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ACCESSION NBR:8901180121 DOC.DATE: 88/12/27 NOTARIZED: NO DOCKET #
 FACIL:STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Publi 05000528
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SUBJECT: LER 88-008-01:on 881228,nonconservative setpoints on high
 log power trip.W/881227 ltr.

W/8 ltr.

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 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Standardized plant.

05000528

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Palo Verde Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 5 2 8 1										PAGE (3) OF 0 5				
TITLE (4) Nonconservative Setpoints on the High Log Power Trip																								
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 N/A						DOCKET NUMBER(S) 0 5 0 0 0									
0	1	2	2	8	8	8	8	0	0	2	0	1	1	2	2	7	8	8	N/A 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)																						
3		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)										
POWER LEVEL (10)		0 0 0				20.405(a)(1)(i)				50.73(a)(2)(v)				73.71(c)										
		20.405(a)(1)(ii)				50.73(a)(2)(vi)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 362A)										
		20.405(a)(1)(iii)				50.73(a)(2)(viii)				50.73(a)(2)(viii)(A)														
		20.405(a)(1)(iv)				50.73(a)(2)(ix)				50.73(a)(2)(viii)(B)														
		20.405(a)(1)(v)				50.73(a)(2)(x)				50.73(a)(2)(x)														
LICENSEE CONTACT FOR THIS LER (12)																								
NAME Timothy D. Shriver, Compliance Manager										TELEPHONE NUMBER AREA CODE 6 0 2 3 9 3 1 2 5 2 1														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC														
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)				MONTH		DAY		YEAR						
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO														

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

On March 17, 1988, at approximately 1110 MST Palo Verde Unit 1 was in Mode 1 (POWER OPERATION) at approximately 100 percent power when engineering personnel (utility, non-licensed) informed the Unit 1 Shift Supervisor (utility, licensed) that the High Log Power Trips (JC) may have been set contrary to the allowable values in the Technical Specifications, Table 2.2.-1.

On January 22, 1988, Unit 1 was in Mode 3 (HOT STANDBY) when the reactor trip switchgear (AA) were closed. Technical Specification 3.3.1, Table 3.3-1 requires the High Log Trip setpoint to be OPERABLE in Mode 3 with the reactor trip switchgear closed. Calculations indicate the High Log trip setpoints were set contrary to the allowable setpoint but were still within the bounds of the safety analysis but were within the bounds of the safety analysis.

The cause of the setpoints being set contrary to the PVNGS Technical Specifications allowable values is inadequate programmatic controls to review design changes from the core reload.

For immediate corrective action, the trip setpoints have been conservatively reset. For long term corrective action to prevent recurrence, new procedures will be developed and/or existing procedures will be revised to ensure adequate review of design changes from the core reload.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104
EXPIRES: 8/31/88

FACILITY NAME (1) Palo Verde Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 5 2 8 8 8 — 0 0 2 — 0 1 0 2 OF 0 5	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 368A's) (17)

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions

On March 17, 1988 at approximately 1110 MST Palo Verde Unit 1 was in Mode 1 (POWER OPERATIONS)(at normal operating temperature and pressure) following the completion of the Unit's first refueling outage.

B. Reportable Event Description (Including Date and Appropriate Times of Major Occurrences)

Event Classification: Operation Prohibited by the Plant's Technical Specifications (T.S.).

On March 17, 1988, at approximately 1110 MST engineering personnel (utility, non-licensed) informed the Unit 1 Shift Supervisor (utility, licensed) that the High Log Power Trips (JC) may have been set contrary to the values specified in PVNGS T.S. Table 2.2-1. This determination was based upon preliminary calculations conducted by the engineer. At this time, Unit 1 management (utility, licensed) discussed the preliminary engineering evaluation with the responsible engineer and conservatively assumed that the trip setpoints (JC) had been set contrary to the T.S. and preparations were begun to initiate a reactor shutdown in accordance with T.S. 3.0.3. Further evaluation determined that when the reactor is above 1E-04 percent power, the effected trips can be bypassed in accordance with T.S. 3.3.1. However, the decision was made to conservatively reset the trip setpoints and the preparations for the reactor shutdown were terminated.

On March 16, 1988, engineering personnel (utility, non-licensed) obtained voltage readings on the log and linear power channels (JC) from the Plant Protection System (PPS)(JC) cabinets. On March 17, 1988, the voltage readings were calculated to determine the variance between the log and linear power channels. The linear power instrumentation had been periodically calibrated by a secondary calorimetric which confirmed the log power channels were indicating a lower power level than actually existed. Based upon the indications available at 100 percent power it was correctly assumed that the trip setpoints may not have actuated at the values specified in T.S. Table 2.2-1.

T.S. 2.2.1 and 3.3.1, the High Log Power level trip (JC) is required to be OPERABLE in Mode 1, 2, 3*, 4*, 5*. (*With the protective system trip breakers in the closed position, the CEA drive system capable of CEA withdrawal, and fuel in the reactor vessel.) On January 22, 1988, Unit 1 was in Mode 3 (HOT STANDBY) following the completion of the first refueling when the reactor trip switchgear

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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EXPIRES: 8/31/88

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breakers (AA) were closed.

- C. Status of structures, systems, or components that were inoperable at the start of the event which contributed to the event:

There were no other structures, systems, or components inoperable at the start of the event which contributed to the event other than those discussed in section I.B of this report.

