UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 4, 1990

Docket Nos. 50-315/316

Mr. Milton Alexich
Indiana Michigan Power Company
c/o American Electric Power
Service Corporation
1 Riverside Plaza
Columbus, Ohio 43216

Dear Mr. Alexich:

SUBJECT: MEETING WITH INDIANA MICHIGAN POWER COMPANY TO DISCUSS CYCLE 8 RELOAD ANALYSIS FOR D. C. COOK UNIT 2.

On April 19, 1990, the staff met with Indiana Michigan Power Company (IMPC) to discuss the proposed Technical Specification (TS) amendments related to the D. C. Cook Unit 2 Cycle 8 reload. A list of attendees is provided as Attachment 1. A copy of the slides (all non-proprietary) is provided as Attachment 2.

IMPC has submitted three technical specification amendment applications to support Cycle 8 for D. C. Cook Unit 2: (1) an amendment that reflects revised accident analyses for Cycle 8, (2) an amendment that would allow receipt of fuel assemblies with higher enrichment into the spent fuel pool and new fuel storage vault, and (3) an amendment that would allow cycle specific parameters to be removed from technical specifications and placed in a Core Operating Limits Report. The staff informed IMPC that safety evaluations for items 2 and 3 were complete and that TS should be issued within the next month.

IMPC currently estimates that Unit 2 will enter a refueling outage toward the beginning of July and commence Cycle 8 at the end of August. The transition core designed for Cycle 8 will include 77 new Westinghouse 17 x 17 Vantage 5 fuel assemblies plus 116 of the previously utilized Advanced Nuclear Fuels 17 x 17 fuel assemblies.

Changes from previous analyses include revised set points or response times for some reactor protection system and engineered safety features actuations, a decrease in shutdown margin (to 1.6%), an increase in minimum boric acid storage tank volume, an increase in allowable rod drop time, and relaxed accumulator volume and pressure limits. The proposed amendment would also modify some current transition mode requirements. For example, shutdown margin requirements would be added for modes 4 and 5 such that an operator would have sufficient time (at least 15 minutes) to respond to a postulated boron dilution transient.

IMPC still plans to submit information related to incomplete modelling of the feedwater regulating valves, in addition to some corrected TS pages and other information requested by the staff. IMPC requested NRC response relative to the shutdown margin requirement in mode 4 and 5 by June 29th and approved TS by August 15th.

Sincerely,

for.

Joseph G. Giitter, Project Manager
Project Directorate III-1
Division of Reactor Projects - III,
IV, V & Special Projects
Office of Nuclear Reactor Regulation

Attachments:
As stated

cc: See next page

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Original signed by

Joseph G. Giitter, Project Manager
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IV, V & Special Projects
Office of Nuclear Reactor Regulation

Attachments:
As stated

cc: See next page

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05/3 /90	05/01 /90	05/3 /90

DF01
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Mr. Milton Alexich
Indiana Michigan Power Company

Donald C. Cook Nuclear Plant

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ATTACHMENT 1

MEETING WITH D. C. COOK TO DISCUSS

UNIT 2, CYCLE 8 RELOAD ANALYSIS

APRIL 19, 1990

NAME	AFFILIATION	TITLE
Thomas A. Georgantis	AEPSC-NF&A	Engineer
Vance Vanderburg	AEPSC-NF&A	Scientist
Steve Brewer	AEPSC-NS&L	Manager
Shamul Abedin	Westinghouse/NS	Sr. Engineer
Donald H. Behuki	Westinghouse/Nuc Sof	Sr. Engineer
Juan M. Nieto	AEPSC-NS&L	Sr. Engineer
Bert Svensson	Indiana Michigan Power	Lic. Coord.
Doug Malin	AEPSC-Nuclear Fuels	Manager
Harry Balukjian	NRR/RSB	Reactor Engineer
Daniel Fieno	NRR/SRXB	Sr. Reactor Physicist
Joseph G. Giitter	NRR/DRSP	Project Manager
Laubros Lois	NRR/DST	Sr. Nuclear Engineer
Scott R. Griffith	Westinghouse/Nuc Safety	Engineer
Michael A. Emery	Westinghouse/Nuc Safety	Engineer
Bernard W. Gergos	Westinghouse/CNFD	Sr. Engineer
Mark Caruso	NRR/SRXB	Section Chief
Dominic DiIanni	NRR/DRSP	Acting Project Director

