



U.S. Department of Energy  
**Office of River Protection**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

08-ESQ-119

Mr. L. J. Simmons, Project Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Dear Mr. Simmons:

CONTRACT NO. DE-AC27-01RV14136 – ASSESSMENT OF BECHTEL NATIONAL, INC.  
(BNI) CLOSURE OF PROCUREMENT QUALITY ISSUES, A-08-ESQ-RPPWTP-006

Reference: ORP letter from J. R. Eschenberg to C. M. Albert, BNI, “Need for Action to  
Resolve Procurement Quality Issues,” 06-WTP-153, dated November 2, 2006.

This letter forwards the results of the U.S. Department of Energy, Office of River Protection (ORP) assessment of the closure of four procurement issues described in the Reference. The assessment was conducted January 14 through 31, 2008, and resumed April 1 through May 15, 2008. The assessment closed all four issues, but identified one new finding.

The assessors found that BNI had not completed one corrective action, and the assessors documented this in the new finding. Because the corrective actions were incomplete, BNI had incorrectly closed a Corrective Action Report and recommended to ORP closure of the associated Price-Anderson Amendments Act Non-compliance Tracking System (NTS) report NTS-RP--BNRP-RPPWTP-2005-0003, “Application of Appropriate Quality Levels.” When the assessment team brought this to the attention of BNI management, BNI verified completion of the corrective action. BNI and ORP subsequently re-opened the NTS report to enable correctly documenting closure actions.

Within 30 days of receipt of this letter you should respond to the assessment finding. For the finding, your response should include:

- The causes of the finding;
- The corrective actions that have been taken to control or remove any adverse impact from non-compliant conditions (remedial actions) and the results achieved;
- The corrective actions that will be taken to identify the extent of condition, correct the cause(s), and prevent further findings; and
- The date when all corrective actions will be completed, verified, and compliance to applicable requirements achieved.

Mr. L. J. Simmons  
08-ESQ-119

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If you have any questions, please contact me, or your staff may contact Patrick P. Carier, Team Lead, Quality Assurance Team, (509) 376-3574.

Sincerely,

ESQ:PPC

John R. Eschenberg, Acting Assistant Manager  
Waste Treatment and Immobilization Plant

Attachment

cc w/attach:

W. S. Elkins, BNI

D. J. Jantosik, BNI

D. E. Kammenzind, BNI

D. J. Pisarcik, BNI

BNI Correspondence

U.S. DEPARTMENT OF ENERGY  
Office of River Protection  
Environmental Safety and Quality

ASSESSMENT: Closure of Procurement Quality Issues

REPORT: A-08-ESQ-RPPWTP-006

FACILITY: Waste Treatment and Immobilization Plant

LOCATION: Richland, Washington

DATES: January 14 through 31, 2008; April 1 through May 15, 2008

ASSESSORS: David H. Brown, Lead Assessor  
Ronald Schrotke, Assessor

APPROVED BY: Patrick P. Carrier, Lead  
Quality Assurance Team

## Executive Summary

The U.S. Department of Energy (DOE), Office of River Protection (ORP) conducted a follow-up assessment of Bechtel National, Inc. (BNI), to close a series of ORP issues regarding the procurement of the Integrated Control Network (ICN) for the Hanford Tank Waste Treatment and Immobilization Plant (WTP). This assessment evaluated BNI's corrective actions for the assessment issues.

The four ORP issues and the assessment team's evaluation are:

**Issue 1:** BNI had no documentation, internal or external, justifying the downgrade of the ABB Automatic, Inc. (ABB) ICN procurement from Quality Level 3 to Commercial Material (CM).

- An Authorization Basis Amendment Request was not submitted when the quality level was changed.
- Other systems and components may have been downgraded without documentation or required approvals.

Assessment conclusion – BNI's corrective actions adequately addressed this issue and its sub-elements, and it is closed.

