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June 26, 2012

AEP-NRC-2012-45
10 CFR 50.73

Docket No. 50-316

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

Donald C. Cook Nuclear Plant Unit 2
LICENSEE EVENT REPORT 316/2012-002-00
UNIT 2 REACTOR TRIP FROM GENERATOR TRIP DUE TO INCORRECT RELAY SETTING

In accordance with the criteria established by 10 CFR 50.73, Licensee Event Report System, the following report is being submitted:

LER 316/2012-002-00: "Unit 2 Reactor Trip From Generator Trip Due to Incorrect Relay Setting"

There are no commitments contained in this submittal.

Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,

Joel P. Gebbie
Site Vice President

SJM/kmh

Enclosure

c: LERevents@INPO.org (e-mail only)
C. A. Casto – NRC Region III
J. T. King – MPSC, w/o enclosure
S. M. Krawec – AEP Ft. Wayne, w/o enclosure
MDEQ – RMD/RPS, w/o enclosure
NRC Resident Inspector
P. S. Tam – NRC Washington DC

IE22
NRC

LICENSEE EVENT REPORT (LER)(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory 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 FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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 an 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

Donald C. Cook Nuclear Plant Unit 2

2. DOCKET NUMBER

05000-316

3. PAGE

1 of 3

4. TITLE

Unit 2 Reactor Trip from Generator Trip Due to Incorrect Relay Setting

5. EVENT DATE

MONTH	DAY	YEAR
04	30	2012

6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO.
2012	002	00

7. REPORT DATE

MONTH	DAY	YEAR
06	26	2012

8. OTHER FACILITIES INVOLVED

FACILITY NAME	DOCKET NUMBER
	05000
FACILITY NAME	DOCKET NUMBER
	05000

9. OPERATING MODE

1

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

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> 50.73(a)(2)(vii) |
| <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) |
| <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) |
| <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) |
| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below
or in NRC Form 366A |

12. LICENSEE CONTACT FOR THIS LER**FACILITY NAME**

Michael K. Scarpello, Regulatory Affairs Manager

TELEPHONE NUMBER (Include Area Code)

(269) 466-2649

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

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 April 30, 2012, at 2328 hours, during power ascension following a recent refueling outage, Donald C. Cook Nuclear Plant (CNP) Unit 2 Reactor tripped automatically from a trip of the main turbine. All control rods fully inserted and the auxiliary feedwater system (AFW) started and performed as designed.

On May 1, 2012, at 0013 hours, the Main Steam Isolation Valves (MSIV) were closed and the Reactor Coolant System (RCS) temperature was controlled by the steam generator atmospheric relief valves (PORV). Closure of the MSIVs was based on cooldown of the RCS and recovered after closing the MSIVs. All major plant components functioned as designed with no safety system functional failures.

The reactor trip was reported in accordance with 10 CFR 50.72(b)(2)(iv)(B) and the AFW actuation was reported in accordance with 10 CFR 50.72(b)(3)(iv)(A). The reactor trip and the AFW system actuation are reportable as a Licensee Event Report (LER) in accordance with 10 CFR 50.73(a)(2)(iv)(A).

The turbine trip was caused by the actuation of the main generator unit differential and overall differential lockout relays. The overall differential function of a multifunctional digital relay actuated and operated the lockout relays. The relay was installed during a recent refueling outage. The actuation was caused by an incorrect current transformer winding compensation setting within the relay. Action taken included correcting the relay setting.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Donald C. Cook Nuclear Plant Unit 2	05000-316	YEAR	SEQUENTIAL NUMBER	REVISION NO.	2 of 3
		2012	- 002	- 00	

NARRATIVE

Conditions Prior to Event

91 percent reactor power.

Description of Event

On April 30, 2012, at 2328 hours, during power ascension following a recent refueling outage, Donald C. Cook Nuclear Plant (CNP) Unit 2 Reactor tripped automatically from a trip of the main turbine [TRB]. All control rods [AA] fully inserted and the auxiliary feedwater system (AFW) [BA] started and performed as designed.

Immediately following the reactor trip, the Reactor Coolant System (RCS) [AB] temperature responded as expected and lowered to approximately 544 degree Fahrenheit (F), then rose to a maximum of 548 degree F approximately 8 minutes following the reactor trip. RCS temperature then slowly lowered over the next 35 minutes reaching a minimum RCS temperature of 539 degree F on May 1, 2012, at 0013 hours. The main steam isolation valves (MSIVs) [ISV] were subsequently closed in accordance with the reactor trip response procedure, which was effective in controlling the cooldown. Decay heat was being removed through the steam generator atmospheric relief valves (PORV) [RV]. The cause of the RCS cooldown was due to leakage past a steam dump [JI] valve [V] to the condenser [SG].

All major plant components functioned as designed; as such, there were no safety system functional failures. The reactor trip was reported in accordance with 10 CFR 50.72(b)(2)(iv)(B) and the AFW actuation was reported in accordance with 10 CFR 50.72(b)(3)(iv)(A).

The main turbine tripped due to the actuation of the main generator unit differential and overall differential lockout relays [86]. A multifunction digital overall differential relay [87] operated the lockout relays and had a phase 2 and phase 3 differential indication observed. A walkdown did not identify any indication of an actual electrical fault.

The reactor trip and AFW system actuation are reportable as a Licensee Event Report (LER) in accordance with 10 CFR 50.73(a)(2)(iv)(A).

Cause of Event

A multifunction digital overall differential relay was installed during a recent refueling outage modification which replaced three overall differential relays and the "V/Hz Over-Excitation Relay" with the single device. The new relay actuated due to an incorrect current transformer winding compensation setting within the new relay. The incorrect setting caused an invalid measurement of current imbalance that was significant enough at 91% power to trip the differential relay element. The relay setting was not verified following installation as prescribed by the modification. The modification process did not require formal verification of tasks implementing the modification.

LICENSEE EVENT REPORT (LER)
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NARRATIVE

Analysis of Event

The event is not considered to be risk significant as there were no risk significant equipment failures to pose elevated risk. It is recognized that there was an actuation of a main generator protective circuit and all systems responded as designed.

Based on review of the control room logs and the post-trip review, all plant systems performed as designed to shut down the unit and remove decay heat. No risk-significant equipment functions were affected or failed and no significant operator actions outside those required for normal trips were required.

Corrective Actions

Completed Corrective Actions

The overall differential relay setting changes were implemented and monitored during the restart evolution as load was increased to 100%.

Planned Corrective Actions

Planning and modification procedures will be revised to address task verification of modification implementation.

Previous Similar Events

LERs for CNP Unit 1 and Unit 2 for the past three years were reviewed for similar events. The following was identified:

05000315-2011-001-00, Unit 1 Reactor Trip Due To Main Turbine Trip

On September 07, 2011, at 0854 hours, Donald C. Cook Nuclear Plant (CNP) Unit 1 Reactor tripped automatically due to a trip of the main turbine. All control rods fully inserted and the auxiliary feedwater system (AFW) started and performed as designed.

The cause of the event above, Unit 1 Main Turbine trip, was an incorrectly installed thrust probe, which was due to an over reliance on field engineering guidance for maintenance activities in lieu of detailed planning instruction. Corrective actions included revising project guidance to improve the quality of work order instructions.

The cause of the event, for this LER, was that the modification process did not require a formal verification of activities required to implement the modification.

The causes are different in each event and the corrective actions taken in the prior event would not have precluded this event.