NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
PALISADES NUCLEAR PLANT	0 5 0 0 0 2 5 5	1 OF 0 3

TITLE (4)
TURBINE GENERATOR TRIP RESULTS IN DIESEL GENERATOR ACTUATION

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
									N/A	0 5 0 0 0
0 4	1 7	8 7	8 7	- 0 1 2	- 0 0	0 5	1 8	8 7	N/A	0 5 0 0 0

OPERATING MODE (9): N
POWER LEVEL (10): 0 1 5

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
C S Kozup, Technical Engineer, Palisades	AREA CODE 6 1 6 7 6 4 - 8 9 1 3

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 (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

Abstract

While returning to power operation on April 17, 1987 at 0818, a turbine generator [TA] trip on reverse power caused the actuation of standby diesel generator 1-1. The reactor was at approximately five percent of rated power at the time of the event.

An electro-hydraulic control system fluid leak from a turbine interface valve [TA;PCU] was believed to be the cause of the event. Adjustments were made to eliminate the leak and a second attempt to synchronize to the grid was made. At 0910 the turbine generator again tripped on reverse power. Investigations revealed that adjustments made to the initial valve setting (a voltage signal) of the turbine governor valve [TA;PCU] prior to attempting to return to power caused governor valve opening to be restricted, such that steam flow sufficient to sustain the turbine could not pass.

Adjustments were made to the initial valve setting and at 1503, synchronization to the grid was completed.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PALISADES NUCLEAR PLANT	0 5 0 0 0 2 5 5	8 7	— 0 1 2	— 0 0	0 2 OF 0 3

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

Description

While returning to power operation on April 17, 1987 at 0818, a turbine generator [TA] trip on reverse power caused the actuation of standby diesel generator 1-1 [EK;DG]. Diesel generator 1-2 was in operation at the time of the event to support turbine generator synchronization to the grid. The reactor was critical at approximately five percent of rated power (primary coolant system: 2008 psia, 532 degrees) at the time of the event.

Initial troubleshooting by Operations personnel identified a turbine interface valve [TA;PCU] to be leaking electro-hydraulic control (EHC) fluid. In belief that the fluid loss was causing EHC system pressure to drop to a level at which turbine governor valve operation was impaired, Auxiliary Operators were instructed to tighten the interface valve diaphragm [TA;BLL] flange bolts. After tightening, no leaks were observed. Subsequently, at 0910 Operations again attempted to synchronize the turbine generator to the grid. As before, the turbine generator tripped on reverse power.

Investigation revealed that prior to this return to power operation, the initial valve setting (a voltage signal) which controls the degree to which the governor valve [TA;PCU] opens in relation to reactor power level had drifted to 2.5 volts. This setting corresponds to a reactor power level of 22.5 percent. This setpoint was adjusted to 0.5 volts which was believed to correspond to a reactor power level of five percent.

After the turbine generator could not be put on line at 0.5 volts, it was determined that in order to maintain the turbine at its design speed of 1800 revolutions per minute, a voltage signal of 0.5 was necessary. Therefore, when the turbine was to be put on line, the governor valves were already opened to the limit allowed by the valve setting. Further discussions with Operations personnel on previous start-ups revealed that an initial valve setting of 1.6 volts would allow the proper amount of steam flow with a corresponding reactor power level of five percent to preclude a turbine generator trip or reverse power.

Adjustments were made and at 1503 synchronization to the grid was successfully completed.

Cause Of The Event

The actuation of diesel generator 1-1 was the result of the above described 0818 turbine trip. Diesel generator 1-2 was in service at the time of the event. Both diesel generators were in service at 0910 when the second turbine trip occurred.

The turbine trips were the result of an adjustment made to the initial turbine governor valve setpoint. A setpoint of 0.5 volts was utilized. Subsequently, it was determined that 0.5 volts allowed turbine governor valve operation sufficient to roll the turbine at its designed speed of 1800 revolutions per minute, however, not to sustain a turbine load at five percent of rated power. This inability to sustain the turbine caused the turbine trip on reverse power.

Corrective Action

The initial turbine governor valve setpoint was positioned at 1.6 volts.

This event, the initiating circumstance and the design function of the initial load circuit will be reviewed in Operations Department continuing training.

The interface valve diaphragm, which was leaking at its housing flange, has been replaced.

The turbine generator control system maintenance procedure will be revised prior to the 1988 Refueling Outage to include a check of initial turbine governor setpoint each refueling outage.

Analysis Of The Event

The actuation of diesel generator 1-1 in response to the turbine generator trip is a designed Engineered Safeguard System function. During the trip and consequent diesel generator actuation, the turbine bypass valve functioned properly to maintain the primary coolant system average temperature and the reactor was maintained in a stable, hot standby condition.

This condition can only occur during return to power operation, therefore, no adverse consequences could result with the Plant at a higher power level. All designed Engineered Safeguards System required to compensate for this event functioned properly, such that no adverse safety hazards to Plant personnel or the general public were presented.

The event is being reported per 10CFR50.73 (a)(2)(iv) due to the actuation of an Engineered Safeguards System component.

CONSUMERS POWER COMPANY
POWERING MICHIGAN'S PROGRESS
General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0550

May 18, 1987

Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT -
LICENSEE EVENT REPORT 87-012 - TURBINE GENERATOR TRIP
RESULTS IN DIESEL GENERATOR ACTUATION

Licensee Event Report (LER) 87-012, (Turbine Generator Trip Results in Diesel Generator Actuation) is attached. This event is reportable to the NRC per 10CFR50.73(a)(2)(iv).

Brian D Johnson
Staff Licensing Engineer

CC Administrator, Region III, USNRC
NRC Resident Inspector - Palisades

Attachment

IE22
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OC0587-0071-NL04