



GPU Nuclear Corporation
Post Office Box 480
Route 441 South
Middletown, Pennsylvania 17057-0191
717 944-7621
TELEX 84 2388
Writer's Direct Dial Number:
717-948-8005

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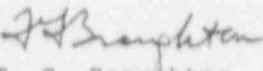
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Response to the Notice of Violation
in Inspection Report 91-02

Enclosed is the GPU Nuclear reply to the Notice of Violation presented in Appendix A to Inspection Report 91-02. Additional time for responding was granted by the TMI-1 NRC Senior Resident Inspector on April 8, 1991.

Sincerely,


T. G. Broughton
Vice President and Director, TMI-1

TGB/MRK

Attachment

cc: Region I Administrator, NRC
Director, Project Directorate I/4, NRC
Senior Project Manager, TMI-1, NRC
Senior Resident Inspector, TMI-1, NRC

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Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
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Response to the Notice of Violation
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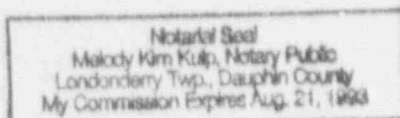
This letter is submitted in response to the Notice of Violation presented in Inspection Report 91-02. All statements contained in this response have been reviewed, and all such statements made and matter set forth therein are true and correct to the best of my knowledge.



T. G. Broughton
Vice President and Director, TMI-1

Signed and sworn before me this

9th day of May, 1991.



Member, Pennsylvania Association of Notaries

Notice of Violation

10 CFR 50, Appendix B, Criterion XVI, states that measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to the above:

- a. The licensee failed to identify that DC-V-65A was partially open from November 6, 1990, to November 17, 1990, leaving the Decay Heat Closed Cooling Water System in a significantly degraded condition. Several licensee personnel had observed the valve position during this time.
- b. On December 14, 1990 the licensee found the diesel generator "B" exciter auto-voltage adjust rheostat mispositioned. Operating and surveillance procedures conducted following the diesel's annual overhaul on October 19, 1990, failed to identify this condition.

This is a Severity Level IV Violation (Supplement I).

GPUN Response to the Notice of Violation

The Notice of Violation dealt with two separate incidents. The first example involved Decay Heat Closed Cooling Water System cooler bypass valve, DC-V-65A. The second example involved the mispositioning of the automatic voltage control rheostat for the "B" emergency diesel generator. These examples dealt with separate incidents which GPU Nuclear considers unrelated. The causes of the two incidents are different as are the corrective actions. The two incidents are treated separately in the response which follows:

I. Admission or denial of the violation

GPUN accepts the above violation.

II. Reasons for the violation

a) DC-V65A Not Completely Closed

The Woodruff key coupling the valve stem to the actuator of the Decay Heat Removal (DHR) cooler bypass valve, DC-V65A, failed leaving the butterfly valve in a 15° open position. The key may have fractured while manually stroking the valve locally in support of implementing a modification to provide remote control of this valve from the control room. However, because of the amount of scoring noted on the shaft, it can be argued that the key actually fractured earlier allowing the valve to operate over several opening/closing cycles only because of the tight fit between the key fragments and the collar, leaving the valve slightly open more with each cycle of the valve. Laboratory analysis of the broken key (Reference: TDR-1041) concluded that failure was a result of a one time overload. Regardless of how long the key had been broken, there was no evidence the valve was not closing fully until a computer alarm came in. This alarm results from actuation of a limit switch mounted on the valve stem.

Historically, the operator log readings had been taken at the remote pneumatic valve operator station one level above the Decay Heat Removal vault where DC-V65A is located. This was to minimize the occupational radiation exposure associated with this log entry. Therefore, it had been common practice to check the position of DC-V65A based on valve actuator demand as opposed to direct inspection of the valve stem position.

Prior to releasing the valve for modification, DC-V65A was checked in its Emergency Safeguards (ES) position by manual manipulation of its local handwheel operator to its full closed position. When the computer alarm indicated that DC-V65A was not fully closed, the Shift Foreman incorrectly assumed that the alarm condition was caused by movement of the limit switch follower set screw mounted on the valve stem. The limit switch follower was adjusted by a technician in accordance with 1420-Y-13 "General Circuit Troubleshooting and Repair" as directed by his supervisor. This adjustment was based on 1) the remote pneumatic indication of a 0 psig control air signal which should allow the valve spring to close the valve and 2) the previous closed position indication established by manual handwheel operation. These proved to be erroneous indications of valve position because of the broken shaft key.

