



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO PROPOSED LICENSE AMENDMENT TO REVISE TESTING REQUIREMENTS
OF THE EMERGENCY CORE COOLING SYSTEM (ECCS) AND STANDBY GAS
TREATMENT SYSTEMS (SGTS)
COMMONWEALTH EDISON COMPANY
DRESDEN NUCLEAR POWER STATION, UNIT NOS. 2 AND 3
DOCKET NOS. 50-237 AND 50-249

1.0 INTRODUCTION

By letter dated December 21, 1988, Commonwealth Edison Company (CEC) proposed to amend Appendix A of Provisional Operating License (POL) No. DPR-19 for Dresden Unit 2 and Facility Operating License No. DPR-25 for Dresden Unit 3 to: revise the testing requirements for other systems or subsystems of the Emergency Core Cooling System (ECCS) or Standby Gas Treatment Systems (SGTS) when one system or subsystems is inoperable; revise the operability requirements of several ECCS systems; and incorporate some administrative changes. By letter dated May 4, 1989, CEC provided supplemental information to support the proposed amendment and included two additional changes. These proposed changes which are part of the Dresden Station improvement program action plan, are consistent with similar technical specifications approved for more recently licensed BWRs and the BWR Standard Technical Specifications.

2.0 EVALUATION

A. Multiple Testing of ECCS and SBT Systems

Present Dresden Units 2 and 3 Technical Specification Surveillance Requirements for ECCS and SBT provide for demonstrating the operability of redundant systems or subsystems when one system or subsystem is inoperable. These requirements are as follows:

- (1) One Core Spray subsystem inoperable-demonstrate operability immediately of the operable core spray subsystem and the LPCI subsystem. Demonstrate daily thereafter operability of the operable core spray subsystem.
- (2) One LPCI inoperable-demonstrate operability immediately of the remaining LPCI subsystem, containment cooling subsystem, and both core spray subsystem. Demonstrate daily the operability of the operable LPCI pumps.
- (3) The LPCI subsystem is inoperable-demonstrate operability immediately and daily thereafter of both core spray subsystems and the containment cooling subsystem.

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- (4) One containment cooling subsystem service water pump is inoperable-demonstrate operability immediately and daily thereafter the remaining components of that subsystem and the other containment cooling subsystem.
- (5) One containment cooling subsystem is inoperable-demonstrate operability immediately and daily thereafter of the operable containment cooling subsystem.
- (6) The HPCI subsystem is inoperable-demonstrate operability immediately of the LPCI subsystem, both core spray subsystems, the automatic pressure relief subsystem and the motor operated isolation valves and shell side make-up system for the isolation condenser. Demonstrate operability daily of the motor operated isolation valves and shell side make-up system of the isolation condenser. Daily demonstration of the operability of the automatic pressure relief subsystem may be required depending on plant power level and the number of operating feedwater pumps.
- (7) One of the five relief valves of the automatic pressure relief subsystem is inoperable-demonstrate the operability immediately and weekly thereafter of the HPCI subsystem.
- (8) More than one relief valve of the automatic pressure relief subsystem is inoperable-demonstrate operability immediately of the HPCI subsystem.
- (9) The isolation condenser system is inoperable-demonstrate operability immediately and daily thereafter of the HPCI subsystem.
- (10) The unit or shared diesel generator is inoperable-demonstrate operability immediately and daily thereafter of all low pressure core cooling, the containment cooling subsystems, and the operable diesel generator.
- (11) One SBTG subsystem is inoperable-demonstrate operability within 2 hours and daily thereafter of the operable SBTG subsystem.

The purpose of this proposed amendment change is to remove the redundant system testing requirements from the ECCS and SGTS sections of the Technical Specifications (Sections 4.5 and 4.7) while maintaining adequate assurance of system operability needed for accident mitigation.

The requirement for demonstrating operability of the redundant systems identified above for Dresden Units 2 and 3 was originally chosen because there was a lack of plant operating history and a lack of sufficient equipment failure data. Since that time, plant operating experience has demonstrated that testing of the redundant ECCS and SGTS when one system is inoperable is not necessary to provide adequate assurance of system operability. In fact, taking the redundant system out of service for testing creates the risk of the second system also failing and in some instances it has been observed that failures of the redundant system are related to the test itself and not an

indication that the system would have failed should it have been needed. Operability of these systems can be shown by checking records to verify that valve lineups, electrical lineups and instrumentation requirements have not been changed since the last time the system was verified to be operable.

