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NLS2013101
December 20, 2013

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Licensee Event Report No. 2013-001-00
Cooper Nuclear Station, Docket No. 50-298, DPR-46

Dear Sir or Madam:

The purpose of this correspondence is to forward Licensee Event Report 2013-001-00.

There are no new commitments contained in this letter.

Sincerely,

Oscar A. Limpias
Vice President Nuclear-
Chief Nuclear Officer

/jo

Attachment: Licensee Event Report 2013-001-00

cc: Regional Administrator w/attachment
USNRC - Region IV

Cooper Project Manager w/attachment
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/attachment
USNRC - CNS

SRAB Administrator w/attachment

NPG Distribution w/attachment

INPO Records Center w/attachment
via ICES entry

SORC Chairman w/attachment

CNS Records w/attachment

COOPER NUCLEAR STATION
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NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 10/31/2013

Estimated burden per response to comply with this mandatory information collection request: 80 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Service Branch (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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Unfused Direct Current Ammeter Circuits Result in Unanalyzed Condition

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
										05000
10	30	2013	2013	- 001 -	00	12	20	2013	FACILITY NAME	DOCKET NUMBER
										05000

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
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
David W. Van Der Kamp, Licensing Manager	(402) 825-2904

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete EXPECTED SUBMISSION DATE)* ☒ NO				

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

During a review of Operating Experience for unfused remote Direct Current (DC) Ammeter Circuits that could result in a secondary fire due to multiple fire induced faults, Cooper Nuclear Station determined susceptibility to the same condition. In a postulated event, a fire in the area of the shunt conductor's route could cause one of the ammeter wires to short to the ground plane. Simultaneously, the event could cause another DC wire from the opposite polarity on the same battery to short to the ground plane. This would cause a ground loop through the unprotected ammeter wire. Since this circuit is not protected, this event could result in excessive current flow in the ammeter wiring causing a secondary fire in a separate fire area.

The cause of the unfused ammeter circuits is that the original design criteria had not factored in the potential of the multiple shorts to ground failure mode and therefore, did not require overcurrent protection for remote shunt fed ammeter circuits.

Compensatory fire watch measures have been implemented until an analysis is performed demonstrating that remote circuits can meet fire protection requirements without fuses. If an analysis cannot demonstrate meeting fire protection requirements with the existing circuit design, then a modification to correct the remote ammeter circuits will be implemented.

PLANT STATUS

Cooper Nuclear Station (CNS) was in Mode 1, Power Operation, 100 percent power, at the time of discovery of the event.

EVENT DESCRIPTION

During review of Operating Experience (OE) INPO ICES-305419, "Unfused remote DC Ammeter circuit could result in a secondary fire due to multiple fire induced faults", it was determined that CNS is susceptible to the same condition.

The condition in the OE is as follows: "The wiring design for the ammeters contains a shunt in the current flow from each direct current (DC) battery or charger. Bolted on the shunt bar are two IEEE 383 qualified leads to a current meter in the main control room (MCR). The small difference in voltage between the two taps on the shunt is enough to deflect the current gauge in the MCR when current flows from the battery or charger through the shunt. The ammeter wiring attached to the shunt does not have fuses. It is postulated that a fire could cause one of these ammeter wires to short to ground at the same time the fire causes another DC wire from the opposite polarity on the same battery also short to ground. This would cause a ground loop through the unfused ammeter cable. With enough current going through the cable, the potential exists that the cable could self-heat to the point of causing a secondary fire in the electrical tray at some point along the path of the cable (including the Control Room) or possibly heat up to the point of causing damage to adjacent cables that may be required for safe shutdown."

CNS has cables [CBL] that run from shunts located in the DC switchgear [SWGR] rooms 1A and 1B to ammeters [II] on bench board C in the Control Room. The conductors do not have over-current protection to limit fault current.

In a postulated event, a fire in the area of the shunt conductor's route could cause one of the ammeter wires to short to the ground plane. Simultaneously, the event could cause another DC wire from the opposite polarity on the same battery [BTRY] to short to the ground plane. This would cause a ground loop through the unprotected ammeter wire. Since this circuit is not protected, this event could result in excessive current flow in the ammeter wiring to the point of causing a secondary fire in a separate fire area. This could potentially cause the loss of the ability to conduct a safe shutdown as required by 10 CFR 50, Appendix R.

BASIS FOR REPORT

This event is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety.

Event Notification 49486 was made to the Nuclear Regulatory Commission on October 30, 2013.

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17. NARRATIVE

SAFETY SIGNIFICANCE

This event is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety in that the self-heating on the overloaded ammeter wiring could cause damage to adjacent cables/equipment that may be required for safe shutdown following a fire in the Control Room or Cable Spreading Room.

There were no actual consequences to report as this identifies an unanalyzed condition with no occurrence of an event. An extent of condition review determined that this issue applies to the 125 and 250 VDC ammeter circuit wiring.

CAUSE

The cause of the unfused ammeter circuits is that the original design criteria had not factored in the potential of the multiple shorts to ground failure mode and therefore, did not require overcurrent protection for remote shunt fed ammeter circuits.

CORRECTIVE ACTION

Compensatory fire watch measures have been implemented until an analysis is performed demonstrating that remote circuits can meet fire protection requirements without fuses. If an analysis cannot demonstrate meeting fire protection requirements with the existing circuit design, then a modification to correct the remote ammeter circuits will be implemented.

PREVIOUS EVENTS

On July 13, 2010, during the review of the Safe Shutdown Analysis Report, station personnel discovered that although the plant credits Containment Overpressure (COP), the Appendix R analysis did not ensure COP is maintained. The cause of the event was approval oversight did not detect that unanalyzed Appendix R issues were being deferred and not promptly addressed. The event was reported under Licensee Event Report 2010-002-00, Appendix R Containment Overpressure Credit, dated September 7, 2010.