CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9810130346 DOC.DATE: 98/10/08 NOTARIZED: YES DOCKET #
FACIL:50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana M 05000315
50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316
AUTH.NAME AUTHOR AFFILIATION
POWERS,R.P. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
RECIP.NAME RECIPIENT AFFILIATION
Records Management Branch (Document Control Desk)

SUBJECT: Application for amends to licenses DPR-58 & DPR-74,revising TS 3.4.1.3, "RCS - Shutdown," & associated bases to provide separate requirements for Modes 4 & 5 with loops filed & Mode 5 with loops not filled.

DISTRIBUTION CODE: A001D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 10+38
TITLE: OR Submittal: General Distribution

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD3-3 LA	1	1	PD3-3 PD	1	1
	STANG,J	1	1			
INTERNAL:	FILE CENTER 01	1	1	NRR/DE/ECGB/A	1	1
	NRR/DE/EMCB	1	1	NRR/DRCH/HICB	1	1
	NRR/DSSA/SPLB	1	1	NRR/DSSA/SRXB	1	1
	NUDOCS-ABSTRACT	1	1	OGC/HDS3	1	0
EXTERNAL:	NOAC	1	1	NRC PDR	1	1

CATEGORY 1 DOCUMENT

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTTR 13 ENCL 12

Indiana Michigan
Power Company
500 Circle Drive
Buchanan, MI 49107 1373

INDIANA MICHIGAN POWER

October 8, 1998

AEP:NRC:1314

Docket Nos.: 50-315
50-316

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
TECHNICAL SPECIFICATIONS CHANGE REQUEST
REACTOR COOLANT LOOP REQUIREMENTS IN MODE 4 AND MODE 5

Indiana Michigan Power Company, the Licensee for Donald C. Cook Nuclear Plant units 1 and 2, proposes to amend Appendix A, technical specifications (T/S), of facility operating licenses DPR-58 and DPR-74 pursuant to 10 CFR 50.90. The Licensee proposes to revise T/S 3.4.1.3, "Reactor Coolant System - Shutdown," and its associated bases to provide separate requirements for mode 4, mode 5 with the loops filled, and mode 5 with the loops not filled. The proposed changes would allow the steam generators to be used to remove heat from the primary coolant in mode 5 with the loops filled. The change is requested to support plant restart activities.

Attachment 1 provides a detailed description and safety analysis of the proposed changes. Attachments 2A and 2B provide marked up T/S pages for unit 1 and unit 2, respectively. Attachments 3A and 3B provide the proposed T/S pages with the changes incorporated for unit 1 and unit 2, respectively. Attachment 4 describes the evaluation performed in accordance with 10 CFR 50.92(c), which confirms that no significant hazards consideration is involved. Attachment 5 provides the environmental assessment.

The proposed changes have been reviewed by the plant nuclear safety review committee and by the nuclear safety and design review committee.

A001

Copies of this letter and its attachments are transmitted to the Michigan Public Service Commission and Michigan Department of Public Health, in accordance with the requirements of 10 CFR 50.91.

Sincerely,

R. P. Powers
Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 8th DAY OF October 1998

Notary Public

VALERIE L. BURNELL
Notary Public, Berrien County, MI
My Commission Expires Sept. 5, 2002

My Commission Expires

/jmc

Attachments

c: J. A. Abramson
J. L. Caldwell, w/attachments
MDEQ - DW & RPD
NRC Resident Inspector, w/attachments
J. R. Sampson, w/attachments
Michigan Public Service Commission, w/attachments
Michigan Department of Public Health, w/attachments

bc: T. P. Beilman, w/attachments
E. R. Eckstein/D. R. Hafer/K. R. Baker
J. J. Euto
B. J. Hickle
G. Honma
FOLIO, w/attachments
J. B. Kingseed/G. P. Arent/M. J. Gumns
J. F. Stang, Jr., - NRC Washington, DC, w/attachments

ATTACHMENT 1 TO AEP:NRC:1314

DESCRIPTION AND SAFETY ANALYSIS FOR PROPOSED CHANGES

Description And Safety Analysis For Proposed Changes

A. Summary of Proposed Changes

The Licensee proposes to revise technical specification (T/S) T/S 3.4.1.3, "Reactor Coolant System - Shutdown" for Donald C. Cook Nuclear Plant (CNP) units 1 and 2 to provide separate coolant loop requirements for mode 4, mode 5 with loops filled, and mode 5 with loops not filled. Currently T/S 3.4.1.3 has the same requirements for mode 4 and mode 5; however, the action statements for mode 5 are more restrictive than those in the standard technical specifications. The change is required to support plant restart activities. A detailed description and schedule of the planned activities is provided in section G of this attachment.