The current Standard Technical Specifications (STS) and more specifically all the technical specifications approved for recently licensed BWR's accept the philosophy of system operability based on satisfactory performance of monthly, quarterly, refueling interval, post maintenance or other specified performance tests without requiring additional testing when another system is inoperable (except for diesel generator testing). The staff reviewed CECO's December 21, 1988 submittal and requested additional information primarily to confirm that the testing requirements for the redundant systems or subsystems contained in the existing Technical Specifications, as modified by the proposed amendments, were consistent with the requirements contained in the Standard Technical Specifications. In Attachment 2 to CECO's May 4, 1989 submittal, a comparison between the Dresden Technical Specifications and the Standard Technical Specifications was provided. The staff has reviewed this submittal and determined the proposed Technical Specifications for Dresden are consistent with the Standard Technical Specifications and those of recently licensed BWR's with regard to the testing requirements for redundant systems.

On this basis, the fact that testing of the redundant system creates the risk of the second system failing and past operational experience, the staff has determined that the revised testing requirements for the ECCS and SGTS systems and subsystems are acceptable.

In addition, other changes to Section 3.5 of the Technical Specifications have been proposed which are administrative in nature. Since these changes either clarify present requirements or promote consistency in location of requirements within the Technical Specifications (i.e. relocating all diesel generator operability requirements in one section of the Technical Specifications), the staff finds them acceptable.

During the review, a need to revise a footnote in Table 4.5.1, which waived the applicability of Specification 4.0.D and would have permitted the plant to enter into the Startup/Hot Standby Mode provided the required surveillances were successfully completed with 12 hours after reactor steam pressure is adequate to perform the test, was identified by the staff. The wording of the footnote presumed prior approval of Section 4.0.D which is also part of the Dresden Technical Specification improvement program but has not yet been submitted. CECO's May 4, 1989 submittal eliminated any reference to Section 4.0.D and included an additional footnote pertaining to entry into the Run Mode which is the same as that required for entry into the Startup/Hot Standby Mode. However, to assure that reactor operation does not continue during startup when the HPCI system testing requirements contained in Table 4.5.1 cannot be met, a proposed action statement 3.5.C.2.b has been added. The staff recognizes that some systems cannot be tested until the plant operational mode has been entered and therefore an exception to the normal Technical Specification surveillance requirements is needed for a limited time to permit the testing. These types of exceptions have been granted in the past and the staff finds them acceptable.

B. HPCI Operability Requirements

The present Technical Specification Sections 3.5.C/4.5.C require the HPCI subsystems to be operable whenever the reactor pressure is greater than 90 psig. If the HPCI is inoperable and cannot be restored within the time limits of Section 3.5.C, then the plant must be shut down and reactor pressure reduced to 90 psig. However, this present LCO requirement of 90 psig for operability of HPCI is not based on HPCI subsystem design or testing requirements. The present Surveillance Requirement in Section 4.5.C.1 requires HPCI subsystem testing to demonstrate that HPCI can deliver at least 5000 gpm against a system head corresponding to a reactor vessel pressure of 1150 to 150 psig. Since the HPCI system is designed to pump 5600 gpm into the reactor vessel within a reactor pressure range of about 1120 psig to 150 psig, the operability of the HPCI system cannot be tested at 90 psig in accordance with the current Technical Specification requirements (at pressures below 150 psig it is estimated that the flow decreases linearly to zero at 50 psig). In addition, one of the HPCI automatic isolation signals is low steam line pressure (less than 100 psig). Since the HPCI system is isolated below a steam line pressure 100 psig, the present LCO requirement of 90 psig for operability is impractical.

CECo has proposed changing the HPCI operability requirement to 150 psig to support system design flow and pressure requirements of Section 4.5.C.1 of the Technical Specifications and to provide an adequate margin to the present setpoint for system automatic isolation on low steam line pressure. The staff has reviewed this proposed change and determined it is acceptable since it corrects inconsistencies in the current Technical Specifications related to HPCI operability requirements and does not result in a decrease in safety.

CECo has also proposed to change the Surveillance Requirements in Section 4.5.C.1 to include the HPCI testing requirements (Table 4.5.1) rather than provide a reference to these requirements in the Core Spray and LPCI subsystem testing (Section 4.5.A.1). To be consistent with the standard Technical Specifications and current BWR industry practice, CECo has added a second low reactor steam pressure flow rate test to the HPCI pump flow rate testing. This second test requirement is also identified in Table 4.5.1. A test is performed every 3 months to demonstrate HPCI operability when steam is being supplied to the turbine at rated reactor pressure. The added second low pressure test is performed approximately every 18 months to demonstrate ECCS design flow when steam is being supplied to the turbine at low pressure. This proposed low pressure test will be run at a pump discharge pressure of 50 psig over reactor pressure when steam is being supplied to the turbine at 300 psig. The 350 psig upper allowable limit for testing was selected to conform with the approximate reactor pressure corresponding to the shutoff head of the low pressure coolant injection pump.

