

U. S. ATOMIC ENERGY COMMISSION
REGION I
DIVISION OF COMPLIANCE

Report of Inspection

CO Report Nos. 289/70-3
320/70-3

Licensee: Metropolitan Edison Company
Three Mile Island Units Nos. 1 and 2
License Nos. CPPR-40 and CPPR-66

Date of Inspection: May 11 and 12, 1970

Date of Previous Inspection: March 30 and 31, 1970

Inspected by: R. M. Gustafson, Metallurgical Engineer, DRS
F. L. Liederbach, Staff QA Engineer, CO:HQ
R. F. Heishman, Reactor Inspector, CO:I

Compiled by:

R. F. Heishman

R. F. Heishman, Reactor Inspector, CO:I

6/2/70

Date

Reviewed by:

E. M. Howard

E. M. Howard, Senior Reactor Inspector, CO:I

6-2-70

Date

Proprietary Information: None

I. Summary

The inspectors found that B&W had developed and is implementing a quality assurance program which generally meets the commitments in the application and Appendix B to 10 CFR 50. A major reorganization, which is further discussed under Criterion I, has been effected in the B&W Power Generation Division. The following areas were found by the inspectors which require further development by the licensee:

A. Procedures for training and qualification of QA/QC personnel have not been developed or implemented; however, qualified personnel are performing QA/QC duties. (Criterion II)

B. Development and implementation of instructions regarding the scope and depth of design review to be performed on systems and components have not been completed. (Criterion III)

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C. Procedures for disposition of obsolete documents were not found. (Criterion VI)

D. Policy on long term record retention was not in evidence. (Criterion XVII)

II. General

A. Background and Purpose

The initial quality assurance inspection was conducted during the week of December 1, 1969.* Numerous deficiencies were found in the QA efforts of the Babcock and Wilcox Company (B&W).

Based on the above findings, a reinspection of the B&W QA efforts was conducted on May 11 and 12, 1970. Only those areas found to be deficient were reinspected. This inspection was limited to Criteria I, II, III, IV, VI, VII, IX, X, XVI, XVII, and XVIII.

The reinspection was conducted to meet the objectives outlined in memorandum, Chief, Reactor Inspection and Enforcement Branch, CO, to Senior Reactor Inspectors, Organization of Special QA Inspections, dated June 24, 1969, and PI 4000/1, Quality Assurance.

B. Team Membership and Assignments

1. R. F. Heishman, Reactor Inspector, CO:I - Responsible for the coordination of the inspection and inspection of organization and program conformance with application commitments and Criteria I, II and XVIII.
2. R. M. Gustafson, Materials and Metallurgy Branch, DRS - Responsible for procurement and conformance with the application and with Criteria IV, VII, X and XVIII of Appendix B, 10 CFR 50.
3. F. J. Liederbach, Staff Quality Assurance Engineer, CO:HQ - Responsible for inspection of design conformance with the application and Criteria III, VI, IX, XVI and XVII of Appendix B, 10 CFR 50.

C. Sequence of Events

5/8/70	Pre-inspection conference, all team members at CO:HQ, Bethesda, Maryland.
5/11-12/70	Inspection of B&W QA program for Three Mile Island 1 and 2 at the B&W design office in Lynchburg, Virginia.

D. Personnel Contacted During Inspection Activities

Metropolitan Edison Company

G. F. Bierman, Project Manager, Met Ed
B. G. Avers, Manager, Quality Assurance, GPU
T. G. Hreczuch, Construction Engineer, Met Ed

MPR Associates

N. M. Cole
J. Gorman

Babcock and Wilcox Company

W. H. Rowand, Vice President and General Manager, NPGD
J. H. MaMillan, Manager, Contract Department
E. G. Ward, Project Manager, TMI-1&2
H. F. Dobel, Manager, Quality Assurance, NPGD
D. W. Montgomery, Manager, NSS Engineering
A. H. Lazar, Manager, NSS Components Engineering
C. E. Thomas, Manager, Construction Section
W. A. Cobb, Assistant Project Manager, TMI-2
F. R. Thomasson, Assistant Project Manager, TMI-1
C. R. Powers, QAR, Mechanical
C. M. Fletcher, QAR, Electrical
R. E. Manoll, QAR, PGD Manufactured Equipment
R. E. Braumiller, QAR, Fuel

III. Project Status

No project status* information was obtained during this inspection, which was limited to the nuclear steam supplier. Only those areas found to contain deficiencies during the initial QA inspection were inspected.

