



Nebraska Public Power District
Nebraska's Energy Leader

NLS2001058
July 6, 2001

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

Gentlemen:

Subject: Licensee Event Report No.2001-003
Cooper Nuclear Station, NRC Docket 50-298, DPR-46

The subject Licensee Event Report is forwarded as an enclosure to this letter.

Sincerely,

J. A. McDonald
Plant Manager

/jrs
Enclosure

cc: Regional Administrator
USNRC - Region IV

Senior Project Manager
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector
USNRC

NPG Distribution

INPO Records Center

W. Leech
MidAmerican Energy

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IED2

LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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.

FACILITY NAME (1)

Cooper Nuclear Station

DOCKET NUMBER (2)

05000298

PAGE (3)

1 OF 4

TITLE (4)

Failure to Adequately Revise Procedures Resulted in Inadequate Fire Watches Under Certain Battery/Battery Charger Configurations and an Unanalyzed Condition

| 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 NAME | DOCKET NUMBER |
| 05 | 09 | 2001 | 2001 | -- 003 -- | 00 | 07 | 06 | 2001 | | 05000 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | | 05000 |

| OPERATING MODE (9) | POWER LEVEL (10) | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | | |
|--------------------|------------------|---|--|-------------------|---|---|
| 1 | 100 | 20.2201(b) | | 20.2203(a)(2)(v) | 50.73(a)(2)(i) | 50.73(a)(2)(viii) |
| | | 20.2203(a)(1) | | 20.2203(a)(3)(i) | <input checked="" type="checkbox"/> 50.73(a)(2)(ii) | 50.73(a)(2)(x) |
| | | 20.2203(a)(2)(i) | | 20.2203(a)(3)(ii) | 50.73(a)(2)(iii) | 73.71 |
| | | 20.2203(a)(2)(ii) | | 20.2203(a)(4) | 50.73(a)(2)(iv) | OTHER |
| | | 20.2203(a)(2)(iii) | | 50.36(c)(1) | 50.73(a)(2)(v) | Specify in Abstract below or in NRC Form 366A |
| | | 20.2203(a)(2)(iv) | | 50.36(c)(2) | 50.73(a)(2)(vii) | |

LICENSEE CONTACT FOR THIS LER (12)

NAME

David Kunsemiller, Risk and Regulatory Affairs Manager

TELEPHONE NUMBER (Include Area Code)

402-825-5236

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

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
| | | | | | | | | | |
| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE).

NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

The station's direct current (DC) electrical system (EIS:EJ) consists of two independent banks of 125 volt and 250 volt batteries (Division I, "A" and Division II, "B" trains) with associated battery chargers. When a battery charger(s) is removed from service for maintenance, a substitute charger(s) ("C") is then connected so that both independent banks of batteries can remain in service. The "B" charger(s), with qualified repair procedures, support post-fire 10CFR50, Appendix R safe shutdown requirements in certain fire zones. The station is required to post a fire watch whenever the "C" charger(s) is used in lieu of the "B" charger(s) because equivalent repair procedures do not exist for the "C" charger(s).

On May 9, 2001, it was determined that inadequate compensatory fire watches were posted after placing the 125/250 volt "C" battery charger(s) in service on three separate occasions during the time frame from December 1998 to July 2000. The lack of a fire watch was not analyzed in the station's fire protection safe shutdown analysis.

The cause was determined to be human error resulting in a failure to incorporate all the required compensatory fire watches in station procedures when they were revised in 1992. Immediate corrective actions included the generation of a Standing Order to address the necessary fire watches and then revision of the appropriate plant procedures to require fire watches in all the necessary fire zones whenever the "C" battery charger is substituting for the "B" charger. The individual responsible for the procedural inadequacies completed a training lesson on human performance including information on error prevention tools.

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

PLANT STATUS

Cooper Nuclear Station (CNS) was in Mode 1, Power Operation, at approximately 100 percent power when the event was discovered.

BACKGROUND

The CNS direct current (DC) power systems (125/250 volt for power and control) supply DC power to station emergency equipment and selected safeguard equipment loads. Power is normally supplied to the DC systems from the critical 460 volt alternating current (AC) buses (E1S:EB) of the auxiliary power distribution system through battery chargers. There are two independent DC power systems for both the 125 and 250 volt buses and their related AC power sources and independent banks of batteries with associated battery chargers (Division I and Division II). Loss of either AC power source causes the related battery to supply power to its DC loads. Each 125 and 250 volt battery is capable of supplying adequate power to operate its loads during emergency conditions. When AC power is returned to service after a loss, the related battery charger is then re-energized by the 460 volt service bus and the battery charger recharges the battery while supplying power to the loads.

The 10CFR50 Appendix R Safe Shutdown Analysis Report (SSAR) identifies the methods and systems available for any postulated fire event within a given fire area in the plant. For a fire in any one of several specific fire zones, the analysis shows that the Division I ("A") batteries may not be available to perform their safety function due to damage from the fire. The Division II ("B") batteries are therefore used to support the post-fire Appendix R safe shutdown requirements for these fire zones. During the first 4.5 hours whenever the plant is a commencing hot shutdown, the battery chargers are not required and the batteries will provide the necessary power to the associated bus during this time frame. In the event of a fire during this time in fire zones that impact the 125/250 volt "B" battery chargers, actions to repair the power cables and reestablish power to the battery chargers can be accomplished within the 4.5 hours. Once the Division II chargers are returned to service, they will begin recharging the batteries and carrying all required loads on the Division II bus.

