

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Beaver Valley Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 3 4	PAGE (3) 1 OF 5
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TITLE (4)
Inoperable Fire Detection System in Diesel Generator Area

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)																										
03	26	86	86	003	00	04	24	86	N/A		0 5 0 0 0																										
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">OPERATING MODE (9)</td> <td style="width:15%;">1</td> <td style="width:15%;">20.402(b)</td> <td style="width:15%;">20.406(c)</td> <td style="width:15%;">50.73(a)(2)(iv)</td> <td style="width:15%;">73.71(b)</td> </tr> <tr> <td rowspan="4">POWER LEVEL (10)</td> <td rowspan="4">11010</td> <td>20.406(a)(1)(i)</td> <td>50.36(c)(1)</td> <td>50.73(a)(2)(v)</td> <td>73.71(c)</td> </tr> <tr> <td>20.406(a)(1)(ii)</td> <td>50.36(c)(2)</td> <td>50.73(a)(2)(vii)</td> <td rowspan="3">OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td>20.406(a)(1)(iii)</td> <td>X 50.73(a)(2)(i)</td> <td>50.73(a)(2)(viii)(A)</td> </tr> <tr> <td>20.406(a)(1)(iv)</td> <td>50.73(a)(2)(ii)</td> <td>50.73(a)(2)(viii)(B)</td> </tr> <tr> <td>20.406(a)(1)(v)</td> <td>50.73(a)(2)(iii)</td> <td>50.73(a)(2)(x)</td> <td></td> </tr> </table>												OPERATING MODE (9)	1	20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)	POWER LEVEL (10)	11010	20.406(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)	20.406(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	20.406(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	20.406(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	
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THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (**)

LICENSEE CONTACT FOR THIS LER (12)

NAME R. J. Druga, Manager Technical Services	TELEPHONE NUMBER AREA CODE: 4 1 2 6 4 3 - 5 3 1 0 8
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPPDS		
A	I C F R A		H 2 6 0	N	B	I C I A		H 2 6 0	N		
X	I C F R A		H 2 6 0	N							

SUPPLEMENTAL REPORT EXPECTED (14)	YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	X	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On 3/26/86 the #2 Diesel Generator was run for its monthly test. During this test it was noticed that while a diesel area smoke detector alarmed, no fire alarm was received in the Control Room. Further investigation showed that two of the three smoke detectors in the #2 Diesel area were inoperable. At 2200 hours the Fire Detection System for this area was declared inoperable and a once-per-hour fire watch was established as required per Tech. Spec. 3.3.3.6. On 4/1/86 personnel from the vendor (Honeywell) arrived and determined that the problem with the one inoperable detector was a missing 470 Ohm resistor which was to have been used during detector installation to increase detector alarm current. The other inoperable detector had its 470 Ohm resistor in place but a loose connection between the resistor and the detector prevented the resistor from being in the current loop. The missing resistor was replaced on the one detector. The connection on the other detector's resistor was tightened. It was discovered that Honeywell personnel performing the surveillance test had misinterpreted Beaver Valley's procedure and not verified that each detector could actuate the remote fire alarm in the Control Room. All smoke detectors are currently being tested properly to verify operability.

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PDR ADOCK 05000334
S PDR

IF 22/1

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Beaver Valley Power Station, Unit 1	0 5 0 0 0 3 3 4	8 6	- 0 0 3	- 0 0	0 2	0 5

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

On 3/26/86, Beaver Valley personnel ran the #2 Diesel Generator for its normal monthly operation surveillance test. During this test, operators at the diesel noted that the red LED on one of the three #2 Diesel Generator smoke detectors had become illuminated. This indicated that the smoke detector had alarmed. This is normal during a diesel generator run due to diesel exhaust. However, the Control Room did not receive a smoke alarm from the #2 Diesel Generator. The Control Room then had operators locally test the remaining two smoke detectors and discovered that only one was capable of causing a Control Room alarm. At 2200 hours the Fire Detection System for the #2 Diesel Generator was declared to be inoperable. A once-per-hour fire watch was immediately established in that area as required per Tech. Spec. 3.3.3.6. The vendor (Honeywell) was notified. Operations also observed that the Honeywell system had a Supervisory Alarm (SVA) for the #2 Diesel Fire Detection Loop. The operators were unaware of the significance of this alarm.

