NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Palo Verde Unit 1	0 5 0 0 0 5 2 8	1 OF 0 3

TITLE (4)

Reactor Trip due to out of tolerance setpoint in Turbine Demand Runback Module

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	DOCKET NUMBER(S)
											0 5 0 0 0
1 2	2 0	8 5	8 5	–	0 8 0	– 0 0	0 1	2 0	8 6		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)			
1	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 4 0	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
William F. Quinn, Manager - Nuclear Licensing (extension 4087)	AREA CODE 6 0 2 — 9 4 3 – 7 2 0 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On December 20, 1985, at 0241, Palo Verde Unit 1 was at 40 percent reactor power when the reactor tripped on high pressurizer pressure after Reactor Power Cutback System (RPCS) signals simultaneously initiated a turbine runback and a Steam Bypass Control System (SBCS) quick open block.

The RPCS signals were generated when a Licensed Senior Reactor Operator put the RPCS into service to reset an RPCS trouble alarm. The RPCS sensed a loss of one main feedwater pump, since only one of two pumps was running with the reactor at 40 percent power, and generated a SBCS quick open block. In addition, the RPCS was receiving a turbine runback demand input signal, due to an out of tolerance setpoint, and generated a turbine runback command output signal.

With the combination of a turbine runback and SBCS quick open block, a mismatch between reactor power and secondary steam demand occurred which resulted in a reactor trip. During the event the Reactor Trip Override (RTO) did not respond properly, and the Main Steam Safety Valves lifted.

To prevent recurrence, the turbine runback demand module setpoint, the initial refill demand position voltage for the Downcomer Valves, and the running speed for the Main Feedwater pumps during a RTO condition were reset.

Procedures have been changed to assure proper caution is observed before placing the RPCS in service.

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

On December 20, 1985, at 0241, Palo Verde Unit 1 was at 40 percent reactor power when the reactor tripped on high pressurizer pressure after Reactor Power Cutback System (RPCS)(JD) signals simultaneously initiated a turbine runback and a Steam Bypass Control System (SBCS)(JI) quick open block.

The RPCS signals were generated when a Licensed Senior Reactor Operator (SRO) put the RPCS into service to reset an RPCS trouble alarm. The SRO was of an understanding that there should be no effect on the plant if the RPCS was put in service.

Since the reactor was at 40 percent power, only one main feedwater pump (SJ) was running when the RPCS was placed in service. The RPCS sensed a loss of one main feedwater pump, and generated a SBCS quick open block signal. The RPCS also initiated a turbine runback command signal because a setpoint in the turbine runback demand module was out of tolerance.

As the turbine began running back, the Reactor Coolant System (RCS)(AB) pressure began increasing. The SBCS did not quick open because the RPCS system blocked the quick open signal, as designed for a loss of feedwater pump event. A mismatch occurred between the reactor power and secondary system demand. The mismatch caused the RCS to heat up and subsequently caused the RCS pressure to increase to the reactor trip setpoint. The Plant Protection System (JC) tripped the reactor on high pressurizer pressure, as designed.

After the trip, a licensed reactor operator informed the SRO licensed assistant shift supervisor that the Reactor Trip Override (RTO) was not responding properly. The RTO controls feedwater flow to the steam generators in the event of a reactor trip, to maintain a no load average RCS temperature. Due to the RTO not responding properly, the cold leg primary temperature was dropping, downcomer flow was pegged high, pressurizer level dropped to 20% and the pressurizer heaters cutout. The assistant shift supervisor directed the operator to take manual control of the steam generator feedwater flow. He slowly fed the steam generators until the cold leg primary system temperature, the pressurizer level, and pressurizer pressure all stabilized. During the event, some of the Main Steam Safety Valves lifted.

The plant commenced a normal shutdown after the pressurizer pressure was stabilized.

Troubleshooting of the RPCS revealed that a turbine runback demand signal was sent to the RPCS from the runback demand module in the SBCS due to an out of tolerance setpoint in the runback demand module. The turbine runback command and SBCS quick open block caused the mismatch between the reactor power and the secondary system demand which resulted in the reactor trip. The setpoint has been recalibrated.

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

The Feedwater Downcomer Control Valves (JB) did not respond as designed for a Reactor Trip Override condition. Both Downcomer Control Valves maintained full open positions following the reactor trip which resulted in cooling the RCS at a rate in excess of the desired rate but within the allowable Technical Specification and procedural limits. Downcomer Control Valve refill demand position voltage was found set at a value greater than that which is required for 100% open valve position. This caused excessive modulation time between demand for the valve to close and actual valve movement. The initial refill demand position voltage for the Downcomer Valves was reset. The Main Feedwater pump running speed for a RTO condition was also reset.

Presently, there are several procedures which address reinitialization and reset of the RPCS module. The applicable procedures have been changed to add appropriate cautions about placing the RPCS in service.

A new procedure which consolidates procedural requirements for operation of the RPCS is forecast for completion by March 1, 1986. This procedure will address normal operation including the reset/reinitialization of RPCS.

No other safety systems actuated, no radioactive releases occurred, and no safety limits were violated as result of the event. Therefore, the event had no impact on the safety of the public or the plant.

No similar reactor trips have occurred previously.

Arizona Nuclear Power Project
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

January 20, 1986
ANPP-34719/EEVB/SGB/98.07

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN 50-528, License No. NPF-41
Licensee Event Report - 85-080-00
File: 86-020-404

Dear Sirs:

Attached please find Licensee Event Report (LER) No. 85-080-00 prepared and submitted pursuant to 10 CFR 50.73. In accordance with 10 CFR 50.73(d), we are herewith forwarding a copy of the LER to the Regional Administrator of the Region V Office.

If you have any questions, please contact me.

Very truly yours,

EE Van Brunt Jr/JH

E. E. Van Brunt, Jr.
Executive Vice President
Project Director

EEVB/SGB/rw
Attachment

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