

ORGANIZATION: PERFORMANCE CONTRACTING, INC.  
SHAWNEE MISSION, KANSAS

REPORT NO.:99901208/90-01	INSPECTION DATE: July 19-20, 1990	INSPECTION ON-SITE HOURS: 8
CORRESPONDENCE ADDRESS: Performance Contracting, Inc. Post Office Box 2198 Shawnee Mission, Kansas 66201		
ORGANIZATIONAL CONTACT: Joseph Ganote, Jr., Quality Assurance Manager TELEPHONE NUMBER: (913) 888-8600		
NUCLEAR INDUSTRY ACTIVITY: Insulation systems and associated support structures for piping and equipment within containments of nuclear power plants.		
ASSIGNED INSPECTOR:	<u>Randolph N. Moist</u> Randolph N. Moist, Reactive Inspection Section No. 2 (RIS-2), Vendor Inspection Branch (VIB)	<u>10/3/90</u> Date
OTHER PERSONNEL:		
APPROVED BY:	<u>AWilson</u> for Chris A. VanDenburgh, Section Chief, RIS-2, VIB	<u>10/3/90</u> Date
INSPECTION BASES AND SCOPE:		
A. <u>BASES</u> : 10 CFR Part 21 and 10 CFR Part 50, Appendix B.		
B. <u>SCOPE</u> : (a) Review Performance Contracting, Inc. (PCI), test laboratory reports relating to physical and chemical attributes of fasteners used in NUKON insulation system support structures, (b) determine if fasteners are used in safety-related applications, (c) review purchase documentation from licensees to PCI and from PCI to subvendors, and (d) determine if licensees were supplied suspect fasteners.		
PLANT SITE APPLICABILITY: The following nuclear power facilities use frictional support rings on vessels to support NUKON insulation systems; Callaway (50-483); Calvert Cliffs, Units 1 and 2 (50-317/50-318); Indian Point, Units 2 and 3 (50-247/50-286); McGuire, Units 1 and 2 (50-369/50-370); Millstone,		

REPORT  
NO.: 99901208/90-01

INSPECTION  
RESULTS:

PAGE 2 of 5

Unit 2 (50-336); Seabrook, Unit 1 (50-443); South Texas, Units 1 and 2 (50-498/50-499); St. Lucie, Unit 2 (50-389); Three Mile Island, Unit 1 (50-289); Turkey Point, Unit 4 (50-251); Vogtle, Units 1 and 2 (50-424/50-425); and Wolf Creek, Unit 1 (50-482).

A. VIOLATIONS:

None

B. NONCONFORMANCES:

None

C. UNRESOLVED ITEMS:

None

D. STATUS OF PREVIOUS INSPECTION FINDINGS:

None

E. INSPECTION FINDING AND OTHER COMMENTS:

1. Entrance and Exit Meetings

The NRC inspection and investigation team informed Mr. Ganote (Quality Assurance/Control Manager) during the entrance meeting held on July 19, 1990, of the scope of the NRC visit; our concerns relating to the use and condition of unknown or suspect bolting material supplied to nuclear power plant facilities; and the records desired by the inspection team for this inspection. The NRC inspector summarized the results of the inspection to Mr. Ganote during the exit meeting conducted on July 20, 1990.

2. Background

On May 25, 1990, PCI notified the NRC, via a precautionary 10 CFR Part 21 report, of an activity which could result in an unknown or suspect condition of bolting materials provided to several operating nuclear power plant facilities. The 10 CFR Part 21 report was submitted as a result of a newspaper article published by the Kansas City Star on May 18, 1990. The newspaper article indicated an apparent suspicion on behalf of the U.S. Customs Service regarding the authenticity

and reliability of bolting materials imported and distributed by ISSCO, Inc. (ISSCO)), of Lee's Summit, Missouri. PCI submitted the 10 CFR Part 21 report because PCI procures bolting materials from ISSCO for use in support structures for NUKON Insulation Systems (NIS).

3. Procurement Activities

a. NUKON Insulation System and Support Structures

NIS consists of high-temperature, fibrous glass insulation enclosed in woven, fibrous glass fabric to form a resilient, thermal-insulation wrap for reactor containment building area pipes, fittings and equipment of any size and configuration. Typical equipment includes steam generators, recirculation pumps, reactor vessels, and pressurizers. Typical piping includes steam generator letdown piping, reactor coolant system (RCS) piping, steam generator steam lines, and pressurizer surge lines. The insulation is procured from Owens Corning Fiberglass Corporation.

