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SUBJECT: LER 89-008-00:on 890509,unit in Mode 5 when supervisor identified calculation error in surveillance test.
W/8 ltr.

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Arizona Public Service Company

PALO VERDE NUCLEAR GENERATING STATION
P O BOX 52034 • PHOENIX, ARIZONA 85072-2034

192-00490-JGH/TDS/JEM
June 7, 1989

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

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529 (License No. NPF-51)
Licensee Event Report 89-008-00
File: 89-020-404

Attached please find Licensee Event Report (LER) No. 89-008-00 prepared and submitted pursuant to 10CFR 50.73. In accordance with 10CFR 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 T. D. Shriver, Compliance Manager at (602) 393-2521.

Very truly yours,

J. G. Haynes
Vice President
Nuclear Production

JGH/TDS/JEM/kj

Attachment

cc: W. F. Conway (all w/a)
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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 2	0 5 0 0 0 5 2 9	1 OF 0 6

TITLE (4)
Improper Performance of Surveillance Test for Startup Channel 2

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)
									N/A	0 5 0 0 0
0 5	0 9	8 9	8 9	0 0 8	0 0	0 6	0 7	8 9	N/A	0 5 0 0 0

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
5	0 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		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)	X 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
	AREA CODE
Timothy D. Shriver, Compliance Manager	6 0 2 3 9 3 - 2 5 2 1

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
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 8	1 4	8 9

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

At approximately 0745 MST on May 9, 1989, Palo Verde Unit 2 was in Mode 5 (COLD SHUTDOWN) when a Work Group Supervisor identified a calculational error in a Surveillance Test that would have resulted in Boron Dilution Alarm Channel 2 being inoperable.

At approximately 1712 MST on May 8, 1989, Startup Channel 2 was declared inoperable to perform Surveillance Test 36ST-9SE05, "Boron Dilution Functional Alarm Check." At approximately 2030 MST on May 8, 1989, an Instrument and Control Technician successfully completed 36ST-9SE05 based on a calculational error which resulted in the Surveillance Test meeting the acceptance criteria. Startup Channel 2 was returned to service at approximately 2154 MST on May 8, 1989 and Technical Specification 3.1.2.7 ACTION b.1 was exited. At approximately 0745 MST on May 9, 1989 the Work Group Supervisor identified the calculational error.

The cause of the event was a personnel error on the part of the Instrument and Control Technician. A contributory cause was a procedure deficiency.

Startup Channel 2 was then declared inoperable at approximately 0840 MST on May 9, 1989 and Technical Specification 3.1.2.7 ACTION b.1 was entered. 36ST-9SE05 was reperformed satisfactorily and Startup Channel 2 was declared operable at approximately 1132 MST on May 9, 1989. To prevent recurrence, the technician was counseled and 36ST-9SE05 will be revised.

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions:

At approximately 0840 MST on May 9, 1989, Palo Verde Unit 2 was in Mode 5 (COLD SHUTDOWN) with Reactor Coolant System (RCS)(AB) temperature at approximately 130 degrees Fahrenheit (F) and pressurizer (PZR)(AB) pressure at approximately 133 psia.

B. Reportable Event Description (Including Dates and Approximate Times of Major Occurrences):

Event Classification: Any operation or condition prohibited by the plant's Technical Specifications.

At approximately 2030 MST on May 8, 1989, an Instrument and Control (I&C) Technician (utility, non-licensed) successfully completed Surveillance Test 36ST-9SE05, "Boron Dilution Functional Alarm Check," based on a calculational error which resulted in the Surveillance Test meeting the acceptance criteria. Based on the successful completion of 36ST-9SE05, Startup Channel 2 (JC) was returned to service at approximately 2154 MST on May 8, 1989 and the associated Technical Specification ACTION statement 3.1.2.7 b.1 was exited. At approximately 0745 MST on May 9, 1989, an I&C Work Group Supervisor (WGS)(utility, non-licensed) identified the calculational error in the Surveillance Test. Correct performance of the calculation would have resulted in Boron Dilution Alarm Channel 2 not meeting the acceptance criteria.

Prior to the event at approximately 1600 MST on May 8, 1989, testing was in progress on Startup Channel 1 when an increase in indication was noticed on Startup Channel 2. A Reactor Operator (RO)(utility, licensed) went to the cabinets (CAB)(JC) where the Instrument and Control (I&C) Technician (utility, non-licensed) was performing 36MT-9SE07, "Excore Startup Channel Calibration," on Startup Channel 1. The RO verified with the I&C Technician that testing was being performed on Startup Channel 1 only. The test lineup was verified to be correct; however, a test lead connection to a High Voltage probe was found to be loose. When the test lead connection was placed in front of a Startup Channel 2 scaler jack and the High Voltage was energized for the test, an Electro-Magnetic Field was induced into Startup Channel 2 drawer causing an increase in indication on Startup Channel 2. When the High Voltage was turned off, the indication returned to the normal level.

A telephone conversation was held between the Operations Manager (utility, non-licensed), the System Engineer (SE)(utility, non-licensed), the I&C Technician and the Work Group Supervisor (WGS)(utility, non-licensed). During the conversation the System

Engineer agreed that the loose connection and the location of the test lead was the most likely cause of the increased indication on Startup Channel 2. However, Surveillance Test 36ST-9SE05, "Boron Dilution Functional Alarm Test," was performed to ensure no damage was done to Startup Channel 2.

