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U. S. Nuclear Regulatory Commission
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SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT NO. 307 TO LICENSE NPF-14 AND
PROPOSED AMENDMENT NO. 278 TO LICENSE NPF-22:
CHANGE TO TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENT (SR) 3.4.3.1 TO REVISE THE LOWER SURVEILLANCE TOLERANCES
PLA-6642

Docket Nos. 50-387 and 50-388

Pursuant to 10 CFR 50.90, PPL Susquehanna, LLC (PPL), hereby requests approval of the following proposed amendments to the Susquehanna Steam Electric Station (SSES) Unit 1 and Unit 2 Technical Specifications (TS), as described in the Enclosure. The proposed amendments would change Surveillance Requirement 3.4.3.1 in Technical Specification 3.4.3 "Safety/Relief Valves (S/RVs)." Specifically, the proposed amendments will change the allowable lower S/RV tolerances.

The change is proposed in order to reduce an unnecessarily restrictive Surveillance Requirement. The proposed change will not impact the reliability of the S/RVs or adversely impact their ability to perform their safety function. This change will limit the number of TS S/RV surveillance test failures in the low direction and preclude the submittal of unnecessary License Event Reports (LERs) to the NRC.

Justification for the change to the Unit 1 and Unit 2 Safety/Relief Valves (S/RVs) Surveillance Requirement 3.4.3.1 is based upon the evaluation presented in the Enclosure. As demonstrated in the enclosed evaluation, the proposed amendment does not involve a significant hazard consideration.

PPL requests approval of the proposed change to the Unit 1 and Unit 2 Technical Specifications by November 30, 2011. PPL further requests that the approved amendment be issued to be effective immediately upon approval with the implementation to be completed within 60 days.

Attachments 1 and 2 contain the Technical Specification and the Technical Specification Bases Mark-ups reflecting the proposed change.

This change has been discussed with the SSES NRC Project Manager. The change is similar to a change approved by the NRC for Entergy Nuclear – South, River Bend Station in a letter dated 02/13/2003, titled "River Bend Station Unit 1 – Issuance of Amendment RE: Modification of the Technical Specifications Surveillance Requirements for the Safety/Relief Valves (TAC No. MB5090)." [ADAMS Accession No. ML030450307]. The change has also been reviewed by the SSES Plant Operations Review Committee and by the Susquehanna Review Committee. In accordance with 10 CFR 50.91(b), PPL Susquehanna, LLC is providing the Commonwealth of Pennsylvania with a copy of this proposed License Amendment request.

There are no regulatory commitments associated with the proposed changes.

If you have any questions or require additional information, please contact Mr. C. T. Coddington at 610-774-4019.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 11-10-10

Richard D Pagodin for TS Rausch

T. S. Rausch

Enclosure:

PPL Susquehanna, LLC Evaluation of Proposed Change to the Unit 1 and Unit 2 TS SR 3.4.3.1 "REACTOR COOLANT SYSTEM (RCS) Safety/Relief Valves (S/RVs)" and the corresponding TS Bases

Attachments:

Attachment 1 Proposed Unit 1 and Unit 2 Technical Specification Changes (Mark-ups)
Attachment 2 Proposed Unit 1 and Unit 2 Technical Specification Bases Changes (Mark-ups)

Copy: NRC Region I
Mr. P. W. Finney, NRC Sr. Resident Inspector
Mr. R. R. Janati, DEP/BRP
Mr. B. K. Vaidya, NRC Project Manager

Enclosure to PLA-6642

PPL Susquehanna, LLC
Evaluation of Proposed Change to the Unit 1 and Unit 2 TS SR 3.4.3.1 "REACTOR COOLANT SYSTEM (RCS) Safety/Relief Valves (S/RVs)" and the Corresponding TS Bases

PPL EVALUATION

Subject: PPL Susquehanna, LLC Evaluation of Proposed Change to the Unit 1 and Unit 2 Technical Specifications (TS) Surveillance Requirements SR 3.4.3.1, Safety/Relief Valves (S/RVs), and the associated TS Basis TS / B SR 3.4.3.1.

