



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 110 TO FACILITY OPERATING LICENSE NO. DPR-39 AND
AMENDMENT NO. 99 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

By letter dated May 29, 1987 from P. C. LeBlond, Commonwealth Edison Company (CECo) to USNRC, CECo proposed changes to the Low Temperature Overpressure Protection (LTOP) section of the Technical Specification. Additional information and clarification was given to the staff in a letter dated January 21, 1988 from P. C. LeBlond (CECo) to USNRC.

2.0 EVALUATION

The proposed change is intended to reflect the guidance given in Standard Technical Specification (STS) NUREG-0452, Revision 4. Section 3.4.9.3 which identifies two methods for low temperature overpressure protection.

- A. Two power operated relief valves (PORV) must be operable, or
- B. The reactor coolant system (RCS) is to be depressurized with an open vent path.

Both the current Zion Technical Specifications and the proposed amendment include the above two options, with the substitution of an open PORV for the specified RCS vent. In addition, the proposed amendment includes the option to permit RCS pressure to be reduced to less than 100 psig concurrent with pressurizer level less than 25%.

All three methods discussed above currently exist in the Zion Technical Specifications. The basis for these methods are contained on page 94 of the existing Technical Specifications. Thus, this proposed amendment does not explicitly involve the approval of new low temperature overpressure protection methods.

The proposed changes follow the STS, and there is no major change in the LTOP methods included in the present Technical Specification. Therefore, the proposed Technical Specification changes in Section 3.3.2.G.1 and 4.3.2.G.1 are acceptable.

The proposed amendment has included the restrictions on charging pump, safety injection pump, and accumulator operation. However, the flexibility to allow two charging pumps to operate for short periods of time for the purpose of maintaining seal injection flow to the reactor coolant pumps has been added. The purpose of this clause is to maintain the cleaner seal injection flow to the Reactor Coolant Pump (RCP) seals during charging pump realignment. This will prevent the backflow of RCS water through the Reactor Coolant Pump (RCP) seals when the seal injection flow has been interrupted which will help prevent RCP seal failure.

The amount of time during which two charging pumps will be operated simultaneously is small, only about 5 minutes. Moreover in the typical LTOP analysis, operation of only one safety injection pump is assumed. The design flow capacity of the safety injection pump (400 gpm) is more than twice the design flow capacity of the charging pumps (150 gpm) (Ref: USAR Table 6.2.2-5). Therefore, the operation of two charging pumps will be bounded by the LTOP analysis. Hence the proposed change in Technical Specification sections 3.3.2.G.2 and 4.3.2.G.2 allowing simultaneous operation of two charging pumps for a short duration of time is acceptable.

The guidance from STS Section 3.4.9.3 indicates that the PCS be vented within 8 hours following the inoperability of one PORV for greater than 7 days or the inoperability of two PORV's. The proposed amendment incorporates 24 hours and 16 hours, respectively, for venting the RCS subsequent to the above conditions.

This variance from the STS reflects operating experience of the Zion Station which shows that 24 hours provides a more realistic time period to accomplish the cooling and depressurization transient in a controlled manner. The initial conditions for such an operation would include a steam bubble within the pressurizer. Specifically, the process to be followed for a plant cooldown is outlined in GOP-4 "Plant Shutdown and Cooldown." This procedure requires 50°F/hr RCS cooldown rate and also requires the performance of several tests (some at the discretion of the Shift Engineer or Operating Engineer) during the cooldown process.

Historically, the cooldown process from 100% power conditions of 559°F/2235 psig to cold shutdown conditions of 200°F/400 psig takes approximately 16 hours. Another 6 to 8 hours is required to place the plant in conditions of 100 psig/pressurizer level 25%. This is the methodology that Zion proposes for responding to one inoperable PORV.

Zion recognizes that 2 inoperable PORV's pose a more serious plant condition. The plant would still follow the guidance of GOP-4, omitting some of the optional steps of the procedure, and consequently cooldown in an expedited manner. This process would take approximately 16 hours.

The staff agrees that maintaining controlled plant conditions during a transient, as demonstrated by the operational experience at Zion Station, is important especially when the plant is in a degraded condition. In addition, the 16-hour time period is more restrictive than the 24 hour allowed the existing Zion Technical Specifications. Based on the above, the staff finds the Technical Specification change in section 3.3.2.G.3 acceptable.

The STS incorporates the requirement for the performance of ASME boiler and pressure code surveillances in the PORV Technical Specification section. The existing Zion specifications address these test requirements in Section 3.3.2.E. Therefore, they are not repeated in this proposed amendment.

TECHNICAL FINDING

The following proposed changes are acceptable for the reason given above.

1. Reformatting Zion Technical Specification sections 3.3.2.G and 4.3.2.G to STS format.
2. Incorporating flexibility to allow the operation of two centrifugal charging pumps for short periods of time during the realignment of operating charging pumps.
3. Clarifying the allowable time period for depressurizing the RCS following the failure of PORVs.

4.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of the facilities component located within the restricted areas as defined in 10 CFR 20. The staff has determined that these 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 these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, these 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 these amendments.

5.0 CONCLUSION

The staff has concluded, based on the consideration 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will be not inimical to the common defense and security or to the health and safety of the public.

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Dated: April 4, 1988