

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Beaver Valley Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 3 4 1	PAGE (3) OF 4
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TITLE (4) Reactor Trip/Turbine Trip During Turbine Pedestal Checks and Failure to Perform Startup Surveillance

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		
01	11	87	87	001	00	01	12	87	N/A		
									DOCKET NUMBER(S)		
									0 5 0 0 0		
									N/A		
									0 5 0 0 0		

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0	20.402(b)	20.406(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)					
	20.406(a)(1)(i)	50.36(e)(1)		50.73(a)(2)(v)	73.71(c)					
	20.406(a)(1)(ii)	50.39(e)(2)		50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 360A)					
	20.406(a)(1)(iii)	50.73(a)(2)(i)	<input checked="" type="checkbox"/>	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)(ix)							

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME Robert J. Druga, Acting Plant Manager	AREA CODE 4 1 2	6 4 3 - 1 2 5 8	

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS		
A	J	J	X X X X	X X X X	N						
D	I	G	X X X X	X X X X	N						

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)				<input checked="" type="checkbox"/> NO		
				MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately, fifteen single-space typewritten lines) (16)

On 1/11/87, with the plant at 100% power, Operations personnel were performing the Main Turbine Pedestal Checks. During the performance of the Thrust Bearing Oil Trip Device Test, at 0039 hours, a turbine trip occurred. A reactor trip was initiated because power was greater than 10 percent and the P-9 permissive was in effect. Operations personnel followed the applicable emergency procedures and stabilized the plant in Hot Standby. The cause of the turbine trip was attributed to low auto stop oil pressure. The low pressure was caused by operator error due to misinterpretations of the precautions in the surveillance procedure. The operators have been counselled and the surveillance procedure will be revised to provide additional guidance. On 1/11/87, during the plant recovery/startup, the reactor was taken critical at 1258 hours and entered the Power Operation mode at 1445 hours. On 1/12/87 at 1000 hours, it was discovered that the Power Range Low Power Reactor Trip Setpoint was not verified operable in accordance with Technical Specification 4.3.1.1.2.b, prior to entering the Power Operation mode. The missed surveillance was attributed to procedure deficiencies. The procedures used did not require the verification of the power range low power setpoint and have subsequently been revised to include this verification.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

On 1/11/87, with the plant at 100% power, Operations personnel were preparing to perform Operating Surveillance Test (OST) 1.26.4, Pedestal Checks, on the main turbine. At 0034 hours, the Nuclear Shift Operating Foreman (NSOF) and a Nuclear Control Operator (NCO) proceeded to the main turbine and commenced the pedestal checks. The mechanical turbine overspeed trip device test, the low condenser vacuum trip device test, and the low bearing oil pressure trip device test were completed satisfactorily and the thrust bearing oil trip device test was started. During the thrust bearing oil trip device test, the oil pressure rise was too fast to record the actual trip setpoint; therefore, it was decided to perform this check a second time. The test valve (1LO-34) was shut and the thrust bearing oil pressure was noted to decrease to normal values. The manual trip latch lever was moved to the LATCH position, then slowly released to the NORMAL position. After waiting approximately three (3) seconds, the NSOF returned the manual overspeed test lever to the NORMAL position. Approximately three (3) seconds later, at 0039 hours, a reactor trip occurred. The reactor trip was caused by a turbine trip (P-9 power escalation permissive interlock when reactor power >10 percent) which was initiated by low auto stop oil pressure. The operators used Emergency Operating Procedure E-0, "Reactor Trip or Safety Injection," to restore the plant to a stable condition (Hot Standby).

The cause for this trip was attributed to operator error due to misinterpretations of the precautions and limitations throughout the performance of the surveillance procedure. One precaution and limitation required the personnel performing the pedestal checks to monitor auto stop oil pressure (indicated on PI-TB-231) for normal operating pressure during all pedestal checks. This precaution was misinterpreted in that the personnel performing the pedestal checks only monitored auto stop oil pressure at the end of each pedestal check rather than monitoring pressure throughout each check. An additional precaution requires the personnel to terminate the surveillance when auto stop oil header pressure drops to 75 psig or when any of the Mercoid pressure switches (AST 63-1, 63-2 or 63-3) show movement toward the tripped condition. This precaution was misinterpreted in the same manner as the previous precaution. Due to these misinterpretations, auto stop oil pressure was allowed to momentarily drop low enough to cause actuation of AST 63-3 (Mercoid pressure switch). This switch energizes the auto stop oil/electrohydraulic (E-H) interface valve (ET-20), opening the valve and allowing the E-H fluid to drain off the turbine control and governor valves. This sequence is confirmed by the Sequence of Events Recorder printout which shows a low auto stop oil pressure alarm, a reactor trip due to a turbine trip and a turbine stop valve closing.

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

The pressure drop is believed to have been caused by either: 1) a small air pocket in the manual overspeed test lever spool assembly which allowed an inrush of auto stop oil sufficient to spike the AST 63-3 pressure switch, or 2) clogged auto stop oil header orifices (which would not allow proper header pressure to build up on the trip valve and still allow latching.)

