

# ENERGY NORTHWEST

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GO2-00-043

Docket No. 50-397

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

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21  
FEEDWATER NOZZLE INSPECTION REPORT  
R-14 MAINTENANCE AND REFUELING OUTAGE**

Reference: Letter G02-98-203, dated December 3, 1998, DW Coleman (SS) to NRC,  
"WNP-2 Feedwater Nozzle Inspection Report"

The WNP-2 Feedwater Nozzle Inspection Report for the R-14 Maintenance and Refueling Outage is attached. This report is submitted pursuant to commitments made in response to NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking."

Should you have any questions or desire additional information pertaining to this report, please call me or PJ Inserra at (509) 377-4147.

Respectfully,



DW Coleman  
Manager, Regulatory Affairs  
Mail Drop PE20

Attachment

cc: EW Merschoff - NRC RIV  
JS Cushing - NRC NRR  
NRC Sr. Resident Inspector - 927N  
DL Williams - BPA/1399  
TC Poindexter - Winston & Strawn

ADD 1

# WNP-2 FEEDWATER NOZZLE INSPECTION REPORT R-14 MAINTENANCE AND REFUELING OUTAGE

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## I. Introduction

This report is submitted pursuant to the Energy Northwest response to NUREG-0619, where we committed to perform ultrasonic examinations of at least one of the six feedwater nozzle inner radii, bore and safe-end regions, from the reactor outside diameter, each refueling outage.

The report covers the period from June 12, 1998 to October 23, 1999 and includes reactor vessel feedwater nozzle inspections performed during the WNP-2 R-14 Maintenance and Refueling Outage (Fall 1999).

As with all previous ultrasonic examinations, no unacceptable indications were found during this inspection period. The feedwater sparger visual examination re-examined the flow hole cracking found during the R-13 outage.

## II Report Details

These report details are formatted in accordance with the reporting guidance of Section 4.4.3.1(2) of NUREG-0619 as follows:

(a) **Number of startup/shutdown cycles since the previous inspection and total number of cycles.**

There were four startup/shutdown cycles from the date of the previous feedwater nozzle inner radius examination (Spring 1998), to when the plant was shutdown in September 1999, for the R-14 Maintenance and Refueling Outage.

The total number of reactor feedwater thermal cycles, due to startups and shutdowns since initial heatup in April 1984, is 67.

(b) **Summary of methods used and results of previous inspections.**

Energy Northwest has developed an angle beam shear wave technique for the WNP-2 feedwater nozzle design. The technique was qualified on the WNP-2 feedwater mock-up, which is a feedwater nozzle from the terminated Douglas Point Unit 1 reactor vessel. The inner radius, Zone 1, of the nozzle is scanned using a 70-degree angle transducer. The inner radius, Zone 2, and bore region, Zone 3, are scanned using a 25-degree angle transducer.

The ultrasonic testing (UT) procedure used for the examinations is Energy Northwest NDE&I Instruction QCI 6-4 "Ultrasonic Examination of Feedwater Nozzle Inner Radii." A copy of QCI 6-4 was included in the R-10 feedwater nozzle inspection report (see Reference). Any changes to this procedure that

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affect UT scanning techniques are verified on the feedwater nozzle mock-up. No changes to this procedure have been made since the R-10 submittal.

Calibration data for reactor feedwater nozzle inner radius examinations have also been predetermined using the WNP-2 feedwater nozzle mock-up. This allows the examiner to use the reactor vessel calibration block representing the shell course containing the feedwater nozzle for calibration.

Indications that exceed 25 percent full-screen-height are recorded. Indications that exceed 50 percent full-screen-height are evaluated.

No unacceptable indications were detected from these feedwater nozzle inner radius examinations.

A remote visual examination of the feedwater spargers using a 0.001 inch wire for resolution was performed. Previous examination during R-13 discovered cracking around the sparger flow holes.

**(c) Changes in feedwater system or operating procedures that will affect feedwater flow or temperature.**

There were no changes to the system or method of operation since the last outage (R-13) that could potentially increase the tendency for nozzle cracking.

**(d) Inspection results.**

Feedwater Nozzle Inner Radius

During the R-14 Maintenance and Refueling Outage, ultrasonic examination of one reactor feedwater nozzle inner radius, bore and nozzle-to-safe-end weld at azimuth 90 from the vessel outside diameter was performed.

The examinations were performed by Energy Northwest and General Electric examiners. These examiners were certified to either Level II or Level III UT.

No indications were detected that met the threshold for recording or evaluation.

Feedwater Sparger

Cracks in the flow holes found during the last outage were recorded and mapped. Analysis by General Electric concluded that operation for one fuel cycle is acceptable. At that time the sparger will be re-examined and re-evaluated.

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**(e) Leakage monitoring.**

We do not have on-line leakage monitoring for the reactor feedwater sparger.

**(f) Information regarding all UT crack-like indications and any subsequent liquid penetrant information.**

No crack-like indications were observed in the feedwater nozzle.

**III. Next Scheduled Examination**

The next examination is scheduled for the R-15 Maintenance and Refueling Outage (Spring 2001).