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July 23, 1982

SECY-82-186A

POLICY ISSUE
(Information)

For: The Commissioners

From: William J. Dircks
Executive Director for Operations

Subject: Make-up Nozzle Cracking in Babcock & Wilcox (B&W) Plants

Purpose: To inform the Commission on the actions taken to resolve the make-up nozzle cracking problem in B&W plants

Background: As previously discussed in the status report to the Commissioners on this subject (SECY-82-186 dated May 7, 1982), cracking was found in the normal make-up/high pressure injection (HPI) nozzles of four B&W plants following an inspection of all eight of the B&W plants currently licensed to operate.

From investigation of the information collected it appeared that the cracking problem was related to the condition of the thermal sleeve. In each instance where nozzle cracks had been detected, the associated thermal sleeve had been loose or as in the case of Rancho Seco the sleeve was missing. Therefore, short term recommended repair consisted of hard rolling the HPI/make-up end of the new thermal sleeve in lieu of the contact roll previously employed and replacing the cracked safe end areas of the nozzle.

At the time of the previous report to the Commissioners, three of the four plants exhibiting nozzle cracks, Crystal River Unit 3 and Oconee 2 & 3, had completed repairs. Crystal River Unit 3 and Oconee 3 returned to power on March 2, 1982 and March 31, 1982 respectively. Oconee 2 was still shutdown for refueling. The Rancho Seco plant repairs to the make-up nozzle had not yet been completed.

Discussion: Since the previous status report, Oconee 2 returned to power on May 17, 1982. The repairs on the make-up/HPI nozzle for Rancho Seco have been completed. However, the plant is still

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shutdown to complete repairs and modifications to the auxiliary feedwater header in the steam generators. This completed the short term resolution for the nozzle cracking problem.

The B&W Owners Group task force, established to evaluate the cause of the cracking and to develop recommendations for long term solutions to prevent recurrence of the problem, met with the Staff on May 7, 1982 to discuss their results at that time and their future program plan. The information developed to date by the task force appears to confirm that the loose thermal sleeves in the make-up nozzles allowed hot primary loop coolant to flow between the outside of the thermal sleeve and the inside of the safe end. This along with the cold makeup water caused thermal cycling in the safe end and caused the thermal fatigue cracking. Accordingly, B&W is performing analyses and tests to demonstrate whether hard rolling the thermal sleeve will provide a long term solution to the cracking problem. Following the estimated completion of these analyses and tests in September 1982, the task force expects to prepare a report on the results and provide recommendations on augmented inservice inspections, operational changes and any additional design changes. The task force report is scheduled to be issued by the end of 1982.

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