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ACCESSION NE	3R:9307020224 DOC.DATE: 93/06/23 NOTARIZED: NO	DOCKET #	
AUTH.NAME	AUTHOR AFFILIATION	05000325	
SISK,D.P.	Pacific Gas & Electric Co.		
RUEGER,G.M.	. Pacific Gas & Electric Co.		1
RECIP.NAM	E RECIPIENT AFFILIATION		
SUBJECT: LI	ER 93-001-01:on 930130, turbine & reactor trip occurred		
dı	1ring testing.Possible causes include personnel error &		I
CC	ontaminated turbine lube oil.Night order log entry issued	&	
pi	cocedure revised.W/930623 ltr.		6

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EXTERNAL:	EG&G BRYCE, J.H	2	2	L ST LOBBY WARD	l	l
	NRC PDR	l	1	NSIC MURPHY, G.A	1	1
	NSIC POORE,W.	1	l	NUDOCS FULL TXT	l	1

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Pacific Gas and Electric Company

77 Beale Street, Room 1451 P.O. Box 770000 San Francisco, CA 94177 415/973-4684 Fax 415/973-2313 Gregory M Rueger Senior Vice President and General Manager Nuclear Power Generation

June 23, 1993

PG&E Letter No. DCL-93-158

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

Re: Docket No. 50-323, OL-DPR-82 Diablo Canyon Unit 2 Licensee Event Report 2-93-001-01 Turbine Trip and Reactor Trip During Surveillance Testing Due to Unknown Cause

Gentlemen:

Pursuant to 10 CFR 50.73(a)(2)(iv), PG&E is submitting the enclosed revision to a Licensee Event Report regarding an automatic reactor trip due to a main turbine trip. This revision is being submitted to report the results of the root cause investigation of this event and completion of recommended procedural changes.

This event has in no way affected the health and safety of the public.

Sincerely,

Gregory M. Rueger

cc: Bobby H. Faulkenberry Ann P. Hodgdon Mary H. Miller Sheri R. Peterson CPUC Diablo Distribution INPO