IV. Significant Inspection Findings

The significant findings during the inspection are summarized below, tabulated by Criterion. Only those criteria found deficient during the initial QA inspection** conducted during the week of December 1, 1970, are included. The supporting details are retained in CO:I files and are available if required.

*Memo, J. P. O'Reilly to SRI Quality Assurance Inspections, dated 1/23/70
**CO Report Nos. 289-69-6 and 320/69-2

Criterion I - Organization

A. Discussion

Babcock and Wilcox Company (B&W) Power Generation Division has been reorganized as shown on Figure I. The transition from the organizational structure previously reviewed to the present structure appears to have been well planned and smoothly accomplished.

The relationship between the Nuclear Power Generation Department (NPGD), QA organization (Lynchburg) and the Engineering Technology Department (ETD) QA organization (Barberton) was not clearly established during the inspection. The responsibilities of NPGD QA manager are clearly defined in the NPGD QA manual; however, a similar document was not reviewed for ETD QA. Both ETD and NPGD QA departments provide policy on QA/QC matters and potential conflicts are possible. The inspectors were informed that a task force appointed by the vice president of the Power Generation Division is studying this matter and will make recommendation regarding the need for additional organizational changes.

B. Findings

The B&W organization meets the commitments in the application and the intent of this criterion.

Criterion II - Quality Assurance Program

A. Discussion

B&W has established and is implementing a QA program which generally complies with the application and Appendix B to 10 CFR 50. Detailed procedures for training and qualification of QA/QC personnel have not been completed. B&W is continuing to refine the QA program with detailed procedures and instructions. The NPGD QA manual and TMI Unit No. 2 QA plan have been approved and implemented in the recent past.

B. Findings

The B&W QA program meets the commitments of the application and the intent of this criterion except for the procedures and instructions regarding training and qualification of personnel.

Criterion III - Design Control

A. Discussion

Objective evidence was found that the engineering groups of B&W interact very closely and that major emphasis is placed on developing and standardizing

rigorous, comprehensive company standards. Not only is there an extensive review process between NPGD Systems Engineering and NPGD Components Engineering, but in some cases other divisions or consultants are utilized to provide additional reviews. Missing, however, was clear policy defining the scope and depth of design review to be applied against each component or design interface in a long list of items, each of which is assigned a quality level category.

B&W has assigned four levels of quality to the equipment they furnish and is now developing the list of items which will require formal design review. Definitions of the type and extent of design review to be conducted are in the process of being developed.

B. Findings

The B&W system of design review meets the commitments of the application and the intent of Criterion III of Appendix B to 10 CFR 50 except for the development and implementation of instructions pertaining to the scope and depth of design review to be applied to systems and equipment assigned the various quality levels.

Criterion IV - Procurement Document Control

A. Discussion

B&W has developed and implemented a system for procurement document control which is documented in sections 6A and 6B of NPGD "Quality Assurance Manual for Steam System Components and Fuel", B&W 19A-2E-4, April 21, 1970. Objective evidence was found that confirmed procurement document control is implemented for items procured by both internal and external procurement groups.

B. Findings

The B&W procurement document control program meets the commitments of the application and the intent of Criterion IV of Appendix B to 10 CFR 50.

Criterion VI - Document Control

A. Discussion

B&W has developed and implemented a system of document control which is documented in the following specifications: 19A-2E4-7A, Document Control; 19A-2G4-5A, Design Control; and 19A-2E4-4A, QA Program. A computer printout is made and distributed to provide the latest information on revisions and new documents for the use of all concerned individuals. Procedures for disposition of obsolete documents were not found during this inspection.

B. Findings

The B&W document control program when fully implemented meets the commitments in the application and the intent of Criterion VI of Appendix B to 10 CFR 50 except for procedures governing disposition of obsolete documents.

Criterion VII - Control of Purchased Material, Equipment and Services

A. Discussion

The quality assurance group at Lynchburg has established procedures which provide tight control over their procurement of material, equipment and services. They have a workable system of vendor evaluation, and through the development and training of their field surveillance group, have the means of implementing tight control over their vendors. The resident QA representatives at the Mt. Vernon and Barberton plants provide a continual surveillance of their procurement effort, and evaluate their suppliers on a regular basis.

B. Findings

B&W's program of control under this criterion was found to meet the commitments in the application and the intent of Criterion VII.

Criterion IX - Control of Special Processes

A. Discussion

B&W has developed and is implementing a system for control of special processes. Limited objective evidence was found to show the degree of implementation. Recently approved documents such as the NPGD QA Manual provide the necessary guidance and implementation is being accomplished in a timely manner.

