FORD 1

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FACIL:50-275 Diablo Canyon Nuclear Power Plant, Unit 1, Pacific Ga 05000275
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-003-01:on 910508,Dresser Industries,Inc issued Part 21 notification re positions of adjusting rings in main steam safety valves.Caused by inadequate communications between util & Westinghouse personnel.W/921030 ltr.

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RIDS/FORD 1 DOCUMENT

Pacific Gas and Electric Company

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Gregory M. Rueger
Senior Vice President and
General Manager
Nuclear Power Generation

October 30, 1992

PG&E Letter No. DCL-92-244

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

Re: Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Licensee Event Report 1-92-003-01
Steam Generator Tube Rupture Analysis Deficiency due to Inadequate Communications with NSSS Supplier

Gentlemen:

Pursuant to Section VI, General Instruction 3 of NUREG-1022, PG&E is submitting the enclosed revision to Licensee Event Report (LER) 1-92-003-00 regarding a Steam Generator Tube Rupture (SGTR) analysis deficiency. This revision is being submitted to report the results of a Westinghouse SGTR reanalysis. Revision bars are included to indicate the changes.

Sincerely,

Gregory M. Rueger

cc: Ann P. Hodgdon
John B. Martin
Mary H. Miller
Harry Rood
CPUC
Diablo Distribution
INPO

DCO-92-NS-N006

Enclosure

5902S/85K/PGD/2246

9211090124 921030
PDR ADOCK 05000275
S PDR

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
DIABLO CANYON UNIT 1	0 5 0 0 0 2 7 5	1 OF 6

TITLE (4) STEAM GENERATOR TUBE RUPTURE ANALYSIS DEFICIENCY DUE TO INADEQUATE COMMUNICATIONS WITH NSSS SUPPLIER

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MON	DAY	YR	YR	SEQUENTIAL NUMBER	REVISION NUMBER	MON	DAY	YR	FACILITY NAMES	DOCKET NUMBER (8)
11	05	87	92	- 0 0 3 -	0 1	10	30	92	DIABLO CANYON UNIT 2	0 5 0 0 0 3 2 3
										0 5 0 0 0

OPERATING MODE (9)	1
POWER LEVEL (10)	1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)

____ 10 CFR ____

_X_ OTHER - VOLUNTARY REPORT

(Specify in Abstract below and in text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER AREA CODE	TELEPHONE NUMBER
DAVID SOKOLSKY, SENIOR NUCLEAR GENERATION ENGINEER	415	973-9717

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
| | YES (if yes, complete EXPECTED SUBMISSION DATE)	|X| NO				

ABSTRACT (16)

This voluntary LER is submitted for informational purposes only as described in Item 19 of Supplement 1 to NUREG-1022.

On May 8, 1991, Dresser Industries, Inc. issued a 10 CFR 21 notification relative to positions of adjusting rings in main steam safety valves (MSSVs). While reviewing the impact of the changed MSSVs reset pressure in the steam generator tube rupture (SGTR) analysis, PG&E determined that the auxiliary feedwater and atmospheric dump valve (ADV) flow values previously provided to Westinghouse in 1987 were inaccurate for the steam generator (SG) overfill analysis. In April 1992, Westinghouse evaluated the SGTR analysis using revised, more accurate flow values, taking into consideration plant-specific features, and determined that plant conditions remain within the licensing basis of the plant. A Westinghouse reanalysis for SG overfill, completed in October 1992, confirmed that margin to overfill is still maintained and plant conditions remain within the licensing basis of the plant.

The root cause was determined to be inadequate communications between PG&E and Westinghouse personnel, and changes in flow calculation techniques for the ADVs.

Corrective action includes the review of valves similar to the ADVs to confirm their calculated flow capacities. Additionally, PG&E developed a procedure in 1990 that ensures analysis assumptions and conservatisms used by a vendor are valid.

I. Plant Conditions

Units 1 and 2 have been in various modes and at various power levels with the condition described below.

