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SUBJECT: Application for amend to License DPR-58, modifying Tech Spec
 4.1.1.5 re min temp for criticality.

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AEP:NRC:1067A
10 CFR 50.90

Donald C. Cook Nuclear Plant Unit 1
Docket No. 50-315
License No. DPR-58
SUPPLEMENTAL TECHNICAL SPECIFICATION CHANGES FOR REDUCED
TEMPERATURE AND PRESSURE PROGRAM

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Attn: T. E. Murley

December 30, 1988

Dear Dr. Murley:

This letter and its attachments constitute an application for amendment to the Technical Specifications (T/Ss) for the Donald C. Cook Nuclear Plant Unit 1. Specifically, we are proposing to modify T/S 4.1.1.5 (Minimum Temperature for Criticality) such that the temperature below which the reactor coolant system average temperature must be monitored every 30 minutes is reduced from 551°F to 545°F.

The change is desired since we plan to operate the upcoming Unit 1 Cycle 11 at reduced temperature and pressure (RTP) conditions. The RTP program supports a range of nominal full power Tav_g from 547°F to 567.8°F. The expected full power Tav_g for Cycle 11 is approximately 550°F, reduced from the present (non-RTP) full power Tav_g of 567.8°F. Plant operation with the present T/S is not precluded under the RTP conditions; however, the T/S does place a burden on the plant operators since Tav_g will have to be monitored every 30 minutes at essentially all times when the reactor is critical.

This letter supplements our letter AEP:NRC:1067, dated October 14, 1988. That letter transmitted the analyses that support RTP operation, as well as the T/S changes necessary to allow plant operation. We request that your review of this request be completed by April 15, 1989, which is the same date requested in AEP:NRC:1067 for approval of the RTP analyses and associated T/S changes.

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Dr. T. E. Murley

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AEP:NRC:1067A

Additional details about the change and our evaluation concerning significant hazards consideration are contained in Attachment 1 to this letter. The proposed revised T/S change is found in Attachment 2.

We believe that the proposed changes will not result in (1) a significant change in the types of effluents or a significant increase in the amounts of any effluent that may be released offsite, or (2) a significant increase in individual or cumulative occupational radiation exposure.

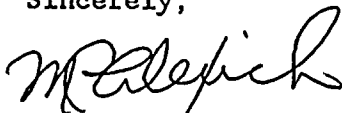
These proposed changes have been reviewed by the Plant Nuclear Safety Review Committee, and will be reviewed by the Nuclear Safety and Design Review Committee at their next regularly scheduled meeting.

In compliance with the requirements of 10 CFR 50.91(b)(1), copies of this letter and its attachments have been transmitted to Mr. R. C. Callen of the Michigan Public Service Commission, and Mr. George Bruchmann of the Michigan Department of Public Health.

Pursuant to the requirements of 10 CFR 170.12(c), we have enclosed an application fee of \$150.00 for the proposed amendments.

This document has been prepared following Corporate procedures that incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Sincerely,



M. P. Alexich
Vice President

MPA/eh

Attachments

cc: D. H. Williams, Jr.
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
G. Bruchmann
A. B. Davis - Region III
NRC Resident Inspector - Bridgman

ATTACHMENT 1 TO AEP:NRC:1067A

DESCRIPTION AND 10 CFR 50.92 SIGNIFICANT HAZARDS EVALUATION

FOR CHANGES TO THE TECHNICAL SPECIFICATIONS

FOR THE DONALD C. COOK NUCLEAR PLANT UNIT 1

Description of Change

Unit 1 Technical Specification (T/S) 4.1.1.5.b (Minimum Temperature for Criticality) as presently written requires verification that the reactor coolant system Tav_g is $\geq 541^{\circ}\text{F}$ at least once per 30 minutes when the reactor is critical and Tav_g is less than 551°F . We are proposing to revise the requirement such that Tav_g must be verified every 30 minutes when Tav_g is below 545°F or when the low Tav_g alarm is inoperable.

Reason for the Change

Under present operating conditions, full power Tav_g is 567.8°F . For the upcoming Unit 1 Cycle 11, however, we are planning to operate the plant under reduced temperature and pressure (RTP) conditions. The RTP program supports a range of nominal full power Tav_g from 547°F to 567.8°F . The full power Tav_g will be lowered to approximately 550°F for Unit 1 Cycle 11. Since this is below 551°F , the present wording of T/S 4.1.1.5.b would require that Tav_g be verified to be above 541°F (the minimum temperature for criticality) every 30 minutes essentially all times when the reactor is critical. Although this does not preclude operation under RTP conditions, it is burdensome and will distract the operators from other duties.

This request supplements our letter AEP:NRC:1067, dated October 14, 1988. That letter transmitted the analyses which support RTP operation, as well as the T/S changes that are necessary in order to implement the RTP program.