**Issue 2:** BNI did not conduct the supplier evaluation of ABB required by 10 Code of Federal Regulations (CFR) 830, Subpart A. This was because the system had been classified CM, but CM classification did not obviate the regulatory requirements in a nuclear facility. Other procurements of CM for nuclear applications may have been placed without a supplier evaluation.

Assessment conclusion – BNI's corrective actions adequately addressed this issue and its sub-elements, and it is closed.

**Issue 3:** The portions of the ICN identified as Additional Protection Class (APC) were required to apply software requirements for Level B safety software as defined in DOE G 414.1-4, "Safety Software Guide for use with 10 CFR 830 Subpart A and DOE O 414.1C," "Quality Assurance."

- BNI appeared not to be applying these requirements to the ICN.
- BNI may not have been applying these requirements to other software systems classified as APC.

Assessment conclusion – This issue was not valid. DOE G 414.1-4 was not in BNI's contract and, as a guide, did not specify requirements. Also, BNI had not yet implemented DOE O 414.1C, "Quality Assurance." DOE was tracking BNI's implementation of DOE O 414.1C separately, and there is no reason to also track that activity by keeping this issue open. The

implementation process for DOE O 414.1C will require BNI to determine how to apply the guidance of DOE G 414.1-4 to all WTP software, including software for the ICN.

**Issue 4:** ORP was concerned with the overall coherence of the BNI quality level system, even after some improvements. For example, Procedure 24590-WTP-GPG-M-036, “Determining Quality and Seismic Classification of Sub-Components, Assemblies, Sub-Assemblies, and Parts,” stated that Safety Significant items were normally procured applying International Standards Organization 9000. This was inconsistent with the Quality Assurance Manual.

- Parts or equipment for Safety Significant systems may have been procured to incorrect quality requirements.
- Other procedures implementing the safety classification and quality level systems may contain errors or inconsistencies.

Assessment conclusion – The assessment found that BNI had not completed the corrective action for this issue, although they did complete it when the assessment team brought the problem to BNI management’s attention. This issue is closed. However, because BNI incorrectly reported the action complete and closed a Corrective Action Report (CAR), they incorrectly reported to ORP that the associated Price-Anderson Amendments Act Non-compliance Tracking System (NTS) report was ready for closure. The assessment team documented the new issue in an assessment finding as follows:

**Finding A-08-ESQ-RPPWTP-006-F01 – BNI closed a CAR and reported the associated NTS report corrective actions were complete when some actions were incomplete.**

The NTS report was NTS-RP--BNRP-RPPWTP-2005-0003, “Application of Appropriate Quality Levels,” and the incomplete actions were to resolve the status of some Important to Safety pipe spools that were purchased on CM purchase orders.

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## List of Acronyms

ABAR	Authorization Basis Amendment Request
ABB	ABB, Inc. (Previously known as ABB Automation, Inc.)
APC	Additional Protection Class
BNI	Bechtel National, Inc.
CFR	Code of Federal Regulations
CIS	Component Information System
CM	Commercial Material
CAR	Corrective Action Report
DOE	U.S. Department of Energy
ICN	Integrated Control Network
NTS	Non-compliance Tracking System
ORP	Office of River Protection
PAAA	Price-Anderson Amendments Act
PIER	Project Issues Evaluation Report
QL-3	Quality Level 3
SSC	Structures, Systems, and Components
WTP	Waste Treatment and Immobilization Plant

# **U.S. Department of Energy (DOE), Office of River Protection (ORP) Assessment of Bechtel National, Inc. (BNI) Response to ORP Procurement Issues**

## **1.0 Details**

This assessment evaluated the BNI response and completed corrective actions for ORP issues identified in an ORP letter from John R. Eschenberg to C. M. Albert, BNI, “Need for Action to Resolve Procurement Quality Issues,” 06-WTP-153, dated November 2, 2006. The issues resulted from inquiries into the purchase of the Integrated Control Network (ICN) from ABB Automatic, Inc. (ABB). BNI presented their response in a BNI letter from C. M. Albert to J. R. Eschenberg, ORP, “Response to Need for Action to Resolve Procurement Quality Issues,” CCN 133082, dated November 22, 2006.