The proposed changes are described in detail in section E of this attachment. T/S pages that are marked to show the proposed changes are provided in attachments 2A and 2B for unit 1 and unit 2, respectively. The proposed T/S pages with the changes incorporated are provided in attachments 3A and 3B for unit 1 and unit 2, respectively.

B. Description of the Current Requirements

T/S 3.4.1.3 requires at least two coolant loops to be operable and at least one loop to be in operation in modes 4 and 5. If the reactor trip system breakers are in the closed position and the control rod drive system is capable of rod withdrawal, then at least three reactor coolant loops are required to be operable and in operation.

C. Bases for the Current Requirements

In modes 4 and 5, a single reactor coolant loop or residual heat removal (RHR) system loop provides sufficient heat removal capability for removing decay heat. Single failure considerations require that at least two loops be operable. If the reactor coolant loops are not operable, then two RHR loops are required.

The operation of one reactor coolant pump or one RHR pump provides adequate flow to ensure mixing, prevent stratification, and produce gradual reactivity changes during boron concentration reductions in the reactor coolant system (RCS).

D. Need for Revision of the Requirement

The Licensee is submitting this amendment request to provide operational flexibility in mode 5. CNP's T/S have identical requirements for coolant loops in mode 4 and mode 5. T/S 3.4.1.3, action C, requires, in part, an immediate action to initiate corrective action to return the required coolant loop to service. In mode 5, the operable loops are the two RHR

loops. If one RHR loop becomes inoperable, then the action statement dictates that a reactor coolant loop be operable. That is, the reactor coolant pump must be capable of being started on demand when required, for example, as a result of a single failure of the running RHR pump. However, starting a reactor coolant pump adds heat to the RCS, increasing the coolant temperature. When the coolant temperature exceeds 200°F, entry into mode 4 occurs. Analyses have shown that, conservatively, this could occur in less than four hours. Entry into mode 4 requires other equipment to be operable. For example, containment integrity must be established; the containment spray system must be operable, and the ice condenser must be operable. If the mode change is made unintentionally, it is likely that all of the mode 4 requirements would not be met. Revising the requirements would ensure that all applicable T/S are satisfied and avoid conflicts that could lead to entry into 10 CFR 50.54(x). It is undesirable to start a reactor coolant pump and cause an unnecessary transient and challenge to safety systems while in mode 5. Remaining in mode 5 is conservative with regard to decay heat removal.

Administrative requirements limit all work that would place the plant in a condition with less than two operable RHR loops to avoid an unintentional mode change. This restriction has a direct impact on the ability to implement the proposed restart schedule and could cause an unnecessary transient and challenge to safety systems. Standard Technical Specifications (NUREG-0452 and NUREG-1431) have separate requirements for mode 4, mode 5 with the loops filled, and mode 5 with the loops not filled. These requirements provide operational flexibility in mode 5 while ensuring adequate cooling is available. Having requirements for CNP that are consistent with the Standard Technical Specifications would allow work to be completed as planned while maintaining a high level of safety. They would also allow flexibility for future maintenance while maintaining a high level of safety.

In the past, maintenance was performed on RHR trains when the fuel was offloaded. Under this condition, it is not necessary to have two trains operable. Normally, a reactor coolant pump is not started in mode 5 except in preparation to enter mode 4 during the planned startup. Currently, both units at CNP are in mode 5. It is not desirable to offload the core solely to prepare for maintenance on an RHR train because it would increase overall risk unnecessarily. However, the current requirements do not permit removing a train of RHR from service in mode 5.

