

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) D. C. COOK PLANT - UNIT 1										DOCKET NUMBER (2) 0 5 0 0 0 3 1 5 1 OF 1 4										PAGE (3) 1 OF 1 4																																							
TITLE (4) DISCOVERY OF ERROR IN "DETECTOR" CODE																																																											
EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																																																		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES			DOCKET NUMBER(S)																																															
0	5	2	8	8	4	8	4	0	0	7	0	2	0	5	0	3	8	5	0 5 0 0 0			0 5 0 0 0																																					
OPERATING MODE (9) 1												THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)																																															
POWER LEVEL (10) 1 0 0												20.402(b) 20.405(a)(1)(i) 20.405(a)(1)(ii) 20.405(a)(1)(iii) 20.405(a)(1)(iv) 20.405(a)(1)(v)												20.405(c) 50.36(c)(1) 50.36(c)(2) 50.73(a)(2)(i) 50.73(a)(2)(ii) 50.73(a)(2)(iii)												50.73(a)(2)(iv) 50.73(a)(2)(v) 50.73(a)(2)(vii) 50.73(a)(2)(viii)(A) 50.73(a)(2)(viii)(B) 50.73(a)(2)(ix)												73.71(b) 73.71(c) <input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A) Voluntary											
LICENSEE CONTACT FOR THIS LER (12)																																																											
NAME MICHAEL A. SAUM AMERICAN ELECTRIC POWER SERVICE CORPORATION												TELEPHONE NUMBER 6 1 4 2 2 3 2 0 5 7																																															
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS																																			
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)																																															
YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO																																															
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																																																											
<p>THIS IS A REVISION TO VOLUNTARY LER 84-007-1 PREVIOUSLY SUBMITTED TO THE USNRC. THE PURPOSE OF THIS REVISION IS TO REQUEST AN EXTENSION OF THE COMMITMENT DATES FOR OUR TWO REMAINING (OUT OF FOUR COMMITTED) COMMITMENTS MADE IN VOLUNTARY LER 84-007-1. THESE TWO REMAINING COMMITMENTS ARE:</p> <ol style="list-style-type: none"><li>1) SET UP A STANDARD INPUT MODEL TO PROVIDE A COMMON BENCHMARK FOR ALL FUTURE VERSIONS OF "DETECTOR"; COMMITTED TO HAVE COMPLETED BY APRIL 30, 1985, AND,</li><li>2) DEVELOP A POST-PROCESSING CODE TO MORE CLOSELY AND EFFICIENTLY MONITOR "DETECTOR" PERFORMANCE AND RESULTS; COMMITTED TO HAVE COMPLETED BY JUNE 30, 1985.</li></ol> <p>AS PER OUR CONVERSATION WITH MARY MCCORMICK-BARKER OF REGION III ON APRIL 1, 1985, WE REQUESTED AN EXTENSION OF SIX MONTHS FOR BOTH COMMITMENTS, I.E.,</p> <ol style="list-style-type: none"><li>1) STANDARD INPUT MODEL-DUE OCTOBER 31, 1985, AND,</li><li>2) POST-PROCESSING CODE-DUE DECEMBER 31, 1985.</li></ol> <p>OUR REASONS FOR THESE REQUESTS APPEAR AT THE END OF THE TEXT OF THIS VOLUNTARY LER.</p>																																																											
NRC Form 366 (9-83)												8505090508 850503 PDR ADOCK 05000315 S PDR												IE 22 VI																																			

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104  
EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
D. C. COOK PLANT - UNIT 1	0 5 0 0 0 3 1 5 8 4	- 0 0 7	- 0 2	0 2	OF 1 4	

TEXT (if more space is required, use additional NRC Form 366A's) (17)

THIS IS AN UPDATED REPORT OF A VOLUNTARY LER. PREVIOUS REPORT  
DATE AUGUST 10, 1984.

BACKGROUND

IN AUGUST OF 1983, MODIFICATIONS WERE MADE TO THE DETECTOR CODE  
TO ALLOW COMPARISON TO TECHNICAL SPECIFICATION PARAMETERS WHICH  
VARIED WITH FUEL TYPE. THESE MODIFICATIONS WERE MADE BY  
SHANSTROM NUCLEAR ASSOCIATES, THE ORIGINAL AUTHOR OF THE CODE.  
  
