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

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

Reference: 1. Letter from John A. Zwolinski, 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," AEP:NRC:3046, dated August 27, 2003

Pursuant to 10 CFR 50.46(a)(3)(ii), Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP), is submitting this report of loss-of-coolant accident (LOCA) model changes resulting in a significant change in calculated peak fuel cladding temperature (PCT). A significant change is defined as a change or error identified in the model which results in a calculated PCT greater than 50 degrees Fahrenheit (°F).

The latest Westinghouse Electric Company (Westinghouse) evaluation, utilizing the NOTRUMP model, demonstrated a PCT increase of +35°F for the burst and blockage/time in life and an additional PCT increase of +35°F in the NOTRUMP bubble rise/drift flux model resulting in a total PCT increase of 70°F as documented in Attachment 1. Attachments 1 and 2 demonstrate that all PCT values remain well within the 2200°F PCT limit as required in 10 CFR 50.46(b)(1).

Attachment 1 of this letter describes the current assessments against the Unit 2 small break (SB) LOCA with the safety injection cross-tie valve closed. The only case affected is the analysis of record with the safety injection cross-tie valves closed. Attachment 2 provides the SBLOCA analysis of record PCT value and error assessments. Attachment 2 also demonstrates that the PCT value remains within the 2200°F PCT limit as required in 10 CFR 50.46(b)(1).

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The overall change to the PCT of the Unit 2 limiting SBLOCA analysis is classified as significant in accordance with 10 CFR 50.46(a)(3)(ii). The schedule for the reanalysis of the Unit 2 SBLOCA was previously transmitted in Reference 1 and remains unchanged.

There are no new commitments in this submittal. Should you have any questions, please contact Mr. Brian Mann, Acting Manager of Regulatory Affairs, at (269) 697-5806.

Sincerely,

John A. Zwolinski
Director of Design Engineering and Regulatory Affairs

DB/rdw

Attachments

c: J. L. Caldwell, NRC Region III
K. D. Curry, Ft. Wayne AEP, w/o attachments
J. T. King, MPSC, w/o attachments
MDEQ – WHMD/HWRPS, w/o attachments
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bc: T. E. Anderson
M. J. Finissi
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R. J. Kohrt
B. D. Mann, w/o attachments
M. K. Nazar
J. E. Newmiller
D. J. Poupard
M. K. Scarpello, w/o attachments
T. K. Woods, w/o attachments
J. A. Zwolinski, w/o attachments

ATTACHMENT 1 TO AEP:NRC:3046-02

ASSESSMENT AGAINST THE LOSS-OF-COOLANT ACCIDENT ANALYSES OF RECORD

Assessment Against the Small Break Loss-of-Coolant Accident (LOCA) Analysis of Record:

NOTRUMP Bubble Rise / Drift Flux Model Inconsistency Corrections

Background:

NOTRUMP was updated to resolve some inconsistencies in several drift flux models as well as the nodal bubble rise / droplet fall models.

Estimated Effect:

As indicated in the peak fuel cladding temperature (PCT) accounting in Attachment 2, implementation of the NOTRUMP Bubble Rise/Drift Flux Model Inconsistency corrections leads to a bounding 35 degree Fahrenheit (°F) increase of the calculated PCT for 10 CFR 50.46 purposes. This 35°F PCT penalty is listed under Category B, Item 1, NOTRUMP bubble rise/drift flux model inconsistency corrections. The 35°F PCT increase from the corrections in NOTRUMP resulted in a further 35°F PCT increase due to SPIKE Correlation Revision penalty. The SPIKE computer program and associated methodology computes PCT increases that would result from fuel rod burst PCT penalties for small break LOCA analyses. The 35°F PCT penalty associated with the SPIKE Correlation is included in Attachment 2 under Category A, Item 2, Burst and blockage / time in life. The +95°F penalty listed includes a new assessment of +35°F from the SPIKE Correlation.

Conclusion

This transmittal satisfies the 30-day reporting requirement of 10 CFR 50.46(a)(3)(ii). Attachment 2 demonstrates that the PCT value remains within the 2200°F PCT limit specified in 10 CFR 50.46(b)(1).

ATTACHMENT 2 TO AEP:NRC:3046-02

DONALD C. COOK NUCLEAR PLANT UNIT 1
SMALL BREAK LOSS-OF-COOLANT ACCIDENT PEAK CLAD
TEMPERATURE SUMMARY

CNP UNIT 2

SMALL BREAK LOCA

Evaluation Model: NOTRUMP
F_Q=2.45 $F_{\Delta H}$=1.666 SGTP=15% 3″ cold leg break
Operational Parameters: SI System Cross-Tie Valves Closed, 3250 MWt Reactor Power[1]

LICENSING BASIS			
	Analysis-of-Record, March 1992		PCT= 1956°F
MARGIN ALLOCATIONS (Δ PCT)			
A.	PREVIOUS 10 CFR 50.46 ASSESSMENTS[2]		
	1.	Limiting NOTRUMP and SBLOCA analysis[3]	-214°F
	2.	Burst and blockage / time in life	+95°F
	3.	Asymmetric HHSI Delivery	+50°F
	4.	NOTRUMP mixture level tracking/region depletion errors	+13°F
B.	NEW 10 CFR 50.46 ASSESSMENTS		0°F
	1.	NOTRUMP Bubble Rise/Drift Flux Model Inconsistency Corrections	+35°F
C.	OTHER		0°F
D.	LICENSING BASIS PCT+ MARGIN ALLOCATIONS		PCT= 1935°F

[1] Unit 2 is licensed to a 3468 MWt steady-state power level. However, 3304 MWt is assumed for the small break LOCA analysis with the SI system cross-tie valves closed. This is because Unit 2 Technical Specification 3.5.2 limits thermal power to 3304 MWt with a safety injection cross-tie valve closed. The 3250 MWt power level used in the reanalysis is acceptable because it bounds the Unit 2 3304 MWt steady state power limit in the operating license after adjusting for recapture of feedwater flow measurement and power calorimetric uncertainty.

[2] ECCS model assessments are no longer being listed by year of occurrence. Instead the errors are being identified by error type. This is consistent with Westinghouse reporting methods and does not change the overall PCT.

[3] This reanalysis is considered an evaluation because a full spectrum of break sizes was not analyzed. This reanalysis incorporated the errors previously reported (Letter from M. W. Rencheck, Indiana Michigan Power Company to Nuclear Regulatory Commission Document Control Desk, "Donald C. Cook Nuclear Plant Unit 2 Annual Report of Loss-of-Coolant Accident Evaluation Model Changes," submittal C1000-07, dated October 27, 2000) in the individual years in which they occurred. The difference between the analysis-of-record limiting break size PCT and the reanalysis PCT is -214°F. Thus, since this reanalysis incorporates the errors previously reported, the errors are no longer being reported individually. Note that this does not impact the resulting PCT as it remains at 1935°F. It is only an accounting change.