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C1000-20
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Docket Nos.: 50-315
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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Units 1 and 2
ADDITIONAL INFORMATION SUPPORTING IMPLEMENTATION OF
LEAK BEFORE BREAK METHODOLOGY FOR THE
PRESSURIZER SURGE LINE

- Reference:
1. Letter from M. W. Rencheck (I&M) to U. S. Nuclear Regulatory Commission (NRC) Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, Request to Apply Leak Before Break (LBB) Methodology to the Pressurizer Surge Line," C0800-04, dated August 22, 2000.
 2. Letter from M. W. Rencheck (I&M) to U. S. NRC Document Control Desk, "Request To Apply Leak Before Break (LBB) Methodology To The Pressurizer Surge Line, Request For Additional Information," C1000-08, dated October 7, 2000.
 3. Letter from G. S. Vissing, U. S. NRC, to Dr. R. C. Mecredy, Rochester Gas and Electric Corporation, "R. E. Ginna Nuclear Power Plant – Issuance of Amendment Re: Reactor Coolant System Leakage Detection Instrumentation," dated January 19, 2000.

In Reference 1, Indiana Michigan Power Company (I&M), the Licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, requested approval to apply Leak Before Break (LBB) methodology to the pressurizer surge line, thereby eliminating the need to consider the dynamic effects of a postulated, non-mechanistic rupture of that piping. In Reference 2, I&M provided additional information regarding the containment atmosphere particulate radioactivity monitors that provide part of the CNP reactor coolant system leak detection capability.

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The Nuclear Regulatory Commission (NRC) staff and I&M personnel have held additional discussions regarding the leakage sensitivity evaluation described in Reference 2 and the compensatory actions that would be taken for certain conditions if the LBB methodology is approved and implemented at CNP. Three items have been identified as requiring additional information. These items are summarized below followed by I&M's resolution.

Item 1

Assurance is needed that the leakage sensitivity evaluation described in Reference 2 remains conservative for the full operating cycle. Certain inputs in the leakage sensitivity evaluation, such as reactor coolant radioactivity, location of the leak detection sensor, and effect of surge line insulation, should be addressed.

Resolution

I&M has prepared a new calculation to quantify leakage detection sensitivity of the containment particulate monitors. This calculation uses additional data in support of the reactor coolant radioactivity input, addresses the effect of the sensor location, and includes an adjustment for piping insulation. The calculation demonstrates that the monitors are capable of detecting a 0.8 gpm leak within 1 hour throughout the operating cycle. This calculation is available for review by the NRC staff.

Item 2

I&M should implement compensatory actions for inoperable containment atmosphere particulate radioactivity monitors similar to the actions required at the R. E. Ginna Nuclear Power Plant as part of implementation of the LBB at that facility.

Resolution

As documented in Reference 3, the R. E. Ginna Nuclear Power Plant implemented a requirement to take a containment atmosphere grab sample or to perform a reactor coolant system (RCS) water inventory balance every 12 hours if the containment particulate monitor is inoperable. Currently, the CNP Unit 1 and 2 Technical Specifications (T/Ss) only require a grab sample every 24 hours if both containment particulate monitors are inoperable.

In accordance with the provisions of NRC Administrative Letter (AL) 98-10, I&M will implement administrative controls requiring a containment atmosphere grab sample or an RCS water inventory balance every 12 hours if both

containment particulate monitors are inoperable. For Unit 1, the administrative controls will be implemented prior to the unit entering Mode 4. For Unit 2, the administrative controls will be implemented if the LBB methodology is to be credited as a basis for reducing any requirements on the installed surge line pipe whip restraints, such as those pertaining to Inservice Inspection activities. As required by AL 98-10, I&M will submit a license amendment request to replace the administrative controls in a timely manner.

Item 3

I&M should implement appropriate compensatory actions if RCS leakage reaches a value of 0.8 gpm, which has been determined by the NRC staff's independent analysis to provide sufficient margin to meet NUREG 1061 requirements for detecting leakage from the leakage flaw, and if the surge line cannot be eliminated as the source of the leakage.

Resolution

In accordance with the provisions of NRC AL 98-10, I&M will implement administrative controls requiring that, if the unidentified RCS leakage is determined to be greater than or equal to 0.8 gpm and if it cannot be demonstrated that the pressurizer surge line is not the source of the leakage, the Action specified in T/S 3.4.6.2.a for unidentified RCS leakage above the 1 gpm limit will be followed. This Action requires that unidentified leakage be reduced to within the stated limits within 4 hours, or the unit be placed in hot standby within the next 6 hours and cold shutdown within the following 30 hours.