THE MODIFIED CODE WAS TESTED BY MAKING RUNS WITH OLD DATA SETS  
AND PUT INTO PRODUCTION FOR UNIT 1 CYCLE 8. THE CHANGES TO  
DETECTOR WERE CARRIED OUT IN ACCORDANCE WITH NMFM PROCEDURE NO.7,  
CHANGES TO THE DETECTOR CODE.

DISCOVERY OF ERROR

AN EFFORT WAS BEGUN IN MAY OF 1984 TO MODIFY THE DETECTOR CODE IN  
HOUSE TO INCORPORATE THE ABILITY TO MONITOR A MODIFIED  $F_{\Delta H}^N$   
TECHNICAL SPECIFICATION REQUIRED FOR UNIT 2 CYCLE 5. THE  
MODIFICATION INVOLVED INCORPORATING INTO THE CODE TWO  $F_{\Delta H}^N$   
LIMITS, ONE RELATED TO DNB (THE CURRENT  $F_{\Delta H}^N$  LIMIT), AND A NEW,  
LOCA RELATED  $F_{\Delta H}^N$  LIMIT. DURING THIS PROCESS, IT WAS DETERMINED

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (5)

PAGE (3)

D. C. COOK PLANT - UNIT 1

0 5 0 0 0 3 1 5 84 - 0 0 7 - 02 0 3 OF 1 4

TEXT (if more space is required, use additional NRC Form 388A-2) (17)

THAT ONE OF THE EDITS DESCRIBING THE  $F_{\Delta H}^N$  LIMIT UNDER CERTAIN CIRCUMSTANCES WOULD PRODUCE INCORRECT RESULTS. THE ERROR WAS PRESENT IN THE AUGUST 1983 VERSION OF "DETECTOR" AND THUS WAS PRESENT IN THE ANALYSIS OF THE FIRST FORTY-SEVEN FLUX MAPS FOR UNIT 1 CYCLE 8.

NATURE OF ERROR

THE "DETECTOR" CODE REQUIRES THAT THE INPUT DATA INCLUDE TECHNICAL SPECIFICATION LIMITS FOR EACH FUEL TYPE. WITH THE AUGUST 1983 MODIFICATION TO THE "DETECTOR" CODE (VERSION 23), IT WAS INTENDED THAT THE RELATIVE POWER OF EACH FUEL PIN (ASSEMBLAGE) BE COMPARED TO THE LIMIT APPROPRIATE TO ITS FUEL TYPE. HOWEVER, AN ERROR WAS MADE IN THE CODING SUCH THAT THE RELATIVE POWER OF EACH PIN WAS ALWAYS COMPARED TO THE LIMITS OF THE LAST FUEL TYPE IN THE INPUT DATA SET. THEREFORE, THE "DETECTOR" OUTPUT WOULD NOT INDICATE THE CORRECT MARGIN BETWEEN  $F_{\Delta H}^N$  AND ITS TECHNICAL SPECIFICATION LIMIT FOR THE FIRST FUEL TYPE.

IT SHOULD BE NOTED THAT THE ERROR AFFECTED ONLY ONE PAGE IN THE "DETECTOR" OUTPUT. REVIEW OF OTHER PAGES OF OUTPUT FROM "DETECTOR" COULD POTENTIALLY HAVE LED TO OUR IDENTIFYING ANY DISCREPANCIES IN THE OUTPUT DATA. THE SPECIFIC ERROR WAS THAT A TRANSFER WAS MADE TO THE WRONG LINE OF CODE.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
D. C. COOK PLANT - UNIT 1	0   5   0   0   0   3   1   5	8   4	-   0   0   7	-   0   2	0   4	OF 1   4

TEXT (If more space is required, use additional NRC Form 366A's) (17)

IMPACT ON UNIT 1 CYCLE 8

THE CODING ERROR IN "DETECTOR" DID NOT CAUSE A TECHNICAL SPECIFICATION VIOLATION DURING UNIT 1 CYCLE 8 OPERATION. TO JUSTIFY THIS STATEMENT, ONE MUST LOOK AT THE INPUT GOING INTO "DETECTOR" FOR UNIT 1 CYCLE 8 FLUX MAP ANALYSIS.

