

LICENSEE EVENT REPORT

CONTROL BLOCK: (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0	1	1	L	Q	A	D	2	2	0	0	0	-	0	0	0	-	0	0	0	3	4	1	1	1	1	4		5		
7	8	9	LICENSEE CODE					14	15	LICENSE NUMBER										25	26	LICENSE TYPE					30	57	CAT	58

0	1	L	6	0	5	0	0	0	2	6	5	7	0	5	1	5	8	1	8	0	6	1	0	8	1	9
7	8	REPORT SOURCE		60	61	DOCKET NUMBER						68	69	EVENT DATE					74	75	REPORT DATE					80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

At 0340 on May 15, 1981, the Control Room received a Unit Two Diesel Generator trouble alarm. An Operator was immediately dispatched to find the Diesel Generator room full of smoke. Finding no evidence of fire and the local alarm, "DIESEL GENERATOR MOTORING" the Diesel Generator was declared inoperable. As per Technical Specification 4.9.E., the shared Diesel Generator and all associated low pressure core and containment cooling systems were demonstrated operable. Probable consequences are minimal since off-site power was available at all times and the provisions of Technical Specification 4.9.E. were satisfied.

0	9	SYSTEM CODE		CAUSE CODE		CAUSE SUBCODE		COMPONENT CODE					COMP. SUBCODE		VALVE SUBCODE								
7	8	E	E	11	E	12	A	13	C	K	T	B	R	K	14	F	15	Z	16				
LER NO. REPORT NUMBER		EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE		REPORT TYPE		REVISION NO.													
17	8	1		0	1	0	0	3	L		0												
ACTION TAKEN		FUTURE ACTION		EFFECT ON FLANT		SHUTDOWN METHOD		HOURS		ATTACHMENT SUBMITTED		NPRD-4 FORM SUB.		PRIME COMP. SUPPLIER		COMPONENT MANUFACTURER							
18	A	19	F	20	Z	21	Z	22	0	0	0	0	23	Y	24	Y	25	A	26	G	0	8	0

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

The cause of this occurrence was equipment failure. A 125 VDC control power ground fault internal to the breaker which ties the Diesel Generator to the emergency bus caused a spurious closure of the breaker which motored the Diesel Generator. The corrective action was to repair the ground and damaged components. Extensive testing and inspections of the Diesel Generator were then done to prove full operability on May 19, 1981.

FACILITY STATUS		% POWER		OTHER STATUS		METHOD OF DISCOVERY		DISCOVERY DESCRIPTION															
1	3	E	22	0	9	4	29	NA	30	A	31	Operational Event	32										
ACTIVITY RELEASED		CONTENT OF RELEASE		AMOUNT OF ACTIVITY		LOCATION OF RELEASE																	
1	5	Z	33	Z	34	NA	35	NA	36														
PERSONNEL EXPOSURES		PERSONNEL INJURIES		LOSS OF OR DAMAGE TO FACILITY		PUBLICITY																	
1	7	0	0	0	37	Z	38	NA	39	0	0	0	40	NA	41	Z	42	NA	43	N	44	NA	45

8107160301 810610
PDR ADCK 05000265
S PDR

Daryl G Clark

PHONE: 309-654-2241, ext. 170

- I. LEP NUMBER: LER/RO 81-10/03L-0
- II. LICENSEE NAME: Commonwealth Edison Company
Quad-Cities Nuclear Power Station
- III. FACILITY NAME: Unit Two
- IV. DOCKET NUMBER: 050-265
- V. EVENT DESCRIPTION:

At 0340 on May 15, 1981, the Control Room received the Unit Two Diesel Generator Trouble Alarm, RHR System 2 Supply from Emergency Diesel Alarm, 4 KV Bus Overcurrent Alarm and Diesel Generator 2 Low Frequency Alarm. The bus 24 to 24-1 ammeter was also indicating a current in excess of 600 amperes. An Operator was immediately dispatched to the Diesel Generator room where he found the room full of smoke. A thorough inspection revealed no evidence of a fire in the room. The only local alarm was "Diesel Generator Motoring". Not knowing the cause of the problem or the extent of damage, the Unit Two Diesel Generator and its associated 4 KV bus were declared inoperable. As required in Technical Specification 4.9.E., the 1/2 Diesel Generator and all low pressure core cooling and containment cooling systems associated with the 1/2 Diesel were tested immediately. Two off-site lines capable of supplying 345 KV power were available. The Unit Two Diesel Generator to bus 24-1 circuit breaker was taken out-of-service to prevent a possible spurious closure of the breaker and to allow inspection of the generator.

