

January 4, 2000

Mr. J. H. Swailes
Vice President of Nuclear Energy
Nebraska Public Power District
P. O. Box 98
Brownville, NE 68321

SUBJECT: NOTICE OF ENFORCEMENT DISCRETION FOR NEBRASKA PUBLIC
POWER DISTRICT REGARDING COOPER NUCLEAR STATION (TAC NO.
MA7784, NOED NO. 99-6-010)

Dear Mr. Swailes:

By letter dated January 1, 2000, Nebraska Public Power District (NPPD) requested that the NRC exercise discretion not to enforce compliance with the actions required in Technical Specification (TS) Section 3.7.3, "Reactor Equipment Cooling (REC) System." NPPD's letter documented information previously discussed with the NRC in telephone conferences on December 30, 1999, at 8:30 p.m. and January 1, 2000, at 2 p.m. [all times Eastern]. The principal NRC staff members who participated in these telephone conferences are included in the enclosure. This letter documents our telephone conversation on December 30, 1999, which commenced at 8:30 p.m. and culminated with Mr. John Zwolinski from the Office of Nuclear Reactor Regulation (NRR) verbally issuing the Notice of Enforcement Discretion (NOED) at 10:30 p.m. A subsequent telephone conference was conducted on January 1, 2000, which commenced at 2 p.m. to discuss technical issues that did not change the status of the NOED previously issued on December 30, 1999. This letter also documents information discussed in the January 1, 2000, teleconference.

1.0 BACKGROUND

NPPD stated that on December 30, 1999, at 4 p.m. (CST), both subsystems (or trains) of the reactor equipment cooling (REC) system were declared inoperable due to increased leakage from the REC system. NPPD's operability determination was based on Cooper Nuclear Station's (CNS) current licensing-basis requirement for the REC system to supply cooling for 30 days after a loss-of-coolant accident (LOCA) without makeup to the REC system, as described in the CNS Updated Safety Analysis Report (USAR). In accordance with Limiting Condition for Operation (LCO) 3.7.3, CNS correctly entered Action B that requires the plant to be placed in Mode 3 within 12 hours and Mode 4 within 36 hours when both REC subsystems are inoperable.

At 8:30 p.m. on December 30, 1999, NPPD requested that an NOED be issued pursuant to the NRC's policy regarding exercise of discretion for an operating facility, set out in Section VII.c. of the "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600, to allow continued operation until such a time as the NRC could review and approve a previously submitted license amendment request. This amendment request, dated June 15, 1999, would allow CNS to revise the maximum allowable REC system leakage

during normal power operation such that the inventory in the REC system surge tank would assure that the REC system would fulfill its function for at least the first 7 days following a LOCA. The service water (SW) system would fulfill the safety functions of the REC system, if required, for the remaining duration of the accident.

Prior to NPPD's enforcement discretion request, the staff had requested additional information regarding the amendment request dated June 15, 1999. NPPD responded to this request verbally during the NOED teleconferences held on December 30, 1999, and January 1, 2000, and in writing in a letter dated January 1, 2000. The latter telephone conversation was requested by NPPD to correct inaccurate information presented in the June 15, 1999, amendment request and the December 30, 1999, teleconference.

NPPD indicated that the NOED request was reviewed and approved by the CNS Station Operations Review Committee on December 30, 1999, prior to the verbal request.

2.0 SAFETY BASIS

NPPD's safety basis for the NOED request is the same as that forwarded in the amendment request dated June 15, 1999. NPPD's complete safety analysis can be found in the amendment request letter dated June 15, 1999 (accession number 9906210086). The no significant hazards consideration determination (NSHCD) was published in the *Federal Register* on July 14, 1999 (64 FR 38030).

The following safety basis is a summary of that forwarded by NPPD in Attachment 1 to the NOED request letter dated January 1, 2000.

NPPD's amendment submittal dated June 15, 1999, requested to make the changes to the current licensing basis that would reduce the requirement for REC system operability without makeup from 30 days to 7 days. The SW system would provide backup supply to the REC system within at least 7 days following a LOCA. The 30-day post-LOCA cooling requirement stems from the post-Three Mile Island accident commitment to not access the reactor building for 30 days post-accident due to radiological concerns. The safety basis for both the amendment request and this NOED request is that, in the event of an accident, the SW backup to REC can ensure the required cooling function as described in the safety evaluation contained in the June 15, 1999, submittal. This has no effect on the District's commitment to not enter the reactor building for 30 days post-LOCA, since SW backup can be initiated from the control room.

The issuance of the NOED involves a no significant hazards consideration based on the following:

- (1) The proposed change to the CNS USAR does not involve a significant increase in the probability of an accident previously evaluated in the USAR since there are no hardware changes associated with this USAR change. Procedure changes associated with this USAR change are limited to direction on which division of SW/REC backup to initiate first, and incorporation of new system leakage limits into surveillance procedures.

