Nebraska Public Power District
Nebraska's Energy Leader

NLS2000014
February 28, 2000

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

Gentlemen:

Subject: Licensee Event Report No. 2000-004
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

/rar
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 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

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.

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TITLE (4)

High System Flow During Restoration from Maintenance Causes Primary Containment Group 3 Isolation

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
01	27	2000	2000	-- 004 --	00	02	28	2000		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	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)		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)	X	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	TELEPHONE NUMBER (Include Area Code)
S. R. Mahler, Assistant Manager Nuclear Licensing and Safety	(402) 825-3811

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).	X NO				

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

On January 27, 2000, at approximately 1122 Central Standard Time, a Primary Containment Isolation System [EIIS:JM] Group 3 isolation occurred when placing the Reactor Water Cleanup (RWCU) [EIIS:CE] system in service following planned maintenance. The isolation occurred during performance of the initial pressurization of the RWCU system per the applicable Station Operating Procedure.

The cause of this event is that the procedure, utilized for post maintenance filling and venting of the RWCU system does not provide a complete fill and vent of the system ensuring an event free pressurization of the system with the reactor at power. In previous maintenance of the RWCU system at power, the section of piping which was not completely filled and vented had not been drained.

The Group 3 isolation was reset at approximately 1124, and RWCU system flow was restored at 1235.

Corrective actions resulting from this event include revisions to the applicable station procedure to define the applicability of the FILL AND VENT section, and to add CAUTION STATEMENTS to alert the user of the potential for a Group 3 isolation. In addition, evaluations will be performed to determine the feasibility of alternate methods to accomplish system restoration following planned maintenance and changes to the existing system design.

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

PLANT STATUS

Cooper Nuclear Station (CNS) was in Mode 1 at approximately 100 percent power at the time of this event.

BACKGROUND

The Reactor Water Cleanup (RWCU) [EIIS:CE] system purifies the reactor coolant by continuously removing a portion of the reactor recirculation flow from the suction side of a recirculation pump, sending the removed flow through filter-demineralizer units to undergo mechanical filtration and ion exchange processes, and returning the processed fluid back to the reactor via the Feedwater system. The RWCU system also provides for the removal of coolant from the reactor at acceptable activity levels during plant startups and shutdowns.

The major equipment of the system consists of two Primary Containment Isolation Valves, two RWCU recirculation pumps, regenerative and nonregenerative heat exchangers, and two filter-demineralizer units with supporting equipment. The entire system is connected by associated valves and piping with appropriate controls and instrumentation to effect the desired system operation.

The RWCU system is equipped with Class A Primary Containment Isolation Valves to provide timely protection against the onset and consequences of accidents involving the gross release of radioactive materials from the fuel and nuclear system process barrier. The Primary Containment Isolation System (PCIS) initiates automatic isolation of appropriate pipelines which penetrate the primary containment whenever monitored variables exceed preselected operational limits.

Sensors are provided in various logic schemes for actuation of the isolation system. RWCU-MOV-MO15 (inboard isolation valve) and RWCU-MOV-MO18 (outboard isolation valve) automatically close on receipt of any of the following isolation signals:

1. Reactor vessel low water level.
2. High temperature at outlet of RWCU system nonregenerative heat exchanger.
3. Line break in RWCU system (high space temperature or high flow).
4. Standby Liquid Control system actuated. Note - Starting Pump A will close the inboard isolation valve of the RWCU system to prevent loss or dilution of the boron. Similarly, starting Pump B will close the outboard isolation valve of the RWCU system.

A Group 3 Containment Isolation Signal is initiated by receipt of any of the following:

1. Low Reactor Water Level.
2. High Reactor Water Cleanup Flow.
3. High Temperature in RWCU system area.

Initiation of a Group 3 Isolation Signal will automatically close RWCU-MOV-MO15 and RWCU-MO-18.

RWCU System High Flow:

High flow rate in the RWCU system could indicate a break in the system piping. The automatic closure of the RWCU supply valves prevents loss of coolant and the release of significant amounts of radioactive material outside of the primary containment.

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

EVENT DESCRIPTION

On January 27, 2000, at approximately 1122 Central Standard Time, a PCIS Group 3 isolation occurred when placing RWCU in service following planned maintenance which drained major portions of the system including the piping between RWCU-MOV-MO18 and the suction of the RWCU pumps. The isolation occurred during the initial pressurization of the RWCU system per the applicable Station Operating Procedure.

As directed by the procedure, the operator commenced to slowly open RWCU-MOV-MO18 until the valve indicated an intermediate position while observing RWCU system pressure on pressure indicator RWCU-PI-131. No pressure was observed and additional throttling was applied to the valve. Pressure commenced to slowly rise and in approximately thirty seconds the System Low Pressure alarms cleared and pressure stabilized at approximately 100 pounds per square inch (psi). The operator waited approximately one minute and throttled open RWCU-MOV-MO18 one additional time. At 1122, Channel "A" and "B" RWCU Hi Flow alarm annunciated. The operator observed the Group 3 lights extinguish on Control Room Panel 9-5 and verified that RWCU-MOV-MO15 and RWCU-MOV-MO18 closed. RWCU system pressure was noted to be approximately 200 psi.

