

CONTROL BLOCK:

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0	1	P	A	B	V	S	1	2	0	0	-	0	0	0	0	0	-	0	0	3	4	1	1	1	1	4			5	
7	8	LICENSEE CODE						14	LICENSE NUMBER												25	LICENSE TYPE					30	57 CAT 58		

REPORT SOURCE: 01 L 6 0 5 0 0 0 3 3 4 7 0 3 2 7 8 3 8 0 5 0 2 8 3 9
60 61 DOCKET NUMBER 68 69 EVENT DATE 74 75 REPORT DATE 80

On 3/27/83, the Diesel Driven Fire Pump, [FP-P-2] failed its OST due to high coolant water temperature. Additional starting attempts yielded continuing high temperatures as well as a number of electrical problems. The pump was returned to service on 4/19/83, after the defective cylinder head and electrical components were replaced. There were no safety implications as the redundant Electric Fire Pump, [FP-P-1] and a portable fire pump were available. This is the third LER on the Diesel Fire Pump.

SYSTEM CODE A B 11		CAUSE CODE B 12		CAUSE SUBCODE B 13		COMPONENT CODE E N G I N E 14				COMP. SUBCODE Z 15		VALVE SUBCODE Z 16					
EVENT YEAR 8 3 21 22		SEQUENTIAL REPORT NO. 0 1 0 24 26		OCCURRENCE CODE 9 9 28 29		REPORT TYPE X 30		REVISION NO. 0 32									
ACTION TAKEN A 18		FUTURE ACTION Z 19		EFFECT ON PLANT Z 20		SHUTDOWN METHOD Z 21		HOURS 0 0 0 0 22		ATTACHMENT SUBMITTED Y 23		NPRD-4 FORM SUB. N 24		PRIME COMP. SUPPLIER A 25		COMPONENT MANUFACTURER C 7 4 2 26	

1 0 The high coolant temperature was caused by a casting defect in the engine's
1 1 cylinder head. When the engine over heated, water overflowed
1 2 from the coolants expansion tank onto the voltage regulator causing it to
1 3 malfunction, producing overvoltage. The defective cylinder head and the electrical
1 4 components damaged by the overvoltage, were replaced.

FACILITY STATUS		% POWER		OTHER STATUS		METHOD OF DISCOVERY		DISCOVERY DESCRIPTION	
1	5	E	28	1	0	0	29	N/A	30
8	9	10	11	12	13	14	15	16	17
18	19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36	37
38	39	40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55	56	57
58	59	60	61	62	63	64	65	66	67
68	69	70	71	72	73	74	75	76	77
78	79	80	81	82	83	84	85	86	87
88	89	90	91	92	93	94	95	96	97
98	99	00	01	02	03	04	05	06	07
08	09	10	11	12	13	14	15	16	17
18	19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36	37
38	39	40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55	56	57
58	59	60	61	62	63	64	65	66	67
68	69	70	71	72	73	74	75	76	77
78	79	80	81	82	83	84	85	86	87
88	89	90	91	92	93	94	95	96	97
98	99	00	01	02	03	04	05	06	07
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58	59	60	61	62	63	64	65	66	67
68	69	70	71	72	73	74	75	76	77
78	79	80	81	82	83	84	85	86	87
88	89	90	91	92	93	94	95	96	97
98	99	00	01	02	03	04	05	06	07
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18	19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36	37
38	39	40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55	56	57
58	59	6							

ACTIVITY CONTENT
RELEASED OF RELEASE

1 6 33 34 35

AMOUNT OF ACTIVITY

N/A

LOCATION OF RELEASE

36

N/A

PERSONNEL EXPOSURES									
NUMBER			TYPE	DESCRIPTION					
1	7	0	0	0	(37)	Z	(38)	N/A	(39)

PERSONNEL INJURIES		DESCRIPTION	
NUMBER			
0	0	0	40
N/A			

1	9	Z	(42)	N/A	8305160064 830502 PDR ADOCK 05000334 S PDR	80
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2		0		N		44		N/A		NRC USE ONLY									
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NRC USE ONLY

Robert J. Drugg, Chief Engineer.

1984-1985

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Attachment To LER 83-010/99X
Beaver Valley Power Station
Duquesne Light Company
Docket No. 50-334

While performing the precaution steps in the "Weekly Diesel Engine Driven Fire Pump Operation Test", on 3/27/83, the water level in the cooling systems' expansion tank was observed to be low. Water was added to bring the level back to normal and the engine was started. After running for 7 minutes, the expansion tank overflowed and high engine temperature was noted. The engine was promptly shutdown. After cooling, the expansion tank was again noted to be empty. The pump was declared inoperable and was removed from service.

Assuming there were cooling system problems, the engine was flushed and the thermostat was replaced. After this maintenance, the diesel was started with overheating problems still occurring. The heat exchanger was next rodded and flushed, with the thermostat replaced a second time. During the next starting attempt, the diesel ran for 30 seconds and tripped.

Through an investigation into the cause of the trip, the voltage regulator was found to be malfunctioning. The voltage regulator damage was judged to be a problem that occurred when coolant splashed onto the regulator during the expansion tank overflow of 3/27/83. After a new voltage regulator was installed, the diesel was again started, with temperature still indicating high.

On further running attempts, the diesel was found to be still running hot with an additional starting problem. Assuming further cooling system problems, the heat exchanger and water pump were replaced; however, further testing still yielded high coolant temperatures. On 4/13/83, a Cummins (diesel manufacturer) representative inspected the engine and thought the cause for high coolant temperatures could be problems with the engines cylinder head. The head was sent to the manufacturer where through pressure testing, it was discovered that the head for the 1 and 2 cylinders was damaged. A hole was found where the injector sleeve was installed, which was caused by a casting defect. This hole in the cylinder head caused the engine to run hot and to lose water level.

After the flawed cylinder head was replaced, the engine was again started. During this run, the Fuel Shut-off Valve solenoid malfunctioned and was replaced. The diesel started on the next attempt, but the starting motor kept cranking even while the diesel was running, and an indicating light was found not functioning. The Crank Cut-off relay and the indicating bulb were replaced.

The valve, relay and bulb failures were caused by an excessive voltage being applied to them as the result of the previous regulator malfunction.

After passing its weekly Operational Surveillance Test, the pump was returned to service on 4/19/83.