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Indiana Michigan Power
One Cook Place
Bridgman, MI 49106
IndianaMichiganPower.com

August 31, 2012

AEP-NRC-2012-69
10 CFR 50.46

Docket Nos.: 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Units 1 and 2
ANNUAL REPORT OF LOSS-OF-COOLANT ACCIDENT
EVALUATION MODEL CHANGES

Pursuant to 10 CFR 50.46, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP), is transmitting an annual report of loss-of-coolant accident (LOCA) evaluation model changes affecting the peak cladding temperature (PCT) for CNP Unit 1 and Unit 2. CNP is providing, as an enclosure to this letter, the Unit 1 and Unit 2 Large Break and Small Break LOCA Analyses-of-Record PCT values and error assessments for calendar year 2011.

There are no new or revised commitments in this letter. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,

Joel P. Gebbie
Site Vice President

JRW/kmh

Enclosure Donald C. Cook Nuclear Plant Units 1 and 2, Large and Small Break Loss-of-Coolant Accident Peak Clad Temperature Summary

c: C. A. Casto, NRC Region III
J. T. King, MPSC
S. M. Krawec, AEP Ft. Wayne, w/o enclosures
MDEQ – RMD/RPS
NRC Resident Inspector
P. S. Tam, NRC Washington, DC

A002
NRC

ENCLOSURE TO AEP-NRC-2012-69

DONALD C. COOK NUCLEAR PLANT UNITS 1 AND 2

LARGE AND SMALL BREAK LOSS-OF-COOLANT ACCIDENT
PEAK CLAD TEMPERATURE SUMMARY

Abbreviations

CNP	Donald C. Cook Nuclear Plant
°F	degrees Fahrenheit
$F_{\Delta H}$	nuclear enthalpy rise hot channel factor
F_Q	heat flux hot channel factor
HHSI	high head safety injection (Safety Injection System at CNP)
I&M	Indiana Michigan Power Company
LOCA	loss of coolant accident
MWt	megawatts – thermal
NRC	Nuclear Regulatory Commission
PCT	peak cladding temperature
RHR	Residual Heat Removal
SGTP	steam generator tube plugging
SI	Safety Injection

CNP UNIT 1

LARGE BREAK LOCA

Evaluation Model: ASTRUM (2004)	
$F_Q = 2.15$	$F_{\Delta H} = 1.55$ $SGTP^{\circ} = 10\%$ Break Size: Split
Operational Parameters: 3304 MWt (plus 0.34% uncertainty) Reactor Power	

LICENSING BASIS

Analysis-of-Record, November 2007¹

PCT = 2128°F

MARGIN ALLOCATIONS (Delta PCT)

A.	PREVIOUS 10 CFR 50.46 ASSESSMENTS	
1.	None	0°F
B.	PLANNED PLANT MODIFICATION EVALUATIONS	
1.	None	0°F
C.	NEW 10 CFR 50.46 ASSESSMENTS ²	
1.	None	0°F
D.	OTHER	
1.	None	0°F

LICENSING BASIS PCT + MARGIN ALLOCATIONS

PCT = 2128°F

¹ The CNP Unit 1 Large Break LOCA Analysis-of-Record identified in this report is the same as the Analysis-of-Record identified in the annual report submitted in 2011 (ML11252B081). However, the designated analysis date has been changed to reflect the date that the analysis was performed.

² Letter from J. P. Gebbie, I&M, to the NRC Document Control Desk, "Response to Information Request Pursuant to 10 CFR 50.54(f) Related to the Estimated Effect on Peak Cladding Temperature Resulting from Thermal Conductivity Degradation in the Westinghouse-Furnished Realistic Emergency Core Cooling System Evaluation (TAC No. M99899)," AEP-NRC-2012-13, dated March 19, 2012, (ML12088A104) provided the estimated impact on the CNP Unit 1 and Unit 2 Large Break LOCA Evaluation Model from fuel thermal conductivity degradation. This impact will be addressed in the 10 CFR 50.46 annual report submitted for calendar year 2012.