The proposed change also does not involve a significant increase in the consequences of an accident previously evaluated in the USAR. The SW system will fulfill the safety

functions of the REC system in a post-LOCA condition and thus the proposed change will not affect the performance and reliability of the REC system. The emergency systems cooled by the REC system, the emergency core cooling systems (ECCS) and their room coolers, will therefore also fulfill their safety function when directly supplied by the SW system.

- (2) The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated in the USAR. The proposed change does not introduce any new plant equipment changes. It does, however, allow the SW system to perform a different type of function than it is presently licensed to perform in a post-LOCA condition. This SW system post-LOCA function has been previously demonstrated to fulfill the functions of the REC in a non-LOCA emergency shutdown which are the same functions required following a LOCA.
- (3) The proposed change does not involve a significant reduction in the margin of safety. The SW system will perform the required REC post-LOCA functions after 7 days, if required. There is an added required operator action which is to align the SW system to directly supply cooling water to the REC critical loops. This action can be performed from the main control room utilizing one control switch and there is sufficient control room indication for the operator to be alerted to the need for use of SW backup. There is also sufficient time for the operator to perform the task. Trending (prior to postulated LOCA) routinely provides the control room operator with REC system leakage information. In a post-LOCA situation, this leakage information would assist the operator in taking timely action to initiate the SW backup before the need is alarmed in the control room.

The issuance of the NOED will not involve any adverse consequences to the environment. This proposed change does not result in a significant increase in radiological doses for any design-basis accident. There is not a significant change in the types or significant increase in the amount of any effluents that may be released offsite. There are no changes to plant equipment and there is no additional requirement for existing equipment to perform a different type of function than they are presently designed to perform. There will not be a significant increase in the types or amounts of any effluents that may be released offsite and these changes do not involve irreversible environmental consequences beyond those already associated with normal operation.

3.0 COMPENSATORY MEASURES

Compensatory measures stated by NPPD in the letter dated January 1, 2000, include briefing operations crews on REC system vulnerabilities and NRC concerns during certain postulated accident scenarios. These briefings will cover all operations crews.

A second compensatory measure includes increased monitoring of REC surge tank level. Temporary administrative guidance requires monitoring of surge tank level every 2 hours to ensure changes are noticed and responded to in a timely manner. This monitoring is in addition to the TS requirement of verification of surge tank level once every 24 hours.

As a third compensatory measure, if REC leakage increases to such a value that a 7-day inventory cannot be maintained, CNS will comply with applicable action statements in TS LCO 3.7.3.

4.0 STAFF EVALUATION

The REC system provides cooling water to the safety-related ECCS pumps and the ventilation system which cools the ECCS pump rooms during accident conditions. The heat is then transferred to the SW system via the REC heat exchangers, which discharges to the Missouri River. The REC surge tank leakage criteria, during normal operation, is established to assure the REC remains functional for 30 days in a post-LOCA condition. Due to radiation levels, no credit can be assumed for operator action in the reactor building to restore the water level in the REC surge tank during post-LOCA conditions.

NPPD indicated that the SW and REC systems were modified, prior to initial licensing, with the provision of inter-ties so that SW could be injected into the REC system to directly supply essential cooling loads following a design-basis earthquake considering a concurrent single active failure or any single passive failure in the critical services headers. The above SW/REC inter-tie licensing basis does not include credit for use of SW in a post-LOCA condition. The critical loops are normally supplied by clean REC water and the issue of silting of the critical loops due to use of the SW system was investigated. The conclusion of the calculation was that, even with the minimum flow from one SW pump through both REC critical loops, sufficient velocity would be achieved to ensure that the critical loops would operate when supplied with SW without loss of function due to silting.

The guidance for closed loop component cooling water system (REC system for CNS) in the NUREG-0800, Standard Review Plan Section 9.2.2, states that the surge tank shall have sufficient capacity to accommodate expected leakage from the system for 7 days. Since the CNS accident duration is considered to be 30 days, the safety functions of the REC system must be fulfilled by some other safety-related system for the period from 7 to 30 days. NPPD proposed to credit the SW/REC inter-tie for this purpose and has indicated that the capability of the SW system to fulfill both its safety function and the safety function of the REC system, when the SW/REC inter-tie is activated, has been verified.

There are no plant equipment changes associated with this USAR change, and NPPD indicated that the SW system already satisfied the applicable criteria for safety-related application, such as electrical and mechanical separation, equipment qualification, seismic classification, missile protection and high energy line break. NPPD also indicated that the single failure criterion would be satisfied as discussed in Section 4.1, below.

4.1 Single Failure

The June 15, 1999, amendment request indicated that the worst possible failure for the SW system would be the failure of an operator to be alerted to the need for SW backup. NPPD indicated that the surge tank low water level alarm instrumentation is neither redundant nor essential so that no credit can be taken within the design basis to alert the operator. However, the REC low pressure alarm is essential and redundant and meets the requirements for single failure. This alarm would provide sufficient operator notice that the SW backup should be initiated. In addition, failure of the REC pumps is also indicated in the control room. Calculations performed for the worst case with two residual heat removal (RHR) pumps running

in one quad indicate that there is sufficient time (45 minutes) for the operator to initiate the SW/REC backup after REC flow ceases and before the room heats up to the maximum temperature for which the RHR pumps are qualified. The SW/REC inter-tie can be initiated from the control room by one key-lock switch, which when activated, automatically realigns the SW system to supply the REC critical loops directly with cooling water. Thus, there is sufficient time for the operator to determine that SW backup is required and initiate this backup.