### **1.1 DOE Issues**

**Issue 1:** BNI has no documentation, internal or external, justifying the downgrade of the ABB ICN procurement from Quality Level-3 (QL-3) to Commercial Material (CM).

- An Authorization Basis Amendment Request (ABAR) was not submitted when the quality level was changed.
- Other systems and components may have been downgraded without documentation or required approvals.

**BNI Response:** In CCN 133082, BNI stated the following:

An ABAR was not required because changing the quality level of the ICN did not constitute a change in the safety basis. ABARs were only required for changes in the safety basis.

To respond to ORP’s question about the extent of condition of inappropriately downgraded items, BNI committed to the following:

- “BNI has identified approximately 2400 components in the Component Information System (CIS) that are now CM but had been some variation of Q in the past (QL-1, QL-2 or QL-3). BNI will evaluate these changes and confirm that the changes were consistent with project procedures and properly documented.”
- “BNI has identified approximately 175 CM components in the INtools database that have been delivered to WTP. These components will be evaluated to confirm that none were downgraded from Q contrary to project procedures or without appropriate documentation.”



- “BNI will identify the Part 1 Safety Evaluations that document changes in safety classification. For changes that resulted in Safety Design Class/Safety Class or Safety Design Significant/Safety Significant Structures, Systems, and Components (SSCs) becoming either Additional Protection Class APC or non-ITS, BNI will evaluate these changes and confirm that the changes were consistent with project procedures and properly documented.”

**Evaluation and Conclusion:** The assessment agreed that an ABAR was not required when the quality level of the ICN was downgraded.

The assessment team reviewed record material, including condition reports, memoranda and attachments, emails, and subcontractor change notices for the other corrective actions. The assessment team also interviewed BNI staff. The assessment determined that BNI had completed the corrective actions appropriately.

Issue 1 is closed.

**Issue 2:** BNI did not conduct the supplier evaluation of ABB required by 10 Code of Federal Regulations (CFR) 830, Subpart A. This was because the system had been classified CM, but CM classification does not obviate the regulatory requirements in a nuclear facility. Other procurements of CM for nuclear applications may have been placed without a supplier evaluation.

**BNI Response:** In CCN: 133082, BNI provided a rationale for why they believed they had done an adequate supplier evaluation of ABB. They also committed to perform a program assessment.

**Evaluation and Conclusion:** The assessment team reviewed record material (including compliance report and assessment report) and interviewed responsible BNI personnel. The assessment team found BNI had completed the corrective actions committed in CCN: 133082. The assessment team agreed that, while BNI had not performed a supplier evaluation that would be adequate for purchasing safety equipment, they did evaluate the supplier as required by 10 CFR 830, Subpart A and DOE supplier quality requirements that existed at the time of the purchase. The assessment team also reviewed the BNI assessment report of 24590-WTP-MAR-QA-07-0002, Revision 0, “Confirmation of WTP Compliance with 10 CFR 830 Requirements for Supplier Evaluation.” The assessment team agreed BNI had performed a program assessment as committed in their response.

At the time of this ORP assessment it was unclear whether the ICN would be identified as either Immobilized High Level Waste-affecting or safety equipment. In either case BNI will need to apply additional quality requirements to the software, possibly by applying the requirements in NQA-1 for “otherwise acquired software.” Final resolution of this is not required to close Issue 2.

Issue 2 is closed.

**Issue 3:** The portions of the ICN identified as Additional Protection Class (APC) are required to apply software requirements for Level B safety software as defined in DOE G 414.1-4, “Safety Software Guide for use with 10 CFR 830 Subpart A and DOE O 414.1C, “Quality Assurance.”

- BNI appears not to be applying these requirements to the ICN.
- BNI may not be applying these requirements to other software systems classified as APC.

