



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 154 TO FACILITY OPERATING LICENSE NO. DPR-39  
AND AMENDMENT NO. 142 TO FACILITY OPERATING LICENSE NO. DPR-48  
COMMONWEALTH EDISON COMPANY  
ZION NUCLEAR POWER STATION, UNITS 1 AND 2  
DOCKET NOS. 50-295 AND 50-304

1.0 INTRODUCTION

In its letter dated November 4, 1993, Commonwealth Edison Company (CECo or the licensee) submitted a proposed change to the Technical Specifications for Zion Nuclear Power Station, Units 1 and 2 that revises Specification 4.7.1.A, Steam Line Safety Valves, by changing the surveillance frequency and acceptance criteria. The proposed change would replace the current testing requirements for the Main Steam Safety Valves (MSSVs) with a requirement to test them in accordance with a periodically updated version of Section XI of the ASME Boiler and Pressure Vessel Code and Addenda.

2.0 EVALUATION

The licensee's proposed change would require the MSSVs to be tested in accordance with the Zion Station Inservice Testing (IST) Plan. The test frequency and detailed instructions of Specification 4.7.1.A, Steam Generator Safety Valves, would be replaced with the requirement that the MSSVs be tested pursuant to Specification 4.0.5. Specification 4.0.5 requires the testing of ASME Code Class 1, 2, and 3 pumps and valves to be performed in accordance with a periodically updated version of Section XI of the ASME Boiler and Pressure Vessel Code and Addenda. The Zion Station IST Plan and implementing procedures must be in accordance with the ASME Boiler and Pressure Vessel Code testing requirements except where specific relief has been granted by the staff pursuant to 10 CFR 50.55a(f). The proposed change results in the MSSVs being tested in accordance with Part 1 of the ASME/ANSI OM-1987 (Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices).

The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the Reactor Coolant System (RCS) by providing a heat sink for the removal of energy if the preferred heat sink, consisting of the condenser and circulating water system, is not available. For the MSSVs to provide the required overpressure protection, the valves must open within the setpoint tolerances, relieve steam generator pressure and reseal when pressure is reduced. The

9403070184 940302  
PDR ADOCK 05000295  
P PDR

operability of the MSSVs is ensured by periodic surveillance testing in accordance with the Technical Specifications (TS).

The current testing requirements for MSSVs are stated in TS Surveillance Requirement 4.7.1.A and associated Table 4.7-1. Ten of the 20 MSSVs per unit are required to be tested during each refueling outage such that all valves are tested by the end of the second refueling outage, which is normally an elapsed time of thirty six months. The TS also specify that the acceptable test methods are use of a calibrated auxiliary lifting device or a bench test with compressed gas. In addition, to ensure a representative sample, the Specification requires at least two valves from each orifice size to be tested. The orifice sizes, setpoints, and the required  $\pm 1\%$  tolerance are specified in Table 4.7-1. The proposed change replaces these requirements with the requirement to test the MSSVs in accordance with Specification 4.0.5. Compliance with Specification 4.0.5 results in the application of Part 1 of the ASME/ANSI OM-1987 Standard to MSSV testing as required by the Zion Ten Year IST Plan and implementing procedures. The Standard requires all MSSVs to be tested every 5 years and a minimum sample population (20%) to be tested every 24 months. If, during the testing of the required 20% sample population, the stamped set pressure criterion of a valve is exceeded by 3% or more, the Standard requires the sample population of valves to be expanded. The additional testing can include up to 100% of the remaining MSSVs if the additional valves tested continue to exceed the stamped set pressure criterion by 3% or more. The application of the ASME/ANSI Standard relaxes the surveillance test interval for the MSSVs since under the current requirements, 100% of the MSSVs are tested approximately every 36 months instead of the five years, per the ASME/ANSI Standard that this amendment would implement.

The proposed change also replaces the  $\pm 1\%$  tolerance specified for set pressure in Table 4.7-1 with  $\pm 3\%$ . The revised tolerance is consistent with the ASME/ANSI OM-1987 Standard and NUREG-1431, Standard Technical Specifications for Westinghouse plants.

The current TS requirement to ensure that at least two MSSVs of each orifice size are tested is also relaxed by the proposed change since the ASME/ANSI Standard contains no requirements with regard to the orifice size of the valves tested.

The proposed change also contains a requirement that specifies the lift settings of the MSSVs tested shall be left within  $\pm 1\%$  of the required value after testing is complete. This requirement is not specified in the ASME/ANSI OM-1987 Standard, but is consistent with NUREG-1431, Standard Technical Specifications for Westinghouse plants.

Although the proposed changes regarding surveillance intervals and orifice size requirements represent a relaxation in the requirements applicable to Zion station, these changes are consistent with the applicable industry standard. The ASME/ANSI Standard has been applied extensively throughout the industry and been demonstrated to be adequate by the resulting industry experience.

The licensee has evaluated the effect of allowing the Zion Station MSSV lift setpoint tolerance to increase from the currently required  $\pm 1\%$  to the  $\pm 3\%$  consistent with the ASME/ANSI Standard for all non-LOCA and LOCA design basis requirements. The  $\pm 3\%$  tolerance for the MSSV setpoints was assumed by the licensee in the VANTAGE 5 Reload Transition Safety Report for Zion Station Units 1 and 2, which was reviewed and approved by the staff in conjunction with license amendments 139/128. In all cases, either a reanalysis incorporating the increased MSSV setpoint tolerance was performed with results within the acceptance limits, or the increased MSSV setpoint tolerance was determined not to affect the licensing basis results.

Testing the MSSVs in accordance with the Zion Station IST Plan and implementing procedures ensures an equivalent level of operational readiness is maintained in the valves. Adequate control of the MSSV testing specified in the IST Plan and implementing procedures is provided by the ASME Section XI requirements pursuant to 10 CFR 50.55a(f) and the required 10 CFR 50.59 review process.

The staff has reviewed the level of MSSV operational readiness ensured by the current TS requirements and compared it to that provided by the licensee's proposed changes that implement the testing requirements of the ASME/ANSI Standard. The staff finds that although testing of 100% of the MSSVs would take five years compared to the present three years, this is adequately compensated for by the provision in the ASME/ANSI Standard that if, during the testing of the required 20% sample population the stamped set pressure criterion of a valve is exceeded by 3% or more, the sample population of valves must be expanded to up to 100% of the remaining MSSVs if the additional valves tested continue to exceed the stamped set pressure criterion by 3% or more. This change is, therefore, acceptable.

During its review for the VANTAGE 5 Reload Transition Safety Report the staff assumed an MSSV setpoint tolerance of  $\pm 3\%$ . The staff previously evaluated this change in setpoint tolerance from  $\pm 1\%$  in the present IS to the  $\pm 3\%$  in the ASME/ANSI OM-1987 Standard and found that the licensing basis results were not affected and the effects on the plant were within the acceptance limits. This change is, therefore, acceptable.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released

offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (58 FR 64605). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

#### 5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: C. Shiraki

Date: March 2, 1994