

Nebraska Public Power District

COOPER NUCLEAR STATION
P.O. BOX 98, BROWNVILLE, NEBRASKA 68321
TELEPHONE (402)825-3811
FAX (402)825-5205

NLS960070

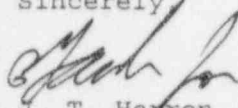
May 24, 1996

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

Dear Sir:

Cooper Nuclear Station Licensee Event Report 96-001, Supplement 1, is forwarded as an attachment to this letter.

Sincerely,


J. T. Herron
Plant Manager

/cct

Attachment

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. Turnbull
MidAmerica Energy

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NRC FORM 366 <small>(4-95)</small>		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 <small>ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND 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.</small>																												
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)																																
FACILITY NAME (1) <div style="text-align: center;">COOPER NUCLEAR STATION</div>				DOCKET NUMBER (2) <div style="text-align: center;">05000298</div>		PAGE (3) <div style="text-align: center;">1 OF 4</div>																										
TITLE (4) Potential Inoperability Of Emergency Diesel Generators Due To Unauthorized Modification																																
EVENT DATE (5) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>MONTH</th> <th>DAY</th> <th>YEAR</th> </tr> <tr> <td style="text-align: center;">01</td> <td style="text-align: center;">18</td> <td style="text-align: center;">96</td> </tr> </table>			MONTH	DAY	YEAR	01	18	96	LER NUMBER (6) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>YEAR</th> <th>SEQUENTIAL NUMBER</th> <th>REVISION NUMBER</th> </tr> <tr> <td style="text-align: center;">96</td> <td style="text-align: center;">-- 001</td> <td style="text-align: center;">-- 01</td> </tr> </table>		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	96	-- 001	-- 01	REPORT DATE (7) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>MONTH</th> <th>DAY</th> <th>YEAR</th> </tr> <tr> <td style="text-align: center;">05</td> <td style="text-align: center;">24</td> <td style="text-align: center;">96</td> </tr> </table>		MONTH	DAY	YEAR	05	24	96	OTHER FACILITIES INVOLVED (8) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>FACILITY NAME</th> <th>DOCKET NUMBER</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td>FACILITY NAME</td> <td>DOCKET NUMBER</td> </tr> </table>		FACILITY NAME	DOCKET NUMBER			FACILITY NAME	DOCKET NUMBER
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POWER LEVEL (10) <div style="text-align: center;">097</div>			20.2201(b)		20.2203(a)(2)(v)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	50.73(a)(2)(viii)																									
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LICENSEE CONTACT FOR THIS LER (12)																																
NAME Calvin C. Taylor, Licensing & Compliance Specialist					TELEPHONE NUMBER (Include Area Code) <div style="text-align: center;">(402) 825-3811</div>																											
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16) <p>At 1520 hours on January 18, 1996, it was determined that an unauthorized modification, installed on both emergency diesel generators, had the potential to prevent the fulfillment of a safety function required to mitigate the consequences of an accident. This modification was found as a result of surveillance testing during which the Diesel Generator (DG) 2 muffler bypass solenoid pilot operated valve failed to operate. Upon investigation of the failure, it was discovered that solenoid pilot operated valve exhaust ports were restricted by tubing and fittings installed during design change activities during the 1995 refueling outage. While not provided for in the design change package, the tubing and fittings were initially added by contracted craft personnel to address foreign material exclusion concerns created by the orientation of the newly installed solenoid pilot operated valves (i.e., the open exhaust ports are directed upward). Diesel Generator 1, although modified in a similar fashion, successfully completed the muffler bypass valve surveillance testing in the as-found configuration. At the time of discovery, the reactor was at power operation.</p> <p>This event resulted from a failure of management to effectively communicate the expectations for installation of modifications (Management/Quality Assurance Deficiency - NUREG 1022, Appendix A, Cause Code E). Corrective actions to prevent recurrence include improvements to the modification process to strengthen the post-modification walk down criteria and enhancements to craft labor and field engineer training.</p>																																

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

PLANT STATUS

At the time of discovery, the plant was at power operation.

EVENT DESCRIPTION

At 1520 hours on January 18, 1996, it was determined that an unauthorized modification, installed on both emergency diesel generators, had the potential to prevent the fulfillment of a safety function required to mitigate the consequences of an accident. This modification was found as a result of routine surveillance testing during which the Diesel Generator (DG) 2 muffler bypass solenoid pilot operated valve (SPV) failed to operate. (The muffler bypass arrangement provides for an alternate route for the DG exhaust to reach the exterior of the building in the event the primary route becomes unavailable.) Upon investigation of the failure, it was discovered that SPV exhaust port was restricted by tubing and fittings installed during a design change implemented during the 1995 refueling outage.

Design Change (DC) 93-024 modified the operation of the DG muffler bypass valves from air-to-open/air-to-close to spring-to-open/air-to-close. To facilitate this change, the existing four-way SPV for each muffler bypass valve was replaced with a three-way SPV. As part of the DC, detailed instructions for installing the tubing and three-way SPVs were provided in sketches SKE-DG-206 and SKE-DG-207 for DG 1 and DG 2, respectively. (However, neither these sketches nor the written instructions included in the DC package directed the installation of tubing or fittings on the exhaust port of the valves.)