**BNI Response:** The BNI response stated, “24950-WTP-RITS-QAIS-06-086 tracks the implementation of DOE O 414.1C. Implementation activities will include a gap analysis between DOE O 414.1C requirements and current QAS software requirements. Additional actions will be identified and tracked as implementation proceeds.”

**Evaluation and Conclusion:** While the assessment team reviewed BNI documents and interviewed BNI personnel, the assessment team also determined that the original ORP issue was not valid. This assessment is closing Issue 3 because the ORP letter failed to recognize that DOE G 414.1-4 did not contain any requirements, and because BNI had not yet implemented DOE O 414.1C, “Quality Assurance.” BNI will determine how to apply the guidance of DOE G 414.1-4 during the course of implementing DOE O 414.1C. The ICN software is not unique, and BNI has not yet specified how to apply this guidance to any software. There is no need to track implementation of DOE O 414.1C separately from BNI’s existing contractual commitment.

Issue 3 is closed.

**Issue 4:** The DOE ORP was concerned with the overall coherence of the BNI quality level system, even after improvements. For example, Procedure 24590-WTP-GPG-M-036, “Determining Quality and Seismic Classification of Sub-Components, Assemblies, Sub-Assemblies, and Parts,” stated that Safety Significant items were normally procured applying International Standards Organization 9000. This was inconsistent with the Quality Assurance Manual.

- Parts or equipment for Safety Significant systems may have been procured to incorrect quality requirements.
- Other procedures implementing the safety classification and quality level systems may contain errors or inconsistencies.

**BNI Response:** BNI acknowledged that Procedure 24590-WTP-GPG-M-036 was in error, but they had corrected it. The response described the BNI quality level system as it existed at the time the response was submitted, although it had evolved considerably since then.

The BNI response agreed that it was appropriate to thoroughly evaluate the extent of potential discrepancies through the following actions:

- “WTP screened all tagged SSCs to ensure there were no discrepancies in quality level for SSCs on order, in inventory, or installed. These actions were documented in the closure actions for Corrective Action Report (CAR) 24590- WTP-CAR-QA-05-083 and verified by WTP QA prior to CAR closure on 09 June 2006.”
- “WTP staff initiated Project Issues Evaluation Report (PIER) 24590-WTP-PIER-MGT-06-0125 on 08 August 2006 to elevate a lack of clarity regarding how the APC defense-in-depth safety function is to be applied to instrumentation in the design. To resolve the PIER, a white paper will be prepared and issued to describe an approach for identifying APC instruments and for establishing the required documentation so that configuration management can be maintained during design and throughout the life of the plant. The intent is to facilitate preparation of an approach that can be consistently applied, that satisfies applicable authorization basis requirements, and that meets the needs of the design, safety, and operations organizations. Once the white paper has been issued, BNI will identify additional issues and develop of a schedule for resolution.”
- “Evaluation and revision of Engineering discipline guides to clarify the communication of requirements and ensure adequacy through review by WTP QA and Engineering Process Assurance (if not already reviewed previously) is in progress under 24590-WTP-CAR-QA-06-134. CAR closure requires that each discipline revise its Guides by 16 April 2007. This action addresses ORP’s concern with the overall coherence of the BNI quality level system.”
- “CAR 24590-WTP-CAR-05-331, Action 31 requires that Engineering review and revise the Engineering Department Process Instructions that implement AB and quality program requirements, as necessary, to align with revised project procedure format and content requirements. This action addresses ORP’s concern that other procedures may contain errors or inconsistencies that could affect the safety classification and/or quality levels for materials or equipment.”

**Evaluation and Conclusion:** The assessment team reviewed record material, including CARs, memoranda and attachments, emails, and PIERs for these corrective actions. The assessment found that other ORP initiatives, along with implementation of NQA-1-2000, had caused the BNI quality level system to evolve from the time of the response, so that most of the response was no longer meaningful. However, BNI’s commitment to determine extent of condition was still important, and the assessment evaluated BNI’s actions. The assessment found that BNI had not completed a corrective action until prompted by the assessment team.