DC2-93-0P-N008

Enclosure

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DIABLO CANYON UNIT 2         O 1 5 0 0 0 3 2 3 1 0         TURBINE TRIP AND REACTOR TRIP DURING SURVEILLANCE TESTING DUE TO UNKNOWN CAUSE         OTHER 10         THIS REPORT 15 SUPHITED PURSUART TO THE LEQUISTONE OF THE LEQUISTON         OTHER 10         TELEPHIC 10         TELEPHIC 10         OTHER 10         TELEPHIC 10         TELEPHIC 10         TELEPHIC 10         OTHER 10         OTHER 10     <	EACHIER	MARAL /**	······································												I D/		UMR	8(2)			PAG	E (3)	
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OUD 1 343-442(         COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)         CAUSE         SYSTEM       COMPONENT         CAUSE       SYSTEM       COMPONENT         COMPLETE ONE DATE IN THIS REPORT (13)         COMPONENT         SUPPLIMENTAL REPORT EXPECTED (14)         EXPECTED         SUBMISSION         Joint Colspan="2">MONTH         ON January 30, 1993, at 2147 PST, with Unit 2 at 100 percent power, a turbine trip         and reactor trip occurred during a routine surveillance test.         Plant in Mode 3 (Hot Standby) in accordance with emergency         operating procedures. A four-hour, non-emergency report was made to the NRC in         accordance with 10 CFR 50.72(b)(2)(ii) on January 31, 1993, at 0009 PST.         The immediate cause of the main turbine trip was an inadvertent simulated low         condenser vacuum signal that satisfied		DAVI	D P. S	ISK,	SENI	OR RE	GULA	TORY	COMI	PLIA	NCE	ENG	INEEF	R			A	REA	CODE	Ī	EAT		
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On January 30, 1993, at 2147 PST, with Unit 2 at 100 percent power, a turbine trip and reactor trip occurred during a routine surveillance test. Plant operators stabilized the plant in Mode 3 (Hot Standby) in accordance with emergency operating procedures. A four-hour, non-emergency report was made to the NRC in accordance with 10 CFR 50.72(b)(2)(ii) on January 31, 1993, at 0009 PST. The immediate cause of the main turbine trip was an inadvertent simulated low condenser vacuum signal that satisfied turbine protection logic. Investigations have eliminated all but two possible root causes: personnel error or contaminated turbine lube oil. An operator holding a test lever may have		YES (	if yes,	compl	ete E>	(PECTED	SUBM	ISSION	DATE	)	X	н	0	1	DATE	: (15	)						
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	D CANY	DŅ UNIT 2	0 5 0 0 0 3 2 3	93	_	0 0 :		0 1	2	OF	6
Ι.	<u>Plant</u>	<u>Conditions</u>									
	Unit	2 was in Mode 1 (Power Oper	ration) at 100 percen	it po	wer	<b>`.</b>					
II.	<u>Descr</u>	<u>iption of Event</u>									
	Α.	Summary:									
		On January 30, 1993, at 21 (TA)(TRB) trip followed by power during the performan (STP) M-21A, "Main Turbing	147 PST, Unit 2 exper y a reactor (AB)(RCT) nce of a routine Surv e/Generator Functiona	rienc tri veill l Te	ed p f and sts	a tur from 1 ce Tes S."	bin 00 t P	e perce roced	nt ure		
	Β.	Background:									
I		STP M-21A tests the main to pumps (TD)(P) and main tur turbine autostop oil syste oil pressure trip, overspe	turbine/generator (TR rbine trip (JJ) featu em (JJ) (low vacuum t eed trip, and thrust	RB/GE Ires crip, bear	N) ass lo ing	lube sociat bw bea g wear	oil ed rin tr	syst with g lub ip).	em the e		
		Surveillance testing of th performed monthly. An Ope typically consists of a "f "test lever operator."	he main turbine prote erations crew perform test director", a "va	ectiv ning alve	e f thi ope	functi is tes erator	ons tin ",	is g and a			
l		Testing these turbine trip turbine trip block valve features are in the trip o trip during testing. The during this testing by the in a panel at the turbine	o features at power r (JJ)(V) to be held cl condition to prevent block valve is manua e "test lever operato front standard.	requi losed an a ally or" u	res wł ctu kep sir	s the nile t ual tu ot clo ng a l	hes rbi sed eve	e ne r			
	c.	Event Description:									
		On January 30, 1993, at an conducted a pre-test brief This briefing emphasized t the required position dur	oproximately 2100 PST fing among the crew t the need for maintair ing the test.	, Op co pe ning	era rfo the	ations orm ST e test	pe P M le	rsonn -21A. ver i	el n		
		On January 30, 1993, at 21 STP M-21A. The performance slowly than usual, require the test position longer to stated, as have other person during this test the test position. The "test leven weight during the testing.	105 PST, Operations p ce of this test progr ing the operator to h than normal. The "te sonnel involved in pe lever was held conti r operator" stated th	perso resse nold est l erfor nuou nat h	nne ds the eve mir sly e c	el beg somewh e test er ope ng thi / in t lid sh	an le rat s t he ift	more ver i or" h est, requi his	n as tha red	t	
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	DIABLO CANY	ON UNIT 2	0 5 0 0 0 3	2 3	93	- 0	01	- 0 1	3 <sup>of</sup> 6					
		On January 30, 1993, at 21 followed by a reactor trip performance of the routine	47 PST, Unit 2 e from 100 percen STP M-21A.	exper nt po	ienc wer	ed a durii	turb ng th	eine tri e	p 、					
	٨	During the low vacuum trip though the test lever was (test lever full-travel) p the reactor tripped as des as required. The plant re exception of the main feed (SJ)(P), which failed to t trip caused a gasket leak drain pump discharge pipin line were observed to have transient.	o test, the main apparently being oosition. Follow signed. All safe esponse was essen water system No. crip. A préssure in a flange (SM) ng (SM)(PSP). Tw been affected b	turb y hel wing ety s ntial 2 h e tra 2 h y (PSF wo ot oy th	ine d in the yste ly n eate nsie ) on her e pr	trip the turb ms fu orma r dra r dra r dra flang essu	ped e bloc ine t uncti l wit ain p uring heat ges i re	even k rip, oned h the ump the er n the						
		Following the trip, the "following the trip, the "for a second se	cest director" in cest lever since sition.	nstru it w	cted as s	the till	"tes bein	t lever g						
	D.	Inoperable Structures, Con Event:	nponents, or Syst	tems	that	Con	tribu	ited to	the					
		None.												
	Ε.	Dates and Approximate Time	es for Major Occu	urren	ces:									
	•	1. January 30, 1993, at	2147 PST:	Even Unit duri STP	t/di 2 m ng p M-21	scove ain † erfo A.	ery d turbi rmanc	late. ne trip :e of	ped					
		2. January 31, 1993, at	: 0009 PST:	A fo repo in a 50.7	ur-h rt w ccor 2(b)	our, as ma danco (2)('	non- ade t e wit ii).	emergen o the N h 10 CF	cy RC R					
	F.	Other Systems or Secondary	/ Functions Affec	cted:										
		None.												
	G.	Method of Discovery:												
		Alarms and other indication indication to had occurred.	ons in the contro the control room	ol ro n ope	om ( rato	NA)   rs tl	provi hat t	ded he even	t					
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III.	<u>Cause</u>	of the	Ever	<u>nt</u>																							
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	Β.	Root C	ause:	:																							
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		ĸ	b.	T P t i P	The leve peri cest in t posi	"t er iod t s the iti	tes in 1 d ste e t ion	t lo the lurin ps n est lon	eve ng wer le nge	r op ull- regu e pe ver r th	er Ila erf be Nan	ato ave orr ing no	or" el p test ned g re orma	i bo ti o equal	s r sit ng. ut uir	equ ion D of ed	ired for urin sequ to b	t a g en e	o   st th ce in	nol ign is , w th	d t ifi eve hic e 1	the icar ent ch fu]	t nt re ]-	test t ti the sul tra	me ted vel		
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## LICENSE VENT REPORT (LER) TEXT CONDUCTION

