



U.S. Department of Energy

~~OFFICE OF RIVER PROTECTION~~

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05-ESQ-056

Mr. J. P. Henschel, Project Director  
Bechtel National, Inc.  
2435 Stevens Center  
Richland, Washington 99352

Dear Mr. Henschel:

CONTRACT NO. DE-AC27-01RV14136 – ASSESSMENT REPORT A-05-ESQ-RPPWTP-006  
– ASSESSMENT OF THE BECHTEL NATIONAL, INC. (BNI) CORRECTIVE ACTION  
MANAGEMENT PROGRAM


This letter forwards the results of the U.S. Department of Energy (DOE), Office of River Protection (ORP) assessment of the BNI Corrective Action Management Program conducted from August 9 through 18, 2005 (attached).

The assessment team concluded BNI had implemented the requirements of 24590-WTP-QAM-01-001, Revision 6, "Quality Assurance Manual," for corrective action management; however, they identified a number of program implementation weaknesses. The Team identified instances where corrective actions did not consistently prevent recurrence of exact or like problems. An example cited in the assessment report is associated with the many gravity drop events. The recurrence of problems is indicative of limited or narrowly focused corrective actions and an ineffective process for determining corrective action effectiveness. The Team noted improved event Root Cause Analysis and the timeliness of associated corrective actions. The assessors identified one Finding and five Observations.

No response to the Findings is required, since BNI has subsequently issued a Corrective Action Report with timely actions that should prevent recurrence. BNI is not required to respond to the Observations in the attached assessment report. However, ORP encourages BNI to implement actions necessary to continuously improve in the areas noted as requiring improvement. DOE will evaluate effectiveness through routine Facility Representative surveillances.

If you have any questions, please contact me, or your staff may call Robert C. Barr, Director, Office of Environmental Safety and Quality, (509) 376-7851.

Sincerely,

  
Roy J. Schepens, Manager  
Office of River Protection

ESQ:PRH

Attachment

cc: See page 2

Attachment  
05-ESQ-056  
A-05-ESQ-RPPWTP-006

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

ASSESSMENT: Bechtel National, Inc., Corrective Action Management

REPORT: A-05-ESQ-RPPWTP-006

FACILITY: Bechtel National, Inc., Waste Treatment and Immobilization Plant  
Construction

LOCATION: Richland, Washington

DATES: August 9 through 18, 2005

ASSESSORS: Paul R. Hernandez, Lead Assessor  
David H. Brown, Assessor

APPROVED BY: Patrick P. Carrier, Team Lead  
Verification and Confirmation Official

## Executive Summary

From August 9 through 18, 2005, the U.S. Department of Energy, Office of River Protection (ORP) evaluated the Bechtel National, Inc. (BNI) Corrective Action Management Program. The assessment team (Team) evaluated corrective action procedures, examined records, and interviewed staff members to determine BNI was effectively implementing the requirements 24590-WTP-QAM-01-001, Revision 6, "Quality Assurance Manual" (QAM).

The Team concluded BNI had implemented the requirements of 24590-WTP-QAM-01-001, Revision 6, "Quality Assurance Manual" for corrective action management; however, they identified a number of implementation weaknesses. The Team identified corrective actions did not consistently prevent recurrence of exact or like problems. Recurrence of problems is indicative of limited or narrowly focused corrective actions and an ineffective process for determining corrective action effectiveness. The Team noted improved event Root Cause Analysis (RCA) and the associated corrective actions. The assessors identified one Finding and made five Observations.

The Finding (A-05-ESQ-RPPWTP-006-F01) identified BNI had misapplied the Management Suspension of Work process. Specifically, BNI procedures exempted the use of the Management Suspension of Work process from suppliers' activities; however, three of the four work suspensions of the preceding year dealt with suppliers and used the Management Suspension of Work process. Because BNI issued a Corrective Action Report for this Finding with timely actions that should prevent recurrence, no response to the Finding is required.

The Team identified five Observations, which are issues based on the assessors' opinions rather than regulatory or contractual non-compliances. One Observation noted BNI improved its timeliness of implementation of corrective actions stemming from RCA. The following four Observations noted areas requiring improvement:

- The "determination" of some corrective actions, particularly from accident type events (e.g., dropped tool events), were narrowly focused and were not consistently broad or thorough enough to prevent recurrence;
- The accident investigation procedure is not sufficiently detailed to result in a consistent and thorough process;
- Some RCA corrective actions for the dropped equipment were not implemented within their intent; and
- One root cause recommendation took inappropriate credit for a procedure revision in force at the time the problem occurred.

While BNI is not required to respond to these Observations, ORP encourages BNI to implement actions to continuously improve in the areas noted as requiring improvement.

