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REPORT SOURCE

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60	61								68	69						74	75							80

DOCKET NUMBER

EVENT DATE

REPORT DATE

0 2 | At 1227 hours a capacitor failed in the Integrated Control System (ICS) causing an ICS
0 3 | response which resulted in a unit trip from approximately 68.8% of full power. While
0 4 | reclosing the generator output breaker at approximately 1250 hours 345KV "J" bus tripped
0 5 | which resulted in a loss of offsite power. Both emergency generators started and pro-
0 6 | vided essential loads with power. The loss of reactor coolant pumps placed the unit
0 7 | in violation of T.S. 3.4.1. The loss of offsite power placed the unit in the action
0 8 | statement of T.S. 3.8.1.1. Adequate core cooling existed throughout the occurrences.
7 8 9 (NP-32-79-11)⁰

SYSTEM CODE E A (11)		CAUSE CODE E (12)		CAUSE SUBCODE C (13)		COMPONENT CODE C K T B R K (14)		COMP. SUBCODE A (15)		VALVE SUBCODE Z (16)	
EVENT YEAR 7 9 (17)		SEQUENTIAL REPORT NO. — (18)		OCCURRENCE CODE 0 9 6 (19)		REPORT TYPE T (20)		REVISION NO. 0 (21)			
ACTION TAKEN C (22)	FUTURE ACTION F (23)	EFFECT ON PLANT C (24)	SHUTDOWN METHOD Z (25)	HOURS 0 0 9 6 (26)	ATTACHMENT SUBMITTED Y (27)	NPRD-4 FORM SUB. Y (28)	PRIME COMP SUPPLIER A (29)	COMPONENT MANUFACTURER G 0 8 0 (30)			
CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (31)											

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 The cause of the loss of offsite power was a part of a blown muffler on one of the

1 1 generator output 345KV breakers causing a fault to ground when the breaker was reclosed.

1 2 The damaged mufflers on both generator output breakers were replaced and reinforcing

1 3 bands installed on all the mufflers in the switchyard. Offsite power was re-estab-

1 4 lished by 1333 hours. Three reactor coolant pumps were restarted by 2000 hours.

FACILITY STATUS			% POWER			OTHER STATUS			METHOD OF DISCOVERY			DISCOVERY DESCRIPTION		
1	5	X	28	0	0	0	29	Recovery from trip			A	31	NA	
ACTIVITY CONTENT			RELEASED OF RELEASE			AMOUNT OF ACTIVITY			LOCATION OF RELEASE					
1	6	Z	33	Z	34	NA				NA				
PERSONNEL EXPOSURES			NUMBER			TYPE			DESCRIPTION					
1	7	0	0	0	37	Z	38	NA						
PERSONNEL INJURIES			NUMBER			DESCRIPTION								
1	8	0	0	0	40	NA								
LOSS OF OR DAMAGE TO FACILITY			TYPE			DESCRIPTION								
1	9	D	42	Damage to a non-seismic steam line restraint										
PUBLICITY			ISSUED			DESCRIPTION			NRC USE ONLY					
2	0	Y	44	Press release to northern Ohio media (AP and UPI)										

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TOLEDO EDISON COMPANY
DAVIS-BESSE NUCLEAR POWER STATION UNIT ONE
SUPPLEMENTAL INFORMATION FOR LER NP-32-79-11

DATE OF EVENT: October 15, 1979

FACILITY: Davis-Besse Unit 1

IDENTIFICATION OF OCCURRENCE: Reactor trip and station power loss

Conditions Prior to Occurrence: The unit was in Mode 1, with Power (MWT) = 1665, and Load (Gross MWe) = 530.

Description of Occurrence: At approximately 1227 hours on October 15, 1979, a capacitor failed in the Integrated Control System (ICS) pulser circuit to the turbine electro-hydraulic control (EHC) system. This capacitor failure caused the turbine control valves to open which lowered the main steam line header pressure. The ICS responded to the low header pressure by increasing both reactor power and feedwater which resulted in a reactor protection system reactor trip at the reduced high flux setpoint of approximately 68.8 percent of full power.

While reclosing the generator output breaker 34560 at approximately 1250 hours, 345KV "J" bus tripped which resulted in a de-energization of the Startup Transformer 01 and a station blackout. Both emergency diesel generators automatically started. The Steam and Feedwater Rupture Control System (SFRCS) actuated from the loss of all four reactor coolant pumps, both auxiliary feed pumps started, and natural circulation was established in the Reactor Coolant System (RCS). Natural circulation was verified by a reactor inlet to outlet temperature change of approximately 20°F. The loss of the reactor coolant pumps placed the unit in violation of Technical Specification 3.4.1 which requires at least one reactor coolant pump in each loop be in operation while the unit is in Modes 1 through 5. The loss of "J" bus placed the unit in Action Statement (c) of Technical Specification 3.8.1.1 which requires two independent circuits between the offsite transmission network and the onsite Class 1E distribution system while the unit is in Modes 1 through 4.