To prevent future incidents of this type, the following actions are being taken:

1. The operators have been counselled on the correct performance of the surveillance procedure and interpretation of the surveillance procedure.
2. Procedure revisions to the surveillance procedure have been submitted, clarifying the requirements for personnel to verify stable turbine parameters during the performance of each pedestal check. These revisions will be completed prior to the next performance.
3. Maintenance work requests will be generated to inspect the manual overspeed test lever spool assembly and the auto stop oil orifices.
4. This incident will be reviewed by Operations personnel at shift safety meetings.

Following the recovery from this reactor trip and the completion of the post-trip review of the event, a plant startup was commenced. Operations personnel utilized Operating Manual Chapter 50, Procedure I, "Station Startup - Recovery from Reactor Trip," and Procedure D, "Reactor Startup from Hot Standby to the Startup Mode," to effect the startup. On 1/11/87 at 1258 hours, the reactor was taken critical. Reactor power was subsequently raised above 5 percent, entering the Power Operation mode (Mode 1) at 1445 hours.

On 1/12/87 at 1000 hours, it was discovered that Surveillance Requirement 4.3.1.1.2.b was not performed prior to entering the Power Operation mode. This startup mode (Mode 2) surveillance requirement tests the power range low power reactor trip setpoint using Operating Surveillance Test (OST) 1.2.1, "Nuclear Power Range Channel Functional Test." This power range low power reactor trip provides protection for an excessive startup rate and power excursion. This trip is automatically reinstated below the P-10 permissive and is manually blocked above 25% power. This reactor trip is backed up by the intermediate range high level reactor trip.

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

The cause for the missed surveillance was attributed to procedure deficiencies. Technical Specification Amendment No. 83, effective 11/16/84, revised the power range low power reactor trip setpoint surveillance frequency to a startup frequency. The two procedures utilized did not require or reference the performance of OST 1.2.1 to verify the operability of the power range low power reactor trip setpoint. A review of the startup procedure used for entering the power startup mode (Mode 2) from an outage (OM Chapter 50, Startup Checklist D) showed that the requirement to verify the operability of the power range low power reactor trip setpoint is included in that procedure.

To prevent future incidents of this type, procedure revisions have been made to the two procedures used (OM Chapter 50, Procedure J and D) requiring the verification of the operability of the power range low power reactor trip setpoint. Special Operating Order 87-1 was generated requiring Operations personnel to perform the power range low power reactor trip setpoint verification (OST 1.2.1) the next time the unit goes below 10 percent reactor power and automatically unblocks this reactor trip. Caution tags have been placed on all four power range channels requiring the performance of OST 1.2.1 (power range low power reactor trip setpoint verification) the next time reactor power is below 10 percent. The Nuclear Shift Supervisors have also been instructed to include this item on the Technical Specification Action List of the operating logs and shift turnover checklists.

There were no safety implications to the public as a result of either incident. Following the reactor trip which occurred during the turbine pedestal checks, all systems functioned as designed to place the plant in a safe shutdown condition (Hot Standby). In the ensuing plant startup, the intermediate range high level reactor trip setpoint (which is a backup protection reactor trip to the power range low power reactor trip setpoint) was verified operable prior to the reactor/plant startup.

LER'S ISSUED DURING 1987

<u>LER NO.</u>	<u>EVENT DATE</u>	<u>DESCRIPTION</u>	<u>ISSUE DATE</u>
87-001-00	1/11/87	Reactor Trip/Turbine Trip During Turbine Pedestal Checks and Failure to Perform Startup Surveillance	1/29/87



Duquesne Light

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

Telephone (412) 393-6000

January 29, 1986
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Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
LER 87-001-00

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 87-001-00, 10 CFR 50.73.a.2.iv, "Reactor Trip/Turbine Trip During the Performance of Turbine Pedestal Checks," and 10 CFR 50.73.a.2.i.B, "Failure to Perform Startup Surveillance."

Very truly yours,

Wm. S. Lacey
Plant Manager

vat

Attachment

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January 29, 1987

NDISS1:3030

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cc: Dr. Thomas E. Murley
Regional Administrator
United States Nuclear Regulatory Commission
Region 1
King of Prussia, PA 19406

C. A. Roteck, Ohio Edison

Mr. Peter Tam, BVPS Licensing Project Manager
United States Nuclear Regulatory Commission
Washington, DC 20555

W. Troskoski, Nuclear Regulatory Commission, BVPS Site Inspector

Mr. Alex Timme, CAPCO Nuclear Projects Coordinator, Toledo Edison

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, GA 30339

G. E. Muckle, Factory Mutual Engineering, Pittsburgh

Mr. J. A. Triggiani, Operating Plant Projects Manager
Mid Atlantic Area
Westinghouse Electric Corporation
Nuclear Services Integration Division
Box 2728
Pittsburgh, PA 15230

American Nuclear Insurers
c/o Dottie Sherman, ANI Library
The Exchange Suite 245
270 Farmington Avenue
Farmington, CT 06032