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## List of Acronyms

BNI	Bechtel National, Inc.
CAMP	Corrective Action Management Program
CAR	Corrective Action Report
CY	Calendar Year
DOE	U.S. Department of Energy
ORP	Office of River Protection
QA	Quality Assurance
QAM	Quality Assurance Manual
RCA	Root Cause Analysis
RITS	Recommendations and Issues Tracking System
SCAR	Supplier Corrective Action Report
TEAM	Assessment Team
WTP	Waste Treatment and Immobilization Plant

**Bechtel National, Inc. (BNI)  
Quality Assurance (QA) Assessment  
Corrective Action Management Program (CAMP)**

## **Scope**

From August 9 through 18, 2005, the U.S. Department of Energy (DOE), Office of River Protection (ORP) evaluated the BNI CAMP. The assessment team (Team) evaluated corrective action procedures, examined records, and interviewed staff members to determine if BNI was effectively implementing the requirements 24590-WTP-QAM-01-001, Revision 6, "Quality Assurance Manual" (QAM).

## **Details**

The Team concluded BNI had implemented the requirements of 24590-WTP-QAM-01-001, Revision 6, "Quality Assurance Manual" for corrective action management; however, they identified a number of implementation weaknesses. The Team identified corrective actions did not consistently prevent recurrence of exact or like problems. Recurrence of problems is indicative of limited or narrowly focused corrective actions and an ineffective process for determining corrective action effectiveness. The Team noted improved event Root Cause Analysis (RCA) and the associated corrective actions. The assessors identified one Finding and made five Observations.

## **Corrective Action Reporting and Resolution**

The assessors evaluated the BNI process for reporting and achieving resolution of conditions adverse to both quality and/or safety. Primarily BNI procedures 24590-WTP-GPP-QA-201, "Corrective Action," and 24590-WTP-GPP-SIND-023, Revision 3, "Reporting Occupational Injuries and Illnesses," governed these activities. The first procedure provided the process of correcting quality issues. The second procedure provided a process for identifying causes and corrective actions for safety issues.

The Team concluded the corrective action process continued to comply with the requirements of the QAM with respect to quality issues. This conclusion was based on review of all Corrective Action Reports (CAR) issued in the previous 12 months and a detailed review of 26 CARs. BNI identified conditions adverse to quality, issue causes, and proposed corrective actions. Closure of corrective actions included verification of completion. The Team found significant conditions adverse to quality were subject to a rigorous RCA process. However, the Team determined in some cases the CAMP had not effectively prevented the recurrence of that or similar problems. For example, while BNI had implemented corrective actions for dropped tools and equipment, the corrective actions were narrowly focused, resulting in a continuation of the events. Furthermore, BNI corrective action effectiveness evaluations for these events were not adequate.

The Team made the following two Observations:

Observation (Improvement Achieved): The “timeliness of implementation” of corrective actions from RCA improved since the last assessment. During the October 2004 ORP assessment, the Team identified problems with the implementation of recommendations from RCA. Recommendations were entered into the Recommendation and Issues Tracking System (RITS) system but were not aggressively resolved. BNI corrected this issue.

Observation (Improvement Required): The “determination” of some corrective actions, particularly from accident type events (e.g., dropped tool events), were narrowly focused and were not consistently broad or thorough enough to prevent recurrence. Following the root cause determination of an accident, BNI conducted training to correct the problem(s) using corrective action statements. Too often these corrective action statements were goals rather than corrective actions and therefore, did not prevent recurrence of the issue. For example, the statement “Ensure all known hazards are identified using the ISMS and STARRT process” was a goal instead of a list of corrective actions to achieve the desired outcome.

Observation (Improvement Required): The accident investigation procedure is not sufficiently detailed to result in a consistent and thorough process. The Team found the procedure focused on identifying organizational responsibilities and did not clearly identify the steps required to conduct the investigation. BNI adherence to the procedure was also inconsistent. For example, BNI did not number reports in the manner apparently intended by the procedure’s investigation form.

### **Root Cause Analysis of Significant Conditions Adverse to Quality and Safety**

To assure completion of corrective action and closure of issues, BNI implemented the requirements of the QAM for RCA for significant conditions adverse to quality through procedures 24590-WTP-GPP-MGT-015, “Root Cause Analysis,” 24590-WTP-GPP-MGT-002, “Recommendation and Issue Tracking System,” and 24590-WTP-GPP-QA-201, “Corrective Action.”