THERE WERE TWO SETS OF TECHNICAL SPECIFICATIONS WHICH WERE APPLICABLE FOR UNIT 1 CYCLE 8. TECHNICAL SPECIFICATION SET 1 WAS APPLICABLE TO EXXON NUCLEAR COMPANY (ENC) FABRICATED FUEL, WHICH APPLIED TO ONCE AND TWICE BURNED FUEL ASSEMBLIES PRESENT IN THE CORE. TECHNICAL SPECIFICATION SET 2 WAS APPLICABLE TO WESTINGHOUSE FUEL WHICH WAS FRESH AT THE START OF UNIT 1 CYCLE 8. THE CORRESPONDING TECHNICAL SPECIFICATIONS LIMITS FOR  $F_{\Delta H}^N$  INPUT INTO "DETECTOR" WERE:

TECHNICAL SPECIFICATION SET 1:  $F_{\Delta H}^N (1) \leq 1.45 [1 + 0.2 (1 - P)]$

TECHNICAL SPECIFICATION SET 2:  $F_{\Delta H}^N (2) \leq 1.49 [1 + 0.3 (1 - P)]$

WHERE P IS THE RATIO OF ACTUAL THERMAL POWER TO RATED THERMAL POWER (RTP).



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
D. C. COOK PLANT - UNIT 1	0 5 0 0 0 3 1 5	8 4	- 0 0 7	- 0 2	05	OF 1 4

TEXT (if more space is required, use additional NRC Form 366A's) (17)

IN ALL CASES "DETECTOR" COMPARED  $F_{\Delta H}^N$  TO THE TECHNICAL SPECIFICATION LIMIT FOR TECHNICAL SPECIFICATION SET 2 (WESTINGHOUSE) REGARDLESS OF WHETHER THE  $F_{\Delta H}^N$  WAS ASSOCIATED WITH AN ENC (TECHNICAL SPECIFICATION SET 1) OR A WESTINGHOUSE (TECHNICAL SPECIFICATION SET 2) FUEL ASSEMBLY. THE ERROR WAS IN THE CODING SUCH THAT THE RELATIVE POWER OF EACH PIN WAS ALWAYS COMPARED TO THE LIMITS OF THE LAST FUEL TYPE IN THE INPUT DATA SET. THUS, IF ANY  $F_{\Delta H}^N$  GREATER THAN  $1.45 [1 + 0.2 (1 - P)]$  OCCURRED IN AN ENC FUEL ASSEMBLY IT MIGHT NOT HAVE BEEN INDICATED AS A VIOLATION OF THE TECHNICAL SPECIFICATION LIMIT BY "DETECTOR".

TO VERIFY THAT THIS DID NOT OCCUR, FLUX MAPS 1-47 FOR UNIT 1 CYCLE 8 WERE ANALYZED TO DETERMINE WHETHER ANY  $F_{\Delta H}^N$  FOR ENC FUEL WAS GREATER THAN 1.45 (THE MOST LIMITING  $F_{\Delta H}^N$  FOR ENC FUEL WITH  $P = 1.0$ ). NO MAPS WERE IDENTIFIED WHERE  $F_{\Delta H}^N$  (ENC) WAS GREATER THAN THE TECHNICAL SPECIFICATION  $F_{\Delta H}^N$  LIMIT FOR ENC FUEL AND THEREFORE THERE WERE NO TECHNICAL SPECIFICATION VIOLATIONS.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
D. C. COOK PLANT - UNIT 1	0 5 0 0 0 3 1 5	8 4	- 0 0 7	- 0 2	0 6	OF 1 4

TEXT (if more space is required, use additional NRC Form 386A's) (17)

ONCE SATISFIED THAT NO TECHNICAL SPECIFICATION VIOLATIONS HAD OCCURRED, THE POSSIBILITY THAT THE MOST LIMITING TECHNICAL SPECIFICATION MARGIN EDIT DID NOT CONTAIN COMPLETELY ACCURATE INFORMATION WAS INVESTIGATED. SPECIFICALLY, THE POSSIBILITY EXISTED THAT AN ENC  $F_{\Delta H}^N$  WAS CLOSER TO ITS TECHNICAL SPECIFICATION LIMIT THAT THE MOST LIMITING TECHNICAL SPECIFICATION MARGINS PRINTED OUT FOR THE WESTINGHOUSE FUEL. SINCE THE  $F_{\Delta H}^N$  FOR ENC FUEL WOULD BE COMPARED TO THE WESTINGHOUSE LIMIT, WHICH IS HIGHER THAN THE ENC LIMIT, THIS ENC FUEL ASSEMBLY (OR PIN) MIGHT NOT BE INCLUDED IN THE MOST LIMITING TECHNICAL SPECIFICATION MARGINS EDIT.