BNI accepted the reported completion of corrective action item CAR-83-24 based on a statement in BNI Engineering memorandum, Steve Lynch to Jeff Monahan, “Closure of CAR 083 Action 24 ‘Screening of all Tagged SSE,’” CCN: 136983, dated March 8, 2006. This document stated, “As a result of the equipment screening there were 90 pipe

spools found that have a ‘Q’ level in CIS but were received from a P.O. with a CM designator. These are included in Appendix B. These are indentified and are addressed as follows: ... Twelve of the 28 are related to lines, which were upgraded after the spool was issued. Status of the lines is being investigated to ensure the hold process was applied effectively.”

BNI Engineering told the assessment team they had not verified the hold process at the time of this assessment. The investigation was incomplete at the time the CAR was closed, and, two years later when ORP conducted this assessment, BNI had still not completed the action to ensure the hold process was applied effectively.

BNI used closure of CAR 05-03 as the basis for notifying ORP that Price-Anderson Amendments Act (PAAA) Non-compliance Tracking System (NTS) report NTS-RP--BNRP-RPPWTP-2005-0003, “Application of Appropriate Quality Levels,” was complete, causing DOE to inappropriately close the NTS report. Because corrective actions were incomplete, BNI should not have closed CAR 24590- WTP-CAR-QA-05-083 and should not have reported to DOE that the corrective actions for NTS-RP--BNRP-RPPWTP-2005-0003 were complete. The assessment team documented this issue in Finding A-08-ESQ-RPPWTP-006-F01.

When the assessment team brought this issue to the attention of BNI management, they investigated it and determined that all the material in question was adequately controlled to prevent inappropriate installations. BNI Engineering documented the investigation and its results in Engineering memorandum CCN: 170980, Mari R. Wilson to David Pisarcik, “CAR-05-083 Spool Data Report,” dated May 15, 2008. The memorandum documented the pipe spools, their locations, and the controls to prevent their installation. The assessment team concluded that BNI had adequately controlled the pipe spools to prevent their installation. BNI also documented the inappropriate closure of the NTS report in a PIER and in a Corrective Action Report, and then re-opened the NTS report.

Issue 4 is closed, although there is a new finding.

## **2.0 Findings**

**Finding A-08-ESQ-RPPWTP-006-F01 – BNI closed a CAR and reported the associated NTS report corrective actions were complete when some actions were incomplete.**

### **Requirements:**

- a. 24590-WTP-QAM-QA-01-001, Revision 7b, “Quality Assurance Manual,” Policy Q-16.1, “Corrective Action,” Section 2.5 stated, “Implementation of the required corrective action(s) is to be performed, documented, and verified by the responsible organization.”
- b. 24590-WTP-QAM-QA-01-001, Revision 7b, “Quality Assurance Manual,” Policy Q-16.1, “Corrective Action,” Section 3.4.1 stated, “Completion of corrective actions shall be verified.”

## Discussion:

Contrary to these requirements, BNI closed CAR 24590-WTP-CAR-QA-05-083, “Gaps in the Migration of Quality Level Information from Design Documents to Procurement Documents” and reported to ORP that the corrective actions for PAAA NTS Report NTS-RP--BNRP-RPPWTP-2005-0003, “Application of Appropriate Quality Levels,” were complete, when some actions were incomplete. The assessment team based its conclusions on the following:

- CAR-05-83 was closed, even though a memorandum used to justify completion of action CAR-83-24 stated, “Twelve of the 28 are related to lines which were upgraded after the spool was issued. Status of the lines is being investigated to ensure the hold process was applied effectively.” The investigation was still incomplete approximately two years after the CARS was closed. The memorandum was CCN: 136983, dated March 8, 2006.
- BNI submitted to DOE an NTS closure package for NTS Report NTS-RP--BNRP-RPPWTP-2005-0003 in 2006, even though corrective action CAR-83-24 was incomplete.
- BNI Engineering management told the assessment team that the action was still incomplete at the time of this assessment fieldwork.

