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May 7, 2012

PG&E Letter DCL-12-043

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

10 CFR 50.73

Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1

Licensee Event Report 1-2012-002: Failure to Comply with Technical Specification
3.0.3 Time Requirement

Dear Commissioners and Staff;

Pacific Gas and Electric Company (PG&E) is submitting the enclosed Licensee Event Report, in accordance with 10 CFR 50.73(a)(2)(i)(B), for the failure to initiate actions, within the 1-hour time requirement of Technical Specification (TS) 3.0.3, to place Unit 1 in a Mode in which the Limiting Condition for Operation does not exist. On March 2, 2012, Rosemount Nuclear Instruments, Inc. issued a 10 CFR Part 21 notification that negatively affected the existing setpoint margin for multiple steam generator water-level channels resulting in plant operators declaring them inoperable. PG&E implemented immediate corrective actions to re-establish setpoint margins; however, the evolution took 3 minutes longer than the 1 hour that is allowed by TS 3.0.3.

PG&E makes no new or revised regulatory commitments (as defined by NEI 99-04) in this report.

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

Sincerely,

James R. Becker

wrl8/50465488

Enclosure

cc/: Diablo Distribution

cc/enc: Elmo E. Collins, NRC Region IV

Michael S. Peck, NRC Senior Resident Inspector

Joseph M. Sebrosky, NRR Project Manager

INPO

NRC FORM 366 (10-2010)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104		EXPIRES: 10/31/2013			
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)					Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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.					
1. FACILITY NAME Diablo Canyon Power Plant					2. DOCKET NUMBER 05000-275		3. PAGE 1 OF 5			
4. TITLE Failure to Comply with Technical Specification 3.0.3 Time Requirement										
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	08	2012	2012	- 002 -	00	05	07	2012		
9. OPERATING MODE 1			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
10. POWER LEVEL 100			<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(vii)							
			<input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(A)							
			<input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(viii)(B)							
			<input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(ix)(A)							
			<input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(x)							
			<input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 73.71(a)(4)							
			<input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 73.71(a)(5)							
			<input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> OTHER							
			<input type="checkbox"/> 20.2203(a)(2)(vi) <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) <input type="checkbox"/> 50.73(a)(2)(v)(D)							
			Specify in Abstract below or in NRC Form 366A							
12. LICENSEE CONTACT FOR THIS LER										
FACILITY NAME Wilbert R Landreth, Regulatory Services Engineer								TELEPHONE NUMBER (Include Area Code) (805) 545 - 6980		
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	
14. SUPPLEMENTAL REPORT EXPECTED						15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO										
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)										
<p>On March 8, 2012, at 1850 PST, Diablo Canyon Power Plant (DCPP) operators declared two of the three steam generator (SG) 1-1 narrow-range low-low level transmitter (LT) channels inoperable placing Unit 1 in Technical Specification (TS) Limiting Condition for Operation (LCO) 3.0.3 as a result of evaluating Rosemount pressure transmitter (PT) 10 CFR Part 21 report described in NRC Event Notification (EN) 47693. Eight of these PTs were installed on LT channels for DCPP SGs, but only SG 1-1 had the subject PTs installed on two of the three low-low level channels. At 1953 PST (63 minutes later), after adjusting the setpoints, operators declared the subject LTs operable, and exited TS LCO 3.0.3. On March 9, 2012, DCPP voluntarily reported this event to the NRC (EN 47728).</p> <p>This event is being reported as a condition prohibited by TS per 10 CFR 50.73(a)(2)(i)(B), since DCPP remained in LCO 3.0.3 in excess of 1 hour and operators did not initiate a shutdown (addition of negative reactivity). Operators delayed initiation of a shutdown transient because of imminent completion of corrective maintenance, consistent with NRC Technical Interface Agreement 92-08, "Use of Shutdown Times for Corrective Maintenance."</p> <p>Subsequent engineering evaluations concluded the subject PTs would still have been able to perform their safety functions prior to adjusting the setpoints.</p>										

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NARRATIVE

I. Plant Conditions

At the time of discovery, Unit 1 was in Mode 1 (Power Operation) at 100 percent power.

II. Description of Problem

A. Background

Diablo Canyon Power Plant (DCPP) Final Safety Analysis Report Update (FSARU), Section 15.4.2.2, "Major Rupture of a Main Feedwater Pipe," lists multiple reactor trip input parameters with respect to the major rupture (or break) of a main feedwater line. One of those input parameters listed for the protection against a main feedwater line break (FLB), is the narrow-range (NR) low-low steam generator [SG] water level in any SG. The main FLB is the limiting design-basis accident with respect to crediting the SG low-low level reactor trip function.

