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ACCESSION NBR	: 8708180376	DOC. DATE	: 87/08/13	NOTARIZE	D: NO	DOCKET #
FACIL: 50-323	Diable Canyon	Nuclear	Power Plant,	Unit 2,	Pacific Ga	05000323
' AUTH, NAME	AUTHOR A	FFILIATIO	N			
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SHIFFER, J. D.	Pacific G	as & Elec	tric Co.			
RECIP, NAME	RECIPIEN	T AFFILIA	TION			

SUBJECT: LER 87-015-00: on 870714, during generator startup, high steam generator level turbine trip & subsequent reactor trip occurred. Caused by personnel error. Util to revise procedures re generator synchronization. W/870813 ltr.

6 DISTRIBUTION CODE: 1222D COPIES RECEIVED:LTR _ ENCL _ SIZE:__ TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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LICENSEE EVENT REPORT (LER)						
PACILITY NAME (1) PAG	<u>. ()</u>					
DIABLO CANYON UNIT 2	1015					
TITLE ME PERSONNEL ERROR RESULTING IN A HIGH STEAM GENERATOR LEVEL TURBINE TRIP AND SUBSEQUEN REACTOR TRIP WITH SAFETY INJECTION INITIATION	<u>, 1015</u>					
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OPERATING THIS REPORT IS SUBMITTED FURSUANT TO THE REQUIREMENTS OF 10 CFR § (11)						
Even of 11 2 50.73 (a)(2)(iv)						
below and in Test, NRC Form Special Report						
LICENSEE CONTACT FOR THIS LER (12)						
TELEPHONE NUMBER						
AREA CODE						
MARTIN T. HUG, REGULATORY COMPLIANCE ENGINEER	31 51 1					
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)						
CAUSE EVETEN COMPONENT MANUFAC REPORTABLE						
TURER TO HEADS	2892					
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ABSTRACT (16)						
At 0759 PDT, July 14, 1987, with the unit in Mode 1 (Power Operation) during generator startup, a high steam generator level turbine trip and subsequent reactor trip occurred. A safety injection followed due to high steam flow coincident with low steam generator pressure caused by a high rate of change of steam line pressure. The event occurred following turbine-generator synchronization when a control room operator manually loaded the turbine generator, creating a high steam flow condition which caused steam pressure to decrease and steam generator level to swell. This was the tenth emergency core cooling system (ECCS) actuation cycle that resulted in a discharge of water into the reactor. An unusual event was declared at 0800 PDT on July 14, 1987, and terminated at 0827 PDT on July 14, 1987. The unit was stabilized in Mode 3 (Hot Standby) at 0827 PDT on July 14, 1987. As required by 10 CFR 50.72 (b)(1)(iv), a 1-hour report was made at 0830 PDT, July 14, 1987. The cause of the event was personnel error, in_that the operator relied on a single meter, for indication of generator load, which was later determined to be improperly wired. A contributing cause to this event was the lack of: (1) providing the proper						
level of detail for postmaintenance testing; and (2) documentation of wire removal and installation. To prevent recurrence, PGandE will revise procedures regarding generator synchronization, post maintenance testing, and wire removal and installation. This event will also be reviewed with all operations percented						
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		EXPIRES: 8/3	I1/88
ACILITY NAME ())	DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)
		YEAR SEQUENTIAL WAREN	
DIABLO CANYON UNIT 2	0 5 0 0 0 3 2 3	3 8 7 - 0 1 6 - 0 0	0 2 0F 0 5

I. Initial Conditions

Unit 1 was in Mode 1 (Power Operation) at 12 percent power.

II. Description of Event

A. Event:

At 0759 PDT, July 14, 1987, with the unit in Mode 1 (Power Operation) during generator startup, a turbine trip (TA) (TRB) and subsequent reactor trip (AB)(RCT) occurred due to steam generator (AB)(BLR) 2-4 reaching its high steam generator level setpoint (P-14). A safety injection followed due to high steam flow coincident with low steam generator pressure caused by a high rate of change of steam line pressure.

