

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 5, 2010

The Honorable Inés R. Triay
Assistant Secretary for Environmental
Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0113

Dear Dr. Triay:

The Defense Nuclear Facilities Safety Board (Board) recently completed a review of the quality assurance aspects of the hydrogen in pipes and ancillary vessels (HPAV) experimental test program supporting development of a revised safety design strategy for use in the Waste Treatment and Immobilization Plant (WTP). The Board understands that this test program forms the technical basis for Bechtel National Incorporated's (BNI) recent proposal to modify the safety design strategy for control of hydrogen in pipes in the design of WTP. The Board observed quality assurance problems which, if not corrected, have the potential for substantial impact on the technical validity of testing in support of the revised HPAV strategy for WTP. Two specific deficiencies noted for the WTP test program are:

- BNI did not impose the quality assurance requirements cited in Department of Energy (DOE) Order 414.1C, *Quality Assurance*, upon Dominion Engineering Incorporated (DEI), BNI's subcontractor for the HPAV test program. Consequently, DEI and its subcontractor did not use the order's quality assurance requirements, including those related to safety software, for the HPAV test program. This challenges the reliability and usefulness of the data resulting from the test program in demonstrating the safety of this aspect of the HPAV design.
- BNI bases its quality assurance program requirements for the procurement of all categories of supplies and services on the American Society of Mechanical Engineers (ASME) standard for nuclear quality assurance (NQA-1-2000). The Board supports the use of NQA-1-2000 for the WTP project; however, BNI did not properly implement the quality assurance requirements of NQA-1-2000, Part I, for the HPAV test program.¹ Specifically, NQA-1-2000, Part I, consists of 18 requirements; 15 of these contain detailed requirements in addition to a basic initial introductory-level expectation paragraph. Implementation of the detailed requirements is necessary to ensure full compliance with the NQA-1 standard. BNI has only required its subcontractors to meet the basic paragraph for each of the applicable Part I

¹Parts II through IV provide nonmandatory guidance for implementation of the Part I requirements.

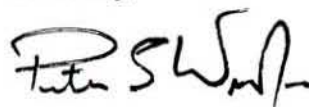
requirements (Paragraph 100, *Basic*), which does not provide the rigor necessary to ensure quality work.

The Board believes this approach is (1) inconsistent with the intent of the ASME NQA-1 Code and Standards Committee, (2) fails to meet the requirements established in DOE Order 414.1C, and (3) produces a flawed quality assurance program. An initial discussion with NQA-1 code committee members confirmed that invoking only the basic introductory-level expectation for requirements of the standard is not consistent with the intent of the standard.

Further, the Board is concerned that the practice of only invoking Paragraph 100, *Basic*, is being applied to other DOE-Office of Environmental Management (DOE-EM) projects. For example, DOE-EM headquarters personnel corrected a similarly defective approach of only invoking the basic paragraph of the NQA-1 standard at the Savannah River Site in August 2008.²

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a written response within 60 days of receipt of this letter that addresses the quality assurance and safety concerns discussed above, including flow down of quality assurance requirements to subcontractors and more rigorous application of consensus quality standards (i.e., ASME NQA-1) to contractor and subcontractor quality assurance programs. This response should: (1) delineate DOE-EM's policy regarding the application of consensus quality assurance standards in quality assurance programs for WTP and across DOE-EM; (2) describe DOE-EM's approach to ensuring that the quality assurance requirements of DOE Order 414.1C are flowed down to DOE-EM's contractors and their subcontractors (e.g., BNI and its subcontractors for WTP); (3) provide an assessment of the flow down of requirements and proper application of consensus standards in contractor quality assurance programs for DOE-EM design and construction activities to determine the state of compliance with the requirements of DOE Order 414.1C; and (4) describe actions taken by DOE-EM to correct any noted deficiencies.

Sincerely,



Peter S. Winokur, Ph.D.
Chairman

c: Ms. Shirley J. Olinger
Ms. Colette Broussard
Mr. Andrew Wallo, III

² Deputy Assistant Secretary for Safety Management and Operations, Environmental Management, *Supplier Audit Report Transmittal for Newport News Industrial Corporation*, August 25, 2008.