

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

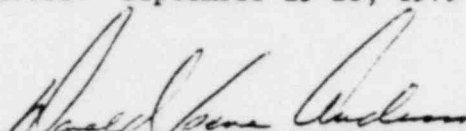
Report No. 99900400/79-03

Program No. 51100

Company: The Babcock & Wilcox Company
Nuclear Power Generation Division
Post Office Box 1260
Lynchburg, Virginia 24505

Inspection Conducted: September 25-28, 1979

Inspector:

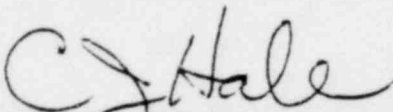


D. G. Anderson, Principal Inspector
Program Evaluation Section
Vendor Inspection Branch

2/20/80

Date

Approved by:



C. J. Hale, Chief
Program Evaluation Section
Vendor Inspection Branch

2-20-80

Date

Inspection Summary

Special Inspection on September 25-28, 1979 (Docket No. 99900400/79-03)

Areas Inspected: Review of procedures and controls adopted by Babcock and Wilcox to implement the requirements of 10 CFR Part 21 and follow-up on a 10 CFR Part 21 report related to two (2) transients which occurred at the Davis Besse Unit 1 plant on September 24, 1977 and October 23, 1977. This inspection involved thirty (30) hours onsite by one NRC inspector.

Results: Potential items of noncompliance have been referred to Inspection and Enforcement Headquarters for action.

DETAILS SECTIONA. Persons Contacted

H. A. Bailey, Principal Licensing Engineer
 R. L. Boyer, Project Manager
 B. M. Dunn, Manager, ECCS Analysis
 R. C. Jones, Jr., Supervisor Engineer, ECCS
 B. A. Karrasch, Manager, Plant Integration
 J. J. Kelly, Principal Engineer
 W. J. Keyworth, Product Manager
 J. H. MacMillan, Vice President, NPGD
 *D. Mars, Licensing Engineer
 *W. E. Patscheider, Quality Assurance Engineer
 *J. H. Taylor, Manager, Licensing

*Indicates attendance at the exit meeting.

B. Compliance with 10 CFR Part 211. Inspection Objective

To determine whether Babcock & Wilcox and appropriate responsible officers had established and implemented procedures and other instructions as required to ensure compliance with 10 CFR Part 21 requirements relative to the reporting of defects and noncompliance with 10 CFR Part 21. Inspector determinations are based on the requirements of 10 CFR Part 21 as clarified by USNRC staff positions in NUREG-0302, Revision 1.

2. Availability and Status of Adopted Procedures and Other InstructionsSummary of Items Subject to Inspection

Each organization, such as Babcock & Wilcox, that performs "design" which involves basic components as defined under 10 CFR Part 21 is subject to its regulations. Babcock & Wilcox is also a firm supplying components to a facility regulated pursuant to the Atomic Energy Act of 1954, as amended, or the Energy Reorganization Act of 1974. Babcock & Wilcox and its responsible officer must therefore ensure compliance with the requirements of Part 21 as specified in Section 21.6, for posting; 21.21(a), for procedures; 21.21(b), for notification and written reports to the Commission; 21.31, for the inclusion of appropriate references in procurement documents; and 21.51, for preparation and maintenance of records, sufficient to assure compliance with regulations under Part 21.

As a means to ensure compliance with 21.21(a) regulations, Babcock & Wilcox must establish procedures to provide for the evaluation of deviations not already corrected in all basic components to which it is applicable when knowledge of the deviation is received (QA-22 under NUREG 0302, Revision 1 on Page 21.21(a)-9), or informing purchasers of the deviation so the purchaser may evaluate the deviation. These procedures must also provide for informing a responsible officer within Babcock & Wilcox of any resulting conclusion of a defect or failure to comply.

To ensure compliance with regulations under: 21.6, 21.21(b), 21.41, and 21.51; Babcock & Wilcox may adopt appropriate controls in the form of procedures or other instructions, as necessary, to ensure that the stated regulatory requirements will be implemented as appropriate.

3. Method of Accomplishment

The preceding objective was accomplished by an examination of:

- a. Nuclear Power Generation Division, Quality Assurance Manual, 19A-N.1, Section 15.
- b. The following procedures and policies:
 - (1) NPG-1707-01, Processing of Safety Concerns.
 - (2) Policy 1208-A5, Implementation of the Requirements of 10 CFR 21.
 - (3) Policy 1716-A1, Reporting of Defects and Noncompliance Concerning Safety (10 CFR 21).
- c. The B&W notice, "Reporting of Safety Related Defects and Noncompliances," posted on two (2) NPGD bulletin boards.
- d. The following documentation related to the reporting of two (2) events at the Toledo Edison Davis Besse Nuclear Power Station, Unit 1, on September 24, 1977, and October 23, 1977:
 - (1) Letter dated October 11, 1979, Toledo Edison to Keppler, USNRC Region III Office of Inspection and Enforcement, reporting a defect in the auxiliary feedwater pump logic under the requirements of 10 CFR Part 21.

