UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555 - 0001

February 24, 2004

MEMORANDUM TO: Bruce Boger, Director
Division of Inspection Program Management
Office of Nuclear Reactor Regulation
/RA/

THRU: Theodore R. Quay, Chief
Emergency Preparedness and Plant Support Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation
/RA/

FROM: Richard P. McIntyre, Senior Reactor Engineer
Quality and Maintenance Section
Emergency Preparedness and Plant Support Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

SUBJECT: TRIP REPORT BY THE QUALITY AND MAINTENANCE SECTION (QMS) STAFF OF THE NUCLEAR PROCUREMENT ISSUES COMMITTEE (NUPIC) AUDIT TEAM DURING THE BABCOCK AND WILCOX CANADA AUDIT

On January 25-30, 2004, Richard McIntyre, Kenneth Heck and Paul Prescott of the Quality and Maintenance Section observed the performance of a NUPIC audit conducted at Babcock and Wilcox Canada at their manufacturing facilities in Cambridge, Ontario Canada. The purpose of the observation was to assess the NUPIC audits process used for suppliers of components to the nuclear industry.

Attachments: As stated

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DATE	2/20/03		2/20/04		2/24/04		2/24/04		/ /2004	

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NRC FOREIGN TRIP REPORT

Subject

This trip report documents observations by members of the Quality and Maintenance Section (QMS) of a Nuclear Procurement Issues Committee (NUPIC) audit team during their audit conducted January 25-30, 2004, at the Babcock and Wilcox Canada manufacturing facilities.

Dates of Travel and Country/Organization Visited

January 25-30, 2004
Babcock and Wilcox Canada in Cambridge, Ontario Canada

Author, Title and Agency Affiliation

Richard P. McIntyre, Team Leader
Quality & Maintenance Section
Emergency Preparedness & Plant Support Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

Sensitivity

There were no documents removed from the facility during the conduct of the audit. This document is available to the public (ADAMS Accession # ML040580213).

Background/Purpose

The purpose of this trip report is to document an assessment conducted January 25-30, 2004, by the QMS of a NUPIC audit. The NUPIC audit team performed an audit of Babcock and Wilcox Canada (BWC). BWC has supplied components to U.S. nuclear utilities and has had a basic nuclear program in operation since the early 1970s for Canadian nuclear industry components. BWC has had American Society for Mechanical Engineering (ASME) surveys conducted since 1988, and has received Nuclear Code Certificates (including material supply) for Class 1, 2 and 3 vessels, piping and supports. BWC has conducted all aspects of manufacturing activities for nuclear components, including associated engineering support. The QMS chose to observe this particular NUPIC audit based on the wide range of activities conducted at BWC. BWC was in the process of manufacturing replacement steam generators and reactor vessel heads for U.S. nuclear facilities when the audit was conducted.

NUPIC was formed in 1989 by a partnership involving all domestic and several international nuclear utilities. The NUPIC program evaluates suppliers furnishing safety-related components and services and commercial grade items to nuclear utilities.

The purpose of the QMS observance of the NUPIC audit was to ensure the NUPIC audit process was an acceptable alternative to the NRC vendor audit program. The QMS

assessment was the first of at least two such assessments to be conducted annually to verify the adequacy of the NUPIC audit process.

The NRC continues to rely on the effectiveness of the NUPIC audit process for evaluating the quality program of suppliers to the nuclear industry.

Abstract: Summary of Pertinent Points/Issues

Oversight of the NUPIC audit process was viewed by the QMS as particularly relevant for two reasons: (1) NRC continues to rely on NUPIC for over-sight of suppliers to the nuclear industry and; (2) may rely heavily on NUPIC for oversight of suppliers to future reactors. The QMS anticipated that new suppliers, both domestic and international, will enter the nuclear supplier business due to an expanded nuclear market. The QMS has initiated discussions with the NUPIC Steering Committee on the role NUPIC may take in evaluating new suppliers. The QMS will need to evaluate NUPIC's capabilities and plans for oversight of the potential expanding supplier base for the next generation of nuclear plants.

Discussion

The NUPIC audit scope was to determine the acceptability and verify the effective implementation of the BWC quality assurance requirements in accordance with the requirements of 10 CFR 50 Appendix B, American National Standards Institute (ANSI) N45.2 and 10 CFR Part 21. NUPIC has developed an audit checklist that was essentially divided into the 18 criteria of Appendix B. This checklist was supplemented by ASME, ANSI and other recognized consensus standards relevant to the supplier being audited. The NUPIC audit checklist can be downloaded from the NUPIC web site (www.nupic.com). After an audit report is issued, the completed checklist is maintained in an electronic database, which is accessible and can be downloaded by NUPIC members.

Additionally, an informal self-assessment was conducted by NUPIC team members on areas of strengths and weaknesses of the supplier from previous audits and individual team member interactions with the supplier. A Performance Based Supplemental Audit Checklist was also used by a technical specialist added to the team to cover ASME Section III components (steam generators, reactor vessel heads, etc.), steel fabrications and calibration standards for eddy current testing. An additional area not explicitly addressed by Appendix B which was covered by the NUPIC audit team and checklist was software verification and validation. The QMS also reviewed the NUPIC Training/Qualification Form for each team member. The form covered such areas as NUPIC training completed, NUPIC procedures familiarization and areas of experience (design, commercial grade dedication, software, special processes, etc.).