Attachment 2

AEP

DONALD C. COOK NUCLEAR PLANT

UNIT 2 CYCLE 8

Presentation to NRC Staff
April 19, 1990

DONALD C. COOK NUCLEAR PLANT
UNIT 2 CYCLE 8

- Currently Projected Outage Schedule
  - End of Cycle 7 ..... 29Jun90
  - Mode 5 Cycle 8 ..... 22Aug90
  - Mode 4 Cycle 8 ..... 27Aug90

- Transition Core
  - 77 Westinghouse 17 x 17 V-5 Assemblies
  - 116 Advanced Nuclear Fuels 17 x 17 Assemblies

- Vantage 5 Fuel
  - Integral Fuel Burnable Absorber
  - Intermediate Flow Mixers
  - Reconstitutable Top Nozzle
  - Extended Burnup
  - Axial Blankets
  - Debris Filter Bottom Nozzle

Cycle 8 Submittals

- Unit 2 Cycle 8 Reload Analyses (AEP:NRC:1071E,1071H)
- Unit 2 Cycle 8 Criticality Analyses (AEP:NRC:1071F,1071G)
- Unit 2 Core Operating Limits Report (AEP:NRC:1077A)

UNIT 2 CYCLE 8
RELOAD ANALYSES

- Unit 2 Licensing Basis
- Proposed T/S Changes

PURPOSES OF CYCLE 8 T/S CHANGES

- Support Mixed Core Operation
  - ANF 17x17 Fuel
  - Westinghouse 17x17 V-5 Fuel
- Gain Operational Flexibility
- Remove Non-Standard Transition Mode Requirements
- Similar Changes to Unit 1 Where Justifications Are Similar

ORGANIZATION OF CYCLE 8 RELOAD ANALYSES SUBMITTAL

- Cover Letter
- Eleven Attachments

Attachments

1. Description and 50.92 Evaluation
2. Proposed T/S Changes
3. Summary

4. Westinghouse Analyses and Evaluations
5. Westinghouse Analysis of M&E Release Inside Containment
6. Westinghouse Evaluation to Support Pressurizer Operability at 92% Level

7. Draft Cycle 8 COLR

8. Unit 2 Licensing Basis 50.92 Evaluation
9. Letter from NRC Staff Discussing Previous Cycle 8 Meeting

10. Part B of WCAP 10217-A, Fq Surveillance Technical Specification
11. Major Analytical Assumptions from WCAP 11908, "Containment Integrity Analysis for Donald C. Cook Plant Units 1 and 2"

ATTACHMENT 3 TO AEP:NRC:1071E

SUMMARY DESCRIPTIONS FOR DONALD C. COOK NUCLEAR PLANT
UNIT 2 CYCLE 8 PROPOSED T/Ss

Page	Section	+	#	Description	Remarks
3/4 1-3b	Figure 3.1-3	2	033	Remove Figure 3.1-3	The shutdown margin requirements for Mode 4 and Mode 5 when operating on RHR were added to the Unit 2 T/Ss by Amendment 82. This requirement ensures the operator has adequate time to respond to dilution transients when operating on RHR. We propose to address this concern administratively. See Attachment 1; T/S Change Group 2b
3/4 1-16	3.1.2.8	1	034	Item a1; the required volume of the 20,000 ppm boration source is increased to 7715 gallons	The new value is a value which is expected to accommodate uprating to a core thermal power of 3588 MWt, fuel of increased enrichment for increased cycle length, and changes in vendor methodology. This change is indicated in Attachment 4, Table 6.1 and Attachment 4, Appendix A.
		4	035	Mathematical symbols replaced with words	Administrative change
3/4 1-23	3.1.3.4	1	036	The rod drop time requirement is changed to less than or equal to 2.7 seconds	The pressure drop is larger in V5 than other fuel types requiring an increase in rod drop time to 2.7 seconds. See Attachment 4, Section 5.1.2; Attachment 4, Appendix B, Section B.2.4; and Attachment 4, Appendix C, Table C.3.2-1.
		4	037	Mathematical symbols replaced with words	Administrative change

NEW ANALYSES FOR UNIT 2 CYCLE 8

- Uncontrolled RCCA Bank Withdrawal From A Subcritical Condition
- Uncontrolled RCCA Bank Withdrawal At Power
- Rod Cluster Control Assembly Misalignment
- Rod Cluster Control Assembly Drop
- Uncontrolled Boron Dilution

NEW ANALYSES FOR UNIT 2 CYCLE 8 (CONTINUED)

- Loss of Forced Reactor Coolant Flow (Including Locked Rotor)
- Loss of External Electric Load or Turbine Trip
- Loss of Normal Feedwater
- Excessive Heat Removal Due to Feedwater System Malfunctions
- Excessive Load Increase
- Loss Of Offsite Power to the Station Auxiliaries