At approximately 1712 MST on May 8, 1989, Startup Channel 2 was declared inoperable to perform 36ST-9SE05. Chemistry personnel were instructed to take two independent boron samples in accordance with Technical Specification 3.1.2.7 ACTION b.1 since both channels were now declared inoperable. The surveillance test was completed, and at approximately 2154 MST on May 8, 1989, Startup Channel 2 was declared operable. Technical Specification 3.1.2.7 ACTION b.1 was then exited. However, since Startup Channel 1 was still inoperable ACTION a.1 was still applicable.

At approximately 0745 MST on May 9, 1989, while performing the WGS review of 36ST-9SE05 for Boron Dilution Alarm Channel 2, the WGS identified a calculational error in the performance of the surveillance test that, if performed correctly, would have resulted in Startup Channel 2 not meeting acceptance criteria. The error was made in the following step:

8.2.4.10 Subtract Test Low display (step 8.2.4.9) from the Setpoint display (step 8.2.4.3) and record on data sheet (Block 1). This should equal the Delta Setpoint plus 0.10 VDC.

The technician performed the subtraction correctly and believed he should add 0.10 VDC. When the technician added the 0.10 VDC, the result met the acceptance criteria and the technician believed he performed the test satisfactorily. However, the last sentence of the step was meant to be a clarifier and not an action of the step.

The Shift Supervisor was notified and Startup Channel 2 was declared inoperable at approximately 0840 MST on May 9, 1989. At approximately 0845 MST on May 9, 1989, two independent boron samples were taken to comply with Technical Specification 3.1.2.7 ACTION b.1 and 36ST-9SE05 was reperformed satisfactorily. At approximately 1132 MST on May 9, 1989, Startup Channel 2 was declared operable.

No work was performed on Startup Channel 2 during this time frame. 36ST-9SE05 is a monthly surveillance test and was satisfactorily performed on May 12, 1989. All appropriate ACTION's were performed during the period that Startup Channel 2 was declared inoperable. However, from approximately 2154 MST on May 8, 1989 to approximately 0840 MST on May 9, 1989, Technical Specification 3.1.2.7 ACTION b.1 was not performed as required.

An independent review of recent performances of 36ST-9SE05 was performed. At approximately 0830 MST on June 7, 1989, a Compliance Engineer (utility, non-licensed) discovered that this calculational error was also made while performing Surveillance Test 36ST-9SE05 on April 17, 1989. Further investigation of this concern is in progress. The investigation is expected to be completed by July 14, 1989. Based upon completion of the investigation, a supplement to this LER is expected to be submitted by August 14, 1989.

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

No structures, systems, or components were inoperable at the start of the event that contributed to the event other than described in I.B above.

D. Cause of each component or system failure, if known:

Not applicable - there were no component or system failures.

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

Not applicable - there were no failed components.

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

Not applicable - there were no failed components.

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

Not applicable - no failures were involved.

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

The error in the performance of the Surveillance Test was discovered by the I&C Work Group Supervisor at approximately 0745 MST on May 9, 1989, during the review of the Surveillance Test. Although the I&C Supervisor believed the Surveillance Test to be adequate, a change was made to the procedure to make the step more explicit.

I. Cause of Event:

The cause of the event was a personnel error on the part of the I&C

Technician (utility, non-licensed) performing the test in that he perceived the clarifying sentence of the step to be part of the required calculation. There were no operator errors that contributed to the event. There were no unusual characteristics of the work location that contributed to the event. The error was contrary to an approved procedure and there were no errors in the procedure. However, the procedure misled the Technician as discussed above in section I.B.

J. Safety System Response:

No manual or automatic safety system responses occurred and none were required.

K. Failed Component Information:

Not applicable - no failed components were involved.

II. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THIS EVENT:

There are no safety consequences or implications of this event. The Surveillance Test for Boron Dilution Alarm Channel 2 was successfully completed before and after the event. No work had been performed on Startup Channel 2 between performances of the monthly Surveillance Test. Additionally the boron samples required by Technical Specification 3.1.2.7 ACTION a.1 did not indicate any dilution of the RCS. The boronometer (CB) was also operable and the boronometer chart did not show any dilution of the RCS. Therefore, there was no impact on the health and safety of the public.

III. CORRECTIVE ACTIONS:

A. Immediate:

Startup Channel 2 was declared inoperable and surveillance test 36ST-9SE05 was performed satisfactorily. Startup Channel 2 was then declared operable.

B. Action to Prevent Recurrence:

The I&C Technician was counseled. In addition, the procedure was changed to make the instructions more explicit.

As discussed in Section I.B, further investigation is in progress. Based upon the results of the investigation, a supplement to this LER will be submitted.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Palo Verde Unit 2	0 5 0 0 0 5 2 9	8 9	— 0 0 8	— 0 0	0 6 OF 0 6

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

IV. PREVIOUS SIMILAR EVENTS:

No previous similar events have been reported.

V. ADDITIONAL INFORMATION

Due to the additional concerns identified on June 6, 1989, this event is still under investigation. A supplement to this LER will be submitted to provide the results of the investigation and the corrective action.