B. Findings

B&W's program of control, when completely implemented, will meet the commitments in the application and the intent of Criterion IX.

Criterion X - Inspection

A. Discussion

NPGD QA, through its field surveillance group, is maintaining a check on the quality control plan of each of its suppliers. Through the use of QA data sheets, hold points and specific inspection functions are indicated. Until a release is signed by NPGD QA representatives, indicating that all required inspections have been completed, the manufactured item cannot be shipped. Each supplier's quality control manual is checked to insure that it is adequate with respect to direct inspection, i.e., (NDT procedures, dimensions,

checks and process monitoring involving processes such as heat treatment and cleaning.)

B. Findings

The B&W program of inspection meets the commitments in the application and the intent of Criterion X.

Criterion XVI - Corrective Action

A. Discussion

NPGD QA Manual devotes a section to corrective action and provides guidance to document same. In addition, the Components Engineering Procedures Manual, sections 5.11.2 and 7.14.0 address the subject for the engineering groups. Objective evidence was found to show the implementation of this portion of the program.

B. Findings

The B&W program of corrective action meets the commitments of the application and the intent of Criterion XVI of Appendix B to 10 CFR 50.

Criterion XVII - Records

A. Discussion

B&W has developed a system of compiling, storing and retrieving QA records which is documented in the NPGD QA Manual, Three Mile Island QA Plans and a draft procedure which is still being reviewed regarding long range storage of records. The system includes check lists for ensuring all required records of quality are included in the files. Objective evidence of implementation was found during the inspection. A plan for long term record retention was not in evidence.

B. Findings

B&W's program for quality assurance records meets the commitment of the application and the intent of Criterion XVII of Appendix B to 10 CFR 50 except for long term record retention procedures.

Criterion XVIII - Audits

A. Discussion

1. Internal Audits

The NPGD QA Manual establishes a system of periodic audits of all parts of the department and vendors (both B&W departments and

outside vendors). The Manual prescribes form, detail and frequency of audit (four per year). Checklist and scope statements are included and also the preparation of the audit report. The audit teams will be composed of four members as follows:

- 1 member of QA section
- 1 member of standards and coordination section
- 2 members selected from the other sections of the department but not the department being audited.

The audit reports are distributed to management and the department head is required to submit a corrective action report to management. Reaudit will be accomplished if appropriate, as determined by management.

No internal audits have been performed to date but a schedule has been prepared and the first one due to be performed in June 1970.

2. Vendor Audits

It was established that the NPGD QA group is systematically and regularly auditing their vendors at various intervals with the frequency of audit depending on the essentiality of the item. It was pointed out that each vendor will be audited at least once a year on items of least criticality, whereas items such as pumps obtained from Bingham Pump are audited on a monthly basis. It was indicated that for items of average importance, audits are scheduled at a frequency of 3 - 4 times a year. The procedures for auditing are detailed and are indicated in their QA Manual. A number of audit reports were reviewed, which revealed that a tight audit program is in effect.

The contractor has established a satisfactory audit program for their vendors' plants and for their own manufacturing facilities. Discussions with various members of the quality assurance staff revealed they were well qualified and knowledgeable in quality assurance matters. They had a good awareness of the intent of the AEC QA criteria, and they reflected the determination expressed by their management to administer such a program.

B. Findings

B&W has developed a system of audits which when totally implemented will meet the intent of Appendix B to 10 CFR 50 and the application.