NEW ANALYSES FOR UNIT 2 CYCLE 8 (CONTINUED)

- Rupture of a Steamline
- Rupture of a Control Rod Drive Mechanism Housing
- Major Rupture of Main Feedwater Pipe
- Large Break LOCA
- Small Break LOCA
- Post LOCA Long Term Cooling
- Combined Seismic LOCA Analysis

T/S CHANGE GROUPS

- Changes Based on Analyses
- Transition Mode Requirements
- Changes Previously Made for Unit 1
- Administrative
- Delta Flux Surveillance
- Parallel Changes to Unit 1 T/S

CHANGES FROM ANALYSES

- New Safety Limit Curves
- New OPDT/OTDT Setpoints
- Increase Design Flow to to 91,600 gpm/loop
- Decrease SDM to 1.6%
- Increase Minimum BAST Volume
- Increase Allowable Rod Drop Time to 2.7 Seconds
- New Mode 1 Operating Window:
  - 543.9oF $\leq$ Tavg $\leq$ 578.7oF
  - Pressurizer Pressure $\geq$ 2200 psig
  - RCS Total Flow $\geq$ 366,400 gpm

    <u>Note</u>: Design Flow = 366,400 gpm / 4

CHANGES FROM ANALYSES
(Continued)

- Revise Fp Penalty
- Add Protection Response Time
  - Pressurizer Level
- Relax Response Times
  - Pressurizer Pressure, Low and High
  - Low Flow, One and Two Loops
  - Steam Generator Level, Low-Low
  - Undervoltage RCPs
- New High Steam Flow Setpoints
- Add Safeguards Response Times
  - Containment Pressure High
  - Steam Generator Level, High-High

CHANGES FROM ANALYSES
(Continued)

- Relax Accumulator Volume and Pressure Limits
  - 921 to 971 Cubic Feet
  - 585 to 658 psig
- Relax Permissible SI and RHR Pump Degradation
- Relax Boron Injection Flow Imbalance
- Related Bases Changes

TRANSITION MODE REQUIREMENTS

- SDM in Modes 4 & 5 for Boron Dilution Transient
- Protection for Increased Steam Load Transient in Mode 3
- DNB Protection in Modes 2, 3, 4 & 5
- $ Footnote for Steam Generator High-High Level Safeguards Actuation

PROPOSED UNIT 2 T/S CHANGE PREVIOUSLY APPROVED FOR UNIT 1

- OPERABILITY LEVEL FOR PRESSURIZER

PROPOSED UNIT 1 CHANGES SIMILAR TO PROPOSED UNIT 2 CHANGES

- SDM In Modes 4 & 5 For Boron Dilution Transient
- Delta Flux Surveillance
- SI and RHR Pump Degradation

DELTA FLUX SURVEILLANCE AFTER RESTORING MONITOR OPERABILITY

- 24 Hour Monitoring Requirement Based on Inability to Update Time Out of Target Band

- Not Needed If Known Delta Flux Not Out of Target Band

FEEDWATER SYSTEM MALFUNCTION ZERO POWER CASE

- One Open Item Remains from AEP:NRC:1071E Submittal: Incomplete Modelling of Feedwater Regulating Valve in Original Analysis
- Analysis Redone
- All Acceptance Criteria Are Met
- NRC Submittal: May 1990

COLR PARAMETERS

- MTC: -38.0 pcm/oF for HFP Tavg = 574.0oF
- 300 ppm Acceptance Criterion:
  Approximately -32 pcm/oF (1)
- ARO: 228 Steps
- Rod Insertion Limits
- Delta Flux Wings
- F(Q): 2.33 for Westinghouse Fuel
  2.10 for ANF Fuel
- K(Z)
- F Delta H: 1.56 for Westinghouse Fuel
  1.49 for ANF Fuel
- V(Z) (1)

(1) : To Be Calculated

Unit 2 Cycle 8 Reload Submittal
Assumes COLR Submittal Approval

CONCLUSIONS

- Standard Westinghouse Fuel Product in Westinghouse NSSS
- No Challenge to Health, Safety, and Welfare of the Public
- Reviewed Submittal with NRC
- Unit 2 COLR - Under Staff Review
- Unit 2 Criticality - Under Staff Review
- AEP to Provide Final Documentation for Feedwater Malfunction in May
- Need NRC Response to Modes 4 & 5 SDM by June 29
- Need NRC Final Approval by August 15