On 4/1/86, Honeywell personnel arrived on site to troubleshoot the #2 Diesel Generator Fire Protection System. They confirmed that two of the #2 Diesel Generator's smoke detectors were inoperable. Further investigation determined that the one inoperable detector (D100) had a missing 470 Ohm accessory resistor. The other inoperable detector (D101) had its accessory resistor in place but had a loose connection (due to a loose screw) where one of the resistors was attached to the detector's conduit box terminal strip (see attached Figure 1). Both the inoperable detectors were type TC100C. These detectors, when alarmed, draw 26 mA of current. This 26 mA of current is not enough to trigger an alarm in the local fire alarm panel (type W931). In order to increase the alarm current, Honeywell installed these accessory resistors in parallel with the detectors alarm LED (see attached Figure 2: Schematic of TC100C Smoke Detector). The resistor is across detector junction points J2-5 and J2-3. This is done by physically placing the resistor across the purple and the red/yellow wires at the detector terminal strip located approximately six inches from the detector (see Figure 1).

Detector D100 (the one with the missing resistor) had been replaced by Honeywell personnel in January 1985. It is believed that when the detector was replaced, the technician failed to re-install the resistor. Detector D101 had been replaced in August 1984. It is not known if the terminal strip screw was left loose at this time or if it came loose at a later date. An accessory resistor was added to detector D100's terminal strip. The loose connection on D101's terminal strip was tightened. After these corrective actions were taken, both detectors were verified to operate/alarm properly.

The Supervisory Alarm (SVA) which was present during this event was determined not to be due to the resistor problems. The SVA is a continuity check which will alarm if a detector is removed from the loop or if any other break in the loop occurs. (Note: The detectors in a given fire zone, such as the #2 Diesel Generator area, share a common current loop. This loop feeds a local fire panel which feeds a Data Gathering Panel which feeds the Control Room Master Panel.) Even without the resistors in the circuit, continuity was maintained. Honeywell investigated and discovered a loose wire in the #2 Diesel Generator Data Gathering Panel (type ALPHA 3000). This loose connection was fixed and the SVA alarm cleared.

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

It was questioned why, if the one detector had been inoperable since January 1985, hadn't Fire Detection surveillance testing discovered the fault. The entire Fire Detection had been tested as recently as November 1985 with no problems found. Investigation determined that Honeywell personnel, who perform the surveillance test, had failed to comply with Beaver Valley's testing procedure. The Honeywell technician had misinterpreted the procedure's instructions and only verified that each detector was capable of alarming locally and that each detector loop was capable of generating an alarm in the Control Room. The procedure, as it had been written, required that a Control Room alarm be verified for each detector. The procedure has been revised to clarify this testing requirement. Honeywell personnel are in the process of re-testing all smoke detectors at Beaver Valley using the revised procedure. Spot checks by Beaver Valley and NRC personnel have verified Honeywell's compliance with the revised procedure.

It was also noted during the investigations surrounding this incident that Beaver Valley personnel did not have procedural guidance for response to a Honeywell Fire Detection System supervisory alarm. Such guidance is currently being prepared for addition to Beaver Valley's alarm response procedure.