E. Description of the Proposed Changes

The Licensee proposes to revise T/S 3.4.1.3 so that it applies in mode 4 only. Information that is applicable in mode 5 only has been deleted. New requirements, T/S 3.4.1.4 and associated surveillances, are added to address requirements in mode 5 with the loops filled. These requirements are based on the standard technical specifications requirements for mode 5 with the loops filled. Notes from T/S 3.4.1.3 that apply under these conditions were transferred to the new T/S. Similarly, new requirements are

added as T/S 3.4.1.5 to address mode 5 with the loops not filled that are consistent with the NUREG-1431 requirements for mode 5 with the loops not filled. The result of these proposed changes is separate requirements for mode 4, mode 5 with the loops filled, and mode 5 with the loops not filled.

Specifically, for mode 5 with the loops filled, at least one RHR loop shall be operable and in operation with either one additional RHR loop operable or steam generator secondary side water level greater than or equal to 76% of wide range instrument span. With one of the RHR loops inoperable and with less than the required steam generator water level, the action required is to immediately initiate corrective action to return the RHR loop to operable status or restore the steam generator water level as soon as possible. With no RHR loops in operation, the required actions are to suspend all operations involving a reduction in boron concentration in the RCS and immediately initiate corrective action to return the required loop to operation. Surveillance requirements are added to verify that the steam generator water level is within the limits and that the required RHR loop is in operation. The requirements are modified by several notes that are consistent with the notes in current T/S 3.4.1.3. In addition, a note allows one RHR to be inoperable for up to two hours for surveillance testing provided the other RHR loop is operable and in operation.

For mode 5 with the loops not filled, at least two RHR loops shall be operable and at least one shall be in operation. With less than two RHR loops operable, the required action is to immediately initiate corrective action to return the required loops to operable status as soon as possible. With no RHR loops in operation, the required action is to suspend all operations involving a reduction in boron concentration in the RCS and immediately initiate corrective action to return the required loop to operation. Surveillance requirements are added to verify that the required RHR loop is in operation. The requirements are modified by several notes that are consistent with the notes in current T/S 3.4.1.3. In addition, a note allows one RHR loop to be inoperable for up to two hours for surveillance testing provided the other RHR loop is operable and in operation.

The bases are also revised to provide separate discussions for mode 4 and mode 5 with reactor coolant loops filled and for mode 5 with reactor coolant loops not filled. An editorial change is proposed for the first discussion. The sentence clarifying when two RHR loops are required to be operable is deleted, and the previous sentence is modified to state the two loops may be either RHR or RCS loops. A statement is added to address operability requirements for support systems.

Surveillance requirement 4.4.1.3.3 is revised to require a water level of greater than or equal to 76% of wide range instrument span rather than 25% of wide range instrument span.

F. Bases of the Proposed Changes

The bases for the mode 4 reactor coolant loop requirements are not changed. The proposed steam generator level requirements provide assurance that heat transfer can occur in the steam generators. The editorial change proposed to this paragraph of the bases is not intended to affect the meaning. The two operable loops may be either RHR or RCS loops; either system provides adequate cooling. This change is consistent with NUREG-1431. A statement is added to the bases to clarify that, for mode 4, in order for an RHR loop to be operable, the essential service water and component cooling water systems that support it shall be operable. That is, the support systems must meet the applicable T/S requirements in mode 4 to support RHR loop operability. This is consistent with the requirements in NUREG-1431 for the essential service water and component cooling water system technical specifications. The change provides reasonable assurance that heat can be removed from the system.

The wide range steam generator level indication was chosen for use in this application since it provides indication at the top of the tubes (the narrow range level instrumentation lower taps are located above the top of the tubes) and the wide range level instrumentation is scaled to indicate more accurately than narrow range level at lower temperatures and pressures.

A wide range level indication of 76% will provide assurance that the steam generator tubes are covered in mode 4 and mode 5 (loops filled) for CNP. This value bounds use of either indicators or recorders and was developed by adding the bounding normal environment indicator/recorder channel uncertainty of ± 3.1% span to the level corresponding to the top of the tubes, and providing additional margin to account for process errors and roundup.

The generic Westinghouse Owners Group (WOG) Emergency Response Guidelines, as well as NUREG-1431, define steam generator level above the top of the U-tubes in at least one steam generator as an adequate secondary side heat sink. For alternate decay heat removal, capability exists for single phase natural circulation cooling in modes 4 and 5 if RHR cooling is lost for a prolonged period of time and secondary side inventory can be maintained as a heat sink. Natural circulation also requires that the reactor coolant loops be filled. Changing the T/Ss to require secondary side wide range level indication to be above the top of the U-tubes in two steam generators allows for redundancy (there is a single wide range indication for each steam generator). Use of two steam generators also helps reduce the temperature difference between the hot legs and cold legs of the "active" loops, i.e., those having steam generators capable of removing the residual heat.

