U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

DEC 07 2005

05-WED-040

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

Dear Mr. Henschel:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF U.S. DEPARTMENT OF ENERGY (DOE), OFFICE OF RIVER PROTECTION (ORP) DESIGN OVERSIGHT REPORT: REVIEW OF CONTRACTOR PROCESS FOR NONCONFORMANCE REPORTING (NCR) (D-05-DESIGN-016)

DOE ORP has conducted a Design Oversight of the Contractor Quality Assurance Manual Policy Q-15.1, "Control of Nonconforming Items," as it was applied to the Revised Ground Motion Implementation Plan (RGM Plan) and is transmitting the resulting report by attachment to this letter.

Design Oversight D-05-DESIGN-016 concluded the Contractor's NCR process was effectively implemented for the identification, tracking, disposition, and closure of the NCRs generated to implement the RGM Plan. This Design Oversight identified no Findings, but does make one Observation and two Recommendations for Bechtel National, Inc. to enhance the oversight of the project oversight programs. The Observation determined all significant Corrective Actions Reports reviewed by this report, were as a result of events, and not identified by planned oversight. The Recommendations suggested include: 1) change the Engineering Management Assessment process to focus on design process areas of weakness identified in Root Cause Analyses; and 2) change the Construction Quality Control oversight program to more closely monitor subcontractor Quality Assurance effectiveness.

If you have any questions, please contact me, or your staff may call William F. Hamel, Jr., Director, Waste Treatment and Immobilization Plant Project, Engineering Division, (509) 373-1569.

Sincerely,

for Roy J. Schepens, Manager
Office of River Protection

WED:JEA

Attachment

cc w/attach:
M. Ensminger, BNI
S. C. Lynch, BNI
D. J. Pisarcik, BNI
G. Shell, BNI

Attachment
05-WED-040

# ORP DESIGN OVERSIGHT REPORT

## REVIEW OF CONTRACTOR PROCESS FOR NONCONFORMANCE REPORTING (NCR)

September 2005

Design Oversight: D-05-DESIGN-016

WED:JEA
September 28, 2005

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

# ORP DESIGN OVERSIGHT REPORT

## REVIEW OF CONTRACTOR PROCESS FOR NONCONFORMANCE REPORTING (NCR)

**September 2005**

**Design Oversight: D-05-DESIGN-016**

Team Lead: 10/28/05
James E. Adams, SRTA
Waste Treatment and Immobilization Plant
Engineering Division (Detail)

Reviewer: 10/28/05
John E. Orchard, SSO
Waste Treatment and Immobilization Plant
Engineering Division

Concurrence: 10/3/2005
William F. Hamel, Director
Waste Treatment and Immobilization Plant
Engineering Division

Approved: 12/6/05
John R. Eschenberg, Project Manager
Waste Treatment and Immobilization Plant

## Executive Summary

The DOE ORP staff has conducted a design oversight to:

1. Evaluate the Contractor's NCR program for compliance and effectiveness as implemented for the Revised Ground Motion Implementation Plan (RGM Plan);

2. Review the status of a sampling of NCRs generated from the Revised Ground Motion Implementation Plan (RGM Plan) and significant CARs issued this year to determine if dispositions were timely and adequate, and verify closures were completed in an adequate and timely fashion;

3. Determine if the parent NCRs used to identify, track, disposition, and close work associated with the RGM Plan, are being implemented per the RGM Plan, and tracked and controlled adequately; and

4. Review the effectiveness of BNI oversight of the NCR Program by review of oversight documentation including significant Corrective Action Reports (CAR) for Fiscal Year (FY) 05.

1) The Design Oversight concluded the NCR reporting process, as applied to the Revised Ground Motion Implementation Plan, was effectively implemented, with no adverse findings or follow-up items identified. However, there was one Observation with two Recommendations for BNI to enhance the oversight program of the Project.

2) The Design Oversight reviewed the overall Contractor NCR program implementation effectiveness in Section 4.1 of this report, and concluded the significant CARs identified all required NCR conditions using the RCA process and properly dispositioned, tracked, and closed the associated NCRs. However, the Observation is made that all significant CARs reviewed by this report, were as a result of events, and not identified by planned oversight.

3) The Design Oversight reviewed the implementation of the RGM Plan in Section 4.2 of this report. The review included the use of the Quality Assurance Information System (QAIS) tracking system for closure of the parent NCRs by statusing work associated with the revision of design calculations based on the new Interim Seismic Criteria (ISC). Two of the three levels of work control in the RGM Plan were evaluated (concrete pours released by completing calculations and component work released by documenting cost/benefit analysis). The Design Oversight verified the RGM Plan was being implemented per the RGM Plan, but noted the QAIS tracking system was lagging the status of actual work. The Design Oversight concluded the delayed status of the NCR tracking through QAIS was not a problem for releasing the work, but required improvement in accuracy to close the NCRs. Hence, it is Recommended the Engineering organization consider placing this activity on the FY06 assessment schedule, to facilitate closure of the NCRs.

   The Design Oversight reviewed the BNI oversight the NCR program and concluded the BNI oversight for the NCR program was adequate, but Recommends the Engineering

Management Assessment process to focus on design process areas of weakness identified by the RCA process including the implementation of high cost activities such as the RGM Plan and code and standard implementation. In addition, this Design Oversight Recommends the Quality Control (QC) oversight program more closely monitor subcontractor Quality Assurance effectiveness.

