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SUBJECT: Application for amend to License DPR-74, modifying Tech Spec
3.3.3.6 to allow pressurizer safety valve position
indicator acoustic monitor QC-107C to be exempted from Table
3.3-10 requirements until end of current fuel cycle.

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AEP:NRC:1170

Donald C. Cook Nuclear Plant Unit 2
Docket No. 50-316
License No. DPR-74
UNIT 2 PRESSURIZER SAFETY VALVE POSITION INDICATOR ACOUSTIC MONITOR
EXPEDITED TECHNICAL SPECIFICATION AMENDMENT REQUEST

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

Attn: T. E. Murley

December 16, 1991

Dear Dr. Murley:

This letter and its attachments constitute an application for an expedited Technical Specifications (T/Ss) change for Donald C. Cook Nuclear Plant Unit 2. Specifically, we are proposing to modify T/S 3.3.3.6 to allow pressurizer safety valve position indicator acoustic monitor QR-107C (Instrument 14 in Table 3.3-10) to be exempted from Table 3.3-10 requirements until the end of the current fuel cycle, which is anticipated to be February 1992. Currently, the T/Ss only allow this monitor to be inoperable for 30 days, with a subsequent action to be in hot shutdown within the next 12 hours. As a result of a spurious alarm from this instrument, on November 30, 1991, we entered the action statement. Due to subsequent alarms that have occurred intermittently since that time, despite our troubleshooting efforts, we have remained in the action statement. This 30-day period expires December 30, 1991 at 0353 hours.

Attachment 1 provides a detailed description of the proposed changes, the justification for the changes, and our proposed determination of no significant hazards consideration performed pursuant to 10 CFR 50.92. Attachment 2 contains the existing pages marked to reflect the proposed changes. Attachment 3 contains the proposed T/Ss pages. The proposed T/Ss changes are based on Westinghouse Standard T/S 3/4.7.11.

We have discussed our situation with our NRC Project Manager, Mr. Tim Colburn. To preclude an unwarranted plant shutdown, Mr. Colburn has recommended that we submit our request as an expedited T/Ss change.

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Dr. T. E. Murley

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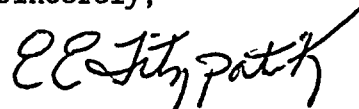
AEP:NRC:1170

The 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. J. R. Padgett of the Michigan Public Service Commission and to the Michigan Department of Public Health.

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

Sincerely,



E. E. Fitzpatrick
Vice President

Attachments

cc: D. H. Williams, Jr.
A. A. Blind - Bridgman
J. R. Padgett
G. Charnoff
NFEM Section Chief
A. B. Davis - Region III
NRC Resident Inspector - Bridgman

Attachment 1 to AEP:NRC:1170

10CFR50.92 Analysis for Changes to the
Donald C. Cook Nuclear Plant Unit 2
Technical Specifications

1.0 SECTION TO BE CHANGED

Table 3.3-10 of Technical Specification (T/S) 3.3.3.6.

2.0 EXTENT OF CHANGE

We are proposing to delete the 30-day time period that pressurizer safety valve acoustic position indicator QR-107C may be inoperable by exempting it from T/S requirements until the end of Cycle 8, currently scheduled to occur in February 1992. As such, Table 4.3-10, which states the post-accident monitoring instrumentation surveillance requirements, is not applicable. This 30-day time period is specified in the Limiting Condition for Operation in T/S 3.3.3.6 (Instrument 14 in Table 3.3-10). Due to spurious alarms and indications, the origin of which we believe to be system components located in the pressurizer doghouse, this acoustic valve position monitor has been declared inoperable.

3.0 CHANGES REQUESTED

We are proposing to make the following change to the Unit 2 Technical Specifications.

Revise Table 3.3-10, "Post-Accident Monitoring Instrumentation"

Currently, Instrument 14 of Table 3.3-10 has no notes or exceptions. We are proposing to add the following footnote:

*****Pressurizer safety valve (SV-45C)
position indicator acoustic monitor QR-107C
is exempted from the above requirements
until the end of Cycle 8, and may be taken
out of service.

4.0 DISCUSSION

System Description

The reactor coolant system is protected against overpressurization by control and protective circuits such as the pressurizer pressure high reactor trip and by the three power-operated relief and three safety valves connected to the top of the pressurizer. Upon opening, these valves discharge steam into the pressurizer relief tank, which condenses and collects the valve effluent. This submittal addresses the

monitoring instrumentation associated with the pressurizer safety valves and the pressurizer relief tank.

The purpose of the acoustic monitor is to provide the operator with information regarding safety valve position. Two independent monitoring systems exist that alert the operator to the passage of steam from the safety valves due to valve lift. An acoustic flow monitor (QR-107A, B, and C) on the discharge of each safety valve detects acoustic vibrations generated from the steam flowing through the valve, and actuates an alarm in the control room. Due to the magnitude of the acoustic vibrations and the sensitivity of the instrumentation, all three monitors will sense when one of the pressurizer safety valves lift. The acoustic monitors were added to meet the requirements of NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations," and NUREG-0737, "Clarification of TMI Action Plan Requirements," and are environmentally qualified, unlike the downstream temperature sensors.

During normal operation the acoustic monitors are not used to detect valve leakage. A temperature sensor (NTA-151, -152, -153) downstream of the acoustic sensor generates a signal that actuates a control room alarm when a temperature increase is experienced in the line, as would be the case if the valve released steam. The attached simplified diagram illustrates this portion of the system.

