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ATTACHED IS A PART 21 REPORT FROM IE MAIL UNIT - ROOM 359E/W

PART 21 IDENTIFICATION NO. 80-206-000 COMPANY NAME B+C

DATE OF LETTER 3/24/80 DOCKET NO. 50-438, 50-439

DATE DISTRIBUTED 3/31/80 ORIGINAL REPORT SUPPLEMENTARY

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ACTION:

LOEB/MPA MNB 5715

PRELIMINARY EVALUATION OF THE ATTACHED REPORT INDICATES LEAD RESPONSIBILITY FOR FOLLOW-UP AS SHOWN BELOW:

IE

HRR

MS

OTHER

RCI

ROI

SG

FF/MSI

REV. 2/26/80

8004300570

Babcock & Wilcox

Power Generation Group

P.O. Box 1260, Lynchburg, Va. 24505

Telephone: (804) 384-5111

March 24, 1980

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

80-206-000

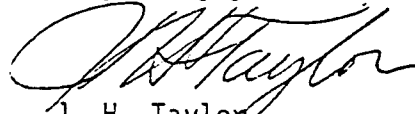
Subject: 10 CFR 21 Report

Gentlemen:

Pursuant to the requirements of 10 CFR 21, B&W made a telephone report to Mr. Mark Peranich of your office at approximately 11:00 AM, March 20, 1980 concerning a defect reportable under 10 CFR 21. The defect concerns support braces for Reactor Building Coolers at Bellefonte Units 1 and 2 that are non-conservative with respect to the support brace design used in the seismic analysis of these coolers. The responsible officer in B&W, Mr. J.H. MacMillan, Vice-President, NPGD, was informed of this reportable defect on March 20, 1980. A report providing additional information on this matter is attached herewith.

Should you require further information, please contact Mr. David Mars of my staff.

Very truly yours



J. H. Taylor
Manager, Licensing

JHT/fw

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

Attachment - As stated

Report on Safety Concern
Re: Reactor Building Cooler Support Braces

This report evaluates a concern that support braces for the cooling water supply header used for the reactor building coolers at the Bellefonte Units 1 and 2 were fabricated from steel angle whereas the seismic analysis by the vendor was done assuming box shape steel tubing. It is concluded that this condition constitutes a defect reportable under 10 CFR 21.

Description of Concern

Each of the Bellefonte plant units has three sets of reactor building coolers that are cooled by raw cooling water. These coolers are part of the reactor building cooling system and are engineered safeguards features since their function is to provide emergency reactor building atmosphere cooling in the event of a design loss-of-coolant accident (LOCA).

Each of the three coolers consists of three sets of cooler banks and each bank of coolers is provided with cooling water by means of cooling water headers. Support braces, as-fabricated, for the cooling water headers for all the coolers in both Bellefonte units, are of angle steel. However, American Air Filter (AAF), the cooler manufacturer, performed the seismic analysis of the coolers and supports based on the support braces being fabricated from box cross-section tubing, and has determined that the as-fabricated brace is non-conservative with respect to the brace design used in the seismic analysis.

The safety concern is that in the event of a seismic occurrence, the braces could possibly be overstressed, causing the cooling water headers to become detached from the coolers, thereby losing cooling water supply to the coolers; the coolers would therefore be unable to perform their cooling function if a LOCA accompanied the seismic event, and the reactor building temperature and pressure would exceed the values used in the plant safety analysis.

The discrepancy between the as-fabricated braces and the brace design used in the seismic analysis was discovered by AAF when they were performing a general review of their seismic analysis methods used for all customers, including the Bellefonte units. This discovery was made subsequent to the

shipment of the coolers to Bellefonte and is not considered as part of the QA process for the design of the Bellefonte units; it is therefore considered to be an inadvertent discovery.

The Bellefonte units are the only B&W plants for which B&W Company contracted to supply the AAF reactor building coolers.

Analysis

The reactor buildings for the Bellefonte Units are provided with two types of systems that are designed to function in the event of a LOCA to adequately cool the reactor building atmosphere. One system is the three building coolers described above. The other system is the reactor building spray system, which consists of two separate trains. Adequate building cooling following a LOCA can be achieved by any one of the following combinations of these two systems:

- (a) Either the full capacity (both trains) of the reactor building spray system, or
- (b) Two of the three reactor building coolers, or
- (c) One train of the spray system and one of the reactor building coolers.

If, in the event of a seismic event concurrent with a LOCA, the three reactor building coolers fail to function due to the deficient support braces, then only the spray system would be available to perform the required cooling. Thus, options (b) and (c) above would be unavailable and only option (a) would be viable. However, a single failure must also be assumed, and in this case, that could be the failure of one train of the spray system, leaving only one train available. One train is insufficient and the accident analysis in the FSAR is therefore invalidated.

Reportability

A seismic stress analysis on the as-fabricated support braces has not been performed, and one is not intended to be performed, to determine if these braces would be overstressed in a seismic event and would, in turn, result in failure of the coolers.

However, the manufacturer, AAF compared the angle brace design with the box tube brace design used in the seismic analysis and concluded that the angle brace was non-conservative with respect to the box tube brace and, further, estimated that the angle brace may not provide the required support strength in a seismic event.

It is therefore concluded that this condition is a defect reportable under 10CFR21.

Corrective Action

The defective support braces (18 in number) have been returned to the vendor for modification to conform to the design used in the seismic analysis.

There appears to have been a lack of design control at AAF in that the detail fabrication drawings showed the braces as angle steel, and that was the way it was actually fabricated, whereas the AAF seismic analysis was performed assuming braces made of square tubing. B&W has no present orders with AAF to procure additional coolers and no orders are presently contemplated; however, prior to the placement of any future orders, B&W will perform an in-depth audit of the AAF design control system to ensure that this type of problem does not recur.