

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-316/77-31

Docket No. 50-316

License No. CPPR-61

Licensee: American Electric Power Corporation  
Indiana and Michigan Power Company  
2 Broadway  
New York, NY 10004

Facility Name: Donald C. Cook Nuclear Plant, Unit 2

Inspection At: Corporate Headquarters, New York, NY

Inspection Conducted: November 21-22, 1977

Inspectors: *J.E. Kohler*  
J. E. Kohler

12/8/77

Approved By: *W.S. Little*  
W. S. Little, Chief  
Nuclear Support Section

12/8/77

Inspection Summary

Inspection on November 21-22, 1977 (Report No. 50-316/77-31)  
Areas Inspected: Routine, announced inspection involving review of  
data taken during Unit Preoperational CILRT.  
Results: No items of noncompliance or deviations were identified.  
The Unit 2 preoperational CILRT in an acceptable test and is closed  
out.

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## DETAILS

### 1. Persons Contacted

- \*R. H. Baer, Assistant Chief Mechanical Engineer, AEPSC
- \*S. J. Miloti, Assistant Division Head Nuclear Energy, AEPSC
- \*J. A. Tesero, Assistant Section Head Engineering and Management Section
- \*G. A. Weber, Performance Engineer I&M Cook
- \*M. J. Trezza, CILRT Cognizant Engineer, AEPSC
- \*E. D. Rounds, Instrument and Control Senior Engineer AEPSC
- \*F. X. Walsch, Assistant Engineer, AEPSC
- \*J. T. Chizmarick, Programmer AEPSC

\*Denotes those present at management exit on November 21, 1977

### 2. D. C. Cook Unit 2 Preoperational CILRT (October 1977)

The D. C. Cook Unit 2 CILRT was performed during a 31 hour period between September 30, 1977 and October 1, 1977. The following summary describes the results of the leak rate analysis.

#### AEP Calculated Values

0-31.5 hours @  $t_o - t_i = 30$  minutes

\*Leakage rate =  $-.00428$  w/o/day

95% upper confidence level =  $-.00850$  w/o/day

\*Negative sign denotes leakage out of the containment

#### Inspector Calculated Values

0-31.5 hours @  $t_o - t_i = 30$  minutes

Leakage rate +  $.0060$  w/o/day

95% upper confidence level +  $.0025$  w/o/day

\*Positive sign denotes leakage into containment

Acceptance Criteria @ 12.0 psig

$L_a = .25$  w/o/day

75%  $L_a = .1875$  w/o/day

Based on the leak rate calculations performed by both the inspector and the licensee, the measured leakage rate during the preoperational test was below the containment leakage limit specified in Technical Specification for D. C. Cook and 10 CFR 50, Appendix J.

3. Supplemental Test

At the conclusion of the CILRT, a supplementary test was performed in which an induced leak rate equivalent to approximately 2.77 scfm (approximately .18 w/o/day) was superimposed. The licensee took data for eight additional hours and calculated the following leakage rate:

Supplementary Test (LI = .18 w/o/day)

AEP 0-8 hours @ to-ti - 30 min  
\* -.19028 w/o/day

Inspector 0-8 hours @ to-ti = .30 min  
-.1810 w/o/day

\*Negative sign denotes leakage out of the containment

The measured leakage rate for the supplementary test is within the 25% margin specified in 10 CFR 50, Appendix J and is confirmatory of the 31.5 hour CILRT.

4. Containment Volume

There is some uncertainty in the free volume of the containment. This uncertainty is the result of uncertainties in the free volume of the ice condenser with the ice loaded. In order to calculate the ice condense volume, AEP used the most recent information available on individual ice basket weights. The following information was used by AEP to calculate the free volume of the ice condenser.

Total weight of ice sample size	2.890 x 10 <sup>6</sup> lbs 144 baskets
Distribution	Normal
Mean Weight	1724 lbs/basket
Standard Deviation	35.4 lbs
Weight of Basket	254 lbs
95% confidence level weight	1481/lb/basket
Density of ice	56 lbs/ft <sup>3</sup>

7. Type C Leakage Penalty

The inspector suggested that the licensee review recent commitments made to NRR regarding the calculation of a Type C leakage penalty for undrained systems in order to determine the applicability or feasibility of applying these same commitments to Unit 1 which is scheduled to perform a periodic containment integrated leakage rate test in the first quarter of 1978.

8. Data Management Test Performance

The inspector stressed the value of automating the CILRT data input mechanism in order to reduce the amount of data that test personnel must manually input. The purpose of the automation is to reduce both keying errors and time necessary to make leak rate calculations.

9. AEP CILRT Program

The inspector suggested that any future modifications to the leak rate program incorporate the following features.

- a. Leak rate calculations at any interval without external data manipulation.
- b. Deletion of bad or erroneous data from data file.
- c. Automation of data input.

10. Instrumentation

The licensee used four dewpoint hygrometers for the Unit 2 test. The inspector does not feel this offers sufficient redundancy in the event of an instrument failure in a single instrumented compartment. The inspector suggested that additional redundancy be supplied for the next containment test.

11. Unresolved Items

All unresolved items identified in IE Inspection Report No. 50-316/77-21 regarding the preoperational CILRT are considered closed out.

12. Management Exit

A management exit was conducted at the conclusion of the inspection in which the results of the inspection were summarized.