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SUBJECT: Application for amends to licenses DPR-58 & DPR-74,deleting requirement for automatic valve closure feature on RHR sys suction from RCS.

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INDIANA MICHIGAN POWER

September 19, 1997

AEP:NRC:1278
10 CFR 50.90

Docket Nos.: 50-315
50-316

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

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2

REQUEST FOR EMERGENCY TECHNICAL SPECIFICATION AMENDMENT
TECHNICAL SPECIFICATION 4.5.2.d.1
AUTOMATIC INTERLOCK SURVEILLANCE REQUIREMENT CHANGE

Pursuant to 10 CFR 50.91(a)(5), we propose to amend technical specification (T/S) 4.5.2.d.1 of the Cook Nuclear Plant units 1 and 2, and request that the NRC grant this as an emergency amendment. This letter and its attachments constitute an application for the emergency amendment. This amendment will delete the requirement for an automatic valve closure feature on the residual heat removal (RHR) system suction from the reactor coolant system (RCS).

A description of the change, the background and reason for change, justification for emergency review and approval, justification for change, and our analyses concerning significant hazards considerations are contained in attachment 1 to this letter. Attachment 2 contains the current T/S pages, marked-up to reflect the proposed changes. The proposed revised T/S pages are contained in attachment 3.

We believe 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 effluents 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.

A0061

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

Sincerely,

E E Fitzpatrick

E. E. Fitzpatrick
Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 19th DAY OF SEPT, 1997

Linda L. Boelcke
Notary Public

My Commission Expires 1-21-2001

LINDA L. BOELCKE
Notary Public, Berrien County, MI
My Commission Expires January 21, 2001

vlb

Attachments

c: A. A. Blind
A. B. Beach
MDEQ - DW & RPD
NRC Resident Inspector
J. R. Padgett

ATTACHMENT 1 TO AEP:NRC:1278

DESCRIPTION OF CHANGE, BACKGROUND AND REASON FOR CHANGE, JUSTIFICATION FOR EMERGENCY REVIEW AND APPROVAL, JUSTIFICATION FOR CHANGE AND 10 CFR 50.92 ANALYSES

Description of Amendment Request

Technical Specification (T/S) surveillance requirement 4.5.2.d.1. requires operability of two automatic interlocks on the residual heat removal (RHR) system suction valves IMO-128 and ICM-129 for both units. One of the interlocks, which we intend to maintain, is designed to ensure that neither of the two suction valves is opened while the reactor coolant system (RCS) is above the RHR system design pressure.

The second interlock, which is the subject of this T/S change request, was designed to automatically close the two valves if the RCS pressure were to increase to 600 psig. It is our intent by this amendment request, to delete reference to the auto-closure interlock from the T/S surveillance. This will remove the T/S requirement of this interlock for RHR system operability.

Background and Reason for Change

This T/S surveillance is currently required by the Modes 1, 2, and 3 specification for the ECCS system, T/S 4.5.2.d.1. By reference, it is also required in the mode 4 specification, 4.5.3.1.

UFSAR Chapter 9, Section 9.3 describes the interlocks associated with the RHR suction valves IMO-128 and ICM-129. The valves are interlocked through separate channels of the RCS pressure instrumentation to provide automatic closure of both valves whenever RCS pressure exceeds RHR design pressure. The UFSAR does state that the interlock may be defeated when the RCS is open to atmosphere.

The requirement for this auto-closure capability dates back to our original T/S and UFSAR license documents. The overpressure protection was designed to prevent an intersystem loss of coolant accident precipitated by an overpressure condition in the RCS, which would cause a break in the RHR system.

However, since June 1980, this interlock has been defeated on both units any time the RHR system is operating in the normal cooling configuration. This practice began in order to prevent inadvertent auto-closure of the valves which would result in loss of RHR suction during shutdown cooling operation.

The interlock is defeated by removing power from the valves and racking out the associated breakers. This action is taken as soon as the valves are opened to place RHR in service for shutdown cooling, in mode 4. On September 11, 1997, with both units shutdown in mode 5, it was determined that both units have operated contrary to the design basis as described in the FSAR and contrary to the T/S for the emergency core cooling systems (ECCS).

The reason for changing this T/S is that, for operation in Mode 4 with the normal RHR cooling configuration in place, this auto-closure capability makes the plant unacceptably vulnerable to a loss of RHR cooling. Characterization of this vulnerability is based on industry and Cook Nuclear Plant operating experience.