## Table of Contents

## 1.0 INTRODUCTION

A major component of the DOE ORP mission is the design and construction of the Waste Treatment and Immobilization Plant (WTP) in the 200 East Area of the Hanford Site. The design and construction contractor for the WTP is Bechtel National, Inc (BNI). As part of its oversight responsibilities, ORP performs various assessments of BNI activities during the design and construction phase. One type of assessment is the design review of various systems and processes, called a Design Oversight, performed by the WTP Engineering Division (WED).

This Design Oversight focused on the effectiveness of the Nonconformance Reporting (NCR) process for tracking and control of the Revised Ground Motion Implementation (RGM) Plan. The base requirements for the NCR process are identified in the Quality Assurance Manual Policy Q-15.1 "Control of Nonconforming Items," and are implemented through two procedures 24590-WTP-GPP-CON-7104 "Nonconformance Reporting and Control" and 24590-WTP-3DP-G04B-00061 "Disposition of Nonconformance Reports." Construction uses CON-7104 to identify, track, and close NCRs, while Design Engineering uses the G04B-00061 to disposition NCRs.

The formal phase of the Design Oversight occurred in late August 2005, consisted of BNI management and staff interviews and document reviews. The team pursued clarification and elaboration of the initial information through early September 2005, and prepared the Report in late September 2005. The Preliminary Report was informally reviewed by BNI, for factual accuracy before issuing the Final Report. There were no open items or adverse findings; but one Observation and two recommendations were made for BNI to enhance their oversight of the NCR program

## 2.0 BACKGROUND

The WTP Project is continuing with design and construction in a reduced work mode to facilitate the revision of the seismic loads based on the new interim seismic ground motion criteria. The Project approved the RGM Plan on May 3, 2005, which provided limited and controlled construction of the facilities affected by the revision of the seismic calculations. In order to continue work on the Project, four parent nonconformance reports, 24590-WTP-NCR-CON-05-0196 for HLW, 0197 for PTF, 0198 for BOF, and 0207 for material requisitions, were issued to track the work on the facilities as the individual work items in the NCRs are dispositioned and closed.

In addition to the non-conformances associated with the implementation of the RGM Plan, other NCRs were reviewed, which were generated based on a series of significant Corrective Action Reports (CAR) indicating some reduction in the level of work quality. These CARs were defined as Significant CARs and, as such, required Root Cause Analyses. The RCAs produced subsequent NCRs to identify non-conforming conditions resulting from the extent of condition review of the CAR/RCA. These CARs, RCAs, and their subsequent NCRs were used as a method for determining the effectiveness of the NCR program to identify non-conforming conditions.

Based on the two issues identified above, ORP management requested WED to perform an assessment of Control of Nonconforming Item per QAM Policy Q-15.1.

## 3.0 OBJECTIVES, SCOPE AND APPROACH

### 3.1 Objectives

This Design Oversight was conducted as part of ORP's responsibility as owner of the WTP to ensure that the nonconformance program was being adequately implemented to approved procedures compliant to the QAM Policy Q-15.1. The following are the specific objectives of this oversight:

- Evaluate the Contractor's NCR program for compliance and effectiveness;
- Review the status of a sampling of NCRs generated from the Revised Ground Motion Implementation Plan (RGM Plan) and significant CARs issued this year to determine if dispositions were timely and adequate, and verify closures were completed in an adequate and timely fashion;
- Determine if the parent NCRs used to identify, track, disposition, and close work associated with the RGM Plan, are being implemented per the RGM Plan, and tracked and controlled adequately; and
- Review the effectiveness of BNI oversight of the NCR Program by review of oversight documentation including significant Corrective Action Reports (CAR) for Fiscal Year (FY) 05.

### 3.2 Scope

This oversight included a review of the Quality Assurance Manual (QAM) Policy Q-15.1 implementing procedures; oversight schedules and reports associated with the NCR program; the RGM Plan and associated tracking systems; work control products; and the NCRs, Corrective Action Reports (CAR), and Root Cause Analyses (RCA) dealing with FY 05 deviations resulting in NCRs being generated. This oversight also observed the internal functioning of the BNI design process relative to identification, disposition, tracking, and closure of non-conforming conditions.

### 3.3 Approach

The oversight was conducted within the guidelines of ORP PD 220.1-12, "Conduct of Design Oversight." Information was collected from various BNI documents, DOE documents, and interviews with BNI design staff. A full listing of reviewed documents and personnel contacted is provided in Section 6.

The approved design oversight plan, Review of Contractor Nonconformance Reporting and Control Process is provided in Appendix A.

Four steps were identified to provide the information required to meet the design review objectives. The order of review and depth of each step was left to the reviewer's discretion.

1) Evaluate the Contractor's NCR program for compliance and effectiveness using a sampling of Significant CARs. These CARs required the performance of RCAs which subsequently generated NCRs. This review determined if the NCRs that were generated by the RCAs sufficiently bounded the issues identified by the CAR.

2) Review the status of sample NCRs generated to date, to determine if dispositions were timely and adequate. In addition, verify the NCR closures were being completed in an adequate and timely fashion by review of the Contractor NCRs generated from the Significant CAR review.

3) Determine if the RGM Plan has been adequately implemented using the NCR procedures to identify nonconforming conditions and is being adequately tracked and controlled by the Quality Assurance Information System (QAIS) tracking system;

4) Review the effectiveness of BNI oversight of the NCR program by review of oversight documentation including Corrective Action Reports for FY 05.

## 4.0 RESULTS

### 4.1 Overall Compliance and Effectiveness of the Nonconformance Reporting Program

The Design Oversight did not review the compliance of the NCR program to the QAM because the DOE assessment report A-04-ESQ-RPPWTP-008 already established the Contractor's NCR program was compliant with QAM Policy 15.1 "Control of Nonconforming Items" when the report was issued in FY 04. The Design Oversight used this established point of compliance to begin this assessment. The compliance and effectiveness of the NCR Program was reviewed using a sampling process based on the review of Significant CARs and Root Cause Analysis (RCA) to determine if subsequent NCRs were being properly initiated to address the corrective actions of the CAR and associated RCA.