II. Description of Event

A. Summary:

The steam generator tube rupture (SGTR) analysis performed by Westinghouse in 1987 was subsequently determined by PG&E in 1992 to have used inaccurate input information. The 1987 analysis assumed a constant 440 gpm auxiliary feedwater (AFW) flow, which is the Technical Specification (TS) design basis flow (TS 3/4.7.1.2) at 1135 psig. The AFW system (BA) is capable of delivering more than 440 gpm during the initial period of a SGTR event because the steam generator (AB)(SG) pressure will be less than 1135 psig. The AFW flow is reduced to less than 440 gpm by the SG level control system (JB)(LCS) and operator action during the event. Because the basis for the 440 gpm steady flow assumption was not adequately understood, it was necessary to determine if the specific AFW flows, integrated over the period when operator action is limited to planned actions, could result in SG overfill. To accomplish this, PG&E developed a detailed model of the AFW system to more accurately determine AFW flows for the various conditions assumed in the 1987 Westinghouse analysis. During the 1992 PG&E investigation, it was also determined that inaccurate information was provided for the 10 percent atmospheric dump valve (SB)(RV)(ADV) flow due to a change in the flow calculation techniques used by the valve manufacturer.

PG&E requested Westinghouse to perform an evaluation of the SGTR analysis using the revised AFW and ADV flows and taking credit for the SG LCS. The Westinghouse evaluation determined that SG overfill will not occur. Furthermore, a Westinghouse SGTR reanalysis confirmed the evaluation results.

B. Background:

As input to the Diablo Canyon Power Plant FSAR Update Chapter 15 accident analyses, Westinghouse performed a SGTR analysis that evaluated SG overfill and offsite dose considerations. For simplicity, this analysis did not consider the effects of the SG LCS or varying SG pressure.

The potential for SG overfill is affected by AFW flow rate and ADV flow rate. Increased AFW flow increases the potential for overfill because more fluid is introduced into the secondary side of the SG. Decreased ADV flow increases the potential for overfill because the decreased ADV flow causes the plant to cool down slower, thus increasing the time and amount of primary to secondary leakage through the ruptured SG tube.

C. Event Description:

In performing the SGTR analysis, the vendor, Westinghouse, on October 12, 1987, requested PG&E to provide nominal AFW flow plus uncertainties. On November 5, 1987, PG&E responded and provided Westinghouse with an AFW flowrate of 440 gpm to each SG, and described the effect of the SG LCS. The conservative, simplistic analysis performed assumed a constant AFW flow of 440 gpm without considering the effect of the LCS. In April 1992, PG&E questioned the conservatism of using a constant AFW flow of 440 gpm for SG overfill because of subsequent events as described below.

On May 8, 1991, Dresser Industries, Inc. (Dresser) issued a 10 CFR 21 notification to PG&E regarding the positions of the adjusting rings in the Dresser Model 3700 main steam safety valves (SB)(RV)(MSSVs). In the 10 CFR 21 notification, Dresser recommended that PG&E review plant procedures and invoke independent verification of adjusting ring positions to ensure ring positions are correct. PG&E investigations and actions addressing the 10 CFR 21 notification continued throughout 1991.

One of the results of the investigations was the determination that the Unit 2 MSSVs were adjusted appropriately but that the Unit 1 MSSVs could reseat at a lower pressure than previously considered. The lower MSSV reseat value increases the MSSV blowdown value which could impact the SGTR overfill analysis. While evaluating the SGTR analysis in March 1992, PG&E began to evaluate the degree of conservatisms in various parameters to assess the available margin in the SGTR overfill analysis. In early April 1992, PG&E obtained MSSV and ADV flow results from Westinghouse. Using this information, PG&E verified that the ADV capacity was adequate to prevent the MSSVs from opening in the SGTR overfill analysis. Therefore, the impact of the MSSV blowdown issue for SG overfill was no longer a concern.

On April 2, 1992, while researching other assumptions and inputs used in the SGTR overfill analysis, PG&E discussed the ADV flow value with Copes-Vulcan, the ADV manufacturer. PG&E was informed that the flow through the ADVs used in the analysis for the intact SGs was a correct value based on flow calculation techniques available at the time the ADV was supplied. Now, however, this value appears to be too high based on current flow calculation techniques. The new, lower calculated ADV flow still prevents the MSSVs from opening in the SGTR overfill analysis.

On April 10, 1992, Westinghouse informed PG&E that, based on engineering judgment and plant-specific configuration, overfill was unlikely. As a result, PG&E determined that the event was not reportable. It was decided to submit a voluntary LER for informational purposes as described in Item 19 of Supplement 1 to NUREG-1022.