1. DESCRIPTION

The change to the PPL Susquehanna, LLC (PPL) Unit 1 and Unit 2 Technical Specification SR 3.4.3.1 "Safety/Relief Valves (S/RVs)" proposes a new safety function lift setpoint lower tolerance for the Safety/Relief Valves (S/RVs). The proposed change will revise the lower tolerances from -3% to -5%. This change would be limited to the lower tolerances and does not affect the upper tolerances. This change only applies to the lower as-found tolerance and not to the as-left tolerance, which will remain unchanged at $\pm$1% of the safety lift setpoint. The as-found tolerances are used for determining past operability and to increase sample sizes for S/RV testing should the upper tolerance be exceeded. There will be no revision to the actual setpoints of the valves installed in the plant due to this change.

If approved, PPL plans to implement the proposed Unit 1 and Unit 2 TS amendments within 60 days. Accordingly, an accelerated acceptance review by the NRC is requested to support the implementation plan.

Mark-ups of the proposed change to the Unit 1 and Unit 2 Technical Specifications (TS) and Bases are included in Attachments 1 and 2.

2. PROPOSED CHANGE

The proposed technical change to the Unit 1 and Unit 2 Technical Specification SR 3.4.3.1 revises the lower setpoint tolerances for the following setpoints:

Setpoint	Lower Tolerance
1175	$\geq$ 1140 to $\geq$ 1117
1195	$\geq$ 1160 to $\geq$ 1136
1196	$\geq$ 1169 to $\geq$ 1145

The proposed change reduces an unnecessarily restrictive Surveillance Requirement. The proposed change will not impact the reliability of the S/RVs or adversely impact their ability to perform their safety function. The S/RVs are required to meet ASME limits based

on valve type and size to ensure acceptable valve performance. These limits are not being changed. This change will preclude the submittal of unnecessary LERs to the NRC due to set point drift in the low (conservative) direction.

Corresponding changes are required to the TS Bases Sections B 3.4.3.1.

3. BACKGROUND

The purpose of the Nuclear Pressure Relief System is to prevent over-pressurization of the Reactor Vessel boiler system during abnormal operational transients. This protects the primary system process barrier from failure, which could result in the release of fission products.

The ASME Boiler and Pressure Vessel Code requires the reactor pressure vessel to 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 Main Steam S/RVs are selected such that the peak pressure in the nuclear system will not exceed the ASME Code limits for the Reactor Coolant Pressure Boundary (RCPB).

There are a total of 16 S/RVs, of which 14 are required to be operable. The S/RVs provide three main protection functions, which are:

1) the overpressure relief mode,
2) the overpressure safety mode, and
3) the automatic depressurization operation.

In the safety mode (or the spring mode of operation) the valves open when steam pressure at the valve inlet overcomes the spring force holding the valve closed. This mode satisfies the ASME code requirements. It is this mode of operation for which the lower surveillance tolerances for the safety function lift setpoints will be relaxed from -3% to -5%. The upper surveillance tolerances will remain at +3%. The relief and automatic depressurization modes rely upon solenoid actuation to open the valves and are not affected by this proposed change.

The SSES S/RVs are Crosby Style 6xRx10 HB-65-BP S/RVs. A review of as-found test data for the SSES S/RVs indicates a tendency for minor setpoint drift in the negative direction. Industry experience shows that it is the nature of these valves to have a drift/variance with an initial as-found low lift pressure. It is typical for two or three S/RVs out of a sample size of six to lift between -5% to -3%. The second, third and fourth test lifts following the initial test lift will typically be within the $\pm$3% band. The valve manufacturer attributes these variances to no cause other than setpoint drift/variance.

Currently, at least four S/RVs are removed during each refueling outage, bench tested for safety set pressure and replaced with valves certified to have zero seat-to-disk leakage and to have safety lift setpoint tolerances within ±1% of the setpoint as specified in the TS SR 3.4.3.1. If the as-found lift is greater than the +3% tolerance for one of the S/RVs tested from the sample size, the sample size will be increased by two S/RVs, in accordance with the IST program requirements.

4. TECHNICAL ANALYSIS

The SSES S/RVs were originally purchased to the ASME Boiler and Pressure Vessel Code, Section III, Nuclear Vessels, up to and including Summer 1970 Addenda. The designed setpoint tolerance of the safety setting was ±1% for construction based upon ASME Section III, Summer 1971, Article NB-7000. The original TS testing requirements were based upon this design code.

The NRC Staff issued an SER on the BWROG Licensing Topical Report NEDC-31753P (LTR) (Reference 7.1). In the SER, the NRC stated that a generic change of setpoint tolerance to ±3% is acceptable provided that it is evaluated in the analytical bases. The required analysis was completed for SSES and the change was approved by the NRC (References 7.2 and 7.3).