THIS IN FACT DID OCCUR ON TWO FLUX MAPS, 108-04 and 108-05. HOWEVER, THESE MAPS WERE TAKEN AT BOC, <50% RTP, WITH TECHNICAL SPECIFICATION MARGIN FOR THE MOST LIMITING PINS APPROXIMATELY EQUAL TO 0.02. THEREFORE, THE FACT THAT ENC FUEL ASSEMBLAGES WERE NOT LISTED ON THE MOST LIMITING  $F_{\Delta H}^N$  EDITS DOES NOT APPEAR ON THE BASIS OF ENGINEERING JUDGMENT TO BE SIGNIFICANT.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
D. C. COOK PLANT - UNIT 1	0 5 0 0 0 3 1 5	8 4	- 0 0 7	- 0 2	07	OF 1 4

TEXT (If more space is required, use additional NRC Form 366A (1) (17))

ONE SHOULD NOTE ALSO THAT FROM A CORE ANALYSIS OF THE UNIT 1 CYCLE 8 CORE, THE HOT SPOTS  $F_{\Delta H}^N$  AND  $F_Q$  (2.1) WILL OCCUR IN FRESH FUEL ASSEMBLIES ONCE EQUILIBRIUM HFP CORE CONDITIONS ARE REACHED. THIS WAS CONFIRMED BY THE ANALYSIS OF ALL UNIT 1 CYCLE 8 FLUX MAPS.

POSSIBLE IMPACT ON UNIT 2 CYCLE 5

IT IS DIFFICULT TO POSTULATE WHETHER THE ERROR WOULD HAVE BEEN DISCOVERED IF THE UNIT 2 CYCLE 5 TECHNICAL SPECIFICATIONS HAD NOT REQUIRED MODIFICATION TO INCLUDE THE ADDITION OF LOCA BASED  $F_{\Delta H}^N$  LIMITATIONS. IF WE ASSUME THAT THE ERROR WOULD NOT HAVE BEEN DISCOVERED, WE CAN LOOK AT THE TWO CASES AND SEE THE POTENTIAL OUTCOME. IN EITHER CASE THE APPLICABLE  $F_{\Delta H}^N$  TECHNICAL SPECIFICATION LIMITS FOR THE TWO DIFFERENT FUEL TYPES ARE:

EXXON FUEL:  $F_{\Delta H}^N \leq 1.49 [1.0 + 0.2 (1 - P)]$

WESTINGHOUSE FUEL:  $F_{\Delta H}^N \leq 1.48 [1.0 + 0.2 (1 - P)]$

CASE 1

IN THIS CASE EXXON FUEL WOULD BE ASSIGNED TO TECHNICAL SPECIFICATION SET 1 AND WESTINGHOUSE FUEL TO TECHNICAL

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
D. C. COOK PLANT - UNIT 1	0 5 0 0 0 3 1 5	8 4	- 0 0 7	- 0 2	0 8	OF 1	4

TEXT (if more space is required, use additional NRC Form 366A's) (17)

SPECIFICATION SET 2. ONE SHOULD NOTE THAT THE UNIT 2 CYCLE 5 CORE CONSISTS OF ONE REGION (TWICE BURNED) OF WESTINGHOUSE FUEL AND 2 REGIONS (ONCE BURNED AND FRESH) OF ENC FUEL. IN THIS CASE, THE PEAK  $F_{\Delta H}^N$ , OCCURRING IN THE ENC FUEL, WOULD HAVE BEEN COMPARED TO THE TECHNICAL SPECIFICATION LIMIT FOR WESTINGHOUSE FUEL. HOWEVER, THE  $F_{\Delta H}^N$  TECHNICAL SPECIFICATION LIMIT FOR WESTINGHOUSE IS MORE CONSERVATIVE THAN THE  $F_{\Delta H}^N$  TECHNICAL SPECIFICATION LIMIT FOR ENC, THEREFORE THIS WOULD NOT HAVE BEEN A PROBLEM. FURTHERMORE, IT IS BELIEVED THAT THIS PROBLEM WOULD HAVE BEEN IDENTIFIED UPON ANALYSIS OF THE MOST LIMITING PINS ON THE  $F_{\Delta H}^N$  LOWEST TECHNICAL SPECIFICATION MARGIN EDIT.