VI. PROBABLE CONSEQUENCES OF THE OCCURRENCE:

The probable consequences of this occurrence were minimal. The Diesel Generator is designed to fast start and supply power to the Division II low pressure core cooling systems if off-site power is lost. The shared Diesel Generator is a redundant system which can supply power to either unit and power Division I low pressure core cooling equipment. The 1/2 Diesel Generator and its associated equipment were available at all times while the Unit Two Diesel Generator was inoperable. Also, off-site power was available. The ability to safely shutdown and place the reactor in the cold shutdown mode was not affected as a result of this occurrence.

VII. CAUSE:

The cause of this occurrence has been designated as equipment failure. The 4 KV breaker in bus 24-1 which connects the Unit Two Diesel Generator with the emergency bus spuriously closed in, causing the bus to energize the generator stator and motor the generator. The cause of the breaker closing in was postulated to be a ground fault in the 125 volt DC control power circuit which operates that breaker. Four wires inside the breaker

• VII. CAUSE: (continued)

cubicle were found to have the insulation worn off. One of these wires probably shorted to ground or another wire causing the breaker closing mechanism to energize, thus closing the breaker. Damage to the generator was limited to the three power current transformers which go to a neutral ground detector. These transformers are directly wired into the 4 KV circuit coming off the generator. The transformers had overheated resulting in internal damage to the transformers, also, a lead to the primary winding of one of the transformers was burned off.

The emergency Diesel Generator is manufactured by the Electro-Motive Division of General Motors Corporation, model A-20-C1; rated at 4160 volts, 452 amps, 3250 KVA. The 4 KV circuit breaker is manufactured by General Electric Company, model MC-4.76. There have been no previous failures of this type at Quad-Cities Station.

VIII. CORRECTIVE ACTION:

The immediate corrective action taken was to verify operability of the 1/2 Diesel Generator and its associated emergency bus. Extensive inspections and tests were performed on the generator and equipment connected to it. The rotor and stator were meggered and revealed no indications of faults or degraded insulation. A visual inspection of generator internals showed signs of localized heating on the rotor pole faces and slight flaking of the insulation. The loose insulation was removed and new insulation material was applied. New power current transformers were installed in the neutral ground detector circuit. The four wires with worn insulation in the 4 KV breaker cubicle were replaced. No other problems were found in the breaker cubicle. At 0957 on May 17, 1981, the Diesel Generator was successfully started and loaded to 2500 kilowatts on bus 24-1. Vibration readings were taken with the Diesel Generator loaded and unloaded to verify no damage was incurred in the shaft or coupling. Approximately 15 minutes after loading the generator, all generator electrical indication was lost in the Control Room. The output breaker was immediately opened and the Diesel was shutdown. Operability of the 1/2 Diesel Generator and the associated low pressure core and containment cooling systems were readily verified. Two off-site lines capable of supplying 345 KV power were available. The problem was found to be a failed diode in the voltage regulator circuit. The diode had probably overheated when the generator was motored, but had not completely failed. The failed diode was replaced, and on May 19, 1981, at 0952, the Diesel Generator was successfully started and loaded to the bus to verify operability.

To prevent recurrence, modification M-4-2-77-21 will be installed during the next Unit Two Refueling Outage in the fall of 1981. This modification will trip the Diesel Generator to bus 24-1 breaker from loss of excitation, generator neutral voltage, generator reverse power, and overcurrent relays. This modification will also be installed on the 1/2 Diesel Generator during the Unit Two fall Refueling Outage. These protective tripping devices were installed on the Unit One Diesel Generator in the fall of 1980. This modification should be adequate to prevent recurrence.