The cause of the high log power trips being inoperable was the miscalibration of the log power channels. Actual reactor power was greater than the log power channel indication. The setpoints were based on indicated log power and, therefore, would not have actuated as required by Technical Specifications. The log power calibration was based on the Unit 1 Cycle 1 reactor core design. The Cycle 2 core design utilized a low neutron leakage fuel management scheme. The low neutron leakage core design altered the ratio of reactor power to neutron flux at the excore detectors which provide input to the log power channels. Therefore, the Cycle 2 core design altered the calibration of the log power indication.

- D. Cause of each component or system failure:

No component or system failures occurred; however, the cause of High Log Power Trip Setpoint inoperability was inadequate programmatic controls to ensure that the High Log Power trip setpoints were conservatively set during the initial startup following a refueling outage.

- E. Failure mode, mechanism, and effect of each failed component:

Not applicable. There were no component failures associated with this event.

- F. For failure of components with multiple functions, list of systems or secondary functions that were also affected:

Not applicable.

- G. For a failure that rendered a train of a safety system inoperable, estimated elapsed time from discovery of the failure until the train was returned to service:

No failure occurred; however, on March 17, 1988 the High Log Power Trips were declared inoperable at approximately 1117 MST and were returned to service at approximately 1204 MST. The estimated elapsed time from discovery until the High Log Power Trips were returned to service was approximately 47 minutes.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES: 8/31/88

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H. Method of discovery of each component or system failure or procedural error:

On March 16, 1988, Operations personnel (utility, licensed) notified the responsible engineer (utility, non-licensed) of a variance between the log and linear power indications. The responsible engineer obtained the voltage readings from the log and linear power channels. On March 17, 1988 the engineer analyzed that data to determine the approximate setpoint setting. Based upon the preliminary evaluations, the High Log Power Trip setpoints were conservatively assumed to be contrary to the allowable values in the T.S. Table 2.2-1 and actions were taken as described in section III of this report.

During the investigation of this event, the procedural controls for the implementation of license amendments were determined to be inadequate. On January 12, 1988 license amendment 23 was issued for the Unit 1 operating license. The amendment changed the high log trip setpoint from 0.798 percent power to 0.01 percent power. The appropriate S.T. was changed and implemented but without proper procedural authorization.

I. Cause of the Event:

The root cause of this event was inadequate programmatic controls to ensure the effects of the reload design changes are fully reviewed. The reload design organization (contractor) and the ANPP Engineering organizations (utility) did not recognize the impact of a low neutron leakage core design on the calibration of log power detectors. This responsibility was not clearly defined. The reload design organization provided documentation for Unit 1 Cycle 2 operation including the setpoints and analysis for the High Log Power Trip. This documentation did not include instructions for the recalibration of the log power indications.

The ANPP Engineering organizations reviewed the reload design documents but did not identify the need to recalibrate the log power indication to startup. The ANPP onsite Reactor Engineering group (utility, non-licensed) did recognize the affect of the low leakage core design on the linear power indication. Reactor Engineering performed calculations to determine the magnitude of the correction to conservatively recalibrate the linear power channels. However, Reactor Engineering did not recognize the need to recalibrate the log power indications since they did not use log power indications for startup test procedures.

J. Safety System Responses

There were no safety system responses and none were expected.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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Palo Verde Unit 1	0500052888	88	002	01	05	OF	05

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K. Failed Component Information:

Not applicable. There were no failed components associated with this event.

II. ASSESSMENT OF SAFETY CONSEQUENCES

No adverse safety consequences resulted from this event. Although the high log power trip setpoints were set contrary to the T.S., a high log power trip would still have occurred. Calculations have determined that the actual setpoints were within the bounds of the safety analysis.

III. CORRECTIVE ACTIONS:

A. Immediate:

Conservative setpoints were inserted in the high log power trip. The effected surveillance test was revised and the appropriate test successfully conducted.

B. Actions to Prevent Recurrence:

Administrative control procedures will be revised/created to provide proper authorization and review of changes associated with reactor reload designs.

Administrative control procedures will be revised and/or created to provide proper authorization to implement license amendments.

ANPP is developing the capability to perform reload design and safety analysis calculations. As a result of this effort, ANPP's technical expertise will enhance the quality of the reload design review.

IV. PREVIOUS SIMILAR EVENTS:

Other events have been reported under the requirements of 10CFR50.73 that involved inappropriate or misadjustments of setpoints. However, based upon the root cause there have been no similar events.



Arizona Nuclear Power Project

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102-01076-JGH/TDS

December 27, 1988

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

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN 50-528 (License NPF-74)
Licensee Event Report 88-002-01
File: 88-020-404

Attached please find Supplement No. 1 to Licensee Event Report (LER) No. 88-002-00 prepared and submitted pursuant to the requirements of 10CFR 50.73. In accordance with 10CFR 50.73(d), we are herewith forwarding a copy of this report to the Regional Administrator of the Region V Office.

If you have any questions, please contact T. D. Shriver, Compliance Manager at (602) 393-2521.

Very truly yours,

J. G. Haynes
Vice President
Nuclear Production

JGH/TDS/JJN/kj

Attachment

cc: D. B. Karner (all w/a)
E. E. Van Brunt, Jr.
J. B. Martin
T. J. Polich
M. J. Davis
A. C. Gehr
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