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10 CFR 50.46

Docket No: 50-316

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

Donald C. Cook Nuclear Plant Unit 2
THIRTY-DAY REPORT OF LOSS-OF-COOLANT
ACCIDENT EVALUATION MODEL CHANGES

Reference: Letter from S. A. Greenlee, Indiana Michigan Power Company, to U. S. Nuclear Regulatory Commission Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, Annual Report of Loss-of-Coolant Accident Evaluation Model Changes," submittal C0801-19, dated August 31, 2001.

Pursuant to 10 CFR 50.46, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP), is submitting a 30-day report of loss-of-coolant accident (LOCA) model changes affecting the peak cladding temperature (PCT) for CNP Unit 2. Attachment 1 to this letter describes the current assessments against the large break LOCA analysis of record. Attachment 2 provides the large break LOCA analysis of record PCT value and error assessments. Attachment 2 demonstrates that the PCT value remains within the 2200 degree Fahrenheit (°F) PCT limit specified in 10 CFR 50.46(b)(1).

The overall change to the Unit 2 limiting large break LOCA (LBLOCA) analysis is classified as significant in accordance with 10 CFR 50.46(a)(3)(i). A significant change is defined as a cumulation of changes such that the sum of the absolute magnitudes of the temperature changes is greater than 50°F. The schedule for the reanalysis of the Unit 2 LBLOCA was previously transmitted in the referenced letter and remains unchanged.

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No new commitments are made in this submittal.

Should you have any questions concerning this subject, please contact Mr. Gordon P. Arent, Manager of Regulatory Affairs, at (616) 697-5553.

Sincerely,

S K Greenlee for

S. A. Greenlee
Director, Nuclear Technical Services

Attachments

/jen

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ATTACHMENT 1 TO AEP:NRC:2046

ASSESSMENT AGAINST THE LOSS-OF-COOLANT ACCIDENT (LOCA)
ANALYSES OF RECORD

Indiana Michigan Power Company (I&M) previously submitted an annual 10 CFR 50.46 report for Donald C. Cook Nuclear Plant (CNP) Unit 2 in a letter from S. A. Greenlee to Nuclear Regulatory Commission Document Control Desk, dated August 31, 2001. The reported analysis of record peak cladding temperature (PCT) values in Attachment 2 to this letter remain the same as stated in the previous submittal as no new LOCA analyses have been performed. New PCT assessments against the CNP Unit 2 large break LOCA (LBLOCA) analysis of record are described below. The new assessment is reflected in the PCT accounting in Attachment 2. There is no new PCT assessment for the CNP Unit 2 small break LOCA analysis.

Assessment Against the LBLOCA Analysis of Record

Cycle 13 ZIRLO™ Fuel Evaluation

Background:

The Unit 2 core will contain ZIRLO™ clad fuel rods beginning in Cycle 13. As a result, a new LBLOCA limiting case evaluation was performed to support this plant change. The LBLOCA evaluation incorporated ZIRLO™ cladding in the rod heat-up portion of the LBLOCA transient.

Estimated Effect:

As indicated in the PCT accounting in Attachment 2, the effect of the change to ZIRLO™ clad fuel is a 50-degree Fahrenheit (°F) benefit. As noted in Table 1 of Attachment 2, the LOCBART vapor film flow regime heat transfer error and cladding emissivity error previously reported have now been incorporated into the ZIRLO™ evaluation for which only the LOCBART code was actually re-run.

Containment Spray Temperature Reduction

Background:

A LBLOCA evaluation was performed to support a reduced containment spray temperature of 32°F.

Estimated Effect:

As indicated in the PCT accounting in Attachment 2, the effect of the reduced spray temperature is a 47°F penalty.

Conclusion

These changes are effective at the beginning of Unit 2 Cycle 13. Thus, this submittal satisfies the 30-day reporting requirement of 10 CFR 50.46(a)(3)(ii).

ATTACHMENT 2 TO AEP:NRC:2046

DONALD C. COOK NUCLEAR PLANT (CNP) UNIT 2
LARGE BREAK LOSS-OF-COOLANT ACCIDENT
PEAK CLAD TEMPERATURE (PCT) SUMMARY

TABLE 1

CNP UNIT 2

LARGE BREAK LOCA

Evaluation Model: BASH

$F_Q = 2.335$ $F_{\Delta H} = 1.6444$ SGTP = 15% Break Size: $C_d = 0.6$

Operational Parameters: RHR System Cross-Tie Valves Closed, 3413 MWt Reactor Power[1]

LICENSING BASIS		
	Analysis-of-Record, December 1995[1]	PCT = 2051°F
MARGIN ALLOCATIONS (Δ PCT)		
A.	PREVIOUS 10 CFR 50.46 ASSESSMENTS	
	1. ECCS double disk valve leakage	+8°F
	2. BASH current limiting break size reanalysis to incorporate LOCBART spacer grid single phase heat transfer and LOCBART zirc-water oxidation error.	+58°F
B.	NEW 10 CFR 50.46 ASSESSMENTS	
	1. Cycle 13 ZIRLO™ fuel evaluation[2]	-50°F
	2. Reduced containment spray temperature	+47°F
C.	OTHER	0°F
D.	LICENSING BASIS PCT + MARGIN ALLOCATIONS	PCT = 2114°F

1. The power level used as the basis for PCT acceptance is 3413 MWt due to the reanalysis (see item A.2) to provide an integrated error effect on the limiting case. This reanalysis (Item A.2.) is not considered the analysis-of-record due to the spectrum of break sizes not being reanalyzed to ensure that the limiting break size at 3413 MWt with the errors incorporated would not change. Thus, the analysis-of-record remains as the 1995 analysis performed at a power level of 3588 MWt. The difference between the limiting case PCT (2051°F) and the PCT from the power level used in the reanalysis is acceptable because it bounds the Unit 2 3411 MWt steady-state power limit in the operating license.

2. The LOCBART vapor film flow regime heat transfer error and cladding emissivity error previously reported have now been incorporated into the ZIRLO™ evaluation in which only the LOCBART code was actually re-run.