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autostop oil header during test conditions and thus limit header pressure to less than the value required to prevent the turbine from tripping.

Inspection of the flow orifices following the trip identified some blockage; however, the observed blockage should not have resulted in a turbine trip. The oil system pressure and flow transient resulting from the turbine trip may have dislodged some of the blockage so that the blockage observed in the flow orifices following the turbine trip was not representative of the full extent of that present at the time of the turbine trip.

No firm evidence was identified to support or refute either possible root cause.

### IV. Analysis of the Event

A reactor trip due to a turbine trip is a previously analyzed Condition II event described in the Final Safety Analysis Report (FSAR) Update Section 15.2.7, "Loss of External Electrical Load and/or Turbine Trip." The FSAR Update shows that following a turbine trip/reactor trip, the automatic steam dump system (SB) accommodates the excess steam generation. Reactor coolant temperatures and pressure do not significantly increase if the steam dump system and pressurizer pressure control system (JD) are functioning properly. Since the 10 percent steam dump and pressurizer control system functioned as designed, the health and safety of the public were not adversely affected, and there were no adverse consequences or safety implications resulting from this event.

### V. <u>Corrective Actions</u>

A. Immediate Corrective Actions:

Plant operators stabilized the plant in accordance with EOPs E-O and E-O.1.

- B. Corrective Actions to Prevent Recurrence:
  - 1. An Operations Department Incident Summary has been issued describing the Unit 2 main turbine trip/reactor trip.
  - 2. An Operations Department Night Order Log entry has been made to inform operators of the potential for a turbine trip/reactor trip during performance of STP M-21A.
  - 3. A design change is being implemented to enhance the controls and instrumentation used by personnel during performance of STP M-21A, thus minimizing the potential for personnel error.

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		4.	STP	M-21A was	revise	ed to:										
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VI.	<u>Addi</u>	<u>tional</u>	<u>Infor</u>	<u>mation</u>												
	Α.	Faile	d Com	ponents:												
		None.														
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		None.														

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