In November 1979, the NRC issued IE Bulletin No. 79-20, "Loss of Non-class 1E Instrumentation and Control Power System Bus During Operation." Review of this bulletin determined that our system was vulnerable to loss of either 120 volt AC vital instrumentation busses CRID I or CRID IV, which would generate a close signal to its associated RHR suction valve, IMO-128 or ICM-129. In May of 1980, IE Information Notice 80-20, "Loss of Decay Heat Removal Capability at Davis-Besse Unit 1 While in a Refueling Mode" and IE Bulletin 80-12, "Decay Heat Removal System Operability" were issued to the industry to highlight NRC concern that licensees maintain diverse and redundant means of decay heat removal.

In our response to IE Bulletin 80-12, we committed to lock out power to both RHR system suction valves whenever the RHR system is in service for RCS cooling, to prevent inadvertent valve closure and loss of suction to the RHR pumps.

The auto-closure capability, if active, renders the Low Temperature Overpressure (LTOP) system inoperable in mode 4 with RHR cooling in service. This happens because the RHR suction safety relief valve, as part of the LTOP system in this configuration, would lose communication with the RCS if either of the suction valves were to close.

The surveillance requirement for both units, currently reads as follows:

> "At least once per 18 months by: Verifying automatic *isolation and* interlock action of the RHR system from the

Reactor Coolant System when the Reactor Coolant System pressure is above 600 psig."

We are proposing to change this to read:

"At least once per 18 months by: Verifying the automatic interlock action *to prevent opening of the suction* of the RHR system from the Reactor Coolant System when the Reactor Coolant System pressure is above 600 psig."

This change, as discussed above, would maintain the open interlock function, but allow us to protect both the RHR system and the Reactor Coolant System from overpressure using the LTOP system.

Justification for Emergency Review and Approval

The Cook Nuclear Plant T/Ss require two operable charging pumps in mode 4 for reactivity control. With the RHR pumps operable, procedures administratively require an LTOP configuration of two operable pressure operated relief valves and one RHR suction safety relief valve to protect the RCS and the RHR system in the event of a pressure transient.

Our LTOP analysis for mode 4 takes credit for the RHR suction valves being open with the auto-closure function defeated, and this is essential to the operation of the RHR suction safety relief valve as part of LTOP, because if the suction valves auto-close, the relief valve has no communication with the RCS. When LTOP was developed and implemented, this procedural control had been in place for many years, and the impact on the T/S again went unidentified.

We cannot comply with the reactivity control T/S and LTOP administrative requirements, and also comply with T/S surveillance requirements 4.5.2.d.1 and 4.5.3.1 for operability of the RHR suction valve auto-closure function. We believe that a change to the T/S as we are requesting, is the appropriate action relative to nuclear safety, and to best comply with the intent of the original design basis.

Therefore, to meet the T/S requirements of two operable charging pumps and to maintain an acceptable LTOP configuration, the auto-closure interlock must be defeated while in mode 4. As a result,

an emergency T/S change is required to allow start-up of the shutdown units.

On September 18, 1997, a letter was sent to the USNRC providing a discussion of the actions we are taking to address technical issues identified by the recently complete architect engineering (AE) team inspection. We are currently anticipating the commencement of startup activities on September 29, 1997, and respectfully request NRC review and approval of this change by that date.

We understand the impact of such an emergency request, and recognizing that the conditions and status of the Cook Nuclear Plant restart may change in the future, we intend to keep the commission informed, through our daily contact with our NRR project manager, as to the status of our restart schedule.

The situation described above occurred because, until recently, the need to meet the RHR suction valve surveillance requirement, in mode 4, simultaneously with the reactivity control specification and the LTOP administrative requirements, was not recognized. Investigation into the root cause of this oversight is still in progress.

The AE inspection team identified issues related to our configuration management, design and procedure control, and our understanding of the plant's design and licensing bases. With the insight gained from the inspectors' conclusions, we identified this particular issue on September 11, 1997. The need for a T/S change prior to restarting either of the units, became evident as a result of our investigation of this matter.

Justification For Change

The requested change has no relevance to modes 1, 2, and 3, since the RHR system is always in ECCS standby readiness in mode 3 per technical specification LCO 3.5.2. In the ECCS line-up, IMO-128 and ICM-129 are closed with control power deenergized, providing assurance, along with the closure prevention interlock, that the valves will not be opened with the RCS at high pressures.

