



**Department of Energy**

Washington, DC 20585

QA: QA

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**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT OFFICE OF QUALITY ASSURANCE OBSERVATION REPORT OF THE NAVAL NUCLEAR PROPULSION PROGRAM (NNPP) TRIP TO OBSERVE QUALITY ASSURANCE (QA) ACTIVITIES ASSOCIATED WITH THE FABRICATION OF NAVAL REACTOR CORES**

Enclosed is the Observation Report of the NNPP trip to observe the QA practices used in the manufacture of Naval reactor cores at BWX Technologies, Inc. (BWXT) in Lynchburg, Virginia, on February 20, 2002.

The purpose of the observation was to determine the effectiveness of the NNPP QA Program as it relates to the manufacture of Naval reactor cores.

The observers determined that the QA process and practices used in the fabrication of Naval Reactor Cores at BWXT indicated that the NNPP QA Program is being implemented; procedures and processes are very detailed in the manufacture of product: and documentation is precise and demonstrable. Based on the activities observed during this visit, the NNPP QA Program remains acceptable.

If you have any questions, please contact me at (702) 794-1460 or John E. Therien at (702) 295-2971.

  
Ram Murthy, Acting Director  
Office of Quality Assurance

OQA:RM-1006

Enclosure:  
Observation Report

cc w/encl:  
John McKenzie, Naval Reactors, Washington, DC  
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James Smyder, Naval Reactors, Las Vegas, NV  
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U.S. DEPARTMENT OF ENERGY  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
OFFICE OF QUALITY ASSURANCE

OBSERVATION REPORT

OF THE

NAVAL NUCLEAR PROPULSION PROGRAM  
QUALITY ASSURANCE ACTIVITIES ASSOCIATED  
WITH THE FABRICATION OF  
NAVAL REACTOR CORES

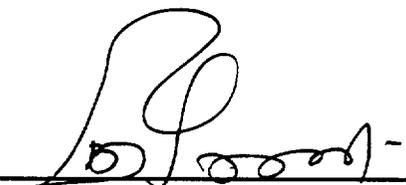
CONDUCTED AT

BWX TECHNOLOGIES, INC.  
LYNCHBURG, VIRGINIA

FEBRUARY 20, 2002

Prepared by:   
John E. Therien

Date: 4/9/02

Approved by:   
Ram Murthy  
Acting Director  
Office of Quality Assurance

Date: 4/11/02

ENCLOSURE

## 1.0 INTRODUCTION

A representative from Office of Civilian Radioactive Waste Management (OCRWM) Office of Quality Assurance (OQA) accompanied Naval Nuclear Propulsion Program (NNPP) staff and support contractors to BWX Technologies, Inc. (BWXT) in Lynchburg, Virginia on February 20, 2002. BWXT is the Reactor Core Vendor for the NNPP.

The OQA observed some of the quality assurance (QA) processes and practices used in the manufacture of Naval Reactor Cores.

## 2.0 OBJECTIVE

Activities were observed by the OCRWM OQA Representative to assess the effectiveness of the NNPP QA Program as it relates to the manufacture of Naval reactor cores and ensure that the NNPP QA Program continues to remain acceptable to the U.S. Department of Energy OCRWM.

## 3.0 ATTENDEES

### NNPP

C. H. Davis  
R. J. Ball  
D. R. Clapper  
R. J. Argenta

### OCRWM OQA

J. E. Therien, BSC/QA  
Bettis  
S. C. Richards  
E. E. Franzen

### DCMA

J. A. Morris  
C. A. Robbins  
C. Kancirsk

### KAPL

L. H. Beaty

Persons Visited:

### BWXT

W. D. Nash, Vice President and General Manager  
R. P. Cochrane, Quality Control Manager  
Others as required

## 4.0 REVIEW OF QA SYSTEMS

BWXT provided an overview of their QA systems beginning with a description of how technical and quality requirements are translated into process outlines, routings, operating procedures and drawings. Throughout fabrication, hardware and processes are performed in accordance with prescribed methodologies.

BWXT has detailed inspection procedures and maintains qualified inspectors. Documentation is maintained that illustrates that product meets contract requirements.

The roles of the Bettis and DCMA Resident Offices were discussed. DCMA Resident Office assures that BWXT is performing their work in accordance with BWXT procedures and that product meets technical and quality requirements. Bettis Resident Office is responsible to ensure that BWXT procedures and practices and NNPP requirements reflect the intent of the designer in the final product.

Bettis Laboratory described their role in assuring that design and performance needs are included and controlled by contract requirements. Bettis indicated that they coordinate and work with all entities to ensure that every aspect of the product cycle is adequately addressed.

Most of the time was spent on the shop floor. Some of the QA activities related to core fabrication were observed. These QA activities included:

- Inspections used to verify element identity, dimensions, physical integrity, and loading attributes.
- Preparation and assembly of elements into assembly and the verifications and inspection done to ensure proper assembly.
- Welder and welding procedure qualification.
- Verifications and inspections performed in the core assembly area.
- Internal certification process for each core certification package.

## **5.0 CONCLUSIONS**

Observation of QA process and practices used in the fabrication of Naval reactor cores at BWXT indicated that the NNPP QA Program is being implemented. Procedures and processes are very detailed in the manufacture of product. Documentation is precise and demonstrable. Based on the activities observed during this visit, the NNPP QA Program and its implementation remain acceptable to OCRWM.