The Design Oversight reviewed three significant CARs with their associated RCA and NCR listings. These were: 1) CAR-05-083 (Gaps in Migration of Quality Levels), which was evaluated by RCA–MGT-05-0002; 2) CAR-05-024 (NDE Requirements for Welds), which was evaluated by RCA-ENG-05-0001; and 3) CAR-05-175 (LAB Structural Steel), which is still being evaluated by a RCA not yet published.

1) The Design Oversight evaluated the CAR-05-024 and its associated root cause analysis RCA-ENG-05-001 and determined an initial listing of 23 NCRs had been developed by the corrective actions of the CAR based on the review of the HLW, PTF, and ITS Switch Gear building drawings to determine the extent of conformance to AISC welding code N690, Weld Inspection Requirements. The Assessor reviewed this listing and found 50% of the dispositions specified rework (12/23 NCRs needed

additional NDE requirements). At the time of the assessment, 4 of the 23 NCRs had been closed. The RCA indicated the scope of the CAR needed to be extended to additional codes for additional reviews, which had not been completed. The Design Oversight concluded the NCR identification, tracking and closure processes were adequately followed for CAR-05-024/RCA-ENG-05-001.

2) The evaluation of CAR-05-083 determined this CAR was an extensive and complicated rollup CAR involving a series of thirteen primary CARs and eight other CARs evaluated under a different RCA. The CAR-05-083 was reported under the Price-Anderson Amendment Act (PAAA) NTS-RP-BNRP-RRPWTP-2005-0003 and listed 24 corrective actions needed to resolve the issues identified in the RCA-MGT-05-0002. The only NCR written to date for CAR-05-083 was NCR 24590-WTP-NCR-CON-05-180, which involved 93 QL pipe spools issued to a commercial grade supplier for fabrication with 26 of these spools installed. Additional spools are expected to be listed. This NCR had a recommended disposition on May 4, 2005, but the final disposition is still being evaluated for commercial grade dedication of the installed spools as of the time of this report. This NCR is considered timely (the procedure does not define timely), even though it has been over four months since the recommended disposition, because the resolution involved commercial grade dedication of the installed spools, which is underway.

3) The review of Significant CAR-05-175 determined the calculations associated with the structural steel for the analytical laboratory required revision due to the steel details not conforming to the design criteria and the calculations not matching the issued drawings. The building steel was identified as non-conforming in NCR-05-0272. The total scope of the problem was not known at the time of the assessment and may expand with additional NCRs and CARs when the RCA is completed. However, the identification of the issue was originated by the vendor, rather than internal Contractor oversight. The Design Oversight was unable to conclude the effectiveness of this CAR/RCA/NRC identification based on this example, because the RCA was not yet complete.

   The Design Oversight concluded the Contractors identification and timely disposition of non-conforming conditions identified by the RCAs were adequate for the corrective actions written of the CARs. The Design Oversight concluded the Contractors tracking, disposition, and closure of non-conforming conditions to be adequate based on the scope of work addressed by this review.

   Based on the above evaluation, the Design Oversight concluded the Contractor was compliant to the QAM by completing work using approved procedures; and the Contractor effectively used the NCR program for the identification, timely disposition, and closure of the issues identified in the significant CARs reviewed.

## 4.2 Effectiveness of Revised Ground Motion Implementation Plan (RGM Plan)

The Design Oversight reviewed the RGM Plan, the associated parent NCRs, the Quality Assurance Information System (QAIS) tracking system providing status of these NCRs, a

sampling of completed work release packages for both concrete (irreversible) and component related (reversible) work. The purpose was to verify the RGM Plan processes were working as described in the plan.

The RGM Plan had three basic levels of control to release work: irreversible installation work, reversible installation work, and pre-installation fabrication and assembly work.

For irreversible work (concrete pours), the plan required the design to be revised to the Interim Seismic Calculations prior to work release. The Design Oversight was able to trace the parent NCR (24590-WTP-NCR-05-0196) to a 36 page printout listing of all work involved by drawing number. The Design Oversight verified 5 examples of completed Engineering Change Calculation Notices (ECCN) to the base calculations; which in turn provided Design Control Notices (DCN); which verified the release based on the completion of the calculation; which finally provided the release of the concrete pour card. No issues were identified even though the status tracking lagged the completion of work but this was determined not to be an issue since the status tracking will only be used to close the NCR, not to release work. Follow-up of the status tracking process by Engineering in their oversight program is recommended.

For reversible work, the RGM Plan required a cost/benefit analysis to be completed prior to the release of component work, which could be reworked if the revised calculations required rework under the NCR listing for the component. A sample of five cost/benefit analyses forms were reviewed by the Design Oversight to verify the criteria provided in the RGM Plan were used for the evaluation. The Area Project Manager approved the work. A technical basis was established for the need to perform the work now versus later, which included the criteria in the RGM Plan and the probabilities for reduced costs. There were cases where disapproval occurred, which resulted in e-mails being sent to revise work schedules to delay the work until the calculations were completed. The work associated with each of these cost/benefit analysis was tracked as a line item by drawing number in the QAIS database; and, if the calculation required rework, the line item stayed open. No issues were identified.

For pre-installation fabrication and assembly work, no processes were identified in the RGM Plan other than existing receipt inspection to approved design specifications. All non-conforming equipment on site was placed on hold and released per the processes listed above.