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POWER GENERATION DIVISION
ORGANIZATION
MAY 1970

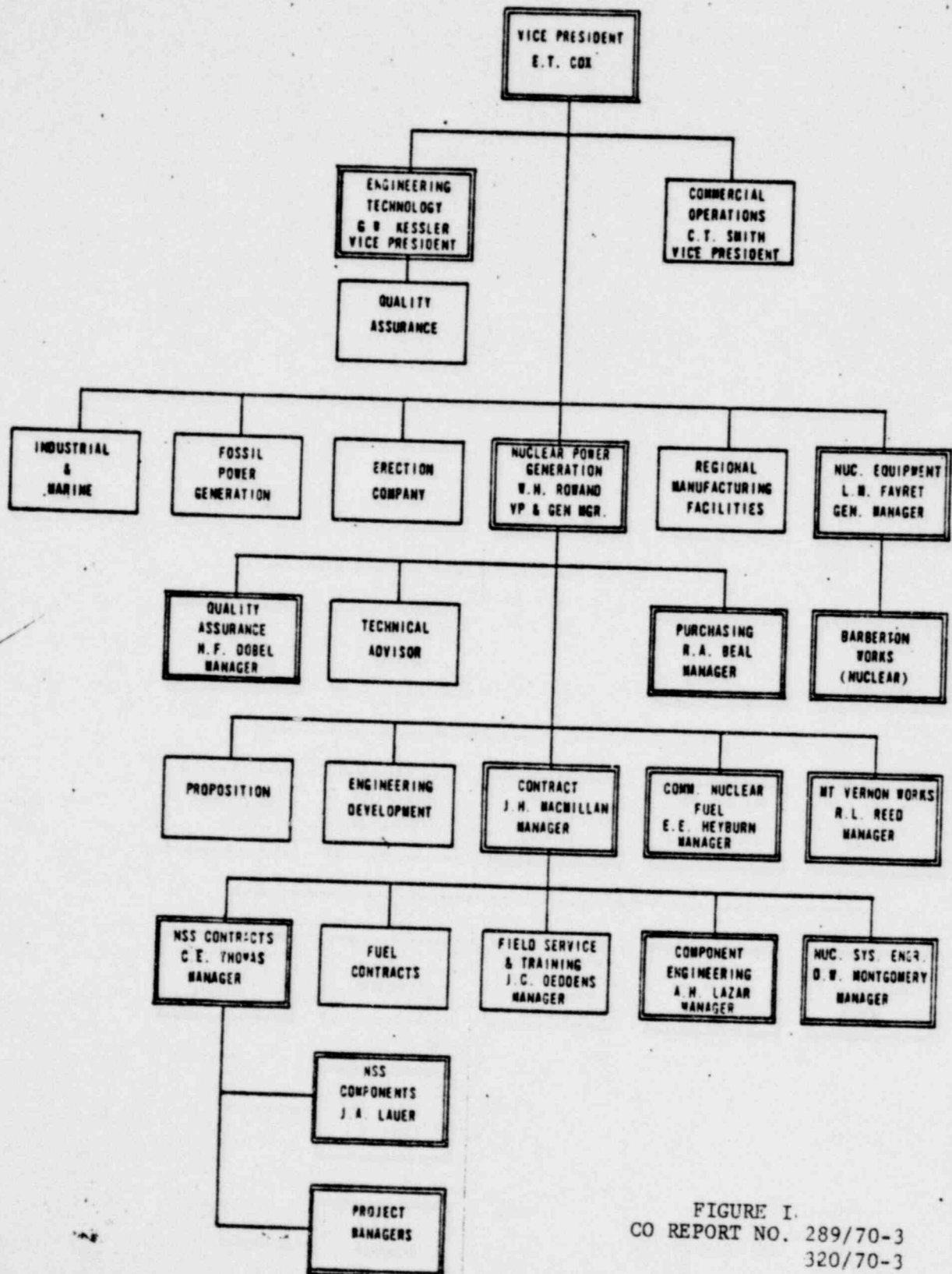
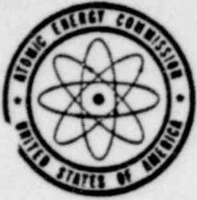


FIGURE I.
CO REPORT NO. 289/70-3
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UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION I
970 BROAD STREET
NEWARK, NEW JERSEY 07102

201 645-3942

April 16, 1970

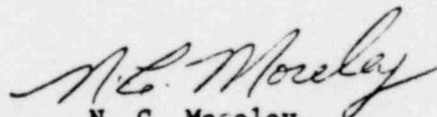
J. P. O'Reilly, Chief, Reactor Inspection and Enforcement Branch,
Division of Compliance, HQ

INQUIRY MEMORANDUM
METROPOLITAN EDISON COMPANY (TMI-1) 289/70-A
DECAY HEAT COOLERS

Region I was provided the following information on April 16, 1970.

During a vendor inspection, the licensee determined that the decay heat cooler tubes (S/S) were cleaned in a chlorinated solvent (Trade-name - Valcolene). The coolers have been installed at the site. B&W has authorized the removal and return of the coolers to the manufacturer: Whitlock Manufacturing Company, 101 South Street, West Hartford, Connecticut.

A chemical analysis of the solvent (Valcolene) showed that it contained 3% methyl chloride.


N. C. Moseley
Senior Reactor Inspector

cc: E. G. Case, DRS
R. S. Boyd, DRL (2)
S. Levine, DRL
D. J. Skovholt, DRL (2)
L. Kornblith, Jr., CO
REG files
Regional Directors, CO

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