R. L. Reid

CPCO PROJECT
B&W - NPGD

Enclosure to
Howe-64-80

Babcock & Wilcox

MAR 7 1980

Power Generation Group

AIL _____ PA _____
CCM _____ CA _____
MR 3/12/80 JSS _____
MRE 12E35/12E26.27

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March 3, 1980

Mr. Victor Stello, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: 10 CFR 21 Report

Dear Mr. Stello;

Pursuant to the requirements of 10 CFR 21, B&W made a telephone report to Mr. Doug Thompson of your office at 1:20 PM, February 28, 1980 concerning a defect reportable under 10 CFR 21. The defect concerns potentially overstressed supports on reactor coolant let-down coolers at the Bellefonte, North Anna and Midland Units under construction by B&W. The responsible officer in B&W, Mr. J. H. MacMillan, Vice-President, NPGD, was informed of this reportable defect on February 28, 1980.

A report providing additional information on this concern is attached herewith.

Should you require further information, please contact Mr. David Mars of my staff, (Ext. 2852).

Very truly yours

J. H. Taylor
Manager, Licensing

JHT/DM/fw
cc: Mr. R. B. Borsum - B&W Bethesda Representative
Mr. J. H. MacMillan - Vice-President - NPGD

Attachment - As stated

POOR ORIGINAL

The Babcock & Wilcox Company, a McDermott company

8004010404

Report on Safety Concern

RE: Letdown Cooler Supports

Introduction

This report evaluates the concern that supports for letdown coolers may be inadequate. This concern was initially reported on February 8, 1979 and evaluated on March 15, 1979; at that time sufficient information on the support designs at B&W plants was available only to complete the evaluation for the WNP-1 and 4 Units of WPPSS and a determination was made that the supports for those coolers was inadequate and that the condition was reportable under the requirements of 10 CFR 50.55 (e). In due course, WPPSS was notified of the deficiency and they, in turn, notified the NRC. Corrective action has now been completed for these units.

Investigation of the remaining B&W plants utilizing this type of cooler (manufactured by Atlas Industrial Manufacturing Company) has now been completed and it is concluded that a reportable defect as defined by 10 CFR 21 exists for the Bellefonte Units 1 and 2 of TVA, for the North Anna Units 3 and 4 of VEPCo and for the Midland Units 1 and 2 of Consumers.

Description of Concern

There are two letdown coolers in the Makeup and Purification System, both in service under normal operation. Reactor coolant letdown is cooled by these coolers prior to leaving the containment. While designing the support platforms for the WPPSS coolers, the architect engineer expressed a concern about the adequacy of these supports. This concern was examined by B&W, Atlas and Dynatech (who performs stress analysis for Atlas), and it was agreed by all parties that the combination of the A E's support platform and the cooler's support bracket would result in an overstressed condition in the lowest of the three cooler supports. The safety implication of this defect is that the coolers could be dislodged from their supports due to the loads imposed from the letdown piping with the potential for rupturing the letdown piping and releasing reactor coolant.

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Analysis

There are three support brackets on each cooler, each of which is attached to a corresponding support platform provided by the customer. When the coolers are installed vertically, the upper two bracket-platform combinations are sliding supports to allow for thermal expansion and the axial load is therefore restrained entirely by the 3rd or lowest support. The customer's support platform does not fully contact the cooler support, thereby making the cooler support bracket a cantilevered beam required to sustain moments in excess of the cooler support design; this condition is shown in the attached figure. In some installations, the coolers are installed horizontally; however, the overstressed condition on the 3rd bracket also exists in this configuration since the major load on the bracket is from nozzle forces for both the vertical and horizontal arrangements.

The overstressed condition is based on the design or specification nozzle loads; it is conceivable that if the letdown piping for each plant were analyzed, the actual loads imposed on the supports would be less than the design values and the supports would be adequate. However, at this time, no analyses have been made and for purposes of determining reportability under 10 CFR 21, the fact that overstressing exists based on design or specification loads constitutes a deviation and a reportable defect.

The Atlas coolers have been provided for the plants listed below; the status of the design is described for each installation.

Status of Atlas Coolers for B&W Plants

Plant	Status
WNP-1 and 4	Installation of the coolers was found to be deficient and to be a reportable safety concern. The customers was notified of the safety concern and the NRC was notified by the customer. Corrective action has been completed.
Bellefonte 1 and 4	Installation of the coolers is deficient and is a reportable safety concern.
Midland 1 and 2	Installation of the coolers is deficient and is a reportable safety concern.
North Anna 3 and 4	The coolers have been shipped but are not installed. The installation plan by the AE was found to have the over-

Plant	Status
	stressed lower support and a reportable safety concern exists. VEPCO has reported this condition to the NRC under both 10 CFR 50, 55(e) and 10 CFR 21.
Pebble Springs 1 and 2	The coolers have been shipped but are not installed. The AE has not yet developed a support design. No reportable concern exists.

Reportability

The inadequate supports for the coolers at Bellefonte Units 1 and 2, the North Anna Units 3 and 4 and the Midland Units 1 and 2 constitute a defect within the meaning of 10 CFR 21 since the letdown coolers and the connecting piping are basic components that assure the integrity of the reactor coolant pressure boundary and the deviation in design has the potential for creating a substantial safety hazard. Note that the defect at the WNP Units 1 and 4 has been previously reported to the NRC.

As stated previously the overstressed condition of the supports is based on the design or specification nozzle loads and if the loads for each plant were to be analyzed, it is possible that the calculated loads on the supports would not cause overstressing and no safety concern would exist. However, the overstressed condition based on design or specification loads falls within the definition of a "deviation" as given in 10 CFR 21, and further, the condition satisfies the definition of a reportable defect under 10 CFR 21.

