ATTACHMENT 2A TO C0999-11

TECHNICAL SPECIFICATIONS BASES PAGES
MARKED TO SHOW PROPOSED CHANGES

REVISED PAGE
UNIT 1

B 3/4 5-3

3/4.5.5 REFUELING WATER STORAGE TANK

The OPERABILITY of the RWST as part of the ECCS ensures that sufficient negative reactivity is injected into the core to counteract any positive increase in reactivity caused by RCS system cooldown, and ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. Reactor coolant system cooldown can be caused by inadvertent depressurization, a loss of coolant accident or a steam line rupture. Consistent with the applicable LOCA analyses, the limits on RWST minimum volume and boron concentration ensure that 1) when combined with water from melted ice, the RCS, and the accumulators, sufficient water is available within containment to permit recirculation cooling flow to the core, and 2) with the exception for the hot leg switchover subcriticality analysis following a cold leg break that incorporates control rod insertion, the reactor will remain subcritical in the cold condition following a LOCA assuming mixing of the RWST, RCS, ECCS water, and other sources of water that may eventually reside in the sump, with all control rods assumed to be out.

At the time hot leg switchover is performed, there is the potential following a cold leg LOCA that boron-diluted liquid from the containment sump will displace the boron-concentrated liquid in the core. To compensate for this momentary reduction of boron in the core, control rod insertion has been credited after a cold leg LOCA to provide negative reactivity necessary to assure core subcriticality.

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.6 and 9.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The ECCS analyses to determine F_Q limits in Specifications 3.2.2 and 3.2.6 assumed a RWST water temperature of 70°F. This temperature value of the RWST water determines that of the spray water initially delivered to the containment following LOCA. It is one of the factors which determines the containment back-pressure in the ECCS analyses, performed in accordance with the provisions of 10 CFR 50.46 and Appendix K to 10 CFR 50.

ATTACHMENT 2B TO C0999-11

TECHNICAL SPECIFICATIONS BASES PAGES
MARKED TO SHOW PROPOSED CHANGES

REVISED PAGE
UNIT 2

B 3/4 5-3

3/4.5.5 REFUELING WATER STORAGE TANK

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ATTACHMENT 3A TO C0999-11

PROPOSED TECHNICAL SPECIFICATIONS BASES PAGES

REVISED PAGE
UNIT 1

B 3/4 5-3

3/4.5.5 REFUELING WATER STORAGE TANK

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ATTACHMENT 3B TO C0999-11

PROPOSED TECHNICAL SPECIFICATIONS BASES PAGES

REVISED PAGE
UNIT 2

B 3/4 5-3

3/4.5.5 REFUELING WATER STORAGE TANK

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ATTACHMENT 4 TO C0999-11

NO SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

Indiana Michigan Power Company (I&M), licensee for the Donald C. Cook Nuclear Plant (CNP), has evaluated this proposed amendment and determined that it involves no significant hazards consideration. According to 10 CFR 50.92(c), a proposed amendment to an operating license does not involve a significant hazard if operation of the facility in accordance with the proposed amendment would not:

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

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

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

The proposed change would credit the rod cluster control assemblies (RCCAs) for criticality control during the realignment from cold leg recirculation to a hot leg recirculation configuration following a cold leg large break loss-of-coolant accident (LBLOCA). The negative reactivity to be credited from the RCCAs will be calculated to include the analysis assumption that the most reactive rod is stuck fully out of the core. The change affects the Bases for Technical Specification (T/S) 3/4.5.5, "Refueling Water Storage Tank," and several sections of the Updated Final Safety Analysis Report (UFSAR).

The determination that the criteria set forth in 10 CFR 50.92 are met for this amendment request is indicated below.

1. Does the change involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated?

No. I&M proposes to credit RCCA insertion of negative reactivity for criticality control during the core cooling flow path realignment from cold leg recirculation to hot leg recirculation following the postulated cold leg LBLOCA. No physical modifications will be made to plant systems, structures, or components.

Credit for RCCAs is only being applied to demonstrate core subcriticality upon hot leg switchover (HLSO) following a cold leg LBLOCA. The performance criteria codified in 10 CFR 50.46 continue to be met. The ability of the RCCAs to insert under LOCA and seismic conditions was a function important to safety as part of the original CNP design basis. This is supported by the conclusion presented in NRC (at the time, the Atomic Energy Commission) Safety Evaluation Report (SER), Section 3.3, "Mechanical Design of Reactor Internals," dated

January 14, 1969. The SER includes the statements that, "[t]he control rod guide tubes are designed so that each finger of each control rod assembly is always partially inserted in the guide tube. Deflection limits on the guide tubes have been chosen so that deflections caused by blow-down forces during a loss-of-coolant accident will not prevent control rod insertion," and that the "... mechanical design of internals, fuel assemblies, and control elements is acceptable." However, the licensing basis safety analyses for the LBLOCA scenario have conservatively not taken credit for insertion of the RCCAs.

