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PG&E Letter DCL-09-035

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Licensee Event Report 1-2009-001-00
Replacement Steam Generator Support Inadequate
Due to Improper Washer Plate Installation

Dear Commissioners and Staff:

In accordance with 10 CFR 50.73(a)(2)(ii)(B) Pacific Gas and Electric Company is submitting the enclosed licensee event report regarding an unanalyzed condition created by an inadequate replacement steam generator vertical support configuration due to improper washer plate installation.

There are no new or revised regulatory commitments in this report.

This event did not adversely affect the health and safety of the public.

Sincerely,

James R. Becker

ddm/2246/50231240
Enclosure
cc/enc: Elmo E. Collins, NRC Region IV
Michael S. Peck, NRC Senior Resident Inspector
Alan B. Wang, NRR Project Manager
INPO
Diablo Distribution

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Diablo Canyon Unit 1	05000275	1 OF 5

4. TITLE

Replacement Steam Generator Support Inadequate Due to Improper Washer Plate Installation

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	22	2009	2009	- 001 -	00	05	19	2009	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☒ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Steven W. Hamilton – Senior Regulatory Services Engineer	(805) 545-3449

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
				No					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On March 22, 2009, at 13:34 PDT, with Unit 1 in Mode 3 (Hot Standby) a significant condition adverse to quality was verified by plant walkdown of the Replacement Steam Generator (RSG) vertical support bolting. Plant operators entered Technical Specification (TS) 3.0.3, stabilized Unit 1 in Mode 3, and made a nonemergency event notification (EN#44927) in accordance with 10 CFR 50.72(b)(3)(ii)(B) at 17:02 PDT.

RSG 1-3 was determined to be in an unanalyzed condition due to two out of sixteen washer plates not seated in the vertical support column adapter due to interfering weld metal on the interior recesses.

On March 22, 2009, at 15:36 PDT, a shim was installed between the washer plate and column adapter at each nonconforming location on RSG 1-3. This brought the support columns into compliance with the full design capacity and plant operators exited TS 3.0.3.

The cause of the event was determined to be human error by RSG contract personnel due to lack of attention to detail. Similar Unit 1 and 2 installations were confirmed to be adequate.

TEXT

I. Plant Conditions

Unit 1 was in Mode 3 (Hot Standby) at normal operating reactor coolant temperature and pressure in preparation for restart following the fifteenth refueling outage (1R15).

II. Description of Problem

A. Background

The Diablo Canyon Power Plants (DCPP) Units 1 and 2 are Pressurized Water Reactors (PWR) with four Reactor Coolant Loops (RCL)[AB] to circulate reactor coolant to each of the four steam generators (SG)[SG]. Each SG is a vertical U-tube design provided by the Nuclear Steam Supply System (NSSS) vendor, Westinghouse. Due to reaching the end of the useful life of the SG tubes, DCPP has installed Replacement Steam Generators (RSG) with an improved design and material.

The SGs are installed on a support system designed to resist deadweight, thermal expansion, pipe break and seismic loadings while allowing free thermal motion from cold to normal operating conditions. The design and details of the SG support structures are further discussed in Final Safety Analysis Report Update (FSAR), Section 5.5.13.

Four vertical support columns on each RSG transfer downward and uplift loads from the RSGs to the containment structure. Each support column is connected to the RSG support foot through a column adapter and eight hold-down bolts. A total of sixteen washer plates (some single and some with multiple bolt holes) are installed under the heads of the hold-down bolts to spread the bearing load evenly on the column adapter bearing surface. A critical characteristic of these washer plates is to sit flat against the column adapter. At two locations on RSG 1-3, gaps existed between two of the sixteen washer plates and column adapters such that some hold-down bolts were not effective in resisting design loadings.

B. Event Description

On March 20, 2009, at 13:20 PDT, Unit 1 entered Mode 4 (Hot Shutdown) following 1R15.

On March 21, 2009, at 9:22 PDT, Unit 1 entered Mode 3.