CNP UNIT 1

SMALL BREAK LOCA

Evaluation Model: NOTRUMP			
$F_Q=2.32$	$F_{\Delta H}=1.55$	SGTP=30%	3" cold leg break
Operational Parameters: SI System Cross-Tie Valves Closed, 3250 MWt (plus 2% uncertainty) Reactor Power ¹			

LICENSING BASIS

Analysis-of-Record, June 2000^{2,3}

PCT= 1720°F

MARGIN ALLOCATIONS (Delta PCT)

A.	PREVIOUS 10 CFR 50.46 ASSESSMENTS	
1.	Asymmetric HHSI Delivery	+50°F
2.	Reduction in Turbine Driven Auxiliary Feedwater Flow	+109°F
3.	Burst and Blockage / Time in Life	+111°F
B.	PLANNED PLANT MODIFICATION EVALUATIONS	
1.	None	0°F
C.	NEW 10 CFR 50.46 ASSESSMENTS	
1.	None	0°F
D.	OTHER	
1.	None	0°F
LICENSING BASIS PCT+ MARGIN ALLOCATIONS		PCT= 1990°F

¹ The 3250 MWt power level used in this analysis bounds the Unit 1 3304 MWt steady state power limit in the operating license after adjusting for recapture of feedwater flow measurement and power calorimetric uncertainty.

² The CNP Unit 1 Small Break LOCA Analysis-of-Record identified in this report is the same as the Analysis-of-Record identified in the annual report submitted in 2011 (ML11252B081). However, the designated analysis date has been changed to reflect the date that the analysis was performed.

³ Letter from R. A. Hruby, I&M, to the NRC Document Control Desk, "Donald C. Cook Nuclear Plant Unit 1 and Unit 2, Docket Nos. 50-315 and 50-316, Schedule for Submittal of Revised Unit 1 and Unit 2 Small Break Loss of Coolant Accident Analyses Addressing Residual Heat Removal System Spray Issue," AEP-NRC-2010-30, dated March 29, 2010, (ML100960423) informed the NRC staff that a revised Unit 1 Small Break LOCA analysis would be transmitted no later than August 31, 2012. The revised analysis is being transmitted via separate correspondence, and will be reflected in the 10 CFR 50.46 annual report submitted for calendar year 2012.

CNP UNIT 2
LARGE BREAK LOCA

Evaluation Model: ASTRUM (2004)

$F_Q = 2.335$ $F_{\Delta H} = 1.644$ $SGTP = 10\%$ Break Size: Split

Operational Parameters: 3468 MWt (plus 0.34% uncertainty) Reactor Power

LICENSING BASIS

	Analysis-of-Record, February 2009	PCT = 2107°F
A.	PREVIOUS 10 CFR 50.46 ASSESSMENTS	
1.	None	0°F
B.	PLANNED PLANT MODIFICATION EVALUATIONS	
1.	None	0°F
C.	NEW 10 CFR 50.46 ASSESSMENTS ¹	
1.	None	0°F
D.	OTHER	
1.	None	0°F

LICENSING BASIS PCT + MARGIN ALLOCATIONS

PCT = 2107°F

¹ Letter from J. P. Gebbie, I&M, to the NRC Document Control Desk, "Response to Information Request Pursuant to 10 CFR 50.54(f) Related to the Estimated Effect on Peak Cladding Temperature Resulting from Thermal Conductivity Degradation in the Westinghouse-Furnished Realistic Emergency Core Cooling System Evaluation (TAC No. M99899)," AEP-NRC-2012-13, dated March 19, 2012, (ML12088A104) provided the estimated impact on the CNP Unit 1 and Unit 2 Large Break LOCA Evaluation Model from fuel thermal conductivity degradation. This impact will be addressed in the 10 CFR 50.46 annual report submitted for calendar year 2012.

CNP UNIT 2

SMALL BREAK LOCA

Evaluation Model: NOTRUMP
 $F_Q = 2.32$ $F_{\Delta H} = 1.62$ SGTP = 10% 4 inch cold leg break
 Operational Parameters: RHR injection flow diversion to RHR spray and
 HHSI train cross-tie valves open, 3600 MWt (plus 0.34% uncertainty) Reactor Power¹

LICENSING BASIS

	Analysis-of-Record, April 2011	PCT = 1274°F
A.	PREVIOUS 10 CFR 50.46 ASSESSMENTS	
	1. None	0°F
B.	PLANNED PLANT MODIFICATION EVALUATIONS	
	1. None	0°F
C.	NEW 10 CFR 50.46 ASSESSMENTS	
	1. None	0°F
D.	OTHER	
	1. None	0°F

LICENSING BASIS PCT + MARGIN ALLOCATIONS PCT = 1274°F

¹ The 3600 MWt power level used in this analysis bounds the Unit 1 3468 MWt steady state power limit in the operating license.