

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9909090170      DOC.DATE: 99/08/20      NOTARIZED: NO      DOCKET #  
 FACIL:STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi      05000529  
 AUTH.NAME      AUTHOR AFFILIATION  
 MARKS,D.G.      Arizona Public Service Co. (formerly Arizona Nuclear Power  
 IDE,W.E.      Arizona Public Service Co. (formerly Arizona Nuclear Power  
 RECIP.NAME      RECIPIENT AFFILIATION

SUBJECT: LER 99-006-00:on 990721,reactor protection & ESFAS  
 instrumentation not bypassed within one hour required by TS,  
 was discovered.Caused by personnel error.Coached maint  
 personnel.With 990820 ltr.

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NOTES:Standardized plant.

05000529

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Palo Verde Nuclear  
Generating Station

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192-01053 – WEI/DGM/RJH  
August 20, 1999

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
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Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Unit 2  
Docket No. STN 50-529  
License No. NPF-51  
Licensee Event Report 99-006-00**

Attached please find Licensee Event Report (LER) 99-006-00 prepared and submitted pursuant to 10 CFR 50.73. This LER reports a condition where the loss of seismic qualification for one channel of reactor protection and ESFAS instrumentation resulted in an inoperable condition that exceeded TS required action times.

There are no commitments stated or implied as a result of this event.

In accordance with 10CFR50.73(d), a copy of this LER is being forwarded to the Regional Administrator, NRC Region IV. If you have any questions, please contact Daniel G. Marks, Section Leader, Regulatory Affairs, at (623) 393-6492.

Sincerely,

WEI/DGM/RJH/rjh

Attachment

090006

cc: E. W. Merschoff (all with attachment)  
N. Kalyanam  
J. H. Moorman  
INPO Records Center

