NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
D.C. COOK UNIT NO. 2	0 5 0 0 0 3 1 6	1 OF 0 2

TITLE (4)

REACTOR TRIP

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 0 0 0
0 9	1 1	8 4	8 4	— 0 2 4	— 0 0	1 0	1 0	8 4		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(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
A.A. BLIND, TECHNICAL ENGINEERING DEPARTMENT SUPERINTENDANT	AREA CODE 6 1 6 — 4 6 5 - 5 9 0 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	E F	U J X	5 2 5 0	Y							

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

ON SEPTEMBER 11, 1984, AT 1517 HOURS, WHILE IN MODE ONE AT ONE-HUNDRED PERCENT POWER, A REACTOR TRIP OCCURED FROM THE LOSS OF A 120 VOLT A.C. VITAL BUS INVERTER. THE FAILURE OF THIS INVERTER RESULTED IN POWER BEING LOST TO THE RELAY INDICATING THE POSITION OF THE BREAKER FOR REACTOR COOLANT PUMP NUMBER 23. THE LOSS OF SIGNAL INDICATED THAT THE BREAKER WAS OPEN, ALTHOUGH IT ACTUALLY REMAINED CLOSED. THIS FAULTY INDICATION CAUSED A REACTOR TRIP ON LOW REACTOR COOLANT FLOW ABOVE PERMISSIVE P-8.

THE CAUSE OF THE 120 VOLT A.C. VITAL BUS FAILURE WAS DETERMINED TO BE A SHORTED C2 CAPACITOR ON THE SHORTING CIRCUIT BOARD.

AS CORRECTIVE ACTION THE FAILED C2 CAPACITOR WAS REPLACED. PREVENTATIVE ACTION INCLUDED REPLACEMENT OF ALL THE DIODES AND SILICON CONTROLLED RECTIFIERS, AS WELL AS REPLACEMENT OF THE A.C. VOLTMETER AND FUSES FU1 AND FU2.

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NRC Form 366A
(9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
D.C. COOK UNIT 2	0 5 0 0 0 3 1 6	8 4	— 0 2 4	— 0 0	0 2 OF 0 2

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

ON SEPTEMBER 11, 1984, AT 1517 HOURS, THE C2 CAPACITOR IN THE 120 VOLT A.C. VITAL BUS CHANNEL III INVERTER SHORTED INTERNALLY CAUSING FAILURE OF THE INVERTER WHICH RESULTED IN POWER TO BE LOST TO THE RELAY INDICATING THE POSITION OF THE BREAKER FOR REACTOR COOLANT PUMP NUMBER 23. THE LOSS OF THE SIGNAL TO THE SOLID STATE PROTECTION SYSTEM INDICATED THAT THE BREAKER WAS OPEN, ALTHOUGH IT ACTUALLY REMAINED CLOSED. THIS FALSE INDICATION CAUSED A REACTOR TRIP ON LOW REACTOR COOLANT FLOW ABOVE PERMISSIVE P8. THE UNIT HAD BEEN OPERATING AT ONE HUNDRED PERCENT POWER UP TO THE TIME OF THIS TRIP.

THE REACTOR TRIP REVIEW REVEALED ONE PROBLEM ASSOCIATED WITH THE TRIP. THE CONTAINMENT ATMOSPHERE RADIATION MONITOR ERS-2400 FAILED TO TRANSFER TO ITS BACK-UP D.C. POWER SUPPLY. TECHNICAL SPECIFICATION CHANNELS ERS-2401 AND ERS-2405 HAD THEIR CHANNEL PARAMETERS RE-ENTERED AND WERE DECLARED OPERABLE AT 2235 HOURS ON SEPTEMBER 11, 1984. THE ACTION ITEMS WERE COMPLIED WITH.

THIS EVENT WAS SIMILAR TO OTHER TRIPS THAT WERE A RESULT OF 120 VOLT A.C. VITAL BUS INVERTER FAILURE. PREVIOUS OCCURRENCES OF A SIMILAR NATURE WERE REPORTED ON LER: 050-315/1980-20, 1979-22, 1984-8, AND 050-316/1983-81, 52, AND 1981-27. HOWEVER, A CONTRIBUTING FACTOR IN THE OTHER EVENTS WAS HIGH AMBIENT TEMPERATURE AROUND THE INVERTERS. IN THIS CASE THE AMBIENT TEMPERATURE WAS NOT UNUSUALLY HIGH AND NOT CONSIDERED TO BE A FACTOR. NO SPECIFIC REASON FOR THIS PARTICULAR FAILURE WAS DETERMINED. THIS C2 CAPACITOR (IEEE COMPONENT FUNCTION IDENTIFIER = CAP; MANUFACTURED BY SPRAGUE - PART NO. 330 p 72.) WAS INSTALLED AS PART OF A DESIGN CHANGE PROGRAM INTENDED TO REDUCE THE LIKELIHOOD OF FAILURE.

ALL REACTOR PROTECTION SYSTEMS AND ENGINEERED SAFEGUARD FEATURES OPERATED SATISFACTORILY AND RESPONSE TIMES WERE WITHIN ACCEPTANCE CIRTERIA.

AS CORRECTIVE ACTION, THE FAULTY C2 CAPACITOR WAS REPLACED AND AS PREVENTATIVE ACTION ALL THE DIODES, SILICON CONTROLLED RECTIFIERS, FUSES FU1 AND FU2, AND THE A.C. VOLTMETER WERE REPLACED. THE 120 VOLT A.C. VITAL BUS INVERTER WAS PLACED ON LOAD BANK FOR TWO HOURS AND DECLARED OPERABLE AT 2230 ON SEPTEMBER 11, 1984. TOTAL INOPERABLE PERIOD WAS SEVEN HOURS AND THIRTEEN MINUTES.