Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043
Tel 269 764 2000

Christopher J. Schwarz
Site Vice President

October 18, 2010

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

SUBJECT: Licensee Event Report 2010-002, Condition that Could Have Prevented the Fulfillment of a Safety Function

Palisades Nuclear Plant
Docket 50-255
License No. DPR-20

REFERENCES: 10 CFR 50.73

Dear Sir or Madam:

Licensee Event Report (LER) 2010-002 is enclosed. The LER describes a condition which was prohibited by the plant Technical Specifications that could have prevented fulfillment of a safety function due to failure of the Reactor Protection System loss of load trip function.

This LER is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(A).

This letter contains no new commitments and no revisions to existing commitments.

Sincerely,

cjs/jse

Attachment 1 - LER 2010-002

CC Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

ATTACHMENT 1

LER 2010-002

CONDITION THAT COULD HAVE PREVENTED
THE FULFILLMENT OF A SAFETY FUNCTION

4 Pages Follow

NRC FORM 366
U.S. NUCLEAR REGULATORY COMMISSION
(9-2007)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 **EXPIRES 8/31/2010**

Estimated burden per response to comply with this mandatory information 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 Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@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 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	2. DOCKET NUMBER	3. PAGE
PALISADES NUCLEAR PLANT	05000255	1 OF 4

4. TITLE

Condition that Could Have Prevented the Fulfillment of a Safety Function

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
08	23	2010	2010	- 002	- 00	10	18	2010	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☒ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Paula Anderson	(269) 764-2788

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
D	JJ	BYC	P319	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ **YES (If yes, complete 15. EXPECTED SUBMISSION DATE)** ☒ **NO**

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On August 23, 2010, at approximately 2210 EDT, with the plant in Mode 1 at 100% power, the control room received a turbine protection and bleeder trip circuits undervoltage alarm. Upon investigation, 125 VDC datalogger distribution panel ED-205 was found to be de-energized, causing turbine protection trip relays RELAY-305-L and RELAY-305-R to become inoperable. These two inoperable relays disabled the reactor trip function of the Reactor Protective System upon a loss of turbine generator load. The control room operators determined, after consulting with other plant staff, that the inoperable loss of load reactor trip function required entry into Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.1 Condition C.

The NRC resident inspector questioned whether the entry into TS LCO 3.3.1 Condition C was a non-conservative TS entry. The inspector believed that TS LCO 3.3.1 Condition E should also have been entered because at least two loss of load trip channels were inoperable and that TS LCO 3.0.3 should have been entered because TS LCO 3.3.1 provided no Required Action when more than two loss of load trip channels are inoperable.

Follow-up review by plant staff concluded that TS LCO 3.3.1 Condition E and TS LCO 3.0.3 should have been entered when the loss of load reactor trip was found inoperable.

This occurrence is reportable under 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(A).

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PALISADES NUCLEAR PLANT	05000255	2010	- 002	- 00	2 OF 4

EVENT DESCRIPTION

On August 23, 2010, at approximately 2210 EDT, with the plant in Mode 1 at 100% power, the control room received a turbine protection and bleeder trip circuits undervoltage alarm [EA]. Upon investigation, the 125 VDC datalogger distribution panel [PL] ED-205 was found to be de-energized, causing the turbine protection trip relays [94] RELAY-305-L and RELAY-305-R to become inoperable. Relay 305-L provides input to Reactor Protective System (RPS) channels A and C and relay 305-R provides input to RPS channels B and D. The RPS generates a reactor trip upon receipt of two of the four trip signals. With the two relays inoperable, the RPS reactor trip upon a loss of turbine generator [TG] load was inoperable.

The control room operators determined, after consulting other plant staff, that the inoperable loss of load trip function required entry into Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.1 Condition C (One Loss of Load trip unit or associated instrument channel inoperable) but entry into TS LCO 3.3.1 Condition E (One or more Functions with two RPS trip units or associated instrument channels inoperable) was not required. Entry into TS LCO 3.0.3 was also determined to not be required because, as discussed in the TS LCO 3.3.1 Bases, the loss of load trip is not relied on in the safety analyses to trip the reactor upon a loss of load, and is intended only for equipment protection. Entry into TS LCO 3.0.3 would have required that plant power be reduced to below 17 percent in accordance with TS Table 3.3.1-1. The operators established a compensatory action to manually trip the reactor upon a loss of turbine load.

On August 24, 2010, the NRC resident inspector questioned whether the entry into TS LCO 3.3.1 Condition C was a non-conservative TS entry. The inspector believed that TS LCO 3.3.1 Condition E also should have been entered because at least two loss of load trip channels were inoperable and that TS LCO 3.0.3 should have been entered because TS LCO 3.3.1 provided no Required Action when all four loss of load trip channels are inoperable.