No physical modifications will be made to plant systems, structures, or components in order to implement the proposed methodology change. The safety functions of the safety related systems and components, which are related to accident mitigation, have not been altered. Therefore, the reliability of RCCA insertion is not affected. As such, taking credit for RCCA insertion does not alter the probability of an LBLOCA (the design basis accident at issue). The Westinghouse analyses provided as Attachments 6 and 7 demonstrate that RCCA insertion will occur, with substantial margin, following a design basis cold leg LBLOCA combined with a seismic event. Crediting RCCA insertion does not affect mechanisms for a malfunction that could impact the HLSO subcriticality analysis, or mechanisms that could initiate a LOCA. Taking credit for the negative reactivity available from insertion of the RCCAs, which is currently assumed for various accident analyses within the CNP licensing basis (e.g., small break LOCA, main steamline break, feedline break, steam generator tube rupture), does not affect equipment malfunction probability directly or indirectly. Therefore, crediting the RCCAs as a source of negative reactivity for post-LOCA criticality control at the time of HLSO does not significantly increase the probability of an accident previously evaluated.

Furthermore, the traditional conservative assumption that the most reactive RCCA is stuck fully out of the core is being maintained. A malfunction that results in one RCCA to fail to insert is a credible scenario, and is being considered for the post-LOCA subcriticality analysis following a cold leg LBLOCA. There will be sufficient negative reactivity, even with the most reactive RCCA stuck fully out of the core, to assure core subcriticality post-LOCA, as supported by the subcriticality analysis that is confirmed each and every fuel cycle as part of the reload documentation (i.e., the Reload Safety Evaluations). The core is shown to remain subcritical during the post-LOCA long-term cooling period, specifically while HLSO is performed. Thus, no additional radiological source terms are generated, and the consequences of an accident previously evaluated in the UFSAR will not be significantly increased.

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

No. The proposed change involves crediting the negative reactivity that is available from the RCCAs for an analysis applicable several hours after the initiation of a cold leg LBLOCA. As such, this change involves post-LOCA recovery actions several hours after the break has occurred

and does not involve accident initiation. As discussed above, the original design requirements for the CNP reactor internals, core fuel assemblies, and RCCAs were based upon assuring the ability of the RCCAs to insert following a double-ended rupture LOCA with seismic loadings. Thus, the safety functions of safety related systems and components have not been altered by this change. Crediting the negative reactivity that is available from the RCCAs for the post-LOCA subcriticality analysis upon HLSO does not cause the initiation of any accident, nor does the proposed activity create any new credible limiting single failure. Crediting the insertion of RCCAs does not result in any event previously deemed incredible being made credible nor is there any introduction of any new failure mechanisms that are not currently considered in the design basis LOCA. There are no changes introduced by this amendment concerning how safety related equipment is designed to operate under normal or design basis accident conditions since the calculations supporting RCCA insertion following a cold leg LBLOCA have assumed design basis break sizes in conjunction with seismic loadings. Therefore, the possibility of an accident of a different type than already evaluated in the UFSAR is not created.

3. Does the change involve a significant reduction in a margin of safety?

No. Presently, no credit is taken for RCCA insertion in the analysis to demonstrate post-cold leg LOCA subcriticality at the time of HLSO. The current subcriticality analysis for this scenario relies only on the boron provided by the RWST and the accumulators. Thus, RCCA insertion provides another source of negative reactivity (margin of safety). Revising the post-cold leg LBLOCA HLSO subcriticality analysis to credit the negative reactivity associated with the RCCAs is a means to offset the sump dilution associated with the effects of the inactive regions of the CNP containment sump. The incorporation of this "defense-in-depth" source of negative reactivity in the HLSO subcriticality analysis has been conservatively determined to cause a reduction in the margin of safety. 10 CFR 50, Appendix K, I.A.2., states, in part, that "[r]od trip and insertion may be assumed if they are calculated to occur," and provides for crediting RCCA insertion as an acceptable feature of emergency core cooling system (ECCS) evaluation models. The proposed change is based upon an analysis for CNP that demonstrates that the control rods will indeed insert and the resulting negative reactivity can be credited for post-LOCA criticality control.

The proposed change would ensure that post-LOCA subcriticality is maintained during HLSO. Subsequently, there would not be a challenge to long-term core cooling due to a return to a critical condition. This being the case, the requirements of 10 CFR 50.46(b)(5) that, "...the calculated core temperature shall be maintained at an acceptably low value and decay heat shall be removed for the extended period of time..." continues to be satisfied and the margin of safety in the CNP licensing basis is preserved. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

In summary, based upon the above evaluation, I&M has concluded that the proposed amendment does not involve a significant hazard.

ATTACHMENT 5 TO C0999-11

ENVIRONMENTAL ASSESSMENT

Environmental Assessment

Indiana Michigan Power Company (I&M) has evaluated this license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. I&M has determined that this license amendment request meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9). This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or that changes an inspection or a surveillance requirement, and the amendment meets the following specific criteria.

(i) The amendment involves no significant hazards consideration.

As demonstrated in Attachment 4, this proposed amendment does not involve significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

As demonstrated in Attachment 4 there will be no significant change in the types or significant increase in the amounts of any effluents released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed changes will not result in significant changes in the operation or configuration of the facility. There will be no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels within the plant. Therefore, there will be no significant increase in individual or cumulative occupational radiation exposure resulting from this change.

ATTACHMENT 7 TO C0999-11

WCAP-15246
"CONTROL ROD INSERTION FOLLOWING A
COLD LEG LBLOCA, D.C. COOK
UNITS 1 AND 2"

NON-PROPRIETARY VERSION