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NLS2003110
November 21, 2003

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

Gentlemen:

Subject: Licensee Event Report No.2003-005
Cooper Nuclear Station, NRC Docket 50-298, DPR-46

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

Sincerely,

John Christensen
Plant Manager

/jrs
Enclosure

cc: Regional Administrator
USNRC - Region IV

Senior Project Manager
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector
USNRC

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NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 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

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Cooper Nuclear Station	05000298	1 OF 3

4. TITLE

Turbine Trip Failure During Testing Due to Ester Contamination of Turbine Lube Oil

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
09	28	2003	2003	– 005 –	00	11	21	2003	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	1
10. POWER LEVEL	061

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

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

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Paul Fleming, Licensing and Regulatory Affairs Manager	(402) 825-2774

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
X	TB	-----	W120	Y					

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

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

On September 28, 2003 at 2345 hours, during turbine trip testing, the turbine trip block failed to actuate as demanded while testing the solenoid and low vacuum trip. Troubleshooting identified resistance in the movement of the trip plate in the trip direction. Repeated cycling of the trip plate resulted in no abnormal resistance and the surveillance was repeated and completed satisfactorily. Per Technical Specifications, reactor power was reduced to less than 25% power.

The most probable root cause was ester contamination of the turbine lubricating oil, combined with trace amounts of water, resulting in the formation of hydrolyzed esters that increased the forces required to open the trip valve. The source of the ester contamination is being investigated. In addition, particles collected in clearances around the trip valve.

Immediate actions were to designate an extra operator to trip the turbine locally until trip capability was restored. An interim action is to perform the turbine trip functional test more frequently. The long-term corrective action is to remove particulate contamination from the turbine lube oil system.

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Cooper Nuclear Station	05000298	2003	-- 005 --	00	2 OF 3

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

PLANT STATUS

Cooper Nuclear Station (CNS) was in Mode 1 (Run) at approximately 61 percent power. Power had been lowered from 100 percent to support performance of an on-line modification to replace the Control Rod Drive System (EIIS:AA) scram solenoid pilot valves.

BACKGROUND

The main turbine is provided with safeguards against situations that may cause damage to the turbine if it were not taken out of service immediately. These protective devices include a low vacuum tripping device, a low bearing pressure trip, a thrust bearing trip and a remote controlled solenoid actuated trip. They are contained in a protective trip block mounted on the turbine front bearing pedestal. These devices operate independently to actuate the protective trip dump valve. The turbine trip protection features are functionally tested to simulate the trip condition.

One of the electrical signals received by the solenoid trip device is for a reactor vessel high water level. This instrumentation is designed to detect a potential failure of the feedwater level control system (EIIS:JB) that could result in excessive feedwater flow. With excessive feedwater flow, the water level in the reactor vessel rises toward the high water Level 8 reference point causing the trip of the two feedwater pump turbines and the main turbine. The main turbine trip causes a reactor scram which mitigates the reduction in Minimum Critical Power Ratio (MCPR).

The trip block consists of a drain valve, a pivot plate, and the previously described trip actuators. Any one of the trip actuators can cause the trip plate to tip and actuate the drain valve which will depressurize the auto-stop oil header. This action will close the main turbine stop valves and initiate a reactor scram.

EVENT DESCRIPTION

At 2345 hours on September 28, 2003, while performing turbine trip testing, the turbine trip block failed to actuate as demanded while testing the solenoid trip. The low vacuum trip was tested and it did not actuate as required. The surveillance was terminated. Troubleshooting identified initial resistance in the movement of the trip plate in the trip direction. Repeated cycling of the trip plate resulted in no abnormal resistance. The surveillance was again initiated and completed satisfactorily.

When the initial surveillance failed, it was determined that a reactor trip would not occur as required by Technical Specification 3.3.2.2, Feedwater and Main Turbine High Water Level Trip Instrumentation. Failure to satisfy the operability requirements of Technical Specification 3.3.2.2 resulted in Condition B being entered at 0015 on September 29, 2003 to restore the high water level trip capability within two hours. When the capability was not timely restored, Condition C was entered at 0215 on September 29, 2003 with the required action to reduce power to less than 25% within four hours. At 0530, power was lowered to less than 25% (22.6% power). Trip capability was restored at 0615. Technical Specification 3.3.2.2 Conditions B and C were exited at 0551 on September 30, 2003 based on troubleshooting activities, successful performance of main turbine trip testing, and approval of compensatory measures for the degraded condition.

BASIS FOR REPORT

This event is reportable in accordance with 10CFR50.73(a)(2)(v)(D) as "any event or condition that could have prevented the fulfillment of a safety function of structures or systems that are needed to mitigate the consequences of an accident."

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

CAUSE

The most probable root cause was determined to be ester contamination of the turbine lubricating oil combined with trace amounts of water, resulting in the formation of hydrolyzed esters that increased the forces required to open the trip valve. The source of the ester contamination is being investigated. In addition, particles collected in clearances around the trip valve, increasing the forces required to open the trip valve.

SAFETY SIGNIFICANCE

The loss of the reactor vessel high level (Level 8) main turbine trip function has a negligible impact on Core Damage Frequency. This condition did not impact the ability of the reactor feed pump turbine trip on Level 8. Thus, no water carry over would be expected to impact High Pressure Coolant Injection(HPCI) (EIIS:BJ) or Reactor Core Isolation Cooling (RCIC) (EIIS:BN) operation. The main turbine trip block degradation had no impact on initiating event frequency. The trip block inability to trip the main turbine is not an initiator. The only transient which credits the turbine trip block function is the feedwater controller failure. The credit is for the indirect scram that results from the turbine stop valve closure. All other trip functions are designed strictly for turbine protection. The impact on MCPR is bounded in the core reload licensing analyses. Mitigation capabilities for shutting the reactor down to decay heat levels and Emergency Core Cooling System (ECCS) injection were not impacted.

This event constitutes a Safety System Functional Failure in accordance with NEI 99-02, Revision 2 as any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident. Feedwater controller failure is a transient analyzed in the CNS Updated Safety Analysis Report.

CORRECTIVE ACTIONS

Immediate Actions

1. An extra operator was designated to trip the turbine locally if a trip was needed. This contingency action remained in place until trip capability was restored on 09/29/03.

2. An interim action is performing the turbine trip functional test more frequently.

Long-Term Action

1. The particulate contamination in the Turbine Lube Oil System will be removed until the particulate counts are less than one-half of the manufacturer's allowable limits, at a minimum. This action will be completed by 06/01/05. In the interim, the lube oil strainer continues to remove particulates.

PREVIOUS EVENTS

A search of internal operating experience found no past events that were relevant.

ATTACHMENT 3 LIST OF REGULATORY COMMITMENTS©

Correspondence Number: NLS2003110

The following table identifies those actions committed to by Nebraska Public Power District (NPPD) in this document. Any other actions discussed in the submittal represent intended or planned actions by NPPD. They are described for information only and are not regulatory commitments. Please notify the Licensing & Regulatory Affairs Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
Particulate contamination in the Turbine Lube Oil System will be removed until the particulate counts are less than one-half of the manufacturer's allowable limits, at a minimum.	06/01/05