

GPU Nuclear

P.O. Box 480 Middletown, Pennsylvania 17057 717-944-7621 Writer's Direct Dial Number:

May 28, 1982 4400-82-L-0089

Office of Inspection and Enforcement Attn: Mr. Ronald C. Haynes, Director Region I U. S. Nuclear Regulatory Commission 631 Park Avenue King of Prussia, Pennsylvania 19406

Dear Sir:

Three Mile Island Nuclear Station, Unit 2 (TMI-2) Operating License No. DPR-73 Docket No. 50-320 Licensee Event Report 82-013/03L-0

Attached please find Licensee Event Report 82-013/03L-0 concerning the inoperability of in-containment smoke detection on April 28, 1982.

This event concerns Section 3.3.3.8 and is considered reportable under Section 6.9.2 of the Interim Recovery Technical Specifications.

ing Director, TMI-2

JJB:SDC:djb

Attachments

cc: L. H. Barrett, Deputy Program Director - TMI Program Office Dr. B. J. Snyder, Program Director - TMI Program Office,

V. Stello, Deputy Executive Director

Operations & Generic Requirements U. S. Nuclear Regulatory Commission Washington, D.C. 20555

GPU Nuclear is a part of the General Public Utilities System

LICENSEE EVENT REPORT

Attachment 1 4400-82-L-0089

4400-82-L-0089	
CONTROL BLOCK: [] [1] (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)	
0 1 P A T M I 2 2 0 0 - 0 0 0 0 - 0 0 3 4 1 1 1 1 1 4 5 57 CAT 58 5	
CON'T O 1 REPORT L G O 5 O O O 3 2 O O O 4 2 8 8 2 O O O O O O O O	
EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10 After initiating the Reactor Building smoke detector portion of Surveillance Procedur	e
0 3 4333-SA1 "Fire System Detector Instrument Fuctional Test" at 1040 hours on April	
0 4 28, 1982, the seven smoke detectors tested failed to provide the required trip	
functions and alarms. The detectors were declared inoperable and the Action State-	
ment of Tech Spec 3.3.3.8 was entered. This event is considered reportable per	
section 6.9.2 of the Tech Specs. This event had no effect on the health and safety	
of the public.	_ <u></u>
SYSTEM CAUSE CAUSE SUBCODE COMPONENT CODE SUBCODE SUBC	,
LER/RO REPORT NUMBER 2 23 24 26 27 28 29 30 31 32	
ACTION FUTURE CFFECT SHUTDOWN HOURS 22 ATTACHMENT NPRD-4 PRIME COMP. COMPONENT SUBMITTED FORM SUB. SUPPLIER MANUFACTURER WANUFACTURER 33 34 18 Z 29 Z 20 Z 21 Q 0 0 0 0 Y 41 23 N 24 A 3 25 P 4 3 CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)	3 5 47
1 0 Investigation determined that the Fire Indicating Unit (FIU) which controls the	
smoke detectors and alarm/trip functions malfunctioned. Specifically, the high	
voltage dc power supply of the FIU failed to provide design voltage due to a	
transformer malfunction. The FIU was replaced and the surveillance performed again.	
The smoke detectors were declared operable at 1037 on May 28, 1982.	80
FACILITY * POWER OTHER STATUS 30 METHOD OF DISCOVERY DESCRIPTION 32 DIS	
7 8 0 10 12 13 44 45 46 RELEASED OF RELEASE AMOUNT OF ACTIVITY (35) LOCATION OF RELEASE (36) 1 6 Z (33) Z (34) N/A N/A	во
7 8 9 10 11 44 45 PERSONNEL EXPOSURES NUMBER TYPE DESCRIPTION 39	80
1 7 0 0 0 37 Z 38 N/A 7 8 9 PERSONNEL INJURIES 8	80
NUMBER DESCRIPTION (41) 1 8 0 0 0 40 N/A	ل
LOSS OF OR DAMAGE TO FACILITY 43	80
AUDI ICITY	80
POBLICITY	100
NAME OF REPRACE Steven D. Chaplin PUONE. (717) 948-8461	2 · 08