9909090170 990820  
PDR ADOCK 05000529  
S PDR

IE22

| <b>NRC FORM 366</b><br>(6-1998)   |                   | <b>U.S. NUCLEAR REGULATORY COMMISSION</b>  |              | <b>APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001</b><br><small>Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-8 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.</small> |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|---|-------------------|--|--------------|---|---|---------------|---------------|--|--|------|-------------------|-----------------|------|-----|----|--|--|-------|-----|------|----|----|------|
| <b>LICENSEE EVENT REPORT (LER)</b><br>(See reverse for required number of digits/characters for each block)   |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>FACILITY NAME (1)</b><br>Palo Verde Nuclear Generating Station-Unit 2  |                   |  |              | <b>DOCKET NUMBER (2)</b><br>05000529  |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              | <b>PAGE (3)</b><br>1 OF 5   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>TITLE (4)</b><br>Reactor Protection and ESFAS Instrumentation Not Bypassed Within One Hour Required By TS  |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>EVENT DATE (5)</b><br><table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>MONTH</th> <th>DAY</th> <th>YEAR</th> </tr> <tr> <td>07</td> <td>21</td> <td>1999</td> </tr> </table>   |                   | MONTH  | DAY          | YEAR  | 07  | 21            | 1999          | <b>LER NUMBER (6)</b><br><table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>YEAR</th> <th>SEQUENTIAL NUMBER</th> <th>REVISION NUMBER</th> </tr> <tr> <td>1999</td> <td>006</td> <td>00</td> </tr> </table> |  | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 1999 | 006 | 00 | <b>REPORT DATE (7)</b><br><table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>MONTH</th> <th>DAY</th> <th>YEAR</th> </tr> <tr> <td>08</td> <td>20</td> <td>1999</td> </tr> </table> |  | MONTH | DAY | YEAR | 08 | 20 | 1999 |
| MONTH   | DAY               | YEAR   |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| 07  | 21                | 1999   |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| YEAR  | SEQUENTIAL NUMBER | REVISION NUMBER  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| 1999  | 006               | 00   |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| MONTH   | DAY               | YEAR   |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| 08  | 20                | 1999   |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>OTHER FACILITIES INVOLVED (8)</b><br><table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>FACILITY NAME</th> <th>DOCKET NUMBER</th> </tr> <tr> <td>N/A</td> <td></td> </tr> <tr> <td>N/A</td> <td></td> </tr> </table>   |                   |  |              |   |   | FACILITY NAME | DOCKET NUMBER | N/A  |  | N/A  |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| FACILITY NAME   | DOCKET NUMBER     |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| N/A   |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| N/A   |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>OPERATING MODE (9)</b><br>1  |                   | <b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b> |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>POWER LEVEL (10)</b><br>100  |                   | 20.2201(b)   |              | 20.2203(a)(2)(v)  | X   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   | 20.2203(a)(1)  |              | 20.2203(a)(3)(i)  | X   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   | 20.2203(a)(2)(i)   |              | 20.2203(a)(3)(ii)   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   | 20.2203(a)(2)(ii)  |              | 20.2203(a)(4)   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   | 20.2203(a)(2)(iii)   |              | 50.36(c)(1)   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   | 20.2203(a)(2)(iv)  |              | 50.36(c)(2)   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              | 50.73(a)(2)(i)  | 50.73(a)(2)(viii)                             |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              | 50.73(a)(2)(ii)   | 50.73(a)(2)(x)                                |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              | 50.73(a)(2)(iii)  | 73.71   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              | 50.73(a)(2)(iv)   | OTHER   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              | 50.73(a)(2)(v)  | Specify in Abstract below or in NRC Form 366A |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              | 50.73(a)(2)(vii)  |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>LICENSEE CONTACT FOR THIS LER (12)</b>   |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>NAME</b><br>Daniel G. Marks, Section Leader, Nuclear Regulatory Affairs  |                   |  |              | <b>TELEPHONE NUMBER (Include Area Code)</b><br>623-393-6492   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)</b>   |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| CAUSE   | SYSTEM            | COMPONENT  | MANUFACTURER | REPORTABLE TO EPIX  |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>SUPPLEMENTAL REPORT EXPECTED (14)</b>  |                   |  |              | <b>EXPECTED SUBMISSION DATE (15)</b>  |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| YES (If yes, complete EXPECTED SUBMISSION DATE).  |                   |  |              | X NO  |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
|   |                   |  |              | MONTH DAY YEAR  |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <b>ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)</b>   |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |
| <p>On July 21, 1999 at approximately 14:10 MST, Palo Verde Unit 2 was in Mode 1 (power operations), operating at approximately 100 percent power, when it was discovered that from July 15, 1999 to July 21, 1999, the seismic fasteners were not engaged on the PPS channel D bi-stable control panel drawer, rendering the drawer inoperable. TS require that inoperable PPS channels be placed in bypass or tripped within one-hour.</p> <p>The cause of the event is attributed to personnel error for not adequately re-installing the seismic fasteners after the performance of a quarterly surveillance test. As corrective action, maintenance personnel were coached on the expectations for system restoration following surveillance and maintenance testing.</p> <p>A previous similar event was reported in LER 50-528/98-001-00.</p> |                   |  |              |   |   |               |               |  |  |      |                   |                 |      |     |    |  |  |       |     |      |    |    |      |



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|  |                   | 1999           | - 006 -           | 00              |          |

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

## 1. REPORTING REQUIREMENT:

This LER 529/99-006-00 is being submitted pursuant to 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(ii) to report a condition prohibited by the Technical Specifications (TS) and a condition that was outside the design basis of the plant.

Contrary to the requirement of TS LCO 3.3.1 and 3.3.5, from approximately 1454 MST on July 15, 1999 to 1410 MST on July 21, 1999 the channel D plant protection system parameters had been inoperable due to a personnel error, and TS required actions to restore the equipment to an operable status or place the channel in bypass or trip were not performed. The condition was immediately corrected when it was identified on July 21, 1999.

## 2. EVENT DESCRIPTION:

Prior to the event, at approximately 1316 MST on July 15, 1999, Control Room personnel placed the PPS (JC) D channels in bypass for the performance of the bi-stable relay response time test by Instrumentation and Control (I&C) maintenance personnel. Control Room personnel entered condition A of LCO 3.3.1 and Condition A of LCO 3.3.5. I&C maintenance personnel commenced testing of the PPS Channel D parameters. Upon successful completion of the response time test, at approximately 1454 MST, control room personnel removed the PPS Channel D parameters from bypass and exited TS Condition A of LCO 3.3.1 and Condition A of LCO 3.3.5.

Investigation of this event has revealed that I&C maintenance technicians did not reinstall the seismic fasteners that were removed to perform the response time test in accordance with the restoration steps of the surveillance test. APS Engineering had previously evaluated this condition and determined that at least four of the eight seismic fasteners are required to be fully engaged to maintain operability of the control panel.