On August 24, 2010, at approximately 0939 EDT, the ED-205 distribution panel was restored to operable status and TS LCO 3.3.1 Condition C was exited.

Follow-up review by plant staff concluded that TS LCO 3.3.1 Condition E and TS LCO 3.0.3 should have been entered when ED-205 was found de-energized.

This occurrence is reportable under 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(A).

Power to the non-safety related 125 VDC datalogger distribution panel ED-205 is provided by the in-service batter charger [BYC], either battery charger no. 1, ED-206, or battery charger no. 2, ED-207. Datalogger battery [BTRY] ED-204 is normally in parallel with the in-service battery charger. In this arrangement, the battery charger supplies the panel loads while maintaining the battery in a fully charged condition. The 125 VDC datalogger distribution panel ED-205 was found de-energized, along with datalogger battery ED-204, because battery charger no. 1, ED-206, had failed.

As described in the TS Bases, Section B3.3.1, the purpose of the loss of load reactor trip is to prevent lifting the pressurizer safety valves and main steam safety valves in the event of a turbine generator trip during power operations. The TS allow the loss of load trip to be bypassed or inoperable with rated thermal power less than 17 percent since the trip is not needed to prevent lifting of the pressurizer or

main steam safety valves in the event of a loss of load. There are no safety analyses that take credit for the loss of load trip. In the Loss of External Load safety analysis in Section 14.12 of the Final Safety Analysis Report, the high pressurizer pressure trip is credited with tripping the reactor. The loss of load trip is intended only for equipment protection and is not required for reactor protection.

CAUSE OF THE EVENT

An apparent cause evaluation of the failure of battery charger ED-206 determined that the charger failed due to component aging because there were no regularly scheduled maintenance activities for the charger.

An apparent cause evaluation concerning the TS entry determined that licensing basis documentation stating that the loss of load trip function is only for equipment protection and is not credited in the plant safety analyses led the plant staff to erroneously conclude that entry into TS LCO 3.0.3 was not required.

CORRECTIVE ACTIONS

Entergy Nuclear Operations Inc. (ENO) plans to address the cause of the failure of ED-206 by creating a preventive maintenance activity to periodically overhaul ED-206 and its sister component, battery charger no. 2, ED-207. ENO also established a plant process computer alarm to signal battery charger ED-206 and ED-207 problems by annunciating on low bus voltage.

To address the TS issue, ENO issued a standing order requiring entry into TS LCO 3.3.1 Conditions C and E in the event of the turbine protection trip relays 305-L and 305-R become inoperable and cause an inoperable loss of load RPS trip. The standing order also requires TS LCO 3.0.3 to be entered if no TS Condition exactly describes plant conditions. This standing order will remain in effect until operator training has occurred or until the TS and TS Bases are revised.

ENO also plans to implement the following:

- Submit a license amendment to revise TS LCO 3.3.1 and the associated TS Bases to provide clear guidance for an inoperable loss of load RPS trip.
- Include this incident in the operator requalification training program.
- Revise procedures to include guidance for responding to a loss of datalogger distribution panel ED-205.
- Revise the Final Safety Analysis Report and site design documentation to describe the loss of load reactor trip circuit as a single instrument channel.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PALISADES NUCLEAR PLANT	05000255	2010	- 002 -	00	4 OF 4

ASSESSMENT OF SAFETY CONSEQUENCES

Entry into TS LCO 3.0.3 due to the inoperable loss of load reactor trip function would have required that plant power be reduced to less than 17 percent in accordance with TS Table 3.3.1-1.

Although the plant did not enter TS LCO 3.0.3 and decrease power below 17 percent, there were no safety consequences associated with this event.

As discussed in the TS Bases, Section B3.3.1, the purpose of the loss of load reactor trip function is strictly for equipment protection. That is, the loss of load trip is an anticipatory trip that prevents lifting of the pressurizer and main steam safety valves in the event of a turbine trip during power operations. Below 17 percent power, the atmospheric dump valves are capable of relieving pressure without challenging overpressure protection equipment.

There are no safety analyses that take credit for the loss of load trip. In the Loss of External Load safety analysis, the safety related high pressurizer pressure trip is credited with shutting down the reactor rather than the loss of load trip.

Without the loss of load trip, a reactor trip will occur upon a loss of load due to high pressurizer pressure. The high pressurizer pressure trip was operable during the period that the loss of load trip was inoperable.

Therefore, the event did not have nuclear safety consequences.

PREVIOUS SIMILAR EVENTS

None.