The QMS observed all aspects of the NUPIC team's conduct of the audit at BWC. This started with the team meeting conducted the day before the audit commenced, to go over details of the audit and audit expectations. For observance of the conduct of the audit, the QMS divided the audit checklist review areas between the three inspectors. The QMS then observed performance of the NUPIC auditors as they conducted a review of a specific audit checklist section. The QMS staff observed how documents were selected for review and the adequacy of the review, interviews conducted of BWC personnel, and observance of on-going activities in the manufacturing facilities. The QMS observed the daily meetings the audit team conducted internally and with BWC management, and the formal exit meeting. The QMS also reviewed the completed NUPIC audit checklist.

The following fabrication tasks were ongoing at the B&W Canada facilities:

Job #	Customer	Item	Delivery Date
006K	Oconee	Reactor Pressure Vessel Head	May 2004
068S	Oconee	RPV Head	January 2004
083D	Oconee	RPV Service Structures	January 2004
104J	Constellation	Head Replacement	March 2005, December 2005

The team included utility auditors assigned to these components. The Constellation auditor was assigned to the facility 100% of the time; the Duke auditor was assigned 25% of the time. Dominion's interest in the audit was Millstone, for which BWC was the nuclear steam supply system (NSSS) manufacturer; Entergy's interest was future procurement, possibly steam generators for Arkansas Nuclear One (ANO).

BWC provided the quality assurance program description and other lower tier documents. To begin their inspection, auditors selected documents from lists of quality control instructions and manufacturing operating procedures. The audit was performed by reviewing the requirements of the QA program and supporting implementing procedures, evaluating the documentation associated with the activities that had been performed and discussing the activities with BWC personnel. Observations of ongoing work and inspection activities were also performed.

Areas examined during the audit included: order entry; design; software quality assurance; procurement; fabrication/assembly activities, material control and handling, storage and shipping; special processes; tests and inspections; calibration; document control/adequacy; organization/program; nonconforming items/Part 21; internal audits; corrective actions; training/certification; field services, and; records.

At the exit meeting, the audit team identified four findings and three recommendations to BWC management. These NUPIC findings and recommendations were preliminary. The final report had not yet been issued when this trip report was finalized. The first finding was in the area of corrective action. The audit team identified that the engineering department did not process engineering-related conditions adverse to quality per the BWC QA manual. The second finding was in the area of procurement. The audit team identified that procurement documents were issued to two suppliers with requirements to apply an NCA 3800 quality program and not an NCA 4000 NQA-1 quality program. No reference was made to the supplier's quality assurance program that was approved by BWC that served as the basis for the material procured. The third finding was in the area of control of purchased material, equipment and services. Commercial grade calibration supplier surveys were being performed to ensure Quality Program implementation only. Specific critical characteristics for commercial grade calibration suppliers were not established and verified. The fourth finding was in the area of document control. A drawing was distributed by document control without updating the revision status on the work order. A review of other work orders that referenced the same drawing identified similar deficiencies. Three checks by the shop document control clerk, shop operator, and QC, failed to identify the error.

The audit team also had three recommendations. The first recommendation was that BWC should perform a self-assessment on several corrective action reports (CARs) that were issued

by customers identifying issues; focusing on why these issues were not self-identified. The second recommendation was that maintenance personnel performing calibration of maintenance equipment should receive 10 CFR 21 training. The audit team identified they were not familiar with specific nonconformance reporting requirements of Part 21. The third recommendation was that BWC should strengthen the external audit process with respect to documenting that suppliers were auditing their respective subsuppliers.

In addition, the technical specialist on the team had three recommendations. The first recommendation was that BWC modify technical specifications to clarify BWC may elect to dedicate items. BWC had dedicated items safety-related and not identified the items to the purchaser. The technical specifications had stated purchaser approval was required prior to the use of material, contingent upon contractor submittal of a currently approved program for commercial grade dedication, which had not been done. The second recommendation was that BWC document the basis justifying destructive sample size in each applicable dedication package. The third recommendation was that BWC document the basis for acceptance of substitution in the request for material substitution form. The basis was identified in the contract file and was difficult to locate and retrieve.

Based on the program elements that were audited, the NUPIC audit team determined that BWC was effectively implementing its quality assurance program, except for those elements where deficiencies were identified. The audit team concluded that the findings had no impact on product quality.

All audit team members were observed in part or in whole on their portion of the audit conducted. Specific areas of the checklist that the QMS focused on for review were adequately addressed by members of the audit team. Training and qualifications of the audit team members were reviewed. All team members were fully trained and qualified to conduct the audit. The auditors supported their findings with comprehensive objective evidence and went to sufficient depth in their respective areas of focus. Findings and recommendations were clearly and thoroughly communicated to BWC management.

The QMS concluded that the NUPIC audit process was effectively implemented by the audit team and resulted in a sound performance based review of the areas covered.

Pending Actions/Planned Next Steps for NRC

This assessment was the first of two planned for this year. The goal is to try and conduct two assessments a year of NUPIC audits to ensure the adequacy of the NUPIC audit process. In addition, QMS plans to attend the March 2004 NUPIC meeting to outline the assessment process to all NUPIC members.

Points for Commission Consideration/Items of Interest

None.