



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 173 TO FACILITY OPERATING LICENSE NO. DPR-40
OMAHA PUBLIC POWER DISTRICT
FORT CALHOUN STATION, UNIT NO. 1
DOCKET NO. 50-285

1.0 INTRODUCTION

By application dated August 4, 1995, as supplemented by letter dated January 22, 1996, Omaha Public Power District (OPPD) requested changes to the Technical Specifications (Appendix A to Facility Operating License No. DPR-40) for the Fort Calhoun Station, Unit No. 1. The requested changes would revise technical specification requirements for containment radiation high signal (CRHS) and the safety injection and refueling water (SIRW) tank low signal (STLS).

The January 22, 1996, supplemental letter provided additional clarifying information and did not change the initial no significant hazards consideration determination published in the Federal Register on August 30, 1995 (60 FR 45182).

2.0 EVALUATION

2.1 Safety Injection and Refueling Water (SIRW) Tank Low Signal (STLS)

The licensee proposed a change to revise Table 2-3, "Instrument Operating Requirements for Engineered Safety Features," Item No. 3B (SIRW Tank Low Level A & B) reference notes for the "Minimum Operable Channels" and "Test Maintenance and Inoperable Bypass." It is proposed to revise the required actions for an inoperable STLS channel from placing the inoperable channel(s) in the tripped condition, if one channel becomes inoperable or upon reaching minimum operable channel conditions, to placing the inoperable channel(s) in the bypassed condition.

A recirculation actuation signal (RAS) is generated upon receipt of a containment pressure high signal (CPHS) or a pressurizer pressure low signal (PPLS) and an STLS. The RAS is designed to automatically realign the safety injection and containment spray systems for long-term operation following a design basis accident (DBA) by diverting the suction of the high-pressure safety injection and containment spray pumps from the SIRW tank to the containment sump, when the contents of the SIRW tank are nearing depletion.

The STLS, as most engineered safety feature (ESF) instrumentation, is designed with two actuation circuits, A and B, with four sensor channels per actuation circuit. The initiation of an STLS requires that two out of the four level sensors for one channel of the actuation circuit detect a low-low level. In addition to the A and B actuation circuits, the system is designed with redundant backup relays for the opposite channel's prime relays. These backup relays provide a derived signal to the opposite actuation circuit and are designated as A1 and B1.

The current TS requirement for an inoperable STLS channel is to place the inoperable channel in the tripped or bypassed condition within 8 hours of the time of discovery of loss of operability. If the channel is not restored to operable status within 48 hours of the time of discovery of loss of operability, the channel must be placed in the tripped condition within the following 8 hours.

The FCS ESF system relies on a two-out-of-four logic to initiate an ESF. The effect of placing an inoperable channel in the tripped condition satisfies one of the two required signals such that the actuation circuit would require a signal from one of three level sensors (i.e., the logic becomes one out of three). When a channel is in the bypassed condition, the actuation circuit requires a signal from two of three level sensors (i.e., the logic becomes two-out-of-three).

Due to the derived signal, if a channel was in the tripped condition and a single failure occurred, (that being one channel of STLS on either A or B circuits), a premature STLS would be generated. During a DBA with a valid CPHS or PPLS, this single failure would prevent the contents of the SIRW tank from being injected into the reactor coolant system. The resulting logic of placing the SIRW tank low-level channels in "bypass" rather than "trip" would not cause a premature switchover of the high-pressure safety injection pumps to the containment sump and it would not prevent the switchover when needed. This scenario was discussed in an NRC memorandum from Mr. R. C. Jones to Mr. T. R. Quay dated November 22, 1994.

Because of these concerns, it is proposed that the TS be revised to require that when one channel of STLS is inoperable, the channel must be placed in bypass and the channel will be restored to operable status no later than the next cold shutdown. If two channels become inoperable, then both inoperable channels must be placed in bypass within eight hours from time of discovery of loss of operability. One channel must be restored to operable status within 48 hours or a plant shutdown must be initiated.

Based on its review of the licensee's submittal, the staff concluded that the proposed TS changes will not impact the safe operation of the plant and are acceptable.

2.2 Containment Radiation High Signal (CRHS)

The proposed change revises Table 2-4, "Instrument Operating Conditions for Isolation Functions," Item No. 3B, Containment High Radiation A and B, "Minimum Operable Channels" from "2" to "1." This change also revises Table 2-4, reference note (d) by correcting the verbiage regarding the two initiating channels. Table 2-4, reference note (d) states that the A and B circuits are both actuated by either one of the two initiating channels. This is being revised to state that the A and B trains are both actuated by either the containment or auxiliary building exhaust stack initiating channels. The reference note (d) and the Basis section on page 2-66a are also being revised to clarify that the number of installed channels for CRHS is two.

The CRHS is designed with two actuation trains, A and B. The signal is generated from either the containment noble gas radiation monitor or the auxiliary building exhaust stack noble gas radiation monitor. A third noble gas radiation monitor is installed as a "swing" monitor that can be aligned to either the auxiliary building stack or containment. In addition to the A and B actuation trains, the system is designed with redundant backup relays for the opposite train's prime relays. These backup relays provide a derived signal to the opposite actuation train and are designated as A1 and B1. The derived signals, A1 and B1, are not considered individual channels, thus each actuation train only has one initiating channel. As indicated in Table 2-4, under the column for Minimum Degree of Redundancy, there is no requirement to have redundancy on the individual actuation trains.

The CRHS is a one-out-of-two signal. This configuration was approved by the NRC in Amendment 152, which deleted the requirements to have particulate and iodine radiation monitors as input to the actuation trains. The proposed change is similar to the CE Standard Technical Specifications (STS) contained in NUREG-0212 (Revision 2) for the CRHS, as the STS indicates the total number of installed channels for gaseous monitors is one. Redundancy is provided by maintaining one radiation monitor initiating channel on two independent ESF actuation trains. The ESF actuation system supervisory A and B safeguard initiation channels will not be affected by this proposed TS change. The minimum level of engineered safeguards performance acceptable for the DBA, termed minimum safeguards, will still be maintained in accordance with IEEE 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations."

Based on its review of the licensee's submittal, the staff concluded that the proposed TS changes will not impact the safe operation of the plant and are acceptable.

2.3 Administrative Changes

This proposed change also revises TS 3.1, Table 3-2, "Minimum Frequencies for Checks, Calibrations and Testing of Engineered Safety Features, Instrumentation and Controls." Specifically, this administrative change revises the containment radiation high signal surveillance methods for the check and test surveillance functions to "channel check" and "channel

functional test", respectively, to be consistent with the applicable surveillance functions and the defined TS terminology. This proposed change to Table 3-2 is administrative in nature and does not affect plant equipment or operations. Also included in this administrative change is the deletion of the term "source check" from the TS Definitions section. As a result of the administrative revisions to TS 3.1, Table 3-2, "source check" will no longer be used in the FCS TS.

It is also proposed to revise the Amendment numbers listed on the bottom of page 2-66a. The initial issuance of page 2-66a was in Amendment 88. Amendments 8, 20, 25, 32, and 43 affected page 2-66 and therefore are being deleted.

These changes are administrative in nature and are acceptable to the staff.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (60 FR 45182). Accordingly, the amendment meets 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 amendment.

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

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