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ICENSEE EVENT REPORT (LER) TEXT CONTINUATION
U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

PACILITY NAME (1)
Beaver Valley Power Station,
Unit No. 2

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## TEXT (If more apece is required, use additional NRC Form 306A's) (17)

On 8/25/87, with the unit in Power Operation (Mode 1) at 30% reactor power, utility electrical maintenance personnel and vendor (Westinghouse) technicians were troubleshooting the Turbine Electronic Overspeed Transducer (Pickup) at the Turbine Trip Panel. Feedwater flow transmitter (2FWS\*FT496) on the 21C Steam Generator (SG) Feedwater Line was out-of-service with the associated bistables for this transmitter in the tripped condition. At 1357 hours, a spurious turbine overspeed trip signal was received which initiated a turbine trip. A reactor trip did not immediately occur because reactor power was below the P-9 setpoint. The P-9 permissive allows a turbine trip to occur without a corresponding reactor trip. The turbine trip caused the SG levels to shrink below the Low Level trip setpoints due to the sharp reduction of steam flow and corresponding pressure increase. Approximately six (6) seconds after the turbine trip, a reactor trip occurred on 21C SG Low Level Coincident with a Steam Flow/Feed Flow Mismatch. The combination of the tripped bistables for 2FWS\*FT496 and the Low Level in the 21C SG caused the reactor trip signal. The operators immediately initiated Emergency Operating Procedure E-O, "Reactor Trip or Safety Injection" to verify stabilization of the plant. Approximately twenty-seven (27) seconds after the turbine trip, the main generator output breakers opened, initiating a 4KV Auto Bus Transfer to the Offsite Electrical Grid. During the transfer, two of the Underfrequency (UF) relays monitoring the 4KV Busses supplying the reactor coolant pumps (RCP) actuated, generating a 2/3 RCP Bus UF Signal, which caused the RCPs to trip. The operators stabilized the plant in Hot Standby (Mode 3) on Natural Circulation. The UF relays were reset and the RCPs were restarted at 1447 hours, restoring forced circulation in the reactor coolant system.

The cause for the turbine trip was due to a faulty turbine overspeed transducer (Westinghouse Style No. 399A496028). During the troubleshooting activities, the leads from the turbine overspeed transducer were disconnected from the transducer at the turbine. Utility and vendor personnel were monitoring at the Turbine Trip Panel. Since the input leads from the overspeed transducer were disconnected at the turbine, the open leads running back to the Turbine Trip Panel acted as a receiving antenna, transmitting signal noise back to the instrumentation at the Turbine Trip Panel. This transmitted signal noise was of sufficient magnitude to cause actuation of the Turbine Electronic Overspeed trip, tripping the turbine. The cause for the actuation of the Underfrequency Relays (IPAC Model 752) monitoring the 4KV Busses supplying the reactor coolant pumps, was due to malfunctioning relays. Utility maintenance personnel conducted tests on the relays and received repeatability of the malfunction

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION APPROVED OMB NO 3150-0104 EXPIRES 6/31/85

FACILITY NAME (1)				DOCKET NUMBER (2)									LER NUMBER (6)										PAGE (3)			
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NRC Form 386A

(improper actuation). The cause for the malfunction could not be determined. The relays met all startup testing program requirements and design specifications.

The short-term corrective actions taken regarding the turbine overspeed transducer involved an investigation by utility and vendor personnel. This investigation revealed two installed spare transducers, one of which was utilized to provide overspeed protection. The spare transducer was hooked up and the turbine electronic overspeed protection trip was returned to service. The turbine overspeed protection system consists of three (3) transducers, one of which is normally in service when the turbine is on-line. The long-term corrective actions involve replacing this faulty transducer with a new transducer.

As a short term solution for the reactor coolant pump underfrequency relay problem, the relays were reset to enable RCP restart. Subsequently, the relays were tested and found to be malfunctioning. The IPAC relays in use were then replaced with Hathaway SFR-59-1A underfrequency relays. As a long term, permanent corrective action the SFR-59-1A relays will be replaced by upgraded Hathaway SFR-2/59 relays.

There were no safety implications to the public as a result of this event. The reactor protection system (RPS) functioned as designed to place the plant in a safe, stable condition (Hot Standby, Mode 3) and to protect the reactor from a sudden loss of heat sink.

This event is being reported in accordance with 10 CFR 50.73.a.2.iv, as an actuation of the RPS/ESF System.



Nuclear Division P.O. Box 4 Shippingport, PA 15077-0004 USNRC-DS 1987 SEP 28 A 9 53

Telephone (412) 393-6000

September 23, 1987 ND3SPM:0036

Beaver Valley Power Station, Unit No. 2 Docket No. 50-412, License No. NPF-73 LER 87-019-00

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 87-019-00, 10 CFR 50.73.a.2.iv, "Reactor Trip Due to Turbine Overspeed Trip Signal".

Very truly yours,

wm. S. Lacey Plant Manager

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Attachment

September 23, 1987 ND3SPM:0036 Page two

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