Station procedure provides the operator with instructions for supplying SW to the REC critical loops. If the REC loops are split when SW backup cooling is initiated (cross-tie valve REC-MOV-695 is closed), the operator is instructed to start both trains of SW backup. NPPD indicated that there is no single failure concern because either REC train can provide the required cooling.

If the REC loops are cross-connected when SW backup cooling is initiated, the operator is required to start only one train of SW backup, either Division I or Division II. NPPD indicated that there is no single-failure concern if the operator preferentially starts the Division II pump to provide SW cooling to both loops. If a single failure occurs in Division II after initiating SW backup cooling, the operator can close the crosstie valve REC-MOV-695 which is powered by Division I, and align the Division I SW backup train for required cooling.

If the operator first aligns the Division I SW system to provide REC cooling when the REC loops are cross-connected, a subsequent failure of Division I power could render the REC inoperable. In this situation, neither REC-MOV-695 or SW-MOV-886 can be closed from the control room, thereby creating a diversion flow path for cooling water that is aligned through the Division II SW inter-tie.

To prevent this unlikely scenario from occurring, NPPD stated that as part of the implementation of this license amendment, the station procedure would be revised to require the operator to preferentially initiate the Division II train of the SW/REC inter-tie when this function is required and when the REC critical loops are not split. NPPD also indicated that surveillance testing requirements applicable to the inter-tie capability (switches, valves, low pressure alarm) have been established and are included in plant procedures.

During review of NPPD's amendment application, the NRC staff identified a single-failure scenario that had not been addressed by NPPD. Figure 1 (NLS 990050) of the amendment application indicated that if a failure of Division I power occurred during the 7-day period following accident initiation before SW backup cooling is aligned to the REC, a flow path would exist for SW to flow back through REC valve MOV-711, through the drywell and nonessential services cooling loops, back to the surge tank (creating a potential for flooding), and to the SW discharge through MOV-888. During the teleconference that was held on January 1, 2000, NPPD indicated that the figure that had been supplied with the amendment application was in error, and that the actual REC system configuration would not permit such a failure mode to occur.

4.2 Evaluation Conclusion

Based on the above evaluation, the staff finds that there is sufficient basis to grant NPPD's NOED request while NRC evaluation of the June 15, 1999, license amendment application, as supplemented by the information contained in the NOED request, is completed. Use of the SW system as backup to the REC system during a LOCA event is acceptable in the interim pending completion of this review. During this interim period, the maximum allowable REC system leakage during normal operation may be increased provided that the REC system can fulfill its function for at least the first 7 days following a large-break LOCA, and provided the SW system is able to perform the REC cooling function (if required) for the remaining duration of the accident.

5.0 CONCLUSION

Based on these considerations, the staff concluded that Criterion 1(a) of Section B.2 and the applicable criteria in Section C.4 to NRC Inspection Manual Chapter 9900, "Technical Guidance, Operations - Notices of Enforcement Discretion," were met. Criterion 1(a) states that, "For an operating plant, the NOED is intended to...avoid undesirable transients as a result of forcing compliance with the license condition and, thus, minimize potential safety consequences and operational risks...."

On the basis of the staff's evaluation of your request, we have concluded that an NOED is warranted because we are clearly satisfied that this action involves minimal or no safety impact, is consistent with the enforcement policy and staff guidance, and has no adverse impact on public health and safety. Therefore, it is our intention to exercise discretion not to enforce compliance with TS Section 3.7.3, "Reactor Equipment Cooling (REC) System." This NOED is issued for the cause of the noncompliance with TS 3.7.3 being REC leakage in excess of that required to ensure that the REC system will supply cooling for 30 days after a LOCA without makeup to the REC system, as described in the CNS USAR. Other possible causes of noncompliance with TS 3.7.3 are not covered under this NOED. In accordance with the compensatory measures stated in the January 1, 2000, letter, CNS will comply with Action B of LCO 3.7.3 if leakage increases to a value such that a 7-day cooling capability, without makeup to the REC system, cannot be ensured. This NOED is effective for the period from December 30, 1999, at 8:30 p.m. (EST) until NRC review of the June 15, 1999, amendment application, as supplemented by the January 1, 2000, NOED request, is completed. The staff plans to complete its review of the license amendment within 4 weeks of the date of this letter.

J. H. Swailes

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As stated in the Enforcement Policy, action will be taken, to the extent that violations were involved, for the root cause that led to the noncompliance for which this NOED was necessary.

Sincerely,

/RA/

Stuart A. Richards, Director
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reaction Regulation

Docket No. 50-298

Enclosure: As stated

cc w/encl: See next page

J. H. Swailes

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/RAI

Stuart A. Richards, Director
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Office of Nuclear Reaction Regulation

Docket No. 50-298

Enclosure: As stated

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Enclosure