CASE 2

IN THIS CASE WESTINGHOUSE FUEL WOULD BE ASSIGNED TO TECHNICAL SPECIFICATION SET 1 AND ENC FUEL TO TECHNICAL SPECIFICATION SET 2. THIS CASE IS SIMILAR TO WHAT ACTUALLY ACCURRED IN UNIT 1 CYCLE 8 IN THAT THE FRESH FUEL TECHNICAL SPECIFICATIONS WERE INPUT AS THE SECOND TECHNICAL SPECIFICATION SET. THE FRESH FUEL TECHNICAL SPECIFICATION LIMIT WOULD BE APPLIED TO ALL FUEL. THIS IS A NON-CONSERVATIVE COMPARISON FOR THE WESTINGHOUSE



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  D. C. COOK PLANT - UNIT 1	DOCKET NUMBER (2)  0 5 0 0 0 3 1 5 8 4 - 0 0 7 - 0 2 0 9	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
					OF	1	4

TEXT (If more space is required, use additional NRC Form 366A's) (17)

FUEL. HOWEVER, SINCE THE WESTINGHOUSE FUEL IS TWICE BURNED AND CONSEQUENTLY OPERATES AT LOW POWER, IT IS HIGHLY UNLIKELY THAT THIS FUEL WOULD REACH AN  $F_{\Delta H}^N$  AS HIGH AS ITS OWN LIMIT OR THE MARGINALLY HIGHER ENC LIMIT.

SHANSTROM RECOMMENDATIONS

IN A LETTER DATED MAY 24, 1984, FROM DR. RAYMOND T. SHANSTROM TO THE USNRC REGARDING NOTIFICATION OF A POTENTIAL 10CFR21 ITEM (I.E., THE "DETECTOR" CODING ERROR DISCUSSED IN THIS LER), DR. SHANSTROM RECOMMENDS TWO ITEMS FOR ADDITIONAL SURVEILLANCE OF "DETECTOR" PERFORMANCE AND RESULTS. THESE RECOMMENDATIONS ARE:

- (1) INCREASE THE SIZE OF THE EDITS  $F_{\Delta H}^N$  AND  $F_Q^N$  TECHNICAL SPECIFICATION EDITS (EG FROM 20 TO THE MAXIMUM CODE ALLOWANCE OF 100). THIS WOULD HAVE CLEARLY IDENTIFIED THIS PARTICULAR BUG SINCE THE "TECH SP. FSUBH" FOR TS SET 1 WOULD HAVE INCORRECTLY BEEN LISTED AS THE "CONST. MULT" FOR TS SET 2.
- (2) FOR EACH CHANGE IN DETECTOR VERSIONS AND FOR ANY CHANGE IN INPUT VALUES FOR CALCULATIONAL OPTIONS, THE USER SHOULD VERIFY, VIA HAND CALCULATIONS, THAT THE "DETECTOR" RESULTS FOR LIMITING TECHNICAL SPECIFICATION ARE VALID

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  D. C. COOK PLANT - UNIT 1	DOCKET NUMBER (2)  0 5 0 0 0 3 1 5 8 4 - 0 0 7 - 0 2 1 0 OF 1 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 366A's) (17)

FOR EACH FUEL TYPE. (THE SHA VERIFICATION AND THE  
"DETECTOR" TRAINING INCLUDE HAND-CALCULATION VERIFICATION  
OF RESULTS FOR ALL EXPECTED OPTIONS).

SHANSTROM'S FIRST RECOMMENDATION WAS EXAMINED AND TESTED BY  
INCREASING THE SIZE OF THE  $F_{\Delta H}^N$  AND  $F_Q^N$  EDITS AND RERUNNING UNIT 1  
CYCLE 8 MAPS 108-04 AND 108-05 WITH BOTH THE OLD AND CORRECTED  
VERSIONS OF "DETECTOR". AFTER ANALYZING THE RESULTS, IT WAS  
CONCLUDED THAT THERE WOULD HAVE BEEN NO CLEAR OR IMMEDIATE  
INDICATION THAT "DETECTOR" WAS NOT PERFORMING AS EXPECTED. WE  
THEREFORE SAW NO BENEFIT IN ADOPTING DR. SHANSTROM'S FIRST  
RECOMMENDATION.

SHANSTROM'S SECOND RECOMMENDATION WAS EVALUATED AND WE FEEL THAT  
OUR CURRENT PROPOSED STRATEGY, WHICH IS IDENTIFIED BELOW, WILL  
ENCOMPASS HIS RECOMMENDATION ALONG WITH OTHER IMPROVEMENTS.