The Operability of the S/RVs is based on the TS SR acceptance criteria with a setpoint tolerance of +/- 3%. If any S/RV exceeds the tolerance, a Condition Report for each S/RV that exceeds the tolerance is entered into our Corrective Action Program to evaluate the test failure. If more than two (2) S/RVs exceed the tolerance a License Event Report (LER) would be required. In addition, test failures above +3% would result in testing additional valves to comply with Code requirements.

The proposed lower setpoint tolerance change from -3% to -5%, was evaluated using the previously accepted methodology of the LTR and the associated SER. Since the evaluation done in detail to support the current upper and lower tolerances of ±3%, and the conclusions of the evaluation have not changed, only those areas not previously reviewed by the NRC will be discussed here.

Plant behavior is currently expected to lead to a less severe transient than is analyzed in FSAR Section 15.1, and will continue to be less severe after this change is made.

The inadvertent S/RV opening event has been identified as non-limiting, and therefore, it is not explicitly analyzed each cycle.

4.1. Operating Margin

The purpose of the lower setpoint tolerance is to ensure sufficient margin exists between the normal operating pressure of the system and the point at which the S/RVs actuate in the overpressure safety mode. The nominal operating pressure of the reactor pressure vessel at power is 1050 psig. A lower setpoint tolerance value of -5%, applied to the lowest nominal S/RV (1175 psig) would allow it to lift at 1117 psig. The lowest potential margin between the nominal reactor pressure and the S/RV lift pressure of the valves with the lowest overpressure safety setpoint is 67 psig. Also, the relief mode for two S/RVs are set at 1106 psig. The relief mode on these two S/RVs would actuate before the above stated 1117 psig lowest allowable lift. The potential margin is sufficient to prevent unwanted actuation of the S/RVs, since the relief mode setpoint of 1106 psig ensures that pressure transients will still cause the valves to open in the relief mode prior to the safety mode. Therefore, there will be no additional inadvertent SRV lifts.

The valves removed for testing are returned to a tolerance of $\pm$1% prior to being installed for service, thereby returning the margin to the original levels. Therefore, the margin is considered adequate and will not impact normal plant operation.

4.2 Surveillance Test History

Test results for SSES S/RVs have shown that the majority of S/RVs experience minor setpoint drift in the negative direction over time. Based on a review of the 295 previous test results for the SSES valves, the average drift was -0.78% from bench test to bench test with a Standard Deviation of 1.56%. There were 22 valve tests that failed below the -3% tolerance. There were 3 valves that tested below -5%. The database includes tests for valves that span more than 6 years between bench tests. Therefore, excessive drift over multiple operating cycles is not anticipated for the S/RVs. The S/RV leakage is monitored and determined by the S/RV tailpipe temperatures recorded in the main control room. If a valve's tailpipe temperature reaches a specified temperature, the S/RV is considered to be leaking and will typically be replaced at the next refueling outage.

5. REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

Amendments are proposed to the Unit 1 and Unit 2 Technical Specification SR 3.4.3.1 "Safety/Relief Valves (S/RVs)" to change the lower surveillance lift setpoint tolerance for the Safety/Relief Valves (S/RVs). The current tolerance is based on $\pm$3%. The proposed change will revise the lower setpoint surveillance tolerances from -3% to -5%. This change only applies to the as-found tolerance and not to the as-left tolerance, which will remain unchanged at $\pm$1%, as specified in TS SR 3.4.3.1, of the safety lift setpoint. The as-found tolerances are used for determining past operability and to increase sample sizes

for S/RV testing. No changes to the actual safety function lift setpoints are required for the valves installed in the plant. There will be no physical modifications to the valves.

PPL Susquehanna, LLC (PPL) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below.

1. **Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?**

Response: No

This change has no influence on the probability or consequences of any accident previously evaluated. The lower setpoint tolerance change does not affect the operation of the valves and it does not change the as-left setpoint tolerance. The change only affects the lower tolerance for opening the valve and does not change the upper tolerance, which is the limit that protects from overpressurization.

The proposed action does not involve physical changes to the valves, nor does it change the safety function of the valves. The proposed TS revision involves no significant changes to the operation of any systems or components in normal or accident operating conditions and no changes to existing structures, systems, or components.

The proposed action does not change any other behavior or operation of any S/RVs, and, therefore, has no significant impact on reactor operation. It also has no significant impact on response to any perturbation of reactor operation including transients and accidents previously analyzed in the Final Safety Analysis Report (FSAR).