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

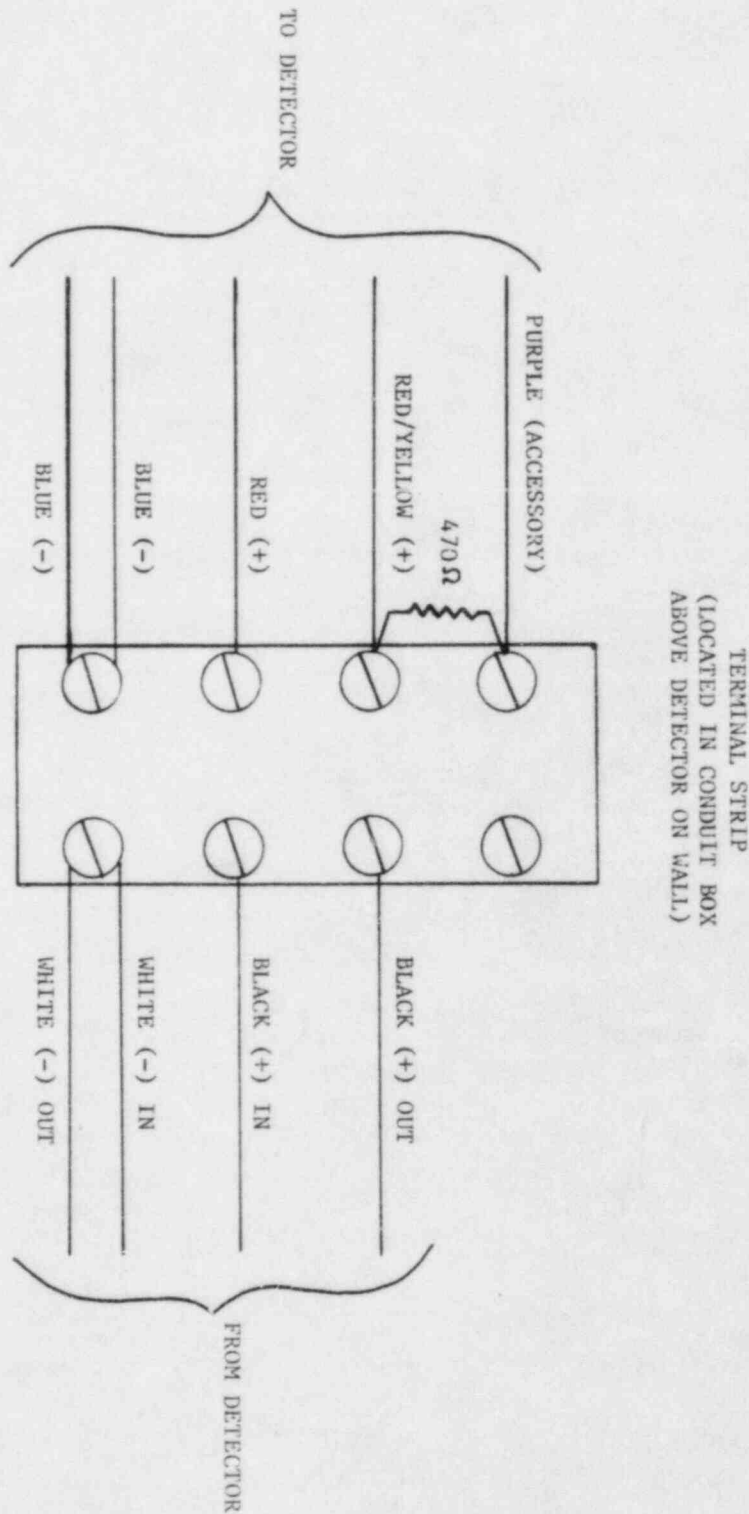


FIGURE 1

FACILITY NAME (1)

DOCKET NUMBER (2)