- (2) Licensee Event Report dated November 14, 1977, from Toledo Edison to Keppler, USNRC Region III Office of Inspection and Enforcement, related to a transient which occurred at the Davis Besse Plant. LER No. NP-32-77-16.
- (3) Report dated December 22, 1978 from Toledo Edison to Reid, Operating Reactors Branch No. 4, Division of Operating Reactors, Nuclear Reactor Regulation, USNRC, which related to transients which had occurred at the Davis Besse Plant, Docket 50-346/NFP-3.
- (4) Memorandum dated November 1, 1977, J. J. Kelly, Plant Integration, Customer Guidance on High Pressure Injection Operation, related to the September 24, 1977 transient at Davis Besse Unit 1 in which the operator terminated safety injection and the October 23, 1977 transient in which the operator bypassed safety injection.
- (5) Memorandum dated November 18, 1977, J. F. Walters, Nuclear Service, BAW, High Pressure Injection during transient, which related to training activities at BAW associated with high pressure safety injection.
- (6) Memorandum dated February 9, 1978, Bert M. Dunn, Manager, ECCS Analysis, BAW, Operator Interruption of High Pressure Injection, related to a serious concern about the potential for operators to take independent action to terminate high pressure injection following the initial stage of a LOCA.
- (7) Memorandum dated August 3, 1978, D. F. Hallman, Manager, Plant Performance Services Section, Operator Interruption of High Pressure Injection (HPI) which related to follow-up on the concerns identified in the item (6) above.
- (8) Memorandum dated December 19, 1978, L. R. Cartin, Plant Integration, BAW, TECO Status Report, which reviewed BAW activities related to resolution of NRC concerns relative to Auxiliary Feedwater actuation and control at Toledo Edison plants.
- (9) Memorandum dated February 16, 1978, Bert M. Dunn, Manager ECCS Analysis, BAW, Operator Interruption of High Pressure Injection, which reviewed recommendations relative to procedures for terminating high pressure injection following a LOCA.

- (10) Davis Besse Nuclear Power Station Unit No. 1, Toledo Edison Company, Technical Specifications, including amendment No. 18, BAW document 05-0011-10, August 9, 1979.
 - (11) Site Problem Reports (SPR):
 - SPR No. 367, September 2, 1977.
 - SPR No. 372, October 4, 1977.
 - SPR No. 384, October 27, 1977.
 - SPR No. 396, November 29, 1977.
 - SPR No. 430, March 1, 1978.
 - (12) Memoranda dated October 7, 1977 and November 7, 1977, BAW to Domeck/Toledo Edison, BAW evaluation of the Davis Besse transients.
- e. The following documentation related to a report entitled, Decay Heat Removal During a Very Small Break LOCA for a BAW 205 Fuel Assembly PWR, C. Michelson, January 1978:
- (1) The following Topical Reports:
 - BAW 10052, Multinode Analysis of Small Breaks for BAW 2568 MWT Nuclear Plants, September 1972.
 - BAW 10062A, Multinode Analysis of Small Breaks for BAW 145 Fuel Assembly Nuclear Plants with Internals Vent Valves, October 1975.
 - BAW 10074A, Multinode Analysis of Small Breaks for BAW 205 Fuel Assembly Nuclear Plants with Internals Vent Valves, October 1975.
 - BAW 10075A, Multinode Analysis of Small Breaks for BAW 177 Fuel Assembly Nuclear Plants with Raised Loop Arrangement and Internals Vent Valves, March 1976.
 - BAW 10103A, ECCS Analysis of BAW 177-FA Lowered-Loop NSS, Revision 1, June 1975, Revision 3, July 1977.

- (2) Preliminary Report of Safety Concerns, PSC 10-78, 0.04 ft² Small Break Analysis, April 7, 1978.
 - (3) Memorandum dated April 12, 1978, Taylor, Manager Licensing, BAW, related to PSC 10-78 and instructing that this safety concern will be reportable to the NRC under the requirements of 10 CFR 21.
 - (4) Letter BAW to Seyfrit, Office of Inspection and Enforcement, Headquarters, Letter BAW to Volgenau, Office of Inspection and Enforcement, Headquarters, dated April 12, 1978, transmitting 10 CFR Part 21 report with affected plants.
 - (5) Press Release dated April 25, 1978, Utilities Establish New Operating Procedures and Limitations at Seven Power Reactors. This press release involved results of reanalysis of small break LOCA and included Three Mile Island 1 and 2.
 - (6) Letter TVA to BAW transmitting Michelson report dated April 27, 1978.
 - (7) Letter BAW to TVA stating that Michelsons' concerns had already been evaluated, dated January 23, 1979.
 - (8) Memorandum BAW ECCS Analysis to Project Management BAW stating that BAW feels that Michelson's concerns have already been addressed in PSC 10-78 and BAW 10074A, Revision 1.
- f. The following documentation related to evaluation of potential safety concerns:
- (1) Log of Significant Deficiency Report and Preliminary Safety Concerns. The first significant deficiency was evaluated in July 1973 and since then a total of 138 safety items have been evaluated under the system.
 - (2) PSDR 76-02, Surveillance Specimen Holder Tubes, March 9, 1976.
 - (3) Topical Report BAW 10100A, Reactor Vessel Material Surveillance Program, February 1975.
- Topical Report BAW 10051, Supplement 1, Structural analysis of 177-FA Redesigned Surveillance Specimen Holder Tube, August 1976.