The support structures used to hold the insulation on steam generators and pressurizers are comprised of NUKON support rings. Each NUKON support ring is made up of NUKON ring segments. The NUKON ring segments are attached by spring-loaded coupling devices. The bolting used for attaching the coupling devices are ASTM A-449 half-inch, hex-head carbon steel bolts of various lengths depending on the application.

The piece parts that are used in fabricating the support structures for the NIS are procured from PCI's sub-tier suppliers. The NRC inspectors focused their review on the bolting materials used in the NUKON ring segments.

All carbon steel bolts are procured from ISSCO. The only supplier that ISSCO has used to procure the above mentioned bolts is INFASCO, a Canadian manufacturer. INFASCO identifies their bolts used in this application with a hollow triangle marking on the head of the bolt.

ORGANIZATION: PERFORMANCE CONTRACTING, INC.  
SHAWNEE MISSION, KANSAS

REPORT  
NO.: 99901208/90-01

INSPECTION  
RESULTS:

PAGE 4 of 5

The NRC team reviewed Baltimore Gas and Electric Company Purchase Order (PO) No. 28533MX, dated April 14, 1989, issued to PCI specifying NUKON thermal insulation for use on the steam generators at Calvert Cliffs, Unit 2. The PO imposed 10 CFR Part 50, Appendix B and 10 CFR Part 21. PCI's nuclear specification/order review form was reviewed for this PO to verify that all the requirements of the PO were incorporated into the review form. The review form was a standard form used by PCI to document their review of POs received from their customers.

PCI issued PO No. 90-11079, dated May 4, 1990, to ISSCO requesting carbon steel bolts. This PO imposed the requirements of 10 CFR Part 21 and PCI's product specification standard (PSS) No. B-7 titled, "NUKON Carbon Steel Bolts," on ISSCO. PSS No. B-7 addressed the materials of construction, and the ordering, packaging, shipping, and certification requirements. The NRC inspectors reviewed both this PO and ISSCO's Certificate of Quality Conformance that was issued to PCI. The inspectors determined that the certificate issued by ISSCO met all the requirements of PCI's PO. The NRC inspectors reviewed INFASCO's Mill Test Report for Lot No. 90-05-82012 (Heat No. A00777, dated June 12, 1990) which showed chemical analyses and mechanical properties for half-inch, hex-head cap screws. The inspectors did not review the basis for PCI's use or acceptance of the ISSCO certificates and test reports.

b. Testing of Bolting Material

In order to verify that the bolting materials met the specifications for both physical and chemical properties, PCI sent the following material from their stock to an independent testing laboratory (Laboratory Testing, Inc.):

<u>PO/Date</u>	<u>Size</u>	<u>Sample Description</u>	<u>Lot</u>
L65-2212 6/5/90	62pcs	½"-13 UNC x 4" long carbon steel bolt (ASTM A449-89 Type 1)	MRR-LX-752

REPORT  
NO.: 99901208/90-01

INSPECTION  
RESULTS:

PAGE 5 of 5

<u>PO/Date</u>	<u>Size</u>	<u>Sample Description</u>	<u>Lot</u>
L65-20823 6/15/90	3pcs	1/2-13 x 1-1/2" long carbon steel bolt (ASTM A449-89, Type 1 SAE J429, Grade 5)	MRR-LX-739

With respect to PO L65-2212, chemical and physical analyses were performed on two samples. The results of the analyses met the requirements of ASTM A449-89. The remaining 60 samples were then subjected to Rockwell hardness testing. All of these samples were found to be in conformance with ASTM A449-89. With respect to PO L65-20823, chemical analysis was performed on all three samples, tensile testing was performed on one sample and Rockwell hardness testing was performed on one sample. The results of the analyses met the requirements of ASTM A449-89 and SAE J429, Grade 5. PCI also had 16 half-inch carbon steel double-tab weld nuts required to meet ASTM A576-79 and 20 half-inch carbon steel, hex-head nuts required to meet SAE J995, Grade 5, tested by the same laboratory with no failures. The nuts were also supplied by ISSCO. Based on the independent testing by PCI and the inspectors review of the procurement records and test results, it appears that the bolts supplied to PCI by ISSCO conformed to the purchase specifications.

F. PERSONNEL CONTACTED

PCI

#* J. Ganote, Jr.	Quality Assurance/Control Manager Power and Process Division
#* G. Pinsky	General Manager, Engineered System Division
# G. Hart	Manager, Technical Services Power and Process Division
# J. Sprowls	QA, Supervisor Power and Process Division

# Present during entrance meeting  
\* Present during exit meeting