual actuation of each required S/RV is performed to verify that, mechanically, the valve is functioning properly and no blockage exists in the valve discharge line. This can be demonstrated by the response of the turbine bypass valves, by a change in the measured steam flow, or by any other method suitable to verify steam flow. Adequate steam flow must be passing through the turbine bypass valves to continue to control reactor pressure when the S/RVs divert steam flow upon opening. Sufficient time is therefore allowed after the required flow is achieved to perform this test. Adequate steam flow is represented by at least one

INSERT A1 – SRV TS Bases

This Surveillance verifies that each S/RV is capable of being opened, which can be determined by either of two means, i.e., Method 1 or Method 2. Applying Method 1, approved in Reference 5, valve OPERABILITY and setpoints for overpressure protection are verified in accordance with the ASME OM Code. Applying Method 2, a manual actuation of each S/RV is performed to verify the valve is functioning properly.

Method 1

Valve OPERABILITY and setpoints for overpressure protection are verified in accordance with the requirements of the ASME OM Code (Ref. 4). Proper S/RV function is verified through performance of inspections and overlapping tests on component assemblies, demonstrating the valve is capable of being opened. Testing is performed to demonstrate that each:

- S/RV main stage opens and passes steam when the associated pilot stage actuates; and
- S/RV second stage actuates to open the associated main stage when the pneumatic actuator is pressurized;
- S/RV solenoid valve ports pneumatic pressure to the associated S/RV actuator when energized;
- S/RV actuator stem moves when dry lift tested in-situ. (With exception of main and pilot stages this test demonstrates mechanical operation without steam.)

The solenoid valves and S/RV actuators are functionally tested once per cycle as part of the Inservice Testing Program. The S/RV assembly is bench tested as part of the certification process, at intervals determined in accordance with the Inservice Testing Program. Maintenance procedures ensure that the S/RV is correctly installed in the plant, and that the S/RV and associated piping remain clear of foreign material that might obstruct valve operation or full steam flow.

This methodology provides adequate assurance that the S/RV will operate when actuated, while minimizing the challenges to the valves and the likelihood of leakage or spurious operation.

Method 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

turbine bypass valve 80% open. This SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. Plant startup is allowed prior to performing this test because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME Code requirements, prior to valve installation. The 12 hours allowed for manual actuation after the required flow is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR. If a valve fails to actuate due only to the failure of the solenoid but is capable of opening on overpressure, the safety function of the S/RV is considered OPERABLE.

Insert A2

The 24 month Frequency was developed based on the S/RV tests required by the ASME OM Code (Ref. 4). Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. USAR, Section 14.5.1.
2. USAR, Section 14.4.
3. USAR, Section 14A.6.
4. ASME Operation and Maintenance (OM) Code.

Insert A3

INSERT A2 – S/RV TS Bases

The Frequency of "In accordance with the Inservice Testing Program" is based on ASME OM Code requirements. Industry operating experience has shown that these components usually pass the SR when performed at the Code required Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

INSERT A3 – S/RV TS Bases

5. Amendment No. XXX, "Issuance of Amendment Regarding: Revise Technical Specification Requirements for Testing the Main Steam Safety Relief Valves," dated XXXXXXX.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance.

SR 3.5.1.11

The ADS designated S/RVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to demonstrate that the mechanical portions of the ADS function (i.e., solenoids) operate as designed when initiated either by an actual or simulated initiation signal, causing proper actuation of all the required components. SR 3.5.1.12 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation since the valves are individually tested in accordance with SR 3.5.1.12.

Insert B1 →

SR 3.5.1.12

A manual actuation of each ADS valve is performed to verify that the valve and solenoid are functioning properly and that no blockage exists in the S/RV discharge lines. This is demonstrated by the response of the turbine bypass valves, by a change in the measured flow, or by any other method suitable to verify steam flow. Adequate steam flow must be

INSERT B1 – ADS TS Bases

This Surveillance verifies that each ADS valve is capable of being opened, which can be determined by either of two means, i.e., Method 1 or Method 2. Applying Method 1, approved in Reference 15, valve OPERABILITY and setpoints for overpressure protection are verified in accordance with the ASME OM Code. Applying Method 2, a manual actuation of each ADS valve is performed to verify the valve is functioning properly.