Based on the review of the sampled concrete pours (the RGM Plan required re-verification by calculation), and the review of the sampled component installations (RGM Plan required completed cost/benefit analysis using RGM Plan acceptance criteria), the Design Oversight concluded the RGM Plan was being implemented as written and approved.

## 4.3 BNI Oversight of the NCR Program

The Design Oversight reviewed documentation and performed interviews of Engineering, Quality Assurance, and Quality Control to determine what oversight efforts had taken

place in the last year relative to nonconforming item control and how effective the oversight was in identifying problems.

The Engineering Management Assessment Plan for FY05 was reviewed, but the area of disposition of non-conforming material was not covered in the facility vertical slice assessments scope. The Engineering Management Assurance assessments have not covered the topic since FY 03. However, the QA organization surveillance SV-QA-04-379 did cover the area for FY 05, and issued CAR-04-135 (insufficient disposition provided to an NCR), which is now closed. The Design Oversight also reviewed the RGM Plan for planned oversight considerations. The RGM Plan did not contain any planned oversight to verify the parent NCRs were being properly managed to facilitate closure of the NCRs at the end of the work, which is not required, but does merit increased surveillance of a complicated process to avoid problems closing the NCRs later. A recommendation is made to this effect in this report.

The FY 06 Engineering Management Assessment Plan was being generated at the time of this assessment. During interviews, BNI Engineering management acknowledged the engineering oversight process should be revised to accommodate more topics, but with less depth than the existing facility vertical slice process. The Design Oversight Recommends this shift in the Engineering Assessment program for FY 06 schedule. There should be more emphasis on design process reviews in areas where weaknesses were identified in the corrective actions reports. The BNI increased oversight should verify the correction action effectiveness and the effectiveness of engineering activities involving high risk/cost scenarios. An example of this would be the review of closures of completed NCR work for the RGM Plan

The Quality Assurance independent audits were reviewed for FY 05 with two audits being performed at the beginning of the FY. The audit "Field Engineering," covered the area of nonconforming item control including NCR adequacy and accuracy, proper dispositions, application of hold tags, and Engineering dispositions. No issues were identified. The QA surveillance program covered various topics associated with the non-conforming item procedures in a series of 29 surveillances. The QA surveillances provided good scope and depth of coverage for the overall NCR program including engineering responsibilities in the NCR program. There were no issues identified.

The Quality Control construction oversight was reviewed both by examination of the FY 04/FY 05 schedule of assessments, and a review of the 49 surveillances performed since the beginning of the year. However, the Design Oversight concluded the vast majority of these 49 surveillances were on one topic (Hold Tag verification) and found the program oversight limited. The QC schedule covered the topics, but the resulting surveillances of the subcontractors were somewhat limited in depth and scope. It is Recommended that QC consider a broader coverage of the subcontractors QA programs in line with BNI's QA surveillances program.

The Design Oversight concluded the Contractor did have oversight programs in place for Engineering, Quality Assurance, and Construction Quality Control, which adequately addressed program compliance. However, recent events have resulted in several

significant CARs that were identified by individual contributors rather than planned oversight processes. These events did require NCRs to be generated and procedures for issuance of the CARs, RCAs, and subsequent NCRs were followed. Hence, this is considered an Observation, and as discussed above, two recommendations were made to consider boarder focused Project oversight in the design/construct phase dealing more with review of high value/high risk work to determine what control process is being used to control the work and whether the process is being followed.

## 5.0 OPEN ITEMS AND RECOMMENDATIONS

**Open Items:**

**OBSERVATION:** This Design Oversight reviewed significant CARs and determined that most originated from vendors or individual contributors based on events, rather than from BNI oversight processes.

**Recommendations:**

- **Recommendation #1:**

  It is recommended that BNI revise their FY 06 schedule of engineering assessment to put emphasis on design process reviews in areas of weakness identified in the corrective action report's corrective actions, and to verify the corrective action effectiveness, particularly for engineering activities involving high risk/cost scenarios. This recommendation includes the scheduled oversight of the RGM Plan QAIS tracking system to ensure closure of parent NCRs and oversight of engineering code and standard implementation.

- **Recommendation #2:**

  It is recommended that BNI Quality Control surveillance program consider more comprehensive coverage of the subcontractors QA implementation similar to with BNI's QA surveillance program by review of high value/high risk areas to ensure a control process is in place and being followed for those activities.

## 6.0 REFERENCES AND PERSONNEL CONTACTED

### 6.1 References

- 24590-WTP-MAR-ENG-03-005, Revision 0, *NCR Disposition,* dated April 04, 2003
- 24590-WTP-MAR-ENG-04-002, Revision 1, *Laboratory Facility Self Assessment,* dated April 28, 2004
- 24590-WTP-MAR-ENG-04-007, Revision 0, *BOF/LAW Facility Self Assessment,* dated July 28, 2004
- 24590-WTP-MAR-ENG-04-009, Revision 0, , *Pre-Treatment Facility Self Assessment,* dated July 28, 2004
- 24590-WTP-MAR-ENG-04-001, Revision 0, *HLW Facility Self Assessment,* dated July 17, 2004
- CCN 116994, dated May 03, 2005, "Revised Ground Motion Implementation Plan"