While the coolers for the Pebble Springs Units 1 and 2 have been shipped, the customer-supplied support stands have not yet been designed and therefore no reportable defect exists for these coolers.

Corrective Action

1. Corrective action taken for the WNP Units 1 and 4 consisted of having the customer re-design the customer-supplied support stand for the lowest cooler bracket. The new design eliminates the moment by providing support for the lower support bracket that extends further under the bracket and therefore provides full horizontal bearing; the only revision needed to the cooler bracket is the drilling of three additional bolt holes for attachment to the larger support stand. This work has been completed.

2. B&W has recommended to the Bellefonte 1 and 4 units the same corrective action as described above for the WNP units.

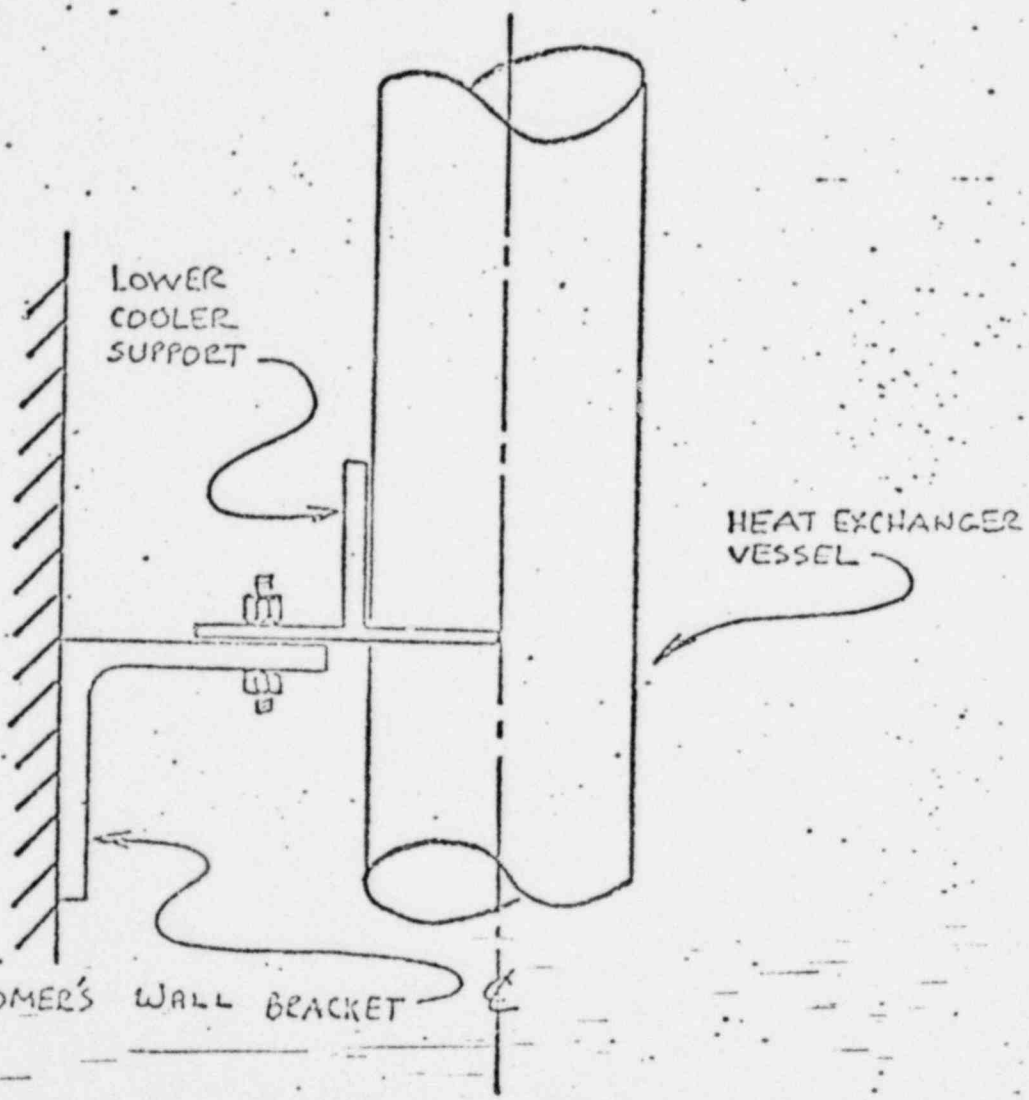
3. A course of corrective action has not yet been agreed upon for the Midland Units. At this time efforts are underway to obtain the calculated nozzle load on the coolers and determine whether they are within the design values.

4. B&W has proposed to VEPCO the same corrective action as taken for the WNP units. However, in the letter to the NRC of January 4, 1980 reporting the condition under the requirements of 10 CFR 21, VEPCO states that "VEPCO has undertaken a study of the feasibility of utilizing the existing North Anna 3 and 4 equipment and structures in the design and construction of coal units. In the event that we decide to continue with the construction of the North Anna Units 3 and 4 as nuclear units, we will modify the current support design to eliminate the overstressed condition."

5. For the Pebble Springs 1 and 2 Units, B&W intends to provide the A/E with an updated support design as was used in the WNP units.

6. For the Erie, PASNY and Davis-Besse 2 and 3 units, the contracts to construct these units has been cancelled and no corrective action is required.

7. To preclude future problems of the type described in this report, the cooler drawings will henceforth show the required support arrangement to be provided by the A/E.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