This event occurred when the control room operator was in the process of synchronizing the main generator (TB) to the PGandE system. After closing the generator output breaker, the operator observed no increase in generator output on the meter on control panel 3 (CC3). Assuming that the generator did not automatically pick up the design 5 percent load, the operator manually loaded the generator using the fast action control push button. This manual loading of the generator resulted in an increase in steam flow. The increase in steam flow caused a decrease in steam generator pressure and an increase in steam generator level due to swell. Steam generator 2-4 swelled to its high level setpoint (P-14), causing a turbine trip. Since the unit was operating at greater than 10 percent power, the reactor tripped. The increase in steam flow was also sufficient to trip the high steam flow bistables. The high steam flow in coincidence with the high rate of change of steam line pressure caused a safety injection.

It was subsequently determined that during the synchronization, the generator did pick up the design 5 percent load. It was determined after the unit trip that the leads to the generator MWe feedback circuit, which provided input to the generator output meter on CC3, had been improperly reconnected following maintenance during the recent unit outage.

This was the tenth emergency core cooling system (ECCS) actuation cycle that resulted in a discharge of water into the reactor.

An unusual event was declared at 0800 PDT on July 14, 1987, and terminated at 0827 PDT on July 14, 1987. The unit was stabilized in Mode 3 (Hot Shutdown) at 0827 PDT on July 14, 1987. As required by 10 CFR 50.72(b)(1)(iv), a 1-hour report was made at 0830 PDT, July 14, 1987.

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IRC Form 36(9-83)	5A	LICENSEE EVEN	IT REPORT (LER)	TEXT CONTINU	U.S. MUCLE. JATION APPRO EXPIRE	AR REGULATORY COM DVED OMB NO. 3150-0 ES. 8/31/88	MMISSION)104
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	BLO CA	NYON UNIT 2	0 5 0	0 0 3 2 3	8 7 - 0 1 6 - 0	0 0 0 3 0F	0 5
 -	B C.	Inoperable structu event: Generator MWe feed meter on CC3 that of the generator. control program co to the actual load however these func Dates and approxim 1. July 14, 1987	back circuit: the operator way This circuit mparing the re This contro tions are not tions are not tate times for n 7, 0759 PDT:	s, or systems This circuit as observing of also provides ference load, ls the position utilized during major occurrent Event date.	that contributed f provides the input during the synchron input to the turb selected by the op on of the governor ng initial synchron	to the nization ine perator, valves, nization.	
		2. July 14, 1987	, 0800 PDT:	Unusual Eve	nt declared.	1	
		3. July 14, 1987	, 0827 PDT:	Unit stabil	ized in Mode 3.		
		4. July 14, 1987	, 0830 PDT:	1-Hour repor 10 CFR 50.72	rt pursuant to 2(b)(1)(iv) was mac	je.	
	D.	Other systems or s	econdary funct	ions affected:	:		
		None					
н	Ε.	Method of discover	у:				
		The event was imme control room.	diately apparer	nt due to the	annunciator alarms	in the	
	F.	Operator actions:					
		The appropriate em stabilized in Mode	ergency procedu 3.	ures were foll	lowed, and the unit	t was	
	G.	Safety system resp	onses:				
a		1. The turbine (TA)(TRB) trippe	ed and feedwat	ter.pump (SJ)(MO)(F) tripped.	
		2. The reactor t	rip breakers (J	JC)(BKR) opene	ed.		
a san' sa		3. The control retoring to drop into	od drive mechar the reactor.	nism (AA)(DRI)	/),allowed the cont	rol rods	
	- ¹ x 44 - ¹ x x - x + 5 - x - 5 	4. All ECCS equip signal: A con isolation, and design.	pment started i ntainment phase d containment v	in response to "A" isolatio ventilation is	o a safety injectic on, main feedwater solation all occurr	on Ted per	

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LICENSEE	EVENT	REPORT	(LER) TEXT	CONTINUATION
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U.S. NUCLEAR REGULATORY COMMISSION APPROVED OMB NO. 3150-0104 EXPIRES: 8/31/88