- 24590-WTP-SV-QA-04-379, "Design Engineering Dispositioning of NCRs," dated August 26, 2005
- 24590-WTP-IAR-QA-04-011, Revision 0, *Field Engineering*, dated October 18, 2004, and
- 24590-WTP-IAR-QA-04-013, Revision 0, *Quality Control*, dated October 29, 2004,
- 24590-WTP-RCA-ENG-05-0001, Revision0, *Root Cause Analysis-Inconsistent Application of AISC N690 Weld Inspection Requirements*, dated June 13, 2005
- 24590-WTP-CAR-QA-05-024, "NDE Requirements for Full-Penetration and Partial-Penetration Welds," dated 2/16/2005.
- 24590-WTP-NCR-CON-05-0078, dated March 07, 2005
- 24590-WTP-NCR-CON-05-0092, dated March 08, 2005
- 24590-WTP-NCR-CON-05-0095, dated March 14, 2005
- 24590-WTP-NCR-CON-05-0116, dated March 18, 2005
- 24590-WTP-NCR-CON-05-00117, dated March 18, 2005
- 24590-WTP-NCR-CON-05-00118, dated March 18, 2005
- 24590-WTP-NCR-CON-05-00119, dated March 18, 2005
- 24590-WTP-NCR-CON-05-00122, dated March 18, 2005
- 24590-WTP-NCR-CON-05-00123, dated March 18, 2005
- 24590-WTP-NCR-CON-05-00124, dated March 18, 2005
- 24590-WTP-NCR-CON-05-00126, dated March 18, 2005
- 24590-WTP-NCR-CON-05-00127, dated March 21, 2005
- 24590-WTP-NCR-CON-05-00129, dated April 18, 2005
- 24590-WTP-NCR-CON-05-00128, dated April 18, 2005
- 24590-WTP-NCR-CON-05-00163, dated April 18, 2005
- 24590-WTP-NCR-CON-05-00166, dated April 19, 2005
- 24590-WTP-NCR-CON-05-00193, dated May 13, 2005
- 24590-WTP-NCR-CON-05-00208, dated May 18, 2005
- 24590-WTP-NCR-CON-05-00221, dated May 27, 2005
- 24590-WTP-NCR-CON-05-00224, dated May 27, 2005
- 24590-WTP-NCR-CON-05-00262, dated July 26, 2005
- 24590-WTP-NCR-CON-05-00263, dated July 26, 2005
- 24590-WTP-NCR-CON-05-00264, dated July 26, 2005
- 24590-WTP-CAR-QA-05-175, "Indeterminate Calculation on Structural Members," dated 8/24/2005
- 24590-WTP-NCR-CON-05-00272, dated August 24, 2005
- 24590-WTP-RCA-MGT-05-0002, Revision1, *Root Cause Analysis for Quality Level Implementation,* dated August 18, 2005
- 24590-WTP-CAR-QA-05-083, *Gaps in the Migration of Quality Level Information from Design Document to Procurement Documents*, dated May 13, 2005
- 24590-WTP-NCR -CON-05-00180, dated May 04, 2005
- CCN 116994, dated May 03, 2005 *Revised Ground Motion Implementation Plan*,
- CCN 125997, dated August 16, 2005, titled "Transmittal for Approval: Authorization Basis Amendment Request (ABAR) 24590-WTP-SE-ENS-05-0017, Revision 1, "Implementation of the Revised Seismic Ground Motion Spectra into the Safety Requirements Document"
- Presentation titled Summary of Seismic Nonconformance Reports prepared August 22, 2005

- Procedure 24590-WTP-GPP-CON-7104, Revision 6, *Nonconformance Reporting and Control*, dated 10/27/04
- Procedure 24590-WTP-3DP-G04B-00061, Revision 7, *Disposition of Nonconformance Reports*, dated 8/1/05
- QAIS printout (dated August 08,2005) of NCR status of NCRs 24590-WTP-NCR-CON-05-0196, 0197, -0198, 0207
- ABAR 24590-WTP-SE-ENS-05-0017
- NCR 24590-WTP-NCR-CON-0196
- 24590-HLW-DBN-S13T-00637
- 24590-HLW-RCPSR-PM-05-0001, "Release for Construction Prior to Seismic Redesign"
- 24590-BOF-RCPSR-PM-05-0001, "Release for Construction Prior to Seismic Redesign"
- 24590-PTF-RCPS-PM-05-0015, "Release for Construction Prior to Seismic Redesign"
- 24590-PTF-RCPSR-PM-05-0017, "Release for Construction Prior to Seismic Redesign"
- 24590-PTF-RCPSR-PM-05-0016, "Release for Construction Prior to Seismic Redesign"
- 24590-HLW-CPC-CON-04-074, Concrete Pour Card released for pour June 27, 2005
- 24590-HLW-DBN-S13T-00637, Drawing Change Notice, dated June 22, 2005

## 6.2 Personnel Contacted

D. Kammenzind, BNI QA
G. Shell, BNI QA Manager
M. Ensminger, BNI QC Manager
B. Grimsley, CB&I QA/QC Manager
B. Chapman, BNI QC Inspector
M. Ehlinger, BNI QA Audit Manager
D. Pisarik, BNI Engineering Process Assurance Manager
S. Sallee, BNI QA Auditor
R. Crisp, BNI QA Auditor
M. Wrona, WTP Seismic Modifications Manager
S. Neubauer, Construction Field Engineer
S. Sunday, QA
J. Smith, QA
D. Miller, BNI Seismic Modification Group
D. Khan, BNI Seismic Modification Group
W. Abdul, ORP Project Manager

# Appendix A – Oversight Plan

**U.S. Department of Energy (DOE), Office of River Protection (ORP)**

# DESIGN PRODUCT OVERSIGHT PLAN

# REVIEW OF CONTRACTOR NONCONFORMANCE REPORTING AND CONTROL PROCESS

## August 16, 2005

**Design Oversight:** D-05-DESIGN-016

**Team Lead:** James E. Adams

**Submitted by:**

_____ Date _____
James E. Adams, Team Lead
WTP Engineering Division (Detail)

**Concurrence:**

_____ Date _____
William F. Hamel, Director
WTP Engineering Division

# 1.0 BACKGROUND, PURPOSE AND OBJECTIVES

## 1.1 Background

The RPPWTP Facilities were approximately 75% designed and 30% constructed when the decision was made to revisit the seismic design criteria creating the need to revise the calculations associated with the piping systems and vessel restraints. The need to continue the construction process while these calculations were being revised required the use of the nonconformance program for those components being installed which did not have confirmed status. The ORP management decided the NCR process needed to be examined to see what controls were in place to ensure installed components, which are dispositioned as rework or repair, are easily located and are accessible for rework.

