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Regulatory Docket File

BBS Ltr. #669-75

Dresden Nuclear Power Station
 R. R. #1
 Morris, Illinois 60450
 October 9, 1975



Mr. James G. Keppler, Regional Director
 Directorate of Regulatory Operation-Region III
 U. S. Nuclear Regulatory Commission
 799 Roosevelt Road
 Glen Ellyn, Illinois 60137

SUBJECT: REPORT OF ABNORMAL OCCURRENCE PER SECTION 6.6.A OF THE TECHNICAL SPECIFICATIONS
HPCI TURBINE FAILURE TO TRIP

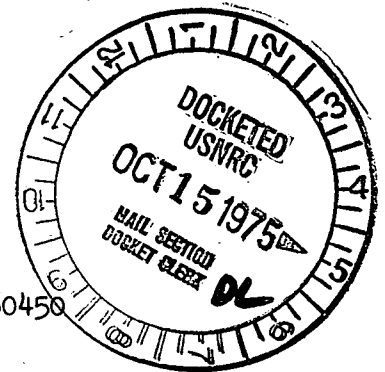
- References:
- 1) Regulatory Guide 1.16 Rev. 1 Appendix A
 - 2) Notification of Region III of U. S. Nuclear Regulatory Commission
 Telephone: Mr. Johnson, 1150 hours on September 29, 1975
 Telegram: Mr. Keppler, 1305 hours on September 29, 1975
 - 3) Drawing Number 12E2533

Report Number: 50-237/75-45

Report Date: October 9, 1975

Occurrence Date: September 29, 1975

Facility: Dresden Nuclear Power Station, Morris, Illinois 60450



IDENTIFICATION OF OCCURRENCE

The Unit-2 HPCI turbine failed to trip at the designed reactor coolant level of $\geq +48$ ".

CONDITIONS PRIOR TO OCCURRENCE

The Unit-2 reactor mode switch was in the shutdown position. A scram precipitated by high drywell pressure had occurred on Unit-2 approximately 50 minutes earlier. The HPCI turbine was operating in response to low reactor coolant level ($\ll +48$ ") and high drywell pressure signals.

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DESCRIPTION OF OCCURRENCE

At 0524 hours on September 29, 1975, Unit-2 scrambled on high drywell pressure (see report no. 50-237/75-46). The HPCI turbine automatically initiated as designed, tripping after vessel coolant level reached +48". While attempting to maintain reactor coolant level by regulating feedwater flow, the operator inadvertently allowed the coolant level to fall below +48". Because a high drywell pressure signal was still present, the HPCI turbine re-started. At approximately 0630 hours, when reactor coolant level again reached +48", the HPCI turbine failed to trip.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE (Equipment Failure)

An inspection of the turbine tripping circuitry revealed an open circuit in the turbine trip solenoid valve coil. The opened circuit apparently resulted from a cold solder joint failure within the coil.

ANALYSIS OF OCCURRENCE

The HPCI turbine trip valve solenoid must be energized to initiate a trip. Failure of the solenoid in the de-energized mode will prevent automatic or remote manual turbine trips, but will not inhibit any automatic actuation of the HPCI system. Since the continued operation of the HPCI system merely resulted in even more conservative core protection, the health and safety of the general public were never jeopardized by this occurrence.

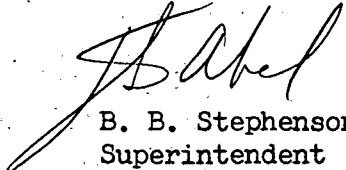
CORRECTIVE ACTION

Immediate corrective action was to set the turbine speed controller to minimum. With the vessel coolant level exceeding +48", HPCI discharge valve MO-2301-8 began to close as designed. The resultant low flow condition caused minimum flow valve MO-2301-14 to open. Pump suction was transferred from the storage tanks to the torus, allowing closed-cycle HPCI pump operation.

At 0915 hours on September 29, relay 2330-124 was jumpered, simulating reactor low pressure which caused HPCI to automatically isolate. By 1515 hours on September 30, the HPCI trip solenoid valve had been replaced, and the system was then trip-checked satisfactorily.

FAILURE DATA

The failed valve is a Barksdale 3-way solenoid valve. A similar failure of this valve model occurred on Unit-3 May 19, 1972. The failure was also attributed to an open-circuited coil.


B. B. Stephenson
Superintendent

BBS:GAR:smp

File/NRC