- 1) FOR EACH NEW "DETECTOR" VERSION, THE CODE WILL BE CHECKED  
BY RUNNING A STANDARD INPUT MODEL BENCHMARK TEST MATRIX  
WITH EMPHASIS ON TESTING THE AREAS OF THE CODE THAT  
WERE MODIFIED.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  D. C. COOK PLANT - UNIT 1	DOCKET NUMBER (2)  0 5 0 0 0 3 1 5 8 4 - 0 0 7 - 0 2 1 1 OF 1 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 366A's) (17)

- 2) A POST PROCESSING CODE WILL BE DEVELOPED TO READ THE OUTPUT FROM "DETECTOR" AND SUMMARIZE CRITICAL INFORMATION PERTAINING TO A PARTICULAR FLUX MAP. INCLUDED IN THIS SUMMARY WILL BE "DETECTOR" RESULTS FOR LIMITING TECHNICAL SPECIFICATIONS FOR EACH FUEL TYPE.

IT IS FELT THAT BY UPGRADING THE METHODOLOGY BY WHICH CHANGES ARE MADE TO "DETECTOR", COUPLED WITH A MORE THOROUGH AUTOMATED METHOD OF MONITORING "DETECTOR" RESULTS, ERRORS THAT MAY OCCUR WILL BE EASIER TO DETECT SHOULD THEY OCCUR.

CORRECTIVE ACTION

THE CODING ERROR WAS CORRECTED IN CONJUNCTION WITH THE OTHER "DETECTOR" MODIFICATIONS BEING MADE FOR UNIT 2 CYCLE 5.

THE TWO FLUX MAPS THAT INDICATED THE INCORRECT MOST LIMITING PINS ON  $F_{\Delta H}^N$  FOR UNIT 1 CYCLE 8 MAPS 108-04 AND 108-05, WERE RERUN WITH THE CORRECTED "DETECTOR" VERSION.

AEPS SC HAS CHANGED THEIR SOURCE LIBRARY DISK FILE MANAGEMENT SYSTEM ON THE CORPORATION COMPUTER SYSTEM FROM "SOURCE" TO "LIBRARIAN". "LIBRARIAN" OFFERS A MUCH MORE THOROUGH METHOD OF MAINTAINING AN ACCURATE AUDIT TRAIL OF CHANGES MADE TO A PROGRAM

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  D. C. COOK PLANT - UNIT 1	DOCKET NUMBER (2)  0 5 0 0 0 3 1 5 8 4 - 0 0 7 - 0 2 1 2 OF 1 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 365A's) (17)

THAN PREVIOUSLY EXISTED WITH "SOURCE". IT IS BELIEVED THAT THIS SOFTWARE ENHANCEMENT WILL REDUCE THE POSSIBILITY OF FUTURE CODE MODIFICATION BEING IN ERROR.

NMFM PROCEDURE NO.7, CHANGES TO THE DETECTOR CODE, WAS REVISED BY DECEMBER 31, 1984, TO ASSURE THAT NOT ONLY ARE TEST CASES RUN, BUT THAT AN INDEPENDENT LINE-BY-LINE REVIEW OF THE CODING CHANGES WILL BE PERFORMED.

A DETAILED ANALYSIS OF ALL "DETECTOR" CHANGES FROM AUGUST 1983 TO OCTOBER 1984 WAS COMPLETED BY OCTOBER 31, 1984.

A STANDARD INPUT MODEL GENERATOR PROGRAM WILL BE DEVELOPED TO PROVIDE A COMMAND BENCHMARK FOR ALL FUTURE VERSIONS OF "DETECTOR". THE MODELS GENERATED BY THIS PROGRAM WILL BE USED TO VERIFY THE CHANGES MADE TO "DETECTOR" SINCE AUGUST, 1983. WE WILL ALSO PERFORM COMPARISONS WITH PAST BENCHMARKS PERFORMED DURING UNIT 1 CYCLE 1 BETWEEN "DETECTOR" AND WESTINGHOUSE'S "INCORE" CODE. WE CURRENTLY ANTICIPATE THAT THIS EFFORT WILL BE COMPLETED BY OCTOBER 31, 1985.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  D. C. COOK PLANT - UNIT 1	DOCKET NUMBER (2)  0 5 0 0 0 3 1 5 8 4 - 0 0 7 - 0 2 1 3 OF 1 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 366A's) (17)

A "DETECTOR" POST-PROCESSING CODE WILL BE DEVELOPED TO MORE CLOSELY AND EFFICIENTLY MONITOR "DETECTOR" PERFORMANCE AND RESULTS. WE CURRENTLY ANTICIPATE THAT THIS CODE WILL BE DEVELOPED, TESTED, DEBUGGED AND DOCUMENTED BY DECEMBER 31, 1985.

