Nebraska Public Power District

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

NLS960095
June 28, 1996

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

Subject: Feedwater Nozzle and Control Rod Drive Return Line Report
Cooper Nuclear Station, NRC Docket No. 50-298, License No. DPR-46

References:
1) NUREG-0619, published November 1980, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking"

2) Letter to G. R. Horn (NPPD) from R. B. Bevan (USNRC), dated February 13, 1992, "Cooper Nuclear Station - Staff Acceptance of Fracture Mechanics Evaluation of Flaw Indications (TAC No. M82258)"

Gentlemen:

In accordance with Reference 1, the Nebraska Public Power District (District) is submitting to the Nuclear Regulatory Commission (NRC) an examination summary report regarding the feedwater nozzles at Cooper Nuclear Station (CNS). The attached report covers past examinations up to and including the 1995 Fall refueling outage. No reportable indications were identified during the ultrasonic examinations of the feedwater nozzles. There have not been any changes to systems, procedures, or plant operation that would change the feedwater temperature or flow since the last report. Based on the leakage monitoring results, the District has determined that there has been no feedwater to nozzle bypass leakage in excess of the 0.3 gpm reporting threshold established in Reference 2 since the last report.

If you have any questions or require any additional information, please contact me.

Sincerely,

John H. Mueller
Site Manager

/dmn
Attachments

A001
1/1

cc: Senior Project Manager
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector
USNRC - Cooper Nuclear Station

Regional Administrator
USNRC - Region IV

NPG Distribution

NUREG-0619 FEEDWATER NOZZLE EXAMINATION SUMMARY REPORT

Cooper Nuclear Station
NRC Docket No. 50-298
License No. DPR-46

System Background

The feedwater system consists of two half capacity cascading-type heater strings with a shared bypass line also rated at half capacity. The preheated feedwater is routed to two turbine driven feedwater pumps. The pump discharge lines are then routed through a flow control station and then discharged to the reactor vessel through four feedwater spargers. Throughout most of a plant startup the feedwater flow control valves are operated in an automatic mode to maintain constant reactor vessel level and a stable feedwater flow. Although the heaters are in service during startup, normal feedwater heating does not commence until extraction steam is established after the turbine is placed in service. Due to these plant characteristics and operational methods, the feedwater nozzles experience a maximum temperature variance of less than 10°F between feedwater loops during power operation and an average temperature difference of less than 5°F between feedwater loops during startup.

History

During the Fall 1977 refueling outage, the control rod drive (CRD) System was tested for proper operation with the return line valved out of service. Satisfactory results from that test allowed the cutting and capping of the CRD return line at the reactor vessel nozzle. Dye penetrant inspections of the return line nozzle and surrounding vessel wall revealed no crack indications.

During the Spring 1980 refueling outage, the interference-fit feedwater spargers were removed, the nozzle cladding was removed, and the nozzles were inspected. Triple-thermal sleeve, double piston ring spargers were installed. No changes were made to the feedwater control system. Based on a ratio of reactor water cleanup (RWCU) flow to feedwater flow of 1 to 100, rerouting of the RWCU system was not considered applicable to Cooper Nuclear Station. No other system changes were made.

During 1981, a CRD System return flow capability test was performed in accordance with paragraph 8.2(4) of NUREG-0619. With two CRD pumps in operation, a flow capacity in excess of 160 gpm was achieved at a reactor pressure above 1000 psig. With one CRD pump in operation, a flow capacity of 140 gpm was achieved at a reactor pressure of 990 psig.

During the Fall 1991 refueling outage, automated ultrasonic examination and supplemental monitoring programs were implemented in lieu of the nozzle dye penetrant examination required by NUREG-0619 (Reference: USNRC letter to G. R. Horn, dated October 2, 1991, "Review of NPPD's Request Regarding Feedwater Nozzle Examination Methods," TAC No. 79612).

Cooper Nuclear Station
NRC Docket No. 50-298
License No. DPR-46

1996 NUREG-0619 Feedwater Nozzle Examination Summary

OUTAGE DATE	SU/SD Cycles		EXAM TYPE	RESULTS
	From Last Exam	Since Initial Startup		
Fall 1980	0	102* Since 1974	UT, PT, VT	Spargers replaced. Nozzle baseline NDE; Sparger baseline VT
Spring 1982	9 Since 1980	111*	UT, VT	No indications
Fall 1983	4 Since 1982	115*	VT	No Indications
Spring 1984	4 Since 1983	119*	VT	No indications
Fall 1986	8 Since 1984	127*	UT, VT	No Indications
Spring 1988	10 Since 1986	137*	VT	No indications
Spring 1989	4 Since 1988	141*	UT, VT	No indications
Fall 1991	7 Since 1989	148	UT, VT	No indications
Spring 1993	4 Since 1991	152	VT	No indications
Fall 1995	7 Since 1993	159	UT	No indications

* These numbers have been corrected based on internal review of startup/shutdown cycles and represent a conservative estimate.

Correspondence No: NLS960095

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
None	N/A