Although the SFRCS actuated upon the loss of all four reactor coolant pumps, complete isolation of the steam generators did not occur until the SFRCS received a trip on feedwater differential pressure at 1259 hours. This was due to the low feedwater flow at 20 minutes after a reactor trip. The auxiliary feedwater pumps maintained the feedwater to the steam generators and provided an adequate heat sink for the reactor decay heat.

The Component Cooling Water (CCW) Pump 2 and Service Water (SW) Pump 3 (as 2) failed to automatically start when the diesels were started. The operators manually started both pumps to provide cooling to the Diesel Generator 2.

Difficulty was experienced in re-energizing 13.8KV "A" and "B" buses from Startup Transformer 02. This was caused by sticking motor cutoff switch operating linkages in the string charging circuit. This required several attempts at closure for bus "A" and a slight tap for bus "B". Therefore, it was not until 1316 hours that bus "A" was re-energized and at 1333 hours bus "B" was re-energized from Startup Transformer 02. This removed the unit from the Action Statement (c) of Technical

Specification 3.8.1.1 and placed the unit in Action Statement (a) of Technical Specification 3.8.1.1. Startup Transformer 01 was re-energized at 1810 hours on October 15, 1979, removing the unit from the Action Statement (a) of Technical Specification 3.8.1.1.

Reactor Coolant Pump 1-2 was restarted at 1415 hours, removing the unit from violation of Technical Specification 3.4.1. Due to difficulties in the CCW interlock, the remaining reactor coolant pumps were not restarted until 1915 hours (Pump 2-2), 2000 hours (Pump 1-1), and 0135 hours on the next day (Pump 2-1).

Designation of Apparent Cause of Occurrence: The cause of the unit trip was the failure of the capacitor in the ICS pulser circuit at the reduced Reactor Protection System trip setpoint (the plant trip setpoint was limited to less than 70% of full power by Technical Specification 3.1.3.3 since a reactor control rod absolute position indicator was inoperable.)

The cause of the station blackout was a blowing out of the internals of the muffler on generator output breaker 34560 when it opened for the trip which caused a fault to ground when the breaker was reclosed. These mufflers reduce the sound level when these air blast breakers actuate.

The cause of the failure of the CCW Pump 2 and SW Pump 3 (as 2) to automatically start was due to a failure of the linkage rod assembly in the Diesel Generator 2 outlet breaker AD101. It was discovered the linkage was improperly manufactured in that only one of two tackwelds had been made on the assembly; the lone tackweld had failed.

The cause of the sticking motor cutoff switch in the spring charging circuit of the 13.8 KV air circuit breakers operating linkages was due to galling of the linkages which actuate the cutoff switch.

The cause of the problem in the CCW interlock to the reactor coolant pump start circuit is believed to be due to defective Couch relays. A relay in the 2-1 RCP circuit was found to have a contact burnt to ground. Corrosion at the base of the relays and relay contact/burning was also noted which may have contributed to the relay deficiencies.

Analysis of Occurrence: There was no danger to the health and safety of the public or to station personnel. Adequate core cooling existed throughout the occurrence and at no time did RCS conditions approach the saturation point.

Corrective Action: The failed pulser circuit was repaired and proper operation of the ICS was verified. Since this was the third occurrence of problems with the capacitors, B&W investigated the cause of the failure (no previous failures resulted in unit trips). It was determined that voltage spikes occurred in the EHC system that exceeded the capacitor design voltage. A capacitor with a higher voltage rating has been installed.

The damaged mufflers on both generator output breakers were replaced and a reinforcing band installed to strengthen all breaker mufflers.

The cell switch linkage rod assembly in the Diesel Generator 2 outlet breaker has been replaced. The cell switch linkage rod assembly on Diesel Generator 1 outlet breaker as well as twenty-seven other breakers have been inspected with no further deficiencies discovered. All breakers with cell switch actuators on C1 and D1 bus transfer switchgear were inspected with no further galling discovered.

The sticking "A" and "B" bus motor cutoff switch operating linkages were replaced. Adjustment of the motor cutoff switches will be checked by a preventative maintenance program on a refueling outage frequency.

All blown fuses were replaced in the CCW interlock circuit. The relays on all four reactor coolant pump interlock circuits were replaced.

Failure Data: There has been one previous loss of all reactor coolant pumps from a power failure, but the power failure did not originate at the switchyard (see Licensee Event Report NP-32-77-20).

LER #79-096

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