The Team reviewed all root cause analyses (seven) performed since the last ORP assessment of BNI CAMP. The Team found BNI complied with the QAM and contract requirements. BNI translated recommendations into corrective actions and tracked the corrective actions to closure using the CAR as the administrative tool. The Team noted RCA team leads and analysts had been trained and applied recognized analytical tools in conducting RCAs. BNI management of recommendations and corrective actions improved since the last DOE assessment of the BNI CAMP in that problems with tracking corrective action to closure had not recurred.

At the time of this assessment, BNI was continuing with its efforts to resolve recurring safety issues associated with dropped equipment (gravity events) at the Waste Treatment and Immobilization Plant (WTP) construction site. At the time of the last DOE assessment of the CAMP, BNI was also attempting to resolve safety issues associated with dropped equipment into areas where personnel were working. The last ORP assessment of the CAMP identified issues with two RCAs conducted during Calendar Year (CY) 2004 to correct this problem. BNI conducted a third RCA in February 2005, which was clearly indicative of the ineffectiveness of the previously implemented corrective actions. At the time of the current ORP assessment, the CAR for the third RCA was still open. Another dropped item event occurred during the

fieldwork, indicating the need for further work before BNI closes this CAR. The Team considered BNI made an appropriate decision to maintain the CAR open; however, was very slow to implement comprehensive corrective actions to protect the workers from dropping equipment.

The Team concluded the RCA process was not consistently effective and required improvement, in spite of BNI implementing the RCA process in accordance with its procedure. The following are Observations that support this conclusion:

Observation (Improvement Required): Some root cause analysis corrective actions for the dropped tools and materials issue were not implemented within their intent. Nothing was “revised” when two root cause analysis corrective actions specified that the accident investigation process be “revised.” In taking credit for completing the corrective actions, the responsible manager said he increased management oversight of the process, but this did not objectively revise the process. The revisions specified in the corrective actions were to involve Construction in the development of corrective actions and increase the rigor of cause and corrective action development.

Observation (Improvement Required): One root cause recommendation took inappropriate credit for a procedure revision in force at the time the problem occurred. In an isolated situation, an RCA report inappropriately stated Revision 6 to the corrective action procedure would correct a contributing cause. However, Revision 6 was in force when the problem, which prompted the RCA, occurred. Rather than taking credit for the revision, the RCA team should have evaluated the effectiveness of its implementation.

### **Supplier Corrective Action**

BNI implements its QAM requirements for supplier corrective action through 24590-WTP-GPP-PSQ-025, “Supplier Corrective Action Reports.” This procedure provides a process for identifying and correcting supplier quality issues that is similar to the CAR process. The procedure included provisions for stopping work and stopping shipment of items when quality deficiencies are identified.

The Team evaluated 11 Supplier Corrective Action Reports (SCAR). The SCAR process was similar to the CAR process used for resolving BNI quality issues and usually was invoked as a result of audit and surveillance Findings. The assessors noted all of the SCARs conformed to the BNI procedure and achieved effective resolution of the associated quality issues.

An RCA (24590-WTP-RCA-MGT-05-0001, “Root Cause Analysis – Controlling Site Work by Suppliers”) to resolve a significant condition adverse to quality in onsite work by suppliers was properly executed and should prevent recurrence of the condition. This condition included an event in which a supplier lost control of welding material and used carbon steel filler material on a stainless steel vessel. BNI determined the root cause to be “less than adequate procedural direction to maintain control of the processes whereby changes to goods, materials, and equipment received onsite are accomplished.” The corrective actions BNI implemented included revision of three procedures involving Engineering Material Requisition, Subcontracting, and



Acquisition services. The ORP Team considered the corrective actions, which were the addition of new barriers, were appropriate.

For the samples selected and the documentation reviewed, the assessors concluded BNI had an effective process for identifying and resolving supplier quality issues.

### **Stop Work**

BNI procedure 24590-WTP-GPP-MGT-008, "QA Stop Work/Management Suspension of Work," provides processes for stopping work due to quality assurance issues and suspension of work to resolve safety issues. The procedure includes a provision whereby anyone can stop work for quality or safety issues. The last ORP assessment found that this procedure effectively implemented the requirements of the QAM, and nothing had changed since then to alter this conclusion.

BNI had issued no stop work orders and initiated four management suspensions of work, since the last ORP assessment of corrective action. The Team evaluated the management suspensions of work and identified one Finding.

Finding A-05-ESQ-RPPWTP-006-F01: BNI misapplied the Management Suspension of Work process. Contrary to the requirements of the BNI corrective action management procedure, BNI personnel used the Management Suspension of Work process to manage supplier quality issues. BNI procedures specifically stated this process was not to be applied to the work of suppliers since other contractual mechanisms had been specified for that purpose. The Team found for three of the four work suspensions the process was initiated to suppliers. In one of these cases the process was initiated but never completed. The process was not completed because the procedure was not written for supplier quality issues and could not be followed to completion. (Despite this procedure noncompliance, all quality issues with the work in question were corrected.)