Indication of the temperature, pressure and water level of the pressurizer relief tank is also provided in the control room and provides additional indication of pressurizer valve steam flow during normal operation. The temperature of the water in the pressurizer relief tank is measured and indicated by instrument number NTA-351. An alarm resulting from this signal is actuated by high water temperature, and informs the operator that cooling of the tank contents is required. The pressurizer relief tank pressure transmitter (NPA-351) operates a high and low pressure alarm. The pressurizer relief tank level transmitter (NLA-351) provides a signal for a level indication and a high and low tank level alarm. Consequently, a discharge from one of the pressurizer safety valves will cause these instruments to provide an alarm indication in the control room.

Reason for Proposed Technical Specification Change Request

On November 30, 1991, at approximately 4:00 a.m., the pressurizer safety valve position indicator acoustic monitor on

the discharge of safety valve SV-45C (monitor QR-107C) was declared inoperable due to spurious alarm indications. Extensive testing of the acoustic monitoring system has not revealed the source of these spurious alarms. However, we know that it is not any of the components located in the control room. The source is believed to be the charge converter located in the pressurizer doghouse. The only portion of the instrumentation that has not been conclusively tested is the in-containment hardware (accelerometer, charge converter and cabling).

It is our belief that the charge converter (in-containment) is failing and, thus, periodically generates a noise signal which is interpreted by the signal conditioning module located in the control room as an alarm condition. The testing to date indicates that, when the channel in question is not generating a spurious alarm, its output is providing correct vibration data, i.e., the monitor is functional. However, in order for an operator to distinguish a valid alarm indication from an invalid indication, other instrumentation must be utilized. Consequently, the acoustic valve position monitor channel in question was declared inoperable on November 30, 1991.

Since access to the suspect in-containment hardware is not possible while at power, we are requesting an exemption to the 30-day time period that this instrument may be inoperable as specified in T/S 3.3.3.6. The time period being requested is until the end of Cycle 8, which is currently anticipated to occur in February 1992.

Justification for Proposed Technical Specification Change

We believe that the period of time that the acoustic valve position monitor channel may be inoperable can be extended until the end of Cycle 8 for the following reasons.

First, the temperature sensor installed downstream of each pressurizer safety valve provides indication and alarm on both the control room panel and the plant computer. Past experience has shown these temperature sensors to be effective leak detection devices.

In addition, the identical system in Unit 1 has shown that when one of the pressurizer safety valves opens, all three safety valve acoustic leak detection channels are actuated. This is caused by the sensitivity of the accelerometers and the fact that the three safety valves and their associated acoustic

monitor sensors are in close proximity to each other. Thus, if the safety valve associated with the inoperable acoustic valve position monitor channel discharges, the remaining two acoustic valve monitor channels would alert the operator. This also enables the operator to discriminate a valid alarm indication from an invalid alarm indication.

The safety valves discharge into the pressurizer relief tank. The temperature, pressure, and liquid level of the tank are indicated and alarmed in the control room. A change in these parameters would alarm and alert the operator of a safety valve discharge condition.

Finally, it should be noted that, when a pressurizer safety valve lifts, it can be heard in the control room, and would therefore alert the operators.

5.0 NO SIGNIFICANT HAZARDS DETERMINATION

We have evaluated the proposed T/Ss exemption and have determined that it does not represent a significant hazards consideration based on the criteria established in 10CFR50.92(c). Operation of the Cook Nuclear Plant in accordance with the proposed amendment will not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated.

Although the proposed exemption results in the operator having one less source of information on plant status, it does not create a significant increase in the probability or consequences of an accident previously evaluated. Acoustic monitor QR-107C does not perform a function vital to safe shutdown or to the isolation of the reactor or the reactor coolant system pressure boundary. These monitors were added to meet the requirements of NUREG-0578 and NUREG-0737. Other instrumentation exists that provides the operator with indication of safety valve actuation. In addition, the subject acoustic monitor being inoperable will not result in an uncontrolled release of radiation to the environment and will not initiate an accident.

(2) Create the possibility of a new or different kind of accident from any previously analyzed.

As previously stated, the purpose of the acoustic monitor is to provide the operator with information regarding safety valve

position that may assist in the mitigation of the consequences of an accident. However, the operator has other mechanisms for obtaining equivalent information. In addition, the signals generated by this monitor do not initiate any other equipment actuation, nor will its inoperability initiate any accident. Consequently, the proposed T/Ss change does not create the possibility of a new or different kind of accident from any previously analyzed.

(3) Involve a significant reduction in a margin of safety.

The proposed change results in the operator having one less source of information on plant status. Consequently, the margin of safety is reduced slightly. However, we believe this reduction in safety is insignificant for several reasons. First, the operator is provided with other viable flow detection devices to determine safety valve position, i.e., the temperature sensor (NTA-153) on the discharge line, and pressurizer relief tank level (NLA-351), temperature (NTA-351) and pressure (NPA-351) indications. In addition, previous experience with an identical system in Cook Nuclear Plant Unit 1 has shown that, when one of the pressurizer safety valves opens, the other two safety valve acoustic leak detection channels (QR-107A, B) are actuated. The operators will also be aware of a safety valve opening, since it can be heard in the control room.

Finally, based on the above, we believe that having an acoustic monitor inoperable does not warrant the inherent risk associated with reactor and plant shutdown. Thermal cycling from unwarranted plant shutdowns increases the likelihood of reactor vessel embrittlement and unnecessarily challenges to safety systems.

Based on the above, we believe that the unit can continue to be operated safely until the end of the present fuel cycle. At the end of the present fuel cycle, the in-containment channel hardware will be returned to operable status.

6.0 PENDING T/Ss PROPOSALS IMPACTING THIS SUBMITTAL

There are no other T/Ss proposals under review that impact this submittal.

FROM
PDRVS