On April 24, 1992, Westinghouse completed an evaluation of the SG overfill analysis using revised AFW and ADV flow rate information, and concluded that overfill would not occur. To provide further assurance that overfill will not occur, PG&E requested Westinghouse to reanalyze the SGTR event using the revised AFW and ADV flow values. On October 13, 1992, Westinghouse completed the SGTR reanalysis and confirmed that overfill will not occur. Thus, this LER remains voluntary for informational purposes as described in Item 19 of Supplemental 1 to NUREG-1022.

D. Inoperable Structures, Components, or Systems that Contributed to the Event:

None.

E. Dates and Approximate Times for Major Occurrences:

1. November 5, 1987: Event Date. PG&E provided AFW and ADV flowrate information to Westinghouse for use in the SGTR analysis.

2. May 8, 1991: Dresser issued a 10 CFR 21 notification concerning positions of MSSVs adjusting rings.

3. April 2, 1992: Discovery Date. PG&E determined that AFW flowrates provided to Westinghouse for SGTR analysis were inaccurate for overfill. PG&E also determined that the calculated ADV flowrate is now lower than the value used in 1987 due to a change in the equation used by the valve manufacturer to calculate flow.

4. April 10, 1992: Westinghouse determined that, based on engineering judgment and plant specific configuration, overfill would not occur.

5. April 24, 1992: Westinghouse evaluation of the SG overfill analysis concluded overfill will not occur.

6. October 13, 1992: Westinghouse reanalysis of SGTR event confirms overfill will not occur.

F. Other Systems or Secondary Functions Affected:

None.

G. Method of Discovery:

Upon review of previous correspondence between PG&E and Westinghouse, PG&E engineers realized that the Westinghouse request for AFW flow information was not adequately interpreted. During the investigation of the SGTR analysis and through contact with the ADV manufacturer, the original calculated ADV flow was discovered to be inaccurate.

H. Operator Actions:

None.

I. Safety System Responses:

None.

III. Cause of the Event

A. Immediate Cause:

The SGTR overfill analysis used inaccurate values for AFW flow and ADV flow.

B. Root Cause:

1. Inadequate communications between PG&E and Westinghouse personnel occurred during the information exchange of the AFW flow rate to be used in the SGTR overfill analysis. Personnel from PG&E and Westinghouse did not clarify whether maximum or nominal AFW flow was a major contributor to SGTR overfill; the discussions focused on operator actions as having the most significant impact on the analysis.

2. Flow calculation techniques in choked-flow steam service valves such as the ADVs have evolved over time such that the current calculated flow values are more realistic.

C. Contributory Cause:

None.

IV. Analysis of the Event

A Westinghouse preliminary evaluation concluded that overfill will not occur and offsite dose consequences will remain within the licensing basis of the plant. An SGTR reanalysis performed by Westinghouse confirmed the preliminary evaluation. Thus, the public health and safety were not affected by this event.

V. Corrective Actions

A. Immediate Corrective Actions:

1. The SGTR analysis was evaluated based on plant-specific configuration to confirm that conditions will remain within the licensing basis of the plant. The evaluation was performed on a preliminary basis on April 10, 1992, and confirmed on April 24, 1992. Final confirmatory reanalysis was completed on October 13, 1992, by Westinghouse. The results of this reanalysis indicate that the recovery actions can be completed to terminate the primary to secondary break flow before overfill of the ruptured SG would occur. Thus, the reanalysis confirms that margin to overfill is still maintained with the incorporation of revised AFW and ADV flow rates.

2. An engineering calculation was prepared documenting the expected ADV flow for SGTR overfill process conditions. This calculation documents the lower calculated ADV flowrate, which was used in the April 24 Westinghouse evaluation and the October 13 Westinghouse reanalysis.

3. Other safety-related choked-flow steam service valves were reviewed to confirm their calculated flow capacities. All other safety-related valves were found to be properly sized for their intended service.

B. Corrective Actions to Prevent Recurrence:

NPAP A-27, "Coordination of Safety Analysis and Evaluation Performed by Outside Vendors," was developed and issued in December 1990. This procedure requires PG&E engineers to stay in contact with vendors and ensure that modelling methods, assumptions, and conservatisms are valid. Use of NPAP A-27 would have prevented the communications misunderstanding that occurred during the 1987 analysis.

VI. Additional Information

A. Failed Components:

None.

B. Previous LERs on Similar Problems:

None.