Method 1

Valve OPERABILITY and setpoints for overpressure protection are verified in accordance with the requirements of the ASME OM Code (Ref. 16). Proper ADS valve function is verified through performance of inspections and overlapping tests on component assemblies, demonstrating the valve is capable of being opened. Testing is performed to demonstrate that each:

- ADS S/RV main stage opens and passes steam when the associated pilot stage actuates; and
- ADS S/RV second stage actuates to open the associated main stage when the pneumatic actuator is pressurized;
- ADS S/RV solenoid valve ports pneumatic pressure to the associated S/RV actuator when energized;
- ADS S/RV actuator stem moves when dry lift tested in-situ. (With exception of main and pilot stages this test demonstrates mechanical operation without steam.)

The solenoid valves and S/RV actuators are functionally tested once per cycle as part of the Inservice Testing Program. The S/RV assembly is bench tested as part of the certification process, at intervals determined in accordance with the Inservice Testing Program. Maintenance procedures ensure that the S/RV is correctly installed in the plant, and that the S/RV and associated piping remain clear of foreign material that might obstruct valve operation or full steam flow.

This methodology provides adequate assurance that the ADS valves will operate when actuated, while minimizing the challenges to the valves and the likelihood of leakage or spurious operation.

Method 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

passing through the turbine bypass valves to continue to control reactor pressure when the ADS valves divert steam flow upon opening.

Sufficient time is therefore allowed after the required flow is achieved to perform this SR. Adequate steam flow is represented by at least one turbine bypass valve 80% open. This SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam flow is adequate to perform the test. Reactor startup is allowed prior to performing this SR because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements, prior to valve installation. The 12 hours allowed for manual actuation after the required flow is reached is sufficient to achieve stable conditions and provides adequate time to complete the Surveillance. SR 3.5.1.11 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The Frequency of 24 months is based on the need to perform the Surveillance under the conditions that apply just prior to or during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

Insert B2 →

SR 3.5.1.13

The LPCI System injection valves, recirculation pump discharge valves, recirculation pump suction valves, and the RHR discharge intertie line isolation valves are powered from the LPCI swing bus, which must be energized after a single failure, including loss of power from the normal source to the swing bus. Therefore, the automatic transfer capability from the normal power source to the backup power source must be verified to ensure the automatic capability to detect loss of normal power and initiate an automatic transfer to the swing bus backup power source. Verification of this capability every 24 months ensures that AC electrical power is available for proper operation of the associated LPCI injection valves, recirculation pump discharge valves, recirculation pump suction valves, and the RHR discharge intertie line isolation valves. The swing bus automatic transfer scheme must be OPERABLE for both LPCI subsystems to be OPERABLE. The Frequency of 24 months is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that the components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

INSERT B2 – ADS TS Bases

SR 3.5.1.11 and the LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.5.1, "ECCS Instrumentation," overlap this Surveillance to provide complete testing of the assumed safety function.

The Frequency of "In accordance with the Inservice Testing Program" is based on ASME OM Code requirements. Industry operating experience has shown that these components usually pass the SR when performed at the Code required Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

BASES

REFERENCES

1. USAR, Section 6.2.2.
2. USAR, Section 6.2.3.
3. USAR, Section 6.2.4.
4. USAR, Section 6.2.5.
5. USAR, Section 14.7.2.
6. USAR, Section 14.7.3.
7. 10 CFR 50, Appendix K.
8. USAR, Section 6.2.1.1.
9. 10 CFR 50.46.
10. USAR, Section 14.7.2.3.2.
11. Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.
12. USAR, Section 14.7.2.3.1.5.
13. Amendment No. 155, "Issuance of Amendment Re: Request to Revise Technical Specification Surveillance Requirement 3.5.1.3 to Correct the Alternate Nitrogen System Pressure," dated February 21, 2008. (ADAMS Accession Nos. ML080380638 and ML080590541)
14. Amendment No. 162, "Issuance of Amendment Regarding Completion Time to Restore a Low-Pressure Emergency Core Cooling Subsystem to Operable Status," dated July 10, 2009. (ADAMS Accession No. ML091480782)

Insert B3

INSERT B3 – ADS TS Bases

15. Amendment No. XXX, "Issuance of Amendment Regarding: Revise Technical Specification Requirements for Testing the Main Steam Safety Relief Valves," dated XXXXXXX.

16. ASME Operation and Maintenance (OM) Code.

BASES

LCO

Three LLS valves are required to be OPERABLE to satisfy the assumptions of the safety analyses (Ref. 1). The requirements of this LCO are applicable to the mechanical and electrical/pneumatic capability of the LLS valves to function for controlling the opening and closing of the S/RVs.