The Group 3 isolation was reset at approximately 1124, and RWCU system flow was restored at 1235.

BASIS OF REPORT

This event is reportable under the requirements of 10CFR50.73(a)(2)(iv) as an event or condition that resulted in a manual or automatic actuation of any engineered safety feature.

CAUSE

The cause of this event is that the procedure utilized for post maintenance filling and venting of the RWCU system does not provide a complete fill and vent of the system, ensuring an event free pressurization of the system with the reactor at power.

Draining of the RWCU system from RWCU-MOV-MO18 to the suction of the RWCU pumps is not a routine evolution performed at power. A review of previous RWCU system maintenance with the reactor at power indicated that the section of piping between RWCU-MOV-MO18 and the RWCU pump suction had not been drained during these activities. Therefore, the identified deficiencies leading to this event appear to be unique and isolated to this specific evolution.

Factors contributing to this event are as follows:

The revision of the procedure for filling and venting, initiated on May 6, 1991, did not document the identified limitations of the fill and vent section of the procedure.

The inherent design of the RWCU system suction piping, downstream of RWCU-MOV-MO18, does not provide a high point vent.

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

SAFETY SIGNIFICANCE

The safety significance of this event is low. Upon the receipt of a high flow indication in the RWCU system, plant systems responded in accordance with their design to provide the required Primary Containment Isolation of the RWCU system.

In addition, a Probabilistic Safety Assessment (PSA) review of this event concluded that the RWCU isolation event cumulative risk had no impact on core damage frequency. This conclusion is supported by the fact that the RWCU system is not credited in the PSA full power model.

This event was also evaluated to determine if the event should be classified as a Safety System Functional Failure (SSFF). The results of the evaluation demonstrated that CNS retained the ability to:

A. Shut down the reactor and maintain it in a safe shutdown condition.
B. Remove residual heat.
C. Control the release of radioactive material.
D. Mitigate the consequences of an accident.

Therefore, this event is not reportable as a SSFF in accordance with the guidance contained in Nuclear Energy Institute 99-02, Draft Revision D, or under the provisions of 10CFR50.73(a)(2)(v).

CORRECTIVE ACTIONS

Immediate Actions:

There were no immediate actions identified as a result of the event.

Additional Corrective Actions:

CNS will revise the appropriate station procedure(s) to: 1) define and state the applicability of the fill and vent section, 2) inform the reader of the inability to fill and vent the RWCU system pump suction piping and add a requirement for Operations to evaluate the necessity of draining the RWCU suction piping with the plant on line, 3) add a caution statement prior to performing applicable steps stating that RWCU-MOV-MO18 must be slowly throttled open to preclude the possibility of a Group 3 isolation: and, 4) add a step requiring conduct and logging of a formal brief of the pressurization evolution including the potential of a Group 3 isolation and required actions.

CNS will perform a feasibility analysis to install a high point vent in the RWCU pump suction piping.

CNS will assess if an alternative methodology exists for achieving an adequate fill and vent of the RWCU system pump suction piping.

CNS will assess if an alternative methodology exists to achieve operating pressure following fill and vent of the RWCU system pump suction piping.

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TEXT CONTINUATION

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

PREVIOUS EVENTS

License Event Report (LER) 1998-012, "Overspeed Trip of HPCI and RCIC Systems During the 150 lbs Vessel Pressure Test," reported an event where both the HPCI and RCIC turbines experienced tripping due to over speed during conduct of startup testing. The cause was determined to be inadequate procedural guidance in achieving a complete fill and vent of the pump suction piping. The procedure did not contain guidance to utilize existing plant features to achieve a complete fill and vent of the pump suction piping. The "Extent of Condition" investigation for the event described in LER 1998-012 focused on Core Standby Cooling systems (High Pressure Coolant Injection, Residual Heat Removal, and Core Spray) and therefore, did not identify the RWCU system which is classified as a 'non-safety' system.

Correspondence No: NLS2000014

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 NL&S Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
CNS will revise the appropriate station procedure(s) to: 1) define and state the applicability of the fill and vent section, 2) inform the reader of the inability to fill and vent the RWCU system pump suction piping and add a requirement for Operations to evaluate the necessity of draining the RWCU suction piping with the plant on line, 3) add a caution statement prior to performing applicable steps stating that RWCU-MOV-MO18 must be slowly throttled open to preclude the possibility of a Group 3 isolation: and, 4) add a step requiring conduct and logging a formal brief of the pressurization evolution including the potential of a Group 3 isolation and required actions.	June 6, 2000
CNS will perform a feasibility analysis to install a high point vent in the RWCU pump suction piping.	June 6, 2000
CNS will assess if an alternative methodology exists for achieving an adequate fill and vent of the RWCU system pump suction piping.	June 6, 2000
CNS will assess if an alternative methodology exists to achieve operating pressure following fill and vent of the RWCU system pump suction piping.	June 6, 2000