LICENSEE EVENT REPORT NARRATIVE REPORT TMI-II LER 82-013/03L-0 EVENT DATE - April 28, 1982

I. EXPLANATION OF OCCURRENCE

At 1040 hours on April 28, 1982, the Reactor Building smoke detector portion of Surveillance Procedure 4333-SAI "Fire System Detector Instrument Functional Test" was initiated. Seven smoke detectors were tested. They were:

- FS-XD-6279-1 which is located in the Reactor Building air cooling duct to the "B" D-ring at approximately the 305' elevation.
- FS-XD-6275 2, 4, 5 which are located on the inside perimeter of the "B" D-ring just below the 367' elevation.
- FS-XD-6276 2, 4, 5 which are located on the inside perimeter of the "A" D-ring just below the 367' elevation.

Of the seven smoke detectors in the Reactor Building that were tested, all failed to activate the interlocks and alarms at either the local panel (panel 720, outside containment) or in the control room. However, a few of the detectors did provide momentary visual indication of tripping at the detector (note: each smoke detector is equiped with a small red lamp to provide indication to the immediate area that the detector has tripped. The detector system is designed such that the light remains lit until the trip signal is reset at panel 720. Panel 720 is where the Fire Indicating Unit (FIU) for the inside containment fire detection strings is located. The FIU is essentially the main control unit of the fire detection and alarm/interlock systems).

Based on the failure to the required trip functions and alarms, the tested detectors were declared inoperable. This placed the unit in the action statement of Tech Spec 3.3.3.8 due to having an insufficient number of operable smoke detectors inside the Reactor Building.

This event is considered reportable under Section 6.9.2 of the Recovery Tech Specs due to the requirements of the action statement of Tech Spec 3.3.3.8.

II. CAUSE OF THE OCCURRENCE

The inoperability of the smoke detectors was the result of a partial failure of the high voltage dc supply unit in the FIU. It appears that the AC transformer, which supplies the rectifier section of the dc power supply, failed to provide the proper output voltage when supplied with its rated input voltage.

III. CIRCUMSTANCES SURROUNDING THE OCCURRENCE

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At the time of the occurrence, the Unit 2 facility was in a long-term cold shutdown state. The reactor decay heat was being removed via loss to ambient. Throughout the event there was no effect on the Reactor Coolant System or the core.

IV. CORRECTIVE ACTIONS TAKEN OR TO BE TAKEN

Subsequent investigation and results are listed below.

- o The detector strings were meggered and indicated that not only was there continuity in the detector string loop conductor but that there were no appreciable difference since the last megger check.
- o The Fire Indicating Unit (FIU) was checked for proper operation. A deficiency was identified in the FIU's high voltage DC power supply.

The high voltage DC power supply provides the operating voltage for the smoke detectors. The unit was delivering approximately 190 Vdc as opposed to 220 Vdc to 240 vdc as specified for an unloaded state. When a detector tripped, i.e. when the power supply became loaded, the voltage would drop to approximately 125 Vdc. Based on the investigation, it is believed that the 125 Vdc signal was insufficient to trigger and/or maintain the FIU in an alarm state. As a result, the FIU was replaced on May 7, 1982.

o With the external to containment portion of the smoke detection in operational order and with the detector loop (22D) inside containment verified as acceptable, the only segment remaining to be verified operable were the smoke detectors. This was accomplished during a containment entry on May 26, 1982. During the retest all of the detectors listed above, except FS-XD-6274-4 which was not retested, the required alarms were received both at panel 720 and the control room. However, interlock function with AH-F-12B did not perform as required.

This deficiency was cleared and the fire protection system returned to operable station at 1037 hours on May 28, 1982.

V. COMPONENT FAILURE DATA

Panel 720 Fire Indicating Unit (FIU)

Manufactured by Pyrotronics

Model #FIU-6

Catalog #405-5