Therefore, the proposed amendment does not result in a significant increase in the probability or consequences of any previously evaluated accident

2. **Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?**

Response: No

The proposed lower setpoint tolerance change only affects the criteria to determine when an as-found S/RV test is considered to be acceptable. This change does not affect the criteria for the upper setpoint tolerance.

The proposed lower setpoint tolerance change does not adversely affect the operation of any safety-related components or equipment. Since the proposed action does not involve hardware changes, significant changes to the operation of any systems or components,

nor change to existing structures, systems, or components, there is no possibility that a new or different kind of accident is created.

The proposed change does not involve physical changes to the S/RVs, nor does it change the safety function of the S/RVs. The proposed change does not require any physical change or alteration of any existing plant equipment. No new or different equipment is being installed, and installed equipment is not being operated in a new or different manner. There is no alteration to the parameters within which the plant is normally operated. This change does not alter the manner in which equipment operation is initiated, nor will the functional demands on credited equipment be changed. No alterations in the procedures that ensure the plant remains within analyzed limits are being proposed, and no changes are being made to the procedures relied upon to respond to an off-normal event as described in the FSAR. As such, no new failure modes are being introduced. The change does not alter assumptions made in the safety analysis and licensing basis.

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

3. Do the proposed changes involve a significant reduction in a margin of safety?

Response: No

The proposed lower setpoint tolerance change only affects the criteria to determine when an as-found S/RV test is considered to be acceptable. This change does not affect the criteria for the upper setpoint tolerance. The TS setpoints for the S/RVs are not changed. The as-left setpoint tolerances are not changed by this proposed change.

The margin of safety is established through the design of the plant structures, systems, and components, the parameters within which the plant is operated, and the establishment of the setpoints for the actuation of equipment relied upon to respond to an event. The proposed change does not significantly impact the condition or performance of structures, systems, and components relied upon for accident mitigation.

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

Based on the above, PPL concludes that the proposed change does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of no significant hazards consideration is justified.

5.2 Applicable Regulatory Requirements/Criteria

SSES FSAR Sections 3.1 and 3.13 provide detailed discussion of SSES compliance with the applicable regulatory requirements and guidance.

The proposed TS amendments:

(a) Do not alter the design or function of any system;

(b) Do not result in any change in the qualifications of any component; and

(c) Do not result in the reclassification of any component's status in the areas of shared, safety-related, independent, redundant, and physically or electrically separated.

5.2.1 General Design Criteria

The following applicable General Design Criteria (GDC) for the Reactor Coolant System require that the system be protected from overpressurization.

GDC 15-Reactor Coolant System Design (Criterion 15)

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 RCPB are not exceeded during any condition of normal operation, including anticipated operational occurrences.

An example of the integrated protective action scheme, which provides sufficient margin to ensure that the design conditions of the RCPB are not exceeded, is the automatic initiation of the nuclear system pressure relief system upon receipt of an overpressure signal. To accomplish overpressure protection, a number of pressure-operated relief valves are provided to discharge steam from the nuclear system to the suppression pool. The nuclear system pressure relief system also provides for automatic depressurization of the nuclear system in the event of a LOCA in which the vessel is not depressurized by the accident. The depressurization of the nuclear system in this situation allows operation of the low pressure Emergency Core Cooling Systems (ECCS) to supply enough cooling water to adequately cool the core. Criterion 15 is not affected by this proposed change.

GDC 35- Emergency Core Cooling (Criterion 35)

The Automatic Depressurization System functions to reduce the reactor pressure so that flow from LPCI and CS enters the reactor vessel in time to cool the core and prevent excessive fuel clad temperature. The Automatic Depressurization System uses several of

the nuclear system pressure relief valves to relieve the high pressure steam to the suppression pool. Criterion 35 is not affected by this proposed change.

Thus, the proposed changes do not change the conformance with the above General Design Criteria.

5.2.2 Applicable ASME Code Requirements

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met.

The SSES In-Service Testing (IST) program is currently implemented in accordance with the requirements of the ASME Operation and Maintenance (OM) Code 1998 Edition through OMb-2000 Addenda. The S/RVs at SSES are Class 1 Category C valves in accordance with the SSES IST Program.