In mode 4, with the RHR suction valves, IMO-128 and ICM-129 blocked open, the RCS and the RHR systems are both protected from overpressurization by the LTOP configuration as it was determined and evaluated in our LTOP analysis.

The protection afforded by the original auto-closure interlock was a simple automatic isolation of the RHR suction from the RCS when the RCS pressure reached the design pressure of the RHR system. The analysis performed for the LTOP system specifically identifies the appropriate protection required for the various operational configurations of the ECCS and the RCS which might be required during cooldown, shutdown, and heatup.

In the LTOP analysis, a distinction is made for requirements with and without the RHR system in service.

In mode 4, at Cook Nuclear Plant, T/S LCO 3.1.2.4, "Charging Pumps - Operating" requires two operable centrifugal charging pumps for reactivity control. Based on the LTOP analysis, with two charging pumps, and the RHR system operable in the mode 4 configuration, LTOP requirements are; two operable pressurizer PORVs AND the RHR suction safety valve operable for pressure relief.

If the auto-closure interlock were also enabled to close the valves, and the RCS pressure reached the setpoint at any time during the transient, the RHR suction safety valve would be without communication with the RCS, and therefore unavailable for pressure relief.

The configuration of all three LTOP pressure relief components available allows for single failure of any one relief component. The available relief flow rate, with failure of any one component, will envelope the injection rates for one or both high head centrifugal charging pumps. This demonstrates that the Donald C. Cook Plant is sufficiently protected by the LTOP system alone, from overpressurization resulting from mass injection events given the above constraints.

The original decision to operate with the power removed from these valves in the open position, was made in 1980, in response to industry operating experience. Events at another plant highlighted the situation where the loss of one electrical control power bus could cause the suction valve auto-closure to occur.

The concern about loss of decay heat removal events was heightened later in the 1980's when additional events underscored the vulnerability of the systems in the shutdown modes of operation. Defeating the auto-closure interlock provides protection from this type of event.

The original basis for the auto-closure interlock was to protect the RHR system from an overpressurization event while operating with RHR suction from the normal RCS cooldown line. The analyzed LTOP configuration, two PORVs and a RHR relief valve, provides this protection and lowers the potential for inadvertent isolation of decay heat removal capability.

Basis For No Significant Hazards Determination

In accordance with 10 CFR 50.92, the proposed changes do not involve a significant hazards consideration if the changes do not:

1. involve a significant increase in the probability or consequences of an accident previously evaluated;

2. create the possibility of a new or different kind of accident from any accident previously evaluated; or

3. involve a significant reduction in a margin of safety.

Criterion 1

This amendment request does not involve a significant increase in the probability or consequences of an accident previously evaluated. The change provides an alternative means of providing overpressurization protection for the RHR system, and thereby protection against potential intersystem LOCA. Operating procedure administrative requirements establish the necessary LTOP system configuration and ECCS equipment operability constraints for mode 4 operation. The LTOP system has been analyzed to show that, if operated per the existing operating procedure constraints, it will protect the RHR system during postulated overpressure conditions.

Criterion 2

The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated. The change involves a different response by the system to an overpressurization event, but we have shown by analysis that the alternative LTOP configuration is capable of providing equivalent protection to the original suction valve auto-closure feature. The system remains protected from single failure of any of the available overpressure protection components.

The change eliminates the potential for a single power supply or instrument failure isolating and damaging the RHR system while operating to remove decay heat in mode 4.

Criterion 3

This proposed change does not involve a significant reduction in a margin of safety. The change maintains an equivalent margin of safety against intersystem LOCA concerns. Operating with the suction valves blocked open and the overpressure protection of the LTOP system, the change also helps to ensure the availability of decay heat removal from the RCS during any postulated accident which would involve pressurization of the RCS. Operating with the original auto-closure isolation of the suction valves would automatically cut off decay heat removal via the RHR system in any such postulated event if the RCS reached the auto-closure setpoint and the suction valves closed.

The change eliminates the potential for a power supply or instrument failure isolating and damaging the RHR system while in mode 4. The requested change maintains protection from inadvertently opening the RHR suction valves, thereby exposing the RHR system to high RCS system pressure, by maintaining the requirement for the open interlock in all modes.