REASONS FOR EXTENSION OF COMMITMENT DATESSTANDARD INPUT MODEL GENERATOR

AEPSC HAS DETERMINED THAT SETTING UP STANDARD INPUT TEST CASES FOR "DETECTOR" MAY BE INADEQUATE FOR USE AS A COMPLETE BENCHMARKING TOOL. FUTURE REVISIONS TO DETECTOR COULD AFFECT CERTAIN AREAS OF THE CODE WHICH MAY NOT BE EXPLICITLY TESTED BY A SET OF STANDARD BENCHMARK TEST CASES. TO TEST A COMPLETE RANGE OF MODIFICATIONS, IT WOULD BE NECESSARY TO MODIFY THE STANDARD BENCHMARK MODELS, THUS DESTROYING THE CONTINUITY REQUIRED TO COMPARE THE NEW VERSION OF "DETECTOR" TO PREVIOUS VERSIONS OF THE CODE. AEPSC PLANS TO AVOID THE ABOVE DEFICEINCY BY WRITING A COMPUTER PROGRAM TO PROVIDE A STRONG BENCHMARKING LINK BETWEEN NEW VERSIONS OF "DETECTOR" AND ITS PREDECESSORS.

THIS PROGRAM WILL CREATE A SET OF STANDARD INPUT MODELS TO BE USED AS THE SOLE BENCHMARKING TOOL FOR VERIFYING NEW VERSIONS OF "DETECTOR". THE PROGRAM WILL BE EXTREMELY FLEXIBLE IN THAT THE



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  D. C. COOK PLANT - UNIT 1	DOCKET NUMBER (2)  0 5 0 0 0 3 1 5 8 4 - 0 0 7 - 0 2 1 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
						OF	

TEXT (If more space is required, use additional NRC Form 366A's) (17)

USER WILL BE ABLE TO SPECIFY, AS AN INPUT, VARIOUS CORE POWER DISTRIBUTION PARAMETERS. THE CODE WILL USE THE POWER DISTRIBUTION INPUT TO GENERATE THE ACTUAL TEST CASES TO BE USED AS THE STANDRAD BENCHMARK MODEL FOR A NEW "DETECTOR" VERSION. SINCE THE MEHTODOLOGY BY WHICH THIS CODE WILL CREATE THE BENCHMARK MODEL IS FIXED, A STRONG LINK BETWEEN "DETECTOR" VERSIONS WILL BE MAINTAINED. AT THE SAME TIME, WE WILL BE ALLOWED TO TEST EFFECTIVLEY ALL AREAS OF THE "DETECTOR" CODE. WE CURRENTLY ANTICIPATE THAT THIS WORK WILL BE COMPLETED BY OCTOBER 31, 1985.

POST-PROCESSING CODE

SINCE THE DEVELOPMENT OF THE POST-PROCESSING CODE WILL REQUIRE MODIFICATINS TO BE MADE TO "DETECTOR", IT IS PRUDENT TO MAKE THESE MODIFICATION TO "DETECTOR" ONLY AFTER THE STANDARD INPUT MODEL GENERATOR CODE IS IN PLACE. WE CURRENTLY ANTICIPATE THIS WORK WILL BE COMPLETED BY DECEMBER 31, 1985.



**INDIANA & MICHIGAN ELECTRIC COMPANY**

DONALD C. COOK NUCLEAR PLANT  
P.O. Box 458, Bridgman, Michigan 49106  
(616) 465-5901

May 3, 1985

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Operating License DPR-58  
Docket No. 50-315

Document Control Manager:

In accordance with the criteria established by 10CFR50.73  
entitled Licensee Event Reporting System, the following  
report/s are being submitted:

RO 84-007-02

Sincerely,

W.G. Smith, Jr.  
Plant Manager

/cbm

Attachment

cc: John E. Dolan  
J.G. Keppler, RO:III  
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11