Contrary to the requirement of TS LCO 3.3.1 and 3.3.5, from approximately 1454 MST on July 15, 1999 to 1410 MST on July 21, 1999 PPS channel D parameters had been inoperable for greater than the one hour allowed by TS. There were no safety system actuations during this time and none were required.



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## 3. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THIS EVENT:

Bi-stable trip units, mounted in the Plant Protection System (PPS) cabinet, contain four channels of bi-stables for each RPS parameter. The bi-stable panel is attached to the steel frame inside the cabinet with eight captive screws. The captive screws are designed to keep the panel chassis from sliding forward in the event of an safe shutdown earthquake (SSE). An engineering evaluation of the condition where all eight screws were not installed, concluded that the outer door to the cabinet, when closed, would maintain the panel chassis from movement in the forward direction thereby preventing the cabinet chassis from becoming a missile and mitigating any damage to nearby equipment. However, Engineering had previously determined that at least four of the eight captive screws are required to be fully engaged to meet the seismic qualification of the chassis. In this event, the eight captive screws were not engaged which resulted in the panel being declared inoperable.

The quarterly PPS bi-stable trip unit functional test for PPS channel D was performed on July 15, 1999. The PPS channel D parameters performed satisfactorily. At approximately 1454 MST on July 15, 1999 the PPS channel D parameters were declared OPERABLE. The satisfactory surveillance test performance demonstrated that the PPS channel D parameters met the surveillance requirements of SR 3.3.3.2 and that the channel D parameters would perform their intended design function for the reactor protection system.

The PPS channel D panel chassis was not returned to its proper configuration to meet its seismic qualification requirements following the surveillance and remained in that condition until July 21, 1999. There were no seismic events while this condition existed. The condition did not result in any challenge to fission product barriers or result in the release of radioactive materials. There were no adverse safety consequences or implications as a result of this event. This event did not adversely affect the safe operation of the plant or health and safety of the public.

## 4. CAUSE OF THE EVENT:

An independent investigation of this event is being conducted in accordance with the APS Corrective Action Program. A preliminary evaluation has determined that the apparent root cause is personnel error in that I&C maintenance personnel did



U.S. NUCLEAR REGULATORY COMMISSION  
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not restore the PPS panel chassis to its required configuration upon completion of the quarterly surveillance test.

The captive screws are removed by I&C personnel to perform testing of the PPS parameters. The captive screws are required to be re-installed when all applicable testing is complete in accordance with the surveillance test procedure. A review of work documents indicated that the captive screws were removed during testing on July 15, 1999 and were not reinstalled until July 21, 1999 when discovered by operations personnel.

The disengaged captive screws resulted in inoperability of the PPS Channel D parameters, resulting in non-compliance with TS LCO 3.3.1 and 3.3.5, from approximately 1530 MST on July 15, 1999 to 1410 MST on July 21, 1999 because PPS channel D parameters had been inoperable for greater than the one hour allowed by TS.

An ongoing evaluation is in progress to determine the adequacy of procedures and work practices. If the final evaluation results differ from this determination, a supplement to this report will be submitted to describe the final root cause determination. No unusual characteristics of the work location (e.g., noise, heat, poor lighting) appear to have directly contributed to this event.

**5. STRUCTURES, SYSTEMS, OR COMPONENTS INFORMATION:**

Although the PPS channel D panel chassis did not have the eight captive screws engaged, the system was capable of performing its plant protection system function provided there was no seismic event. There are no indications that any structures, systems, or components were inoperable which contributed to this condition. No component or system failures were involved. No failures of components with multiple functions were involved. No failures that rendered a train of a safety system inoperable were involved.

**6. CORRECTIVE ACTIONS TO PREVENT RECURRENCE:**

A transportability review was conducted for Unit 1 and 3 and the captive screws were fully engaged in these PPS cabinets. This condition was isolated to Unit 2 PPS cabinet D. The condition was not transportable to any other Unit or system train.



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Actions to prevent recurrence will include placing this event in the Industry Events Training for I&C personnel which will be completed by November 30, 1999. I&C management has coached personnel on the importance of proper restoration of equipment following surveillance or maintenance testing.

## 7. PREVIOUS SIMILAR EVENTS:

A previous similar event was reported in LER 50/528-98-001 for not bypassing or placing in trip within the TS required action time. However the causes discussed in the previous events were not similar to this event. Therefore, the corrective actions taken as a result of LER 50/528-98-001 would not have prevented this event.