In addition to the specific need mentioned above, the nonconformance program implementation of BNI and the subcontractors needs to be reviewed for effectiveness in terms of the volume of NCRs being generated, the timeliness of the dispositions, verification that dispositions are being properly assigned and traceable to their specifications, prints and components. This assessment will allow the Project to assess the level of risk being introduced to the Project completion and the effectiveness of the implementation of the NCR system in general.

## 1.2 Purpose

The purposes of this review is to confirm that the Contractor properly implements the nonconformance process effectively for both design and construction forces and to determine the ability of the Project to use the nonconformance process to effectively track and resolve components being installed which are in the process of recalculation of their seismic design loading.

## 1.3 Objectives

The following are the specific objectives of this oversight:

1. Evaluate the nonconformance (NCR) program of the Contractor and selected subcontractors to the BNI Quality Assurance Manual (QAM) and the associated approved implementing procedures, to verify continued compliance and establish effectiveness of implementation of the NCR.
2. Review the status of existing NCRs generated to date, determine if dispositions are timely and adequate, and verify closures are being completed in an adequate and timely fashion.
3. Determine if the parent NCRs used to identify, track, disposition, and close work associated with the RGM Plan are being implemented per the RGM Plan and tracked and controlled adequately.
4. Review the effectiveness of BNI oversight of the NCR Program by review of oversight documentation including significant Corrective Action Program reports for FY 05.

## 2.0 PROCESS

This oversight shall be conducted within the guidelines of ORP PD 220.12, issued February 12, 2003, "Conduct of Design Oversight."

### 2.1 Scope

This Design Oversight will include review of the design processes and the design products produced to date in support of the topic under review. This will include procedures, calculations, deliverables, and other documents that describe the applicable processes and products.

This oversight will also include monitoring the internal functioning of the BNI oversight process to assess the effectiveness of oversight in producing quality products in the design.

### 2.2 Preparation

1. Identify the Contractor Point of Contact for the Review.

2. Establish the scope and elements of the design processes and deliverables under review.

3. Identify and review the applicable Contract and requirements source documents.

4. Review background information as provided by Contractor and identified through review of available databases.

5. Review previously performed Contractor design review reports, documentation, open issues, and the plans for and status of their resolution.

6. Review the applicable design processes and a sample of the resulting design deliverables.

7. Table 1 lists information requested from the Contractor to initiate this oversight.

### 2.3 Review and identify, resolve or document issues

Evaluate the selected attributes and develop lines of inquiry and specific questions that are then explored with cognizant Contractor personnel to meet the oversight objectives. This phase will be documented in summary tables as shown in ORP PD 220.12, issued February 12, 2003, "Conduct of Design Oversight," Attachment 9.4, Appendix A. This effort will include participating in any applicable internal Contractor reviews and discussions. The output from this phase of the oversight will be a completed summary table with Contractor responses to the questions and lines of inquiry and a list of remaining open issues that need further evaluation by Contractor for resolution.

### 2.4 Reporting

De-brief ORP and Contractor management periodically as required. Prepare a draft report that summarizes the activities, the results, conclusions and recommendations of the review. Issue the Draft Design Oversight Report for review and comment of ORP management and cognizant Contractor personnel. The final report will resolve comments received on the draft report.

## 3.0 SCHEDULE OF ACTIVITIES

Table 2 summarizes the schedule for completion of this oversight.

## 4.0 DOCUMENTATION

The final report of this task shall contain the sections and content as summarized in ORP PD 220.12, issued February 12, 2003, "Conduct of Design Oversight," Attachment 9.4, "Design Oversight Report Outline."

The open issues identified in this oversight shall be listed in the final report. Each open issue shall be assigned an item number and shall be tracked to resolution through the Consolidated Action Reporting System (CARS). These shall also be tracked to resolution by Contractor through the Correspondence Control Number (CCN) that will be assigned to the transmittal of the report from ORP to Contractor.

## 5.0 CLOSURE

The Team Leader with concurrence of the Director shall confirm that the open items from this oversight are adequately resolved.

## Appendix B - Assessment Note D-05-DESIGN-RPPWTP-0016-01 Contractor

## Management Assessment and Oversight for the Nonconformance Reporting Program Implementation

## ASSESSMENT NOTE

**Inspection Note Number: D-05-DESIGN-RPPWTP-0016-01**

**Design Oversight Name(s): James Adams Dates of Inspection: August 16, 2005**

**Area/Items(s) Inspected: Contractor Management Assessment and Oversight for the Nonconformance Reporting Program Implementation**

The Design Oversight reviewed all available Contractor oversight documentation produced in the last year relevant to the nonconformance reporting (NCR) process including management assessments (MA), the QA audit and surveillance reports, and QC surveillance reports. In addition, the Design Oversight reviewed the associated corrective action reports (CAR) these reports created and their associated closeout surveillance reports. The Assessor interviewed the Construction Quality Control, Quality Assurance and Engineering management and staff responsible for the creation, disposition, tracking, and closure of NCRs for their perspective on the NCR program in light of these oversight reports. In addition Note D-05-DESIGN-RPPWTP-0016-03 "Implementation of Nonconformance Reporting in Relationship to Significant Corrective Action Reports" is taken into consideration for this note.