The Team concluded the management suspension of work process was adequate, but had been misapplied on three occasions.

### **Trending**

BNI procedure 24590-WTP-GPP-QA-204, "Quality Trending," provides a process for developing and reporting trends, including the identification of adverse trends. The Team found this procedure implements the requirements of the QAM for quality trending, but requires improvements.

The Team reviewed the last four quarter quality trend reports and noted improvement in quality and content from the reports reviewed in during the October 2004 assessment. The reports were distributed to senior management and to the managers responsible for developing and implementing corrective actions. The most recent quarterly trend report (second quarter CY 2005) provided a good example of how the report had been restructured to include statistical control charts. The report included an Executive Summary, positive conclusions, QA Program effectiveness charts, and opportunities for improvement.

The most recent trend report identified the areas requiring additional management attention were related to engineering quality levels, Authorization Basis problems, pipe slope designations, incorrect calculation assumptions, specification conflicts, and construction inspection weaknesses. Based on negative trends, actions were assigned to responsible organizations through the CAR, RITS, or lessons learned programs to analyze cause and identify corrective actions. The report did not identify some recurring difficult issues, such as the dropped tools as trends.

The Team concluded the BNI trend program and procedures implemented the requirements of the QAM. Trending reports have improved over those issued before CY 2005, but can be improved further by trending additional topics. Further evaluation of future reports is planned for next years' corrective action assessment.

## **Documents Reviewed**

The Team evaluated BNI corrective action management to the applicable requirements and guidance from the following documents:

- Code of Federal Regulations, Title 10, Part 830, Subpart A, "Quality Assurance;"
- 24590-WTP-QAM-01-001, Revision 6, "Quality Assurance Manual;"
- 24590-WTP-GPP-QA-201, Revision 11, "Corrective Action;"
- 24590-WTP-GPP-MGT-015, Revision 1, "Root Cause Analysis;"
- 24590-WTP-GPG-MGT-002 Revision 0, "Recommendation and Issue Tracking System;"
- 24590-WTP-GPP-SIND-023, Revision 3, "Reporting Occupational Injuries and Illnesses;"
- 24590-WTP-GPP-PSQ-025, Revision 2, "Supplier Corrective Action Reports;" and
- 24590-WTP-GPP-QA-204, Revision 3, "Quality Trending."

The assessors also examined:

- A sample of 26 BNI CAR;
- A sample of 11 SCAR;
- All formal RCA reports issued since the last ORP assessment of BNI corrective action management (six reports);
- Nine accident investigation reports associated with CARs and RCAs;
- The four trend reports issued since the last assessment of BNI corrective action management;

- One near miss report;
- Twenty-two RITS reports associated with formal RCA reports;
- Six lessons learned reports associated with RCA reports;
- Two management assessments of the corrective action management system;
- All minutes of BNI Safety/Quality Council meetings for the past six months (18 meetings);
- Training records for a sample of four root cause analysts/RCA team leads;
- All management suspensions of work issued since the last ORP assessment of BNI corrective action management;
- The two Occurrence Reporting and Processing System reports that led to formal RCA since the last ORP assessment of BNI corrective action management; and
- The one Price-Anderson Amendments Act Non-compliance Tracking System report issued since the last ORP assessment of BNI corrective action management associated with an RCA analysis.

### **Staff Interviewed**

The Team interviewed the following BNI management and staff personnel responsible for, or participating in, the corrective action management process:

- Manager, QA;
- Manager, Safety Assurance;
- Manager, Process Deployment;
- Manger of Construction;
- Two RCA team leaders and other team members;
- Several individuals assigned CAR closure verification responsibilities;
- The Construction organization Issues Coordinator;
- Manager, Supplier Quality; and
- Manger, Engineering Processes.

## Items Opened, Closed, and Discussed

### Opened

A-05-ESQ-RPPWTP-006-F01      Finding      The Management Suspension of Work process was misapplied.

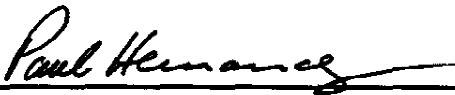
### Closed

None.

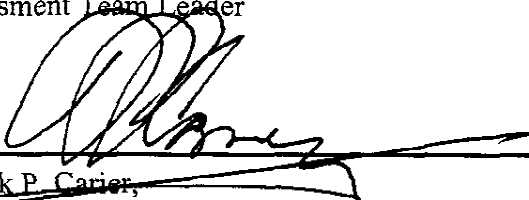
### Discussed

None.

## Signatures



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