On March 22, 2009, at 13:34, plant operators entered Technical

TEXT

Specification (TS) 3.0.3 due to verification that two of the sixteen washer plates on RSG 1-3 were improperly installed.

On March 22, 2009, at 15:36 PDT, plant operators exited TS 3.0.3 following installation of a shim between the RSG 1-3 anchor column adapter and the washer plate of sufficient thickness to clear the weld metal interference at each of the two nonconforming locations.

On March 22, 2009, at 16:00 PDT it was determined that an eight-hour nonemergency report in accordance with 10 CFR 50.72(b)(3)(ii)(B) was required.

On March 22, 2009, at approximately 22:44 PDT plant operators made a nonemergency event notification (EN#44927) in accordance with 10 CFR 50.72(b)(3)(ii)(B).

C. Status of Inoperable Structures, Systems, or Components that Contributed to the Event

None.

D. Other Systems or Secondary Functions Affected

No additional safety systems were adversely affected by this event.

E. Method of Discovery

During an exit interview, a contract pipe fitter performing work for the RSG project raised a concern regarding an unacceptable gap that may exist between the RSG column adapter and the washer plates. A plant walk down verified that two out of sixteen washer plates on RSG 1-3 were not seated in the column adapter due to interfering excess weld metal on the interior recesses of the column adapter.

F. Operator Actions

Utility licensed plant operators stabilized Unit 1 in Mode 3 at normal operating temperature and pressure.

Plant operators made a nonemergency phone notification (EN#44927) in accordance with 10 CFR 50.72(b)(3)(ii)(B).

TEXT

G. Safety System Responses

No safety systems were required to respond.

III. Cause of the Problem

A. Immediate Cause

The gaps between the washer plates and column adapters were caused by interfering excess weld metal on the interior recesses of the column adapters and inadequate verification of the washer installation.

B. Root Cause

Limitations associated with the use of a fit-up template to identify excess weld material resulted in insufficient excess weld material removal.

The field installation instructions over-relied upon the preinstallation template fit-up, resulting in inadequate verification requirements.

A human performance error by RSG contract personnel resulted in one washer plate being installed upside down.

IV. Assessment of Safety Consequences

There were no safety consequences as a result of this event.

The Unit 1 reactor was maintained in Mode 3 at stable pressure and temperature during the condition with appropriate equipment available and TS-required equipment operable; thus, any at-power accidents postulated in the FSAR Updated were precluded.

In the unlikely event of a postulated high seismic event an analysis of the as-found RSG 1-3 support system verified that there may have been localized yielding of the connection but failure would not occur. The nonconforming condition could have resulted in limited damage to the hold-down bolts and washer plates at the nonconforming locations, but the RSG supports would have performed their safety function to restrain the RSG and attached piping systems.

Therefore, the event is not to be considered risk significant and it did not adversely affect the health and safety of the public.

TEXT

V. Corrective Actions

A. Immediate Corrective Actions

Plant operators entered TS 3.0.3 and maintained Unit 1 in Mode 3 at normal operating temperature and pressure. This event was entered into the DCPP corrective action program for resolution (50231240).

RSG contract personnel installed shims between the RSG 1-3 anchor column adapter and the washer plate of sufficient thickness to clear the weld metal interference at each of the two nonconforming locations.

B. Corrective Actions to Prevent Recurrence (CAPR)

The RSG installation contractor will incorporate this event into the Lessons Learned so as to include the critical characteristics for inspection on work packages for future RSG projects at other stations.

RSG personnel and DCPP personnel verified that all Unit 1 RSG support anchors are properly installed and that the extent of the condition was isolated to RSG 1-3. More rigorous verification requirements employed during the Unit 2 RSG project ensured that each of the configurations were adequate.

VI. Additional Information

A. Failed Components

None.

B. Previous Similar Events

None.

C. Industry Reports

INPO Operating Experience Report OE 28508 issued for this condition.