### 3.0 Conclusion

With the exception of Issue 4, the assessment team found that the information BNI presented during the assessment demonstrated that BNI had addressed the ORP issues. In response to questions posed by the assessment team concerning Issue 4, BNI established that some material in question was adequately controlled to prevent installation. This was several lots of “Q” pipe spools that had been purchased from CM suppliers. While the issues of the original ORP letter are closed, there is one new finding that a CARs and an NTS report were closed when some actions were incomplete.

## Signatures

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David H. Brown,  
Lead Assessor

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Patrick P. Carrier, Lead  
Quality Assurance Team

## Appendix A – Documents Reviewed

- ORP letter from J. R. Eschenberg to C. M. Albert, BNI, “Need for Action to Resolve Procurement Quality Issues,” 06-WTP-153, dated November 2, 2006.
- BNI letter from C. M. Albert to J. R. Eschenberg, ORP, “Response to Need for Action to Resolve Procurement Quality Issues,” CCN:133082, dated November 22, 2006.

### Issue 1

- CCN: 148790 – Email, January 31, 2007, From: Robert Harshberger, To: David Pisarcik.
- CCN: 149580 – Memorandum, January 11, 2007, From: Tony Martinolich, To: Klemme Herman.
- CCN: 148979 – Email, December 20, 2006, From: Stanley R. Crow, To: Bruce R. Wagner.
- CCN: 150882 – Email, January 30, 2007, From: Gerald Gauden, To: Mark W. Hoffman.
- CCN: 148791 – Email (and attachments), January 31, 2007, From: Bruce R. Wagner, To: David Pisarcik, et.al.
- CCN: 148989 – Memorandum, December 12, 2006, From: Mark Platt, To: Dennis Klein.
- CCN: 149007 – Memorandum, January 31, 2007, From: Mark Platt, To: Dennis Klein.
- CCN: 145492 – Memorandum, December 13, 2006, From: Tony Martinolich, To: Klemme Herman.
- CCN: 149963 – Report, January 30, 2007, From: W. S. Elkins, To: R. J. Schepens.

### Issue 2

- CCN: 154208 – Email, May 23, 2007, From: Yvonne Dirksen, To: WTP PDC, Stephen Lynch, et. Al.
- 24590-WTP-MAR-QA-07-002, Revision 0, Assessment Report, “Confirmation of WTP Compliance with 10 CFR 830 Requirements for Supplier Evaluation.”

#### Issue 4

- CAR-05-83 – Assigned to: Jeffery Monahan, Completed: February 13, 2006 – Memorandum: March 8, 2006, From: Jeff Monahan, To: Steve Lynch.
- 24590-WTP-PiER-MGT-06-0125 – Assigned to: Andrew Larson, Close: December 12, 2006 – Report: 24590-WTP-RPT-ENS-06-004, Revision 0, December 11, 2006, Author: Richard I. Smith.
- CAR-06-134 – converted to – 24590-WTP-CAR-QA-06-134, Revision 0 – Assigned to: Heather Moorman, Completed: August 8, 2006.
- CCN: 136983 – BNI Engineering memorandum from Jeff Monahan to Steve Lynch, “Closure of CAR 083 Action 24, Screening of All Tagged SSC,” dated March 8, 2006.
- BNI Engineering memorandum, Mari R. Wilson to David Pisarcik, “CAR-05-083 Spool Data Report,” CCN: 170980, dated May 15, 2008.
- 24590-WTP-PiER-MGT-08-0944, Revision 0, dated May 28, 2008.
- 24590-WTP-CRPT-QA-08-243, Revision 0, “Tagged SSCs in CAR 05-083,” dated June 22, 2008.

## **Appendix B – Personnel Interviewed**

BNI Engineering Processes Manager

BNI Quality Assurance Coordinator

BNI Manager of Quality and Performance Assurance