**Observations and Assessments**

Engineering Management Assessments

The Assessor reviewed all Contractor Engineering oversight performed within the last year on the topic of the nonconformance program implementation and received the following documents:

- 24590-WTP-MAR-ENG-03-005, Revision 0, dated April 03, 2003 NCR Disposition;
- 24590-WTP-MAR-ENG-04-002, Revision 1, dated April 28, 2004, Laboratory Facility Self Assessment;
- 24590-WTP-MAR-ENG-04-007, Revision 0, dated July 28, 2004, BOF/LAW Facility Self Assessment;
- 24590-WTP-MAR-ENG-04-009, Revision 0, dated July 28, 2004, Pre-Treatment Facility Self Assessment;
- 24590-WTP-MAR-ENG-04-001, Revision 0, dated July 17, 2004, HLW Facility Self Assessment;
- CCN 116994, dated May 03, 2005 "Revised Ground Motion Implementation Plan"; and
- 24590-WTP-SV-QA-04-379, dated August 26, 2005, "Design Engineering Dispositioning of NCRs."

The Assessor determined the 2003 Engineering NCR Disposition Assessment Report (24590-WTP-MAR-ENG-03-005) issued no Findings, but had one Observation concerning an NCR disposition, which needed to be revised. The remainder of the vertical slice facility assessments did not cover the topic of nonconforming work or components. The Assessor determined the Engineering assessment program continues to follow its annual plan, but had not recently assessed the disposition of nonconforming issues by design engineering. However, the

Assessor's review of the QA surveillance process determined surveillance SV-QA-04-379 did address the area and issued CAR-QA-04-135, which addressed the issue of NCRs not containing dispositions with acceptance criteria equivalent to the original design. This CAR and the associated NCRs had subsequently been closed and verified. The Assessor determined further Engineering oversight efforts in the of the adequacy of design dispositions would be appropriate in the near future since Engineering is responsible for the disposition of all the seismic related NCRs associated with the RGM Plan.

Engineering Oversight for the RGM Plan

The Assessor reviewed the document CCN 116994, "Revised Ground Motion Implementation Plan" and interviewed the Engineering Processes Manager relative to the controls associated with implementing the RGM Plan. The plan allowed installation of components originally procured to the existed approved seismic design criteria, while the calculations were taking place to confirm or revise the design for the RGM Seismic Criteria. Since this plan allowed the installation of existing delivered materials, the NCR program was needed to control and track the items on an NCR while the calculations were be completed. The Assessor reviewed the details in the RGM Plan and the tracking system to monitor the status of the work release process allowing the incorporation of the revised seismic criteria into the design of the SSCs. The Assessor determined the plan and associated tracking systems were sufficient in detail and control to meet compliance with the intent of the QAM and procedure because the RGM Plan did provide the controls and tracking systems to ensure irreversible work could not be performed until verified by calculation to meet the Interim Seismic Criteria using drawing holds. Irreversible work was defined as the pouring of concrete. In addition, component installation of steel and piping components was allowed on a cost/benefit basis assuming potential rework. The details of the analysis are in Assessment Not D-05-DESIGN-RPPWTP-0016-02.

No engineering oversight was defined in the RGM Plan or in the Engineering Annual Management Assessment Plan for FY 05 relative to proper implementation of the RGM Plan. The Engineering Process Manager indicated the timing of the RGM Plan was too late in the audit cycle to include it in the FY 05 Schedule but it would be placed in the FY 06 Schedule. The Design Oversight recommended some level of oversight of the implementation to this plan to ensure the ability to close the NCRs that were generated. In addition, the Design Oversight recommended additional programmatic oversight as information became available based on the Root Cause Analysis for several FY 05 significant Corrective Action Reports complete. The oversight of the Nonconformance Reporting program for FY 05 was covered by QA and QC oversight.

Quality Assurance Independent Audits

The Assessor reviewed the *WTP Quality Assurance Internal Audit Schedule*, 24590-WTP-SC-QA-01-002, Revision 11, dated 4/27/05. The Assessor selected the audits:

- 24590-WTP-IAR-QA-04-011, Revision 0, Field Engineering, dated October 18, 2004; and
- 24590-WTP-IAR-QA-04-013, Revision 0, Quality Control, dated October 29, 2004

to assess the scope, quality, and results of the audit process oversight by Quality Assurance for its relative to the nonconformance program. The Assessor's review determined the audits both covered the topic. The Field Engineering assessment thoroughly covering the topic with a sampling of NCRs reviewed for accuracy, completeness, criteria for proper disposition, use of hold tags and use of Engineering for dispositions requiring their involvement. No issues were identified.

QC/QA Surveillance Associated With the NCR Program

The Assessor selected a number of QC/QA surveillances performed in the last six months to assess the scope, depth, and effectiveness of the surveillance program relative to oversight of the NCR process. The surveillances reviewed are listed on Attachment 1.

The Assessor' review of the 29 QA surveillances determined the Contractor had established a methodical process for evaluating all program areas associated with the NCR procedures 24590-WTP-GPP-CON-7104 including subcontractor implementation of SDDRs and NCRs. A listing of the topics covered in shown in Attachment 1. This overall effort included follow-up of closed CARs and adequately verified effective closure all issues.