For Unit 1, the administrative controls will be implemented prior to the unit entering Mode 4. For Unit 2, the administrative controls will be implemented if the LBB methodology is to be credited as a basis for reducing any requirements on the installed surge line pipe whip restraints, such as those pertaining to Inservice Inspection activities. As required by AL 98-10, I&M will submit a license amendment request to replace the administrative controls in a timely manner.

The NRC also requested that I&M describe actions that would be taken if RCS unidentified leakage is below the 0.8 value but increasing. CNP T/S 4.4.6.2.1.d requires that an RCS inventory balance be conducted every 72 hours. The procedure for conducting an RCS inventory balance refers operators to the abnormal operating procedure (AOP) for excessive RCS leakage if the inventory balance identifies an increase in the gross RCS leak rate of 0.2 gpm above the 3 to 5 day average. The annunciator response procedure for high particulate or noble gas radiation in containment also refers operators to the AOP for excessive

RCS leakage. This AOP also identifies increasing containment radiation levels as an indicator of excessive reactor coolant leakage.

The AOP for excessive RCS leakage directs actions to be taken to identify the source of the leakage by checking specific leakage paths such as the pressurizer power operated relief valves and safety valves, component cooling water system heat exchangers, steam generator tubes, Emergency Core Cooling System accumulators, and in-core detector thimble tubes. The AOP also directs actions to determine if the leakage is inside containment by checking containment radiation, sump level, humidity, pressure, and sump pump monitors. If the leakage source is determined to be inside containment, the AOP directs that accessible areas of containment be inspected.

The lower containment area, in which the surge line is located, would not be accessible unless power level was reduced, and radiation levels would still be significant. Surveys performed in the lower containment area with the reactor at power levels of 8% and 10% indicate that the gamma dose rates would be approximately 350 to 500 mrem/hr at the pressurizer relief tank deck location where portions of the surge line are visible, and approximately 1 to 3 rem/hr where other portions of the surge line are visible. Neutron dose rates would range from approximately 5 to 40 mrem/hr over the entire area. In a given leakage scenario, Operations personnel would conservatively evaluate the personnel hazards, available indications, and the specific leakage values and trends, and determine whether to shut down the reactor or continue attempts to locate the source of the leakage while the unit was operating.

Attachment 1 contains a list of additional commitments contained in this letter.

Should you have any questions, please contact Mr. Wayne J. Kropp, Director of Regulatory Affairs, at (616) 697-5056.

Sincerely,



M. W. Rencheck
Vice President Nuclear Engineering

/jen

attachment

c: J. E. Dyer
MDEQ – DW & RPD
NRC Resident Inspector
R. Whale

ATTACHMENT 1 TO C1000-20

COMMITMENTS

The following identifies those actions committed to by Indiana Michigan Power Company (I&M) in this submittal. Other actions discussed in this submittal represent intended or planned actions by I&M. They are described to the Nuclear Regulatory Commission (NRC) for the NRC's information and are not regulatory commitments.

Commitment	Due Date
I&M will implement administrative controls requiring a containment atmosphere grab sample or an RCS water inventory balance every 12 hours if both containment particulate monitors are inoperable.	For Unit 1, the administrative controls will be implemented prior to the unit entering Mode 4.
I&M will implement administrative controls requiring a containment atmosphere grab sample or an RCS water inventory balance every 12 hours if both containment particulate monitors are inoperable.	For Unit 2, the administrative controls will be implemented if the LBB methodology is to be credited as a basis for reducing any requirements on the installed surge line pipe whip restraints, such as those pertaining to Inservice Inspection activities.
I&M will implement administrative controls requiring that, if the unidentified RCS leakage is determined to be greater than or equal to 0.8 gpm and if it cannot be demonstrated that the pressurizer surge line is not the source of the leakage, the Actions specified in Technical Specification (T/S) 3.4.6.2.a for unidentified RCS leakage above the 1 gpm limit will be followed.	For Unit 1, the administrative controls will be implemented prior to the unit entering Mode 4.
I&M will implement administrative controls requiring that, if the unidentified RCS leakage is determined to be greater than or equal to 0.8 gpm and if it cannot be demonstrated that the pressurizer surge line is not the source of the leakage, the Actions specified in T/S 3.4.6.2.a for unidentified RCS leakage above the 1 gpm limit will be followed.	For Unit 2, the administrative controls will be implemented if the LBB methodology is to be credited as a basis for reducing any requirements on the installed surge line pipe whip restraints, such as those pertaining to Inservice Inspection activities.
As required by Administrative Letter 98-10, I&M will submit a license amendment request to replace the administrative controls.	No later than the next refueling outage for the respective units.