While the involved contracted craft personnel are no longer on site for interview, it is assumed that there were foreign material exclusion (FME) concerns associated with the as-installed orientation of the three-way muffler bypass SPVs on DG 1. Specifically, foreign material could enter the exhaust ports, which are directed upward, and subsequently could cause the valves to fail. Although working to sketch SKE-DG-207 for the tubing modification on DG 2, craft personnel were directed by the contract field engineer responsible for DC implementation to duplicate DG 1 if any questions arose on DG 2 modifications since DG 1 had successfully passed all of the acceptance testing criteria.

The contract field engineer was contacted concerning his knowledge of the unauthorized modification. While he was aware of the J tube, he did not authorize or give direction to the contract craft for its installation. However, he believed it to be a good practice to avoid FME concerns, even though not specified in the design change package, and did not question the installation.

The DGs passed their post-modification testing and were declared operable in support of divisional work and plant restart.

On January 17, 1996, troubleshooting under a maintenance work request determined the exhaust port tubing to be under sized. This created a flow restriction in the exhaust of the SPV, therefore not maintaining the minimum differential pressure across the SPV as required by the SPV manufacturer. Tubing was removed from the exhaust ports of DG 1 and DG 2 per maintenance work requests and subsequent post-maintenance testing was successfully completed.

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CAUSE

This event resulted from a failure of management to effectively communicate the expectations for installation of modifications (Management/Quality Assurance Deficiency - NUREG 1022, Appendix A, Cause Code E). Craft labor and field engineers failed to recognize that installation of the exhaust tubing was an unauthorized modification.

Contributing causes of this event included a weakness in field supervision and inadequate training for craft labor and field engineering in that responsibilities and expectations for them had not been clearly defined.

SAFETY SIGNIFICANCE

The muffler bypass arrangement provides for an alternate route for the DG exhaust to reach the exterior of the building in the event the primary route (i.e., muffler and exhaust stack) becomes unavailable. Although the muffler is seismically qualified, it is not qualified for tornado and missile events. The exhaust stack is subject to seismic, wind, tornado, and missile design basis events. Should the muffler bypass valve fail to open when required, the diesel engine could stall as a result of high back pressure conditions. While the potential inoperability of the muffler bypass valves could have challenged DG operability during these design basis events, the actual significance for this condition is considered to be minimal for the following reasons:

1. The condition was self-identified during routine surveillance testing and immediately corrected, thus minimizing the duration of inoperability for DG 2.
2. DG 1 remained operable. This was confirmed through the performance of five surveillance tests from December 30, 1995, through just prior to removing the J tube on January 18, 1996.

Further, the following considerations affect the probability of design basis events to which the exhaust stack is subject to:

1. Missile impact damage is not credible for structures over 30 feet (1975 NRC Standard Review Plan). The DG muffler and stack are located greater than 30 feet above ground level.
2. The exhaust stack is qualified for 100 mph wind conditions and NUREG CR 4767 specifies an 87 mph wind as the 100 year high.
3. Tornado and seismic event core damage frequency increases due to muffler bypass unavailability are within the CNS non-risk significant permanent change envelope.

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CORRECTIVE ACTIONS

The tubing and fittings were removed from the SPV exhaust ports. A walk down of accessible safety-related SPV applications for similar concerns and a review of inaccessible safety-related SPVs was performed with no operability concerns found. Engineering support personnel were briefed on this event in continuing training.

CNS management has increased the focus on the identification and prevention of unauthorized modifications. The Design Engineering Manager has briefed appropriate site work groups on this issue to increase their awareness of the issue. Written communications were provided to station personnel that:

- 1) provided better definition of a station modification,
- 2) discussed what types of routine activities could constitute unintended design changes, and
- 3) solicited input from site personnel to identify other potential unauthorized modifications that may exist in the plant.

The sensitivity of station personnel to unauthorized modifications has improved as evidenced by their identification of other potential examples. These examples were evaluated with no unreviewed safety questions or safety significant issues identified.

The following corrective actions to prevent recurrence will be taken:

1. Procedure 3.4.11, "Status Report," will be revised to strengthen guidance on post-modification walk down criteria and documentation (**June 24, 1996**).
2. A field engineering function qualification guide will be developed to ensure consistent understanding of the Field Engineer's responsibilities for station modification implementation (**June 6, 1996**).
3. Construction craft training will be enhanced to clearly define management expectations regarding craft responsibilities during implementation of work instructions (**November 11, 1996**).

PREVIOUS EVENTS

LER 95-018, "Maintenance Activity That Could Compromise a Steam Tunnel Blowout Panel Design Function During a High Energy Line Break Outside Containment," describes a 1985 unauthorized modification.

EQUIPMENT SPECIFICATIONS

Component: Three-Way Pilot Operated Valve
Manufacturer: ASCO
Model: NP8316A54E

Correspondence No: NLS960070

The following table identifies those actions committed to by the District in this document. Any other actions discussed in the submittal represent intended or planned actions by the District. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
Procedure 3.4.11, "Status Report," will be revised to strengthen guidance on post-modification walk down criteria and documentation.	June 24, 1996
A field engineering function qualification guide will be developed to ensure consistent understanding of the Field Engineer's responsibilities for station modification implementation.	June 6, 1996
Construction craft training will be enhanced to clearly define management expectations regarding craft responsibilities during implementation of work instructions.	November 11, 1996