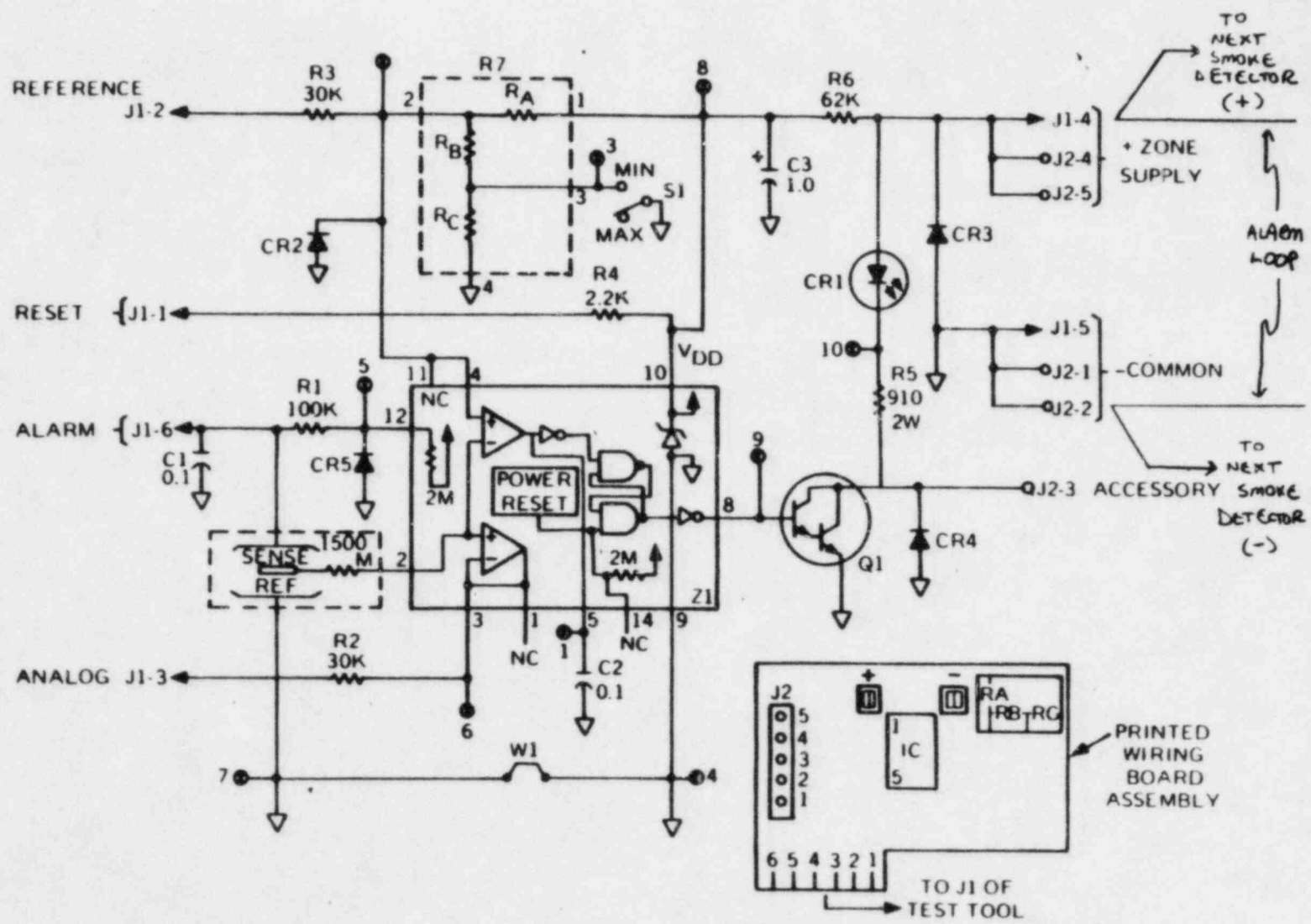
YEAR

SEQUENTIAL NUMBER

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TEXT (If more space is required, use additional NRC Form 366A 9/1/77)



Schematic-TC100C Smoke Detector.

FIGURE 2



Duquesne Light

Nuclear Division
P. O. Box 4
Shippingport, PA 15077-0004

Telephone (412) 393-6000

April 24, 1986
ND1SS1:2780

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
LER 86-003-00

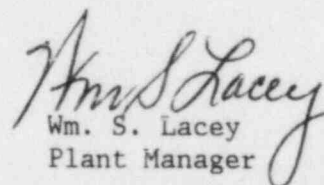
United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

In accordance with Appendix A, Beaver Valley Technical Specifications,
the following Licensee Event Report is submitted:

LER 86-003-00, 10 CFR 50.73.a.2.i, "Inoperable Diesel Area Fire
Detection System."

Very truly yours,


Wm. S. Lacey
Plant Manager

Attachment

IE22
//

April 24, 1986

NDISS1:2780

Page two

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