Justification for Change

The proposed change does not alter the minimum temperature for criticality. Tav_g must be maintained above 541°F any time the reactor is critical. Should Tav_g drop below 541°F , the action statement for T/S 3.1.1.5 requires that Tav_g be restored above 541°F within 15 minutes or the unit must be placed in hot standby. T/S 4.1.1.5.b presently requires Tav_g to be determined every 30 minutes when Tav_g is less than 10°F above 541°F . This 10°F value is consistent with the latest revision of Westinghouse Standard T/Ss. Westinghouse has informed us the 10°F was established to protect against encroachment upon the 541°F minimum temperature for criticality. The 10°F value is not derived from any analysis.

The plant is equipped with a low Tav_g alarm that is currently set at 554°F . The low Tav_g alarm is derived from the bistables that close the main feedwater control valves on low Tav_g coincident with a reactor trip. This function helps protect the reactor from excessive cooldown following a reactor trip. Diversity of signals

for terminating main feedwater is provided via the P-4 permissive, which trips the main feedwater pumps in the event of a reactor trip. The functions associated with the low Tav_g bistable and the main feedwater pump trip on reactor trip are not delineated in the T/Ss.

We are proposing to lower the low Tav_g setpoint (including the alarm) from 554°F to 545°F. The temperature of 545°F is sufficiently below the operating temperature to lessen the possibility of unnecessary alarms, but is high enough to provide the operator with ample warning that Tav_g is approaching the 541°F minimum temperature for criticality.

Lowering the low Tav_g setpoint has minimal effect on the response of the plant to reactor trip because, as discussed above, the main feedpumps (MFP) are tripped directly on a reactor trip, via the P-4 permissive. The FSAR LOCA and transient analyses do not take credit for feedwater isolation derived from the low Tav_g bistable. The function is modeled in the Westinghouse Owners Group analysis of steamline break mass and energy releases outside containment (WCAP 10961), because it is conservative to do so. Modeling of the function is conservative because it leads to earlier feedwater isolation than the other (T/S) signals that also provide feedwater isolation. Early termination of feedwater results in greater steam generator tube uncover, and thus more superheating of the steam exiting the break. Lowering the low Tav_g setpoint is conservative with respect to this analysis, since it will somewhat delay the feedwater isolation.

We propose that the operator only be required to monitor and document Tav_g on a 30-minute basis if Tav_g is below the proposed low Tav_g setpoint of 545°F, or if the low Tav_g alarm is inoperable. This will avoid the burden that monitoring Tav_g every 30 minutes places on the operators, and will help ensure the operators' attention is not diverted from more important safety functions. Tav_g will continue to be measured at least once per 12 hours in Mode 1, as required by T/S 3.2.5 (DNB Parameters). The resetting of the Tav_g alarm to 545°F will ensure the operator is warned that Tav_g is encroaching upon the 541°F minimum temperature for criticality.

10 CFR 50.92 Evaluation

Per 10 CFR 50.92, a proposed amendment will not involve a significant hazards consideration if the proposed amendment does not:

- 1) Involve a significant increase in the probability or consequences of an accident previously analyzed,
- 2) Create the possibility of a new or different kind of accident from any accident previously analyzed or evaluated, or
- 3) Involve a significant reduction in a margin of safety.

Criterion 1

The periodic monitoring and documenting of Tavg when the plant is operated near the minimum temperature for criticality will be reduced. However, this change will be compensated for by lowering the alarm setpoint to warn the operator of approach to the minimum temperature for criticality. Therefore, we do not believe our proposal will result in an increase in the probability or consequences of an accident previously analyzed.

Criterion 2

The proposed T/S changes do not revise the minimum temperature for criticality of 541°F specified in T/S 3.1.1.5. The change only impacts the temperature at which Tavg must be monitored every 30 minutes. This will be compensated for by providing an alarm at a Tavg of 545°F that will warn the operator that the plant is approaching the minimum temperature at which it may remain critical. Thus, we do not believe the change can result in any new or different kinds of accidents from any previously analyzed or evaluated.

Criterion 3

The purpose of the T/S is to ensure the reactor is not critical with Tavg below 541°F, without appropriate action being taken. We will ensure that the operator is warned that Tavg is approaching the 541°F limit by lowering the low Tavg alarm setpoint to 545°F. We believe this will provide adequate assurance that the 541°F Tavg limit is protected. Therefore, the proposed change should not significantly reduce the margin of safety.

Lastly, we note that the Commission has provided guidance concerning the determination of significant hazards by providing examples (48 FR 14870) of amendments considered not likely to involve significant hazards consideration. The sixth of these examples refers to changes that may result in some increase to the probability or consequences of a previously analyzed accident, but the results of which are within limits established as acceptable. As discussed in the bases, the minimum temperature for criticality ensures that the reactor, instrumentation, and vessel are operated in their analyzed temperature ranges. These requirements are not

affected by our proposed revision to the surveillance requirements. The change only impacts the temperature at which the operator must monitor Tavg every 30 minutes to ensure the temperature does not drop below the minimum temperature for criticality. We will be providing an alarm that will alert the operator that the temperature is approaching its minimum Tavg limit. Therefore, we believe the example cited is applicable and that the changes should not involve a significant hazards consideration.