APPLICABILITY

In MODES 1, 2, and 3, an event could cause pressurization of the reactor and opening of S/RVs. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations in these MODES. Therefore, maintaining the LLS valves OPERABLE is not required in MODE 4 or 5.

ACTIONS

A.1

With one LLS valve inoperable, the remaining OPERABLE LLS valves are adequate to perform the designed function. However, the overall reliability is reduced. The 14 day Completion Time takes into account the redundant capability afforded by the remaining LLS valves and the low probability of an event in which the remaining LLS valve capability would be inadequate.

B.1 and B.2

If two or more LLS valves are inoperable or if the inoperable LLS valve cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.5.1

Insert C1

A manual actuation of each LLS valve is performed to verify that the valve and solenoids are functioning properly and no blockage exists in the valve discharge line. This can be demonstrated by the response of the turbine bypass valves, by a change in the measured steam flow, or by any other method that is suitable to verify steam flow. Adequate steam flow must be passing through the turbine bypass valves to continue to control reactor pressure when the LLS valves divert steam flow upon opening. Sufficient time is therefore allowed after the required flow is achieved to perform this test. Adequate steam flow is represented by at least one turbine bypass valve 80% open. This SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after

INSERT C1 – LLS TS Bases

This Surveillance verifies that each LLS valve is capable of being opened, which can be determined by either of two means, i.e., Method 1 or Method 2. Applying Method 1, approved in Reference 3, valve OPERABILITY and setpoints for overpressure protection are verified in accordance with the ASME OM Code. Applying Method 2, a manual actuation of each LLS valve is performed to verify the valve is functioning properly.

Method 1

Valve OPERABILITY and setpoints for overpressure protection are verified in accordance with the requirements of the ASME OM Code (Ref. 2). Proper LLS valve function is verified through performance of inspections and overlapping tests on component assemblies, demonstrating the valve is capable of being opened. Testing is performed to demonstrate that each:

- LLS S/RV main stage opens and passes steam when the associated pilot stage actuates; and
- LLS S/RV second stage actuates to open the associated main stage when the pneumatic actuator is pressurized;
- LLS S/RV solenoid valve ports pneumatic pressure to the associated S/RV actuator when energized;
- LLS S/RV actuator stem moves when dry lift tested in-situ. (With exception of main and pilot stages this test demonstrates mechanical operation without steam.)

The solenoid valves and S/RV actuators are functionally tested once per cycle as part of the Inservice Testing Program. The S/RV assembly is bench tested as part of the certification process, at intervals determined in accordance with the Inservice Testing Program. Maintenance procedures ensure that the S/RV is correctly installed in the plant, and that the S/RV and associated piping remain clear of foreign material that might obstruct valve operation or full steam flow.

This methodology provides adequate assurance that the LLS valves will operate when actuated, while minimizing the challenges to the valves and the likelihood of leakage or spurious operation.

Method 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

reactor steam flow is adequate to perform the test. Unit startup is allowed prior to performing the test because valve OPERABILITY is verified by Reference 2 prior to valve installation. The 12 hours allowed for manual actuation after the required flow is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the Surveillance.

Insert C2

The 24 month Frequency was based on the S/RV tests required by the ASME OM Code (Ref. 2). The Frequency of 24 months on a STAGGERED TEST BASIS ensures that each solenoid for each LLS valve is alternately tested. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.1.5.2

The LLS designated S/RVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to verify that the mechanical portions (i.e., solenoids) of the LLS function operate as designed when initiated either by an actual or simulated automatic initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.3, "Low-Low Set (LLS) Instrumentation," overlaps this SR to provide complete testing of the safety function.

The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation. This prevents a reactor pressure vessel pressure blowdown.

REFERENCES

1. USAR, Section 4.4.3.

2. ASME Operation and Maintenance (OM) Code.

Insert C3

INSERT C2 – LLS TS Bases

SR 3.6.1.5.2 and the LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.6.3, "LLS Instrumentation," overlap this Surveillance to provide complete testing of the assumed safety function.

The Frequency of "In accordance with the Inservice Testing Program" is based on ASME OM Code requirements. Industry operating experience has shown that these components usually pass the SR when performed at the Code required Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

INSERT C3 – LLS TS Bases

3. Amendment No. XXX, "Issuance of Amendment Regarding: Revise Technical Specification Requirements for Testing the Main Steam Safety Relief Valves," dated XXXXXXX.