When a battery charger(s) is removed from service for maintenance, a substitute charger(s) is employed. The substitute charger is called the swing charger ("C") and is used so that both independent banks of batteries can remain in service. However, when the "B" charger(s) is out of service and the swing "C" charger(s) is supplying power to the Division II bus, no repair procedure is available during an Appendix R fire event in the related fire zones that ensures the charger(s) will be able to provide power to the Division II batteries/bus. If a fire were to occur such that the swing charger(s), the AC input or the DC output cables of the swing charger(s) were damaged, the "B" batteries would only provide power to the Division II bus until the batteries become depleted of energy. The bus voltage would eventually fall to a value where certain safety significant equipment would not operate. Because no repair procedures are in place for this scenario, the ability of the plant to achieve and maintain a cold shutdown may be impacted. The plant would not be able to conform to 10CFR50 Appendix R, Sections III.G.1.b or III.L.5. Therefore, a fire watch is required as a compensatory measure whenever the "C" charger(s) is substituting for the "B" charger(s) and the "B" charger(s) is out of service. The purpose of the fire watch is to provide assurance that a fire will not impede the ability of the station to achieve and maintain safe shutdown.

Plant procedures were revised in 1992 to require fire watches in appropriate fire zones as compensatory actions whenever the "B" battery charger(s) is out of service and the "C" swing battery charger(s) is being used as a substitute. However, not all the necessary fire watches for the related fire zones were incorporated into those procedure revisions.

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

EVENT DESCRIPTION

On May 9, 2001, it was determined that insufficient fire watches were posted after placing the "C" battery charger(s) in service in lieu of the "B" charger(s). This occurred on three separate occasions. For the 125 volt DC system, there were two instances, on 8/25/99 from 0450 Central Daylight Time (CDT) until 8/26/99 at 1540 CDT and on 7/11/00 from 0406 CDT until 7/25/00 at 1330 CDT. For the 250 volt DC system there was one instance, on 12/15/98 from 1816 Central Standard Time (CST) until 12/30/98 at 1339 CST. The compensatory fire watches required by plant procedures were inadequate and did not cover all the necessary fire zones.

BASIS OF REPORT

This event is being reported under the requirements of 10CFR50.73(a)(2)(ii)(B), an unanalyzed condition.

CAUSE

The root cause of this event was human error resulting in a failure to incorporate all the required compensatory fire watches in appropriate station procedures. When the procedures for the 125 volt DC and 250 volt DC electrical systems were revised in 1992 to list all the fire zones for which compensatory measures would be required when the "C" charger(s) was substituting for the "B" charger(s), the available technical input was not incorporated. The knowledgeable resource, Appendix R engineers, were not used by the procedure change originator in the review of the procedure revisions.

A review determined that there were no other plant areas with insufficient fire watches indicated in procedures. The "B" battery chargers are the only components that require additional compensatory measures because the out-of-service time is not controlled either by Technical Specifications or administrative procedures. A review of corrective action program trending data did not find any negative trends in the area of inadequate procedure change technical reviews.

SAFETY SIGNIFICANCE

At CNS, the risk associated with fires was assessed using the Electric Power Research Institute (EPRI) Fire Induced Vulnerability Evaluation (FIVE) method. This method is a process that uses various levels of screening criteria to characterize the risk associated with postulated fires that could be initiated in the plant. For each of the areas that lacked compensatory measures when the swing charger ("C") was in service in lieu of the "B" charger, the FIVE analysis was reviewed to determine if the charger configuration would affect the fire results. In all cases, the configuration with the swing charger in service was functionally equivalent to the normal charger lineup. Therefore, there was no change to the results of the FIVE analysis, and the missed compensatory measures are considered inconsequential to fire risk.

In conclusion, the safety significance of this event is low.

CORRECTIVE ACTIONS

A Standing Order was generated to address the necessary fire watches when placing the "B" batteries on the "C" battery charger for the 125 volt DC or 250 volt DC systems. This Standing Order remained in effect until the appropriate procedures were revised to incorporate all the fire zones that require a fire patrol when the "C" battery charger(s) is used in lieu of the "B" battery charger(s) for the 125 volt DC or 250 volt DC

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battery chargers. The procedures were revised on June 7, 2001.

The individual who was involved in the 1992 procedure change errors completed, along with the rest of the engineering support population, a training lesson on human performance. Part of the lesson was a discussion on engineering error prevention tools to address common engineering error categories and the most effective tools to use in each category. The training lesson also discussed individual behaviors to improve human performance and specifically addressed how technical reviews were especially useful in preventing errors.

PREVIOUS EVENTS

There have been no recent LER's on insufficient fire watches due to procedural inadequacies or LER's on inadequate technical review of procedure changes.