- (4) PSC 2-79, Unavailability of Pressurizer Heaters following a Seismic Event, January 8, 1978.

4. Findings

a. Safety Concern Regarding Reactor Operations Procedures

This item relates to the identification of a safety concern in an internal BAW memorandum dated February 9, 1978 and lack of follow-up per the Procedure for Processing of Safety Concerns, NPG-1707-01. In particular, following the two incidents at Davis Besse in 1977, the Manager of ECCS Analysis at BAW became concerned about the operators at Davis Besse having taken action after the LOCA by first terminating High Pressure Injection (HPI) in the September 24, 1977 transient and then bypassing HPI during the October 23, 1977 transient. In both events, the plant was at 10% of full power prior to the transient. The memorandum postulates that "if this event occurred in a reactor at full power with other than insignificant burnup it is quite possible, perhaps probable, that core uncover and possible fuel damage would have resulted," and concludes that BAW may not have supplied sufficient information to reactor operator in the area of recovery from LOCA. NPG-1707-01, requires in Section VII that all NPGD personnel have the responsibility for processing a form BWNP-20208, Preliminary Report of Safety Concerns, when they identify a potential safety concern. This action assures that the item receives the depth of review and evaluation that it otherwise would not receive.

Up to the time of this inspection, the B&W staff having responsibility for addressing the above issue did not consider it of sufficient safety significance to handle this matter under B&W procedures adopted pursuant to 10 CFR 21.21(a).

b. Statements on Procurement Documents

Section 21.31 of 10 CFR Part 21 requires that each individual, corporation, partnership, or other entity subject to the regulations in this part shall assure that each procurement document for a facility, or a basic component issued by him, her or it on or after January 6, 1978 specifies, when applicable, that the provisions of 10 CFR Part 21 apply.

Interpretation 21.3(d)8 of NUREG-0302, Revision 1, states that if the supplier identifies a deviation in a delivered basic component and has evaluated the deviation and by evaluation he has determined that it could cause a substantial safety hazard, he is required to report the deviation, which is now a defect, directly to the NRC.

BAW Corporate Policy 1208-A5, Implementation of the Requirements of 10 CFR Part 21, requires that the following purchase order clause be included in purchase orders for components, materials, and services:

"The requirements of Title 10, Chapter 1, Code of Federal Regulations, Part 21 apply to this order. The Babcock and Wilcox Company shall be immediately notified when a deviation from technical requirements of the procurement documents is found to exist in products already delivered. Upon request, you shall further provide the necessary technical information or analysis to the company which will permit an evaluation of the safety implications. The Babcock and Wilcox Company shall be responsible for notifying the Nuclear Regulatory Commission, as required."

This clause in procurement documents tends to preclude the supplier from making an evaluation or determination that an item is reportable directly to the NRC as required by Part 21. This clause would only be appropriate if the supplier was unable to perform the required evaluation because of limited knowledge concerning the application of the item with a known defect.

c. Follow-up Items

Section 206 of the Energy Reorganization Act of 1974, requires that any responsible officer of a firm supplying the components of a facility licensed pursuant to the Act who obtains information reasonably indicating that a basic component supplied to that facility contains a defect shall immediately notify the Commission. Section 21.1 of 10 CFR 21 requires the immediate notification of the Commission of defects or noncompliance with regulatory requirements. The Babcock and Wilcox procedure which implements this requirement is NPG-1707-01, Processing of Safety Concerns; however, the procedure does not address the requirement for immediate notification of the Commission. In addition to the deficiency identified in b. above, procedural discrepancies which delay the immediacy of reporting defects or noncompliance to the Commission are as follows:

- (1) The procedure allows the responsible officer additional time in reporting, since NPG-1707-01 requires that the affected utilities be notified first and the USNRC second.

The intent of Section 206 is immediate notification and not after notification of the customer.

- (2) NPG-1707-01 uses the term "inform the Commission" instead of immediately notify as used in Section 206.
- (3) No time limit for the evaluation of deviations is addressed in NPG-1707-01.

C. Exit Meeting

An exit meeting was conducted with Babcock and Wilcox management personnel at the conclusion of the inspection on September 28, 1979. Those individuals indicated by an asterisk in the Details Section of this report were in attendance. In addition, the following were present:

J. C. Deddens, Manager, Project Management Department
J. W. Donnell, Manager, Quality Control Surveillance
S. H. Klein, Manager, Quality Assurance Engineering
T. M. Schuler, Engineering

The inspector discussed the scope of this special inspection and the details of the findings identified during the inspection. Management representatives of Babcock and Wilcox acknowledged the statements by the inspector.