PPL Susquehanna Relief Request RR-02 (Reference 7.4) provides an alternative to ASME Code 1998 Edition through OMb-2000 Addenda, section I-1330, "Test Frequencies, Class 1 Pressure Relief Valves." The alternative requires that SSES remove at least 20% of the 16 Main Steam S/RVs plus weeping valves detected during the previous operating cycle and any valves required to be removed to access scheduled or weeping valves up to a maximum of 8 valves during each refueling outage.

Additional valves above the Code required minimum 20% will be tested if the as-found setpoint exceeds +3% of the nameplate. No additional valves will be tested if the as-found setpoint is below the nameplate setpoint. The additional valves tested will be from the initial population removed that are in excess of the 20% Code required minimum. If one of these valves fails, then all the MSRVs would be removed and tested.

Completion of Code testing will be accomplished over a period of 3 refuel cycles or 6 years. The SSES S/RVs will continue to be tested in accordance with these requirements.

The ASME OM Code Appendix I, Section I-1310(e) allows the owner to establish setpoint acceptance criteria for relief valves tested under the IST program Therefore, no relief will be required with regard to the setpoint tolerance change. However, a change to the TS will be required.

Conclusion

Based on the analysis provided in Section 5: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's

regulations, and (3) the issuance of the amendment will not be adverse to the common defense and security or to the health and safety of the public.

6. ENVIRONMENTAL CONSIDERATION

10 CFR 51.22(c)(9) identifies certain licensing and regulatory actions, which are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility does not require an environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; or (3) result in a significant increase in individual or cumulative occupational radiation exposure. PPL Susquehanna, LLC has evaluated the proposed change and has determined that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Accordingly, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with issuance of the amendment. The basis for this determination, using the above criteria, follows:

Basis

As demonstrated in the "No Significant Hazards Consideration" evaluation, the proposed amendment does not involve a significant hazards consideration.

There is no significant change in the operational transients. The proposed change does not involve any physical alteration of the plant (no new or different type of equipment will be installed) or change in methods governing normal plant operation. There is no significant increase in individual or cumulative occupational radiation exposure.

7. REFERENCES

7.1 NEDC-31753P, "BWROG In-Service Pressure Relief Technical Specification Revision Licensing Technical Report"

7.2 PLA-5377, "Proposed Amendment No. 244 To License NPF-14 And Proposed Amendment No. 208 To License NPF-22: Revise Main Steam Relief Valve Steam Setpoint Tolerance And Requests For Relief from IST And ASME Code Requirements"

7.3 PLA-5430, "Supplement to Proposed Amendment No. 244 To License NPF-14 And Proposed Amendment No. 208 To License NPF-22: Revise Main Steam Relief Valve Steam Setpoint Tolerance And Requests For Relief from IST And ASME Code Requirements"

7.4 PPL Susquehanna Relief Request RR-02, Approved by the NRC March 10, 2005.

Attachment 1 to PLA-6642

Technical Specification Markups
(Unit 1 and 2)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify the safety function lift setpoints of the required S/RVs are as follows: ----------NOTE---------- Up to two inoperable required S/RVs may be replaced with spare OPERABLE S/RVs having lower setpoints until the next refueling outage. ---------- Number of S/RVs / Setpoint (psig) 2 / 1175 (≥ ~~1140~~ ≥ 1117 and ≤ 1210) 6 / 1195 (≥ ~~1160~~ ≥ 1136 and ≤ 1230) 8 / 1205 (≥ ~~1169~~ ≥ 1145 and ≤ 1241) Following testing, lift settings shall be within ±1%.	In accordance with the Inservice Testing Program

SURVEILLANCE REQUIREMENTS

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Attachment 2 to PLA-6642

Technical Specification Bases Markups (Unit 1 and 2)

BASES

APPLICABLE SAFETY ANALYSES (continued)

From an overpressure standpoint, the design basis events are bounded by the MSIV closure with flux scram event described above. Reference 2 discusses additional events that are expected to actuate the S/RVs.

S/RVs satisfy Criterion 3 of the NRC Policy Statement (Ref. 4).

LCO

The safety function of 14 of the 16 S/RVs are required to be OPERABLE to satisfy the assumptions of the safety analysis (Refs. 1 and 2). The requirements of this LCO are applicable only to the capability of the S/RVs to mechanically open to relieve excess pressure when the lift setpoint is exceeded (safety function).