Pursuant to 10 CFR Part 21, Section 21.21(b), Rosemount Nuclear Instruments, Inc. (Rosemount) issued a Part 21 report, "Notification under 10 CFR Part 21 on certain Rosemount Model 1154 Series H Pressure Transmitters [PIT]," dated March 2, 2012 (NRC EN 47693, updated March 2, 2012). This Part 21 notification identified that an out-of-tolerance condition during steam pressure and temperature testing was observed on a test pressure transmitter in the qualification program. Rosemount discovered that this condition was a result of the magnitude of a resistance change made to the transmitter temperature compensation circuitry during a final factory acceptance test.

B. Event Description

On March 8, 2012, DCPP completed its review of the 10 CFR Part 21 report from Rosemount and determined that DCPP was adversely impacted by the change in Rosemount transmitter performance specifications. DCPP determined that multiple SG NR level channel accident uncertainty accuracies were affected by the change of Rosemount's transmitter performance specifications. Based on the setpoint analysis summarized in WCAP 11082, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 & 2, 24 Month Fuel Cycle Evaluation," Revision 8, the steam generator NR level channels had an existing minimum setpoint margin of 1.32 percent span for the low-low setpoint value of 15 percent listed in DCPP Technical Specifications (TS). DCPP reevaluated the setpoint uncertainty using the new Rosemount numbers specified in the 10 CFR Part 21 notification and determined that an additional 2.0 percent span uncertainty must be added to the analysis to address the deficiency described in the Part 21 report. Margin was reduced from 1.32 percent span to negative 0.68 percent span. This negative margin could have resulted in the reactor protection system responding later than assumed in the accident analysis credited in the DCPP FSARU. On March 9, 2012, DCPP voluntarily reported this event to the NRC as Event Notification (EN) 47728.

The required actions of TS Limiting Condition for Operation (LCO) 3.3.1, "Reactor Trip System Instrumentation," Required Action E.1, and LCO 3.3.2, "Engineered Safety Featured Actuation System Instrumentation," Required Action D.1, were to place the channel in "trip" within 72 hours or be in Mode 3 within 78 hours. However, as Unit 1 SG 1-1 had two of the three (2/3) channels, level transmitters (LT) 517 and 519, affected by the Part 21 notification, TS LCOs 3.3.1 and 3.3.2 did not apply, requiring entry into TS LCO 3.0.3. DCPP operators entered TS LCO 3.0.3

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and immediately began preparing for a safe and controlled shutdown by placing a second charging pump in service and briefing the control room crew for ramp down, while simultaneously working toward a resolution of the negative transmitter setpoint margin.

TS LCO 3.0.3 states: "When an LCO is not met and the associated actions are not met, an associated action is not provided, or if directed by the associated actions, the unit shall be placed in a mode or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in mode..." DCPD staff evaluated a memorandum from Christopher I. Grimes, Chief, NRC TS Branch, "Use of Shutdown Times for Corrective Maintenance (TIA 92-08)," dated December 11, 1992. This memo supports the delay of initiating plant shutdown actions during a TS LCO 3.0.3 entry to avoid unnecessary plant transients as long as plant safety is better served by the delay. The memo states: "If a licensee responsibly concludes that plant shutdown be delayed or corrective action can be accomplished so that an unnecessary plant transient can be avoided, we believe that such a decision is permitted as long as the shutdown times specified by the TS are observed, including the "default" (3.0.3) provision, and no violation should be imposed."

DCPD completed adjustment of LT-517 at 1922 PST, restoring the functionality of the LT. To avoid an unnecessary plant transient, DCPD did not initiate shutdown action directed by TS LCO 3.0.3 within one hour of TS LCO 3.0.3 entry. Instead, DCPD adjusted the steam generator low-low level setpoint to 17 percent to recover margin and incorporate the additional uncertainty identified in the 10 CFR Part 21 report issued by Rosemount, restoring channel LT-517 to operable 3 minutes beyond the 1 hour allowed.

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

None.

D. Other Systems or Secondary Functions Affected

This notification applied to various SG level transmitters on both Units 1 and 2; however, only Unit 1 SG 1-1 had two affected transmitters on one SG requiring entry into TS LCO 3.0.3.

E. Method of Discovery

Rosemount issued a 10 CFR Part 21 report (NRC EN 47693), announcing the potential 1154 Series H pressure transmitter safety hazards caused by incorrect transmitter accuracy specifications.