The degraded condition of DC-V65A went undetected for approximately eleven (11) days because of personnel error. This failure could have been avoided if the Operations and Maintenance Departments supervision involved had required the actual valve stem position to be more closely verified using the stem position rather than manual handwheel and pneumatic operator indications. The method by which valve position was checked led to the erroneous conclusion and continued misposition of the valve.

b) Diesel Generator Auto Voltage Rheostat Out of Position

This event occurred as a result of a mispositioned automatic voltage control rheostat. This rheostat controls the generator voltage setpoint during a condition that would require the diesel to automatically respond, such as an Engineered Safeguards (ES) actuation or an undervoltage condition on the "E" 4160 volt bus. Although it was determined that the system was fully operable and able to fulfill its specified function, the mispositioned rheostat caused diesel generator voltage to be higher than normal. It is believed that this control was inadvertently mispositioned during the diesel generator overhaul seven (7) weeks prior to the event.

The diesel had been tested in parallel operation with the grid subsequent to the overhaul. However, the voltage control for parallel operation is adjusted by a separate rheostat located on the outside of the local control cabinet and the problem with the rheostat located inside the cabinet was not found.

The problem was identified by the operator at the diesel during the ESAS quarterly test in accordance with Surveillance Procedure (SP) 1303-5.2, "Loading Sequence and Component Test and High Pressure Injection Logic Channel Test." This resulted in management involvement and prompt corrective action. However, the length of time the condition existed prior to discovery was unacceptable.

The cause of the incident was procedural inadequacy. SP 1303-4.16 "Emergency Power System" and the Operating Procedure (OP) 1107-3 "Diesel Generator" are both used to qualify the diesel following the annual overhaul. Neither of the two procedures properly accounted for verification of the proper position of this rheostat which is located internal to the cabinet.

III. Corrective steps which have been taken and the results achieved

a) **DC-V65A Not Completely Closed**

The following actions have been taken in response to this incident:

- 1) Failure of the Woodruff key was the result of using the incorrect material. This key has been replaced with a key of the proper material. In addition, warehouse stock has been replaced with the correct material.
- 2) Both the Shift Foreman and the I&C Supervisor who conducted troubleshooting of DC-V65A have been briefed on improved methods of determining the actual position of this type of valve.
- 3) New instructions on position verification methods for this valve have been provided. The Primary Auxiliary Operator Log Sheets have been changed to clarify that valve position checks of DC-V65A/B be by direct verification of the valve shaft position.
- 4) A local sign has been placed on the DHR cooler piping directing that valve position checks be made using the physical stem position.
- 5) Work is planned to provide a scribe mark on the stem and reference point on the valve body which will provide a more reliable indication of stem position.
- 6) The primary cause of this incident has been identified as human error caused by lack of training on troubleshooting and diagnosing this specific mechanical linkage failure. In addition to the above improvements, it has been determined that enhancements to Corrective Maintenance Procedure 1420-Y-13 "General Circuit Troubleshooting and Repair" may be beneficial in preventing a similar incident from occurring. This procedure is being revised to ensure more reliable valve position indication verification prior to limit switch adjustment.
- 7) Based upon a review of Administrative Procedure (AP) 1067, "Independent Verification Program," critical plant valves in accident mitigating systems were reviewed to identify the potential for any other problems of this nature and none was identified.

b) **Diesel Generator Auto Voltage Rheostat Out of Position**

The following actions have been taken in response to this incident:

- 1) SP 1303-4.16 "Emergency Power System" and the Operating Procedure OP 1107-3 "Diesel Generator" have been revised to ensure that the ES voltage rheostat (inside the cabinet) is set correctly.
- 2) The ESAS quarterly test Procedure, SP 1303-5.2, was revised to verify that the diesel generator output voltage is within an acceptable range.
- 3) A label has been applied inside the control cabinet which states that the ES voltage rheostat is not to be adjusted without the permission of the shift supervisor in accordance with OP 1107-3.

IV. Corrective steps which will be taken to avoid further violations

GPU Nuclear believes that the following corrective actions will ensure that these or similar events do not reoccur:

a) **DC-V65A Not Completely Closed**

- 1) Revisions to Corrective Maintenance Procedure 1420-Y-13, "General Circuit Troubleshooting and Repair" will be implemented by June 30, 1991.
- 2) Action to provide a more reliable indication of DC-V65A stem position will also be completed by June 30, 1991.

b) **Diesel Generator Auto Voltage Rheostat Out of Position**

Corrective actions associated with this item are complete.

V. Date of Full Compliance

GPU Nuclear considers that full compliance has been achieved although one of the procedure changes discussed above, ie., Corrective Maintenance Procedure 1420-Y-13, will not be completed until the end of June, 1991. Until the procedure change is approved, personnel have been made aware of this problem potential and understand that limit switches will not be adjusted without proper verification of valve position.

These incidents resulted in degraded conditions that existed for a period of time. However, once the problems were identified, prompt action was taken to resolve them. GPU Nuclear has concluded, based on a thorough inquiry into both events, that these two incidents are not indicative of a programmatic weakness.