The S/RV setpoints are established to ensure that the ASME Code limit on peak reactor pressure is satisfied. The ASME Code specifications require the lowest safety valve setpoint to be at or below vessel design pressure (1250 psig) and the highest safety valve to be set so that the total accumulated pressure does not exceed 110% of the design pressure for overpressurization conditions. The transient evaluations in the FSAR are based on these setpoints, but also include the additional uncertainty of ~~± 3%~~ + 3%, - 5% of the nominal setpoint to provide an added degree of conservatism.

Operation with fewer valves OPERABLE than specified, or with setpoints outside the ASME limits, could result in a more severe reactor response to a transient than predicted, possibly resulting in the ASME Code limit on reactor pressure being exceeded.

APPLICABILITY

In MODES 1, 2, and 3, all required S/RVs must be OPERABLE, since considerable energy may be in the reactor core and the limiting design basis transients are assumed to occur in these MODES. The S/RVs may be required to provide pressure relief to discharge energy from the core until such time that the Residual Heat Removal (RHR) System is capable of dissipating the core heat.

In MODE 4 reactor pressure is low enough that the overpressure limit is unlikely to be approached by assumed

(continued)

BASES

APPLICABILITY (continued)

operational transients or accidents. In MODE 5, the reactor vessel head is unbolted or removed and the reactor is at atmospheric pressure. The S/RV function is not needed during these conditions.

ACTIONS

A.1 and A.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 one 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 REQUIREMENT

SR 3.4.3.1

The 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 safe 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%~~ + 3%, - 5% of the nominal setpoint for OPERABILITY. Requirements for accelerated testing are established in accordance with the Inservice Test Program. Any of the 16 S/RVs, identified in this Surveillance Requirement, with their associated setpoints, can be designated as the 14 required S/RVs. This maintains the assumptions in the overpressure analysis.

A Note is provided to allow up to two of the required 14 S/RVs to be physically replaced with S/RVs with lower setpoints until the next refueling outage. This provides operational flexibility which maintains the assumptions in the over-pressure analysis.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

From an overpressure standpoint, the design basis events are bounded by the MSIV closure with flux scram event described above. Reference 2 discusses additional events that are expected to actuate the S/RVs.

S/RVs satisfy Criterion 3 of the NRC Policy Statement (Ref. 4).

LCO

The safety function of 14 of the 16 S/RVs are required to be OPERABLE to satisfy the assumptions of the safety analysis (Refs. 1 and 2). The requirements of this LCO are applicable only to the capability of the S/RVs to mechanically open to relieve excess pressure when the lift setpoint is exceeded (safety function).

The S/RV setpoints are established to ensure that the ASME Code limit on peak reactor pressure is satisfied. The ASME Code specifications require the lowest safety valve setpoint to be at or below vessel design pressure (1250 psig) and the highest safety valve to be set so that the total accumulated pressure does not exceed 110% of the design pressure for overpressurization conditions. The transient evaluations in the FSAR are based on these setpoints, but also include the additional uncertainty of ~~± 3%~~ + 3%, - 5% of the nominal setpoint to provide an added degree of conservatism.

Operation with fewer valves OPERABLE than specified, or with setpoints outside the ASME limits, could result in a more severe reactor response to a transient than predicted, possibly resulting in the ASME Code limit on reactor pressure being exceeded.

APPLICABILITY

In MODES 1, 2, and 3, all required S/RVs must be OPERABLE, since considerable energy may be in the reactor core and the limiting design basis transients are assumed to occur in these MODES. The S/RVs may be required to provide pressure relief to discharge energy from the core until such time that the Residual Heat Removal (RHR) System is capable of dissipating the core heat.

In MODE 4 reactor pressure is low enough that the overpressure limit is unlikely to be approached by assumed

(continued)

BASES

APPLICABILITY (continued)

operational transients or accidents. In MODE 5, the reactor vessel head is unbolted or removed and the reactor is at atmospheric pressure. The S/RV function is not needed during these conditions.

ACTIONS

A.1 and A.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 one 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 REQUIREMENT

SR 3.4.3.1

The 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 safe 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%~~ + 3%, - 5% of the nominal setpoint for OPERABILITY. Requirements for accelerated testing are established in accordance with the Inservice Test Program. Any of the 16 S/RVs, identified in this Surveillance Requirement, with their associated setpoints, can be designated as the 14 required S/RVs. This maintains the assumptions in the overpressure analysis.

A Note is provided to allow up to two of the required 14 S/RVs to be physically replaced with S/RVs with lower setpoints until the next refueling outage. This provides operational flexibility which maintains the assumptions in the over-pressure analysis.

(continued)