The staff has reviewed these proposed changes and determined that both the administrative changes and the additional low pressure HPCI operability test are improvements over the existing Technical Specifications and are, therefore, acceptable.

C. Automatic Pressure Relief and Isolation Condenser Operability Requirements

The present Technical Specification Sections 3.5.D (Automatic Pressure Relief) and 3.5.E (Isolation Condenser) require their respective systems to be operable whenever the reactor pressure is greater than 90 psig. CECO has proposed a Technical Specification change that would not require the Automatic Pressure Relief and the Isolation Condenser to be operable until the reactor pressure is greater than 150 psig. These changes have been proposed to preserve the consistency between the Technical Specifications for the HPCI, Automatic Depressurization System and the Isolation Condenser. Although the operability requirement is being increased from 90 to 150 psig, sufficient overlap with the low pressure systems to assure adequate core cooling will still be provided since the injection interlock for the low pressure systems is set between 300 to 350 psig. On this basis and to provide consistency between the operability requirements for these systems, the staff has concluded the proposed changes are acceptable.

D. Standby Gas Treatment System (SGTS)

The proposed changes to the SGTS Section of the Technical Specifications (Sections 3.7.B and 4.7.B) in addition to the elimination of the testing of the redundant train discussed in Section A of this Safety Evaluation are: replacing the word "circuits" with the word "subsystems;" deletion of outdated requirements for special tests in Section 4.7.B.4; and changing the test frequency for performing Surveillance Requirements 4.7.B.2a and 4.7.B.2.b.

The first two proposed changes are administrative in nature and are acceptable. The word change is editorial. The special tests are no longer required because the equipment modifications needed to allow verification of the system performance requirements are complete. The frequency of performing Surveillance requirements is presently stated as "once per operating cycle but not to exceed 18 months." The not to exceed 18 months requirement excludes allowances for use of the allowable standard accepted interval extensions permitted for other systems in the Technical Specifications (Definition CC). The proposed change would use the Terminology "or every 18 months whichever occurs first" which would permit the use of these interval extensions. The staff has reviewed this proposed change and, since it is consistent with current standard acceptable practices, finds it acceptable.

E. Secondary Containment Integrity Requirements

The proposed changes to Technical Specification Section 3.7.C on Secondary Containment integrity are: inclusion of a time frame for restoration of Secondary Containment Integrity; clarification of Definition Z on Secondary Containment Integrity; elimination of completed preoperational and first cycle operating tests and a one-time exemption which was used in 1979; and the relocation of core spray and LPCI subsystem operational requirements to Specification 3.5.A.

The first proposed change will allow 4 hours to restore Secondary Containment integrity and, if not restored, an orderly shutdown is required to at least hot

shutdown within the next 12 hours and to cold shutdown within the following 24 hours. The staff has determined that these times are consistent with those of other operating nuclear plants including those that have been recently licensed and that operating experience has demonstrated these times support safe operation. The proposed orderly reactor shutdown is also consistent with the requirements of present Specification 3.0.A. The staff therefore finds this proposed change acceptable. The remaining three changes are administrative in nature and are acceptable.

F. Additional Proposed Changes in Supplemental Submittal

In CECO's May 4, 1989 submittal, two additional changes were proposed. One change, related to the Containment Cooling Service Water (CCSW) system, would add a surveillance requirement to verify that each manual, power operated or automatic valve in the flow path that is not locked, sealed or otherwise secure must be verified to be in its correct position. Since this proposed change is the same as one of the requirements to demonstrate operability of the ECCS contained in the STS and is a safety enhancement, the staff finds this acceptable. The second change, which is purely administrative adds the words "not used" next to Section 3/4.5.G and is acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve changes to surveillance and operability requirements for ECCS equipment located within the restricted area as defined in 10 CFR Part 20. The 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 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 Part 51.22(c)(9). Pursuant to 10 CFR Part 51.22(b) no environmental impact statement nor environmental assessment need be prepared in connection with the issuance of these amendments.

4.0 CONCLUSION

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security nor to the health and safety of the public.

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