FACILITY NAME (1)

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NRC Form 366A (9-83)

FACILITY NAME (1)		DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)
			YEAR SEQUENTIAL REVISION	
DIABLO CANYO	N UNIT 2	0 5 0 0 0 3 2 3	817 - 011 6 - 010	014 0F 015
TEXT III more space is required, use	eddrtionel NRC Form 366A'sJ (17)			
5.	Diesel Generators (1 design, did not load	EK)(DG) 2-1, 2-2, and 1.	1-3 started, but per)

- 6. Auxiliary feedwater pumps (BA)(MO)(P) 2-2 and 2-3 started per design.
- 7. The main steam isolation valves (SB)(V) and the inside containment steam generator blowdown valves (WI)(V) did not close because the steam line isolation valve signal was of very short duration.

III. <u>Cause of the event</u>

A. Immediate cause:

High steam generator level caused a turbine trip and subsequent reactor trip. High steam line flow coincident with low steam generator pressure caused a safety injection.

B. Root cause:

Personnel error in that the control room operator did not check other independent indications of generator output before loading the generator manually. The following procedural deficiencies contributed to the personnel error.

- 1. Wiring for the generator MWe feedback circuit was improperly reconnected during outage maintenance. The wiring was incorrectly reconnected because no overall plant procedure existed that would have required the proper positions for the wires to be logged in a formal wire log.
- 2. Proper testing of the generator MWe feedback circuit was not accomplished. The procedures governing testing of maintenance items did not provide the proper guidance as to the level of detail of the testing to be performed to determine if a system is ready to be returned to service after maintenance is performed.

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U.S. NUCLEAR REGULATORY COMMISSION APPROVED OMB NO. 3150-0104

FACILITY	NAME (1)
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NRC Form 366A 19-83)

IV. Analysis of Event

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

DIABLO CANYON UNIT 2

Loss of a turbine generator is a previously analyzed event (FSAR Update 15.2.7).

High steam line flow coincident with low steam generator pressure is a previously analyzed event (FSAR Update 15.4.2).

During the safety injection, the main steam isolation valves did not close since the steam line isolation signal was of very short duration. The isolation signal was short because the turbine was tripped on steam generator high level. All other safety feature equipment respond normally during the reactor trip and safety injection. Thus, there were no unanalyzed safety consequences or implications resulting from this event.

V. <u>Corrective Actions</u>

- 1. This event will be reviewed with all operations personnel by means of an Operations Incident Report.
- 2. The operating procedure governing main unit turbine startup was revised to include instructions on using alternate generator output indication and on separating the generator from the grid if the load pickup cannot be verified from the alternate indications.
- 3. Procedures governing postmaintenance testing will be revised to provide the proper guidance as to the level of detail of the testing to be performed to determine if a system is ready to be returned to service.
- 4. An administrative procedure will be initiated to provide a formal program for the I&C and Electrical Maintenance Department to follow for documentation of wire removal and reinstallation.

VI. Additional Information

A. Failed components:

None

B. Previous LERs on similar events:

None

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PACIFIC GAS AND ELECTRIC COMPANY

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77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211 • TWX 910-372-6587

JAMES D. SHIFFER VICE PRESIDENT

August 13, 1987

PGandE Letter No.: DCL-87-203

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 2-87-016-00 Personnel Error Resulted in a High Steam Generator Level Turbine Trip and Subsequent Reactor Trip with Safety Injection Initiation

Gentlemen:

Pursuant to 10 CFR 50.73(a)(2)(iv), PGandE is submitting the enclosed Licensee Event Report concerning personnel error resulting in a high steam generator level turbine trip and subsequent reactor trip with safety injection initiation.

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

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely. J.D. Shiffer

Enclosure

- cc: L. J. Chandler J. B. Martin M. M. Mendonca
 - P. P. Narbut
 - B. Norton CPUC
 - Diablo Distribution

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