During natural circulation cooling with decay heat - 1% or less (as anticipated in modes 4 and 5), most of the energy removal in the "active" steam generators occurs near the tube sheet. Thus, the minimum steam generator wide range level requirement could be defined to be a lower value and still allow adequate decay heat

removal. Specification of a level above the top of the tubes is, therefore, considered a conservative requirement for this T/S.

In mode 5 with reactor coolant loops filled, a single coolant loop provides sufficient heat removal capability for removing decay heat. However, single failure considerations require that at least two loops be operable. Compared to the current requirements, the proposed change would allow the steam generators to be used as an alternate method for decay heat removal via natural circulation instead of the other RHR train. The steam generators are capable of being used as a heat sink due to their large volume of secondary water. As long as the steam generator secondary side water is at a lower temperature than the reactor coolant, then heat transfer will occur. The proposed requirement for secondary side water level in two steam generators provides reasonable assurance that the steam generator tubes remain covered and capable of transferring heat. Further, the steam generator water level requirement is intended to ensure that the tubes are covered and the steam generators can be used as a heat sink. The frequency for verifying steam generator level is appropriate because there are other indications available in the control room to alert the operator to the loss of steam generator level.

In mode 5 with the reactor coolant loops not filled, the steam generators are not available as a heat-removing component. Although a single RHR loop provides sufficient heat removal capability for removing decay heat, single failure considerations require both RHR loops to be operable. The RHR loops have been identified as important contributors to risk reduction. Maintaining two operable RHR loops ensures that an accidental boron dilution event can be mitigated. Compared to the current requirement, the limiting condition for operation is unchanged because the RHR loops would be used as the two operable loops, rather than a combination of RCS and/or RHR loops. The action statements are essentially the same after the mode 4 requirements are separated. The proposed T/S provides clarity because it applies only in mode 5 with the reactor coolant loops not filled. It was determined that the proposed changes do not impact CNP's response to NRC Generic Letter 88-17, "Loss of Decay Heat Removal," or Generic Letter 87-12, "Loss of RHR While RCS Partially Filled." These generic letters are related to the proposed requirements for mode 5 with the loops not filled. The proposed requirements, along with the commitments from the generic letters, are intended to ensure that the risk associated with reduced RHR inventory is minimized.

The proposed changes do not impact the ability of the low temperature overpressure protection (LTOP) system to protect the RCS from overpressure transients. A review determined that the proposed changes do not impact the Licensee's previous commitments regarding LTOP. The proposed changes for mode 5 do not affect the ability of the LTOP devices to limit pressure in the RCS. Two events that would cause a transient are startup of an idle reactor coolant pump with secondary water temperature of the steam generator greater than or equal to 50° F above the RCS cold leg temperature, or the start of a charging pump and its injection into a water solid RCS. The first event is addressed

by limitations in notes to the proposed mode 5 T/S. The second event is precluded by T/S 3.1.2.3. The proposed changes do not introduce any new events that could cause a pressure transient. Therefore, the LTOP system continues to serve its function.

The proposed changes are adequate to mitigate the postulated accidents, which include a dilution accident. There are no changes to accident initiators or precursors, or to the accident analyses. The proposed changes provide reasonable assurance that decay heat is removed as designed and that redundancy is maintained. Therefore, it is concluded that there is no effect on the types or increase in the amounts of any effluent that may be released offsite. Further, it was concluded that the changes have no impact on individual or cumulative occupational radiation exposure.

G. Impact of the Proposed Changes

The restart schedule for CNP unit 1 includes work that will render one of the trains of RHR inoperable. Many surveillances cannot be performed while meeting the requirements T/S 3.4.1.3 because the one-hour allowed outage time is inadequate. Further, this change would avoid an unnecessary transient and challenge to safety systems. Therefore, the amendment is required to complete work as planned.

H. Schedule Requirements

Approval of the proposed changes is requested by November 30, 1998 to support the proposed restart activities described above.