F. Operator Actions

Operators entered TS LCO 3.0.3 because the required actions of TS LCOs 3.3.1 and 3.3.2 did not apply to SG 1-1 as two of the three SG NR water level channels were affected by the Part 21 notification. Operators prepared for plant shutdown by organizing the necessary procedures, placing a second charging pump in service, and briefing the Unit 1 control room crew on OP L-4, "Normal Operation at Power," which includes instructions for decreasing power.

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Operators took every action necessary to prepare for a safe and controlled shutdown at the completion of the 1 hour allowed by TS LCO 3.0.3.

G. Safety System Responses

None.

III. Cause of Problem

Rosemount conducted a thorough investigation regarding the out-of-tolerance condition and determined that it was a result of the magnitude of a resistance change made to the transmitter temperature compensation circuitry during a final factory acceptance test.

IV. Assessment of Safety Consequences

DCPP concluded that the information presented in Rosemount's 10 CFR Part 21 report would not have prevented the SG low-low level signal from tripping the reactor as credited in the design-basis FLB accident analysis in FSARU Section 15.4.2.2.

The FLB, as analyzed in FSARU 15.4.2.2, is the limiting design-basis accident with respect to crediting the SG low-low level reactor trip function and evaluating the potential environmental error associated with the Rosemount Part 21 issue. The SG low-low level trip is designed to actuate early enough to ensure there is adequate remaining secondary side liquid inventory which in combination with the auxiliary feed water system provides adequate decay heat removal to maintain reactor coolant system and nuclear fuel integrity.

The FLB sequence of events in FSARU Table 15.4-8, "Time Sequence of Events for Major Secondary System Pipe Ruptures," shows that the SG low-low level reactor trip is actuated within 12 seconds after the FLB occurs. Design Calculation STA-237, "LOCA/MSLB Containment EG Envelope P/T Curves for RSGs," compiles the limiting pressure/temperature profile for a Main Steam Line Break (MSLB) inside containment (which bounds the FLB event) for environmental qualification (EQ) effects. The results in STA-237 Table 5, "EQ Envelope Pressure and Temperature Profiles," show that the containment air temperature could be as high as 317 degrees F in the first 10 to 20 seconds after the break occurs.

The design of the Rosemount transmitter housing would significantly delay the thermal heat-up of the internal components. This was confirmed by review of the thermal lag evaluation performed for a Rosemount 1153H pressure transmitter as documented in STA-232. This calculation used the Generation of Thermal-Hydraulic Information for Containments (GOTHIC) computer code to evaluate the Rosemount transmitter heat-up when exposed to the limiting MSLB cases outside containment which due to superheated steam effects generates a more severe temperature profile than that inside containment. STA-232 Table 8-3 shows that at 30 seconds after the break, while the air temperature is at 319 degrees F, the Rosemount cover is only 203 degrees F and the air temperature inside the housing is only 148 degrees F. This confirms that the SG low-low level trip would already have actuated for the design basis FLB accident before the environmental temperature error effects could occur as identified in the Rosemount Part 21 report.

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In conclusion, the Rosemount Part 21 environmental error issue would not have prevented the SG low-low level signal from tripping the reactor as described in the FSARU.

V. Corrective Actions

DCPP concludes that no corrective actions are warranted for exceeding the 1-hour time frame, as plant operators made a conscious decision to delay plant shutdown to avoid an unnecessary plant transient as described in NRC TIA 92-08. Also, plant staff recalibrated the transmitters within the 1-hour time frame allowed by TS LCO 3.0.3, but operators needed additional time to complete necessary reviews and perform closeout actions to declare the transmitter channels operable. In response to the Rosemount Part 21 Issue, DCPP replaced the level transmitters for Unit 1 and intends to replace the level transmitters for Unit 2 at the next available outage of sufficient duration.

VI. Additional Information

A. Failed Components

None.

B. Previous Similar Events

On August 17, 2009, Pacific Gas and Electric Company submitted DCL-09-059, "Licensee Event Report 2-2009-001-00, Technical Specification 3.0.3 One Hour Exceeded Due to Failure of Group Step Counters," to the NRC in accordance with 10 CFR 50.73(a)(2)(i)(B). The cause of this event was inappropriate maintenance schedule and priority to replace the group demand counter batteries prior to failure. The corrective actions for this event were not relevant to the TS 3.0.3 entry reported in this Licensee Event Report.

C. Industry Reports

None