The Assessor also reviewed the 49 QC surveillances as shown on Attachment 1 with 43 of the 46 surveillances involved with verification of NCR hold tag on the equipment. Several of the surveillances were efforts to review subcontractor QA requirements to the NCR process, but in at least one case, SV-QC-05-236, the surveillance became an acknowledgement that no requirement existed in the contract for the contractor to follow the NCR process. The Assessor's interview with the QC Manager determined that two of the subcontractors doing NDE work did not require the NCR process in their QAM because the contract was for inspection services only and no equipment or installation work was involved. The Assessor reviewed the FY 04 and FY05 QC surveillance schedule to determine the extent or coverage of each subcontractor performing work requiring and NCR program. In one case a surveillance SV-QC-05020, dated January 25, 2005, resulted in a corrective action report CAR-QA-05-018, which dealt with the requirement to "periodically perform trend analysis of non-conforming conditions to determine if corrective action is required." The Assessor considered this a good example of oversight by BNI QC on the subcontractors in the area of the nonconformance control. Sufficient surveillances were found and reviewed for all subcontractors except Chicago Bridge and Iron (CB&I). The Assessor resolved this by performing oversight directly on the subcontractor CB&I by review of the NCR Log and all NCRs performed during the term of the contract. A total of 4 NCRs were reviewed and two issues were identified to BNI dealing with the closure process. These comments were resolved by follow-up responses. This was considered adequate closure.

Assessment Note 3 makes the following statement, "The Design Oversight concluded the above examples of significant CARs, which required RCAs and extent of condition review, did provide the associated documentation of the non-conforming conditions via the NCR program and provided good examples of identification and extent of condition reviews (with appropriate NCR being generated as the conditions were found). *However, in all cases the source of the identification of the deficiency was based on events with individuals discovering and reporting the issue."* This is considered an oversight area Observation. The Observation is both positive

(individuals are properly following procedure to identify deficiencies when discovered) and negative (oversight processes are not discovering significant process implementation problems in the design process. (See Note D-05-DESIGN-RPPWTP-0016-03) These Contractor problems have been self-identified and the lack of oversight in these specific areas is not a violation of any procedure; hence, no Finding or AFI."

**Conclusion:**

The overall conclusion of the Design Oversight was the Contractors oversight of the Nonconformance Reporting process was compliant, thorough, and effective. However, recent discoveries made by individual contributors, resulting in the issuance of significant Corrective Action Reports requiring RCAs and multiple NCRs has shown the need for strengthening the oversight of the Project. The fact that individuals followed approved procedures to discover and correct problems is laudable, and is the first line of defense with programmatic oversight the backup. Quality Assurance audit and surveillance program in the area of Nonconformance Reporting was adequate and appropriate. The Design Oversight also determined the Construction/QC oversight was adequate. The Design Oversight determined the Engineering Management Assessment program was adequate, but recommends further oversight efforts in the review of design processes in light of the three significant CARs with emphasis on process versus facility. The need to ensure the RGM Plan NCRs get dispositioned, tracked and closed is important to the Project and should be in the oversight schedule.

**Submitted By:**_____ **Approved By:**_____
**Date:** **Date:**

**Personnel Interviewed:**
D. Kammenzind, BNI QA POC
G. Shell, BNI QA Manager
M. Ensminger, BNI QC Manager
B. Grimsley, CB&I QA/QC Manager
B. Chapman, BNI QC Inspector
M. Ehlinger, BNI QA Audit Manager
D. Pisarik, BNI Engineering Process Assurance Manager
S. Sallee, BNI QA Auditor
R. Crisp, BNI QA Auditor

## Appendix C - Assessment Note D-05-DESIGN-RPPWTP-0016-02

# Use of Nonconformance Report to Control Work Release for the Revised Seismic Criteria

## ASSESSMENT NOTE

**Inspection Note Number: D-05-DESIGN-RPPWTP-0016-02**

**Design Oversight Names(s): James Adams** **Dates of Inspection: August 16, 2005**

**Area/Items(s) Inspected: Use of Nonconformance Report to Control Work Release for the Revised Seismic Criteria.**

The Design Oversight reviewed the Contractor's process, plans, and procedures to verify the RGM Plan was being adequately implemented and controlled through existing QA and Engineering procedures; thus allowing the continuation of construction work including concrete pours and the installation of components, which had not yet been reanalyzed for the revised seismic spectrum. In addition, the Design Oversight reviewed completed samples of the work for both concrete pours and component installation releases performed per the RGM Plan to verify the implementation of the process was effective and adequately controlled.

**Observations and Assessments**

Application of NCR Process to Seismic Problem Resolution

Documents reviewed:

- CCN 116994, dated May 03, 2005, *Revised Ground Motion Implementation Plan*
- CCN 125997, dated August 16, 2005, titled Transmittal for Approval: Authorization Basis Amendment Request (ABAR) 24590-WTP-SE-ENS-05-0017, Revision 1, "Implementation of the Revised Seismic Ground Motion Spectra into the Safety Requirements Document"
- Presentation titled Summary of Seismic Nonconformance Reports prepared August 22, 2005
- Procedure 24590-WTP-GPP-CON-7104, Revision 6, *Nonconformance Reporting and Control*, dated October 27, 2004
- Procedure 24590-WTP-3DP-G04B-00061, Revision 7, *Disposition of Nonconformance Reports*, dated August 01, 2005
- QAIS printout (dated August 23, 2005) of NCR status of NCRs 24590-WTP-NCR-CON-05-0196, 0197, 0198, 0207
- ABAR 24590-WTP-SE-ENS-05-0017
- NCR 24590-WTP-NCR-CON-0196
- 24590-HLW-DBN-S13T-00637
- 24590-HLW-RCPSR-PM-05-0001, *Release for Construction Prior to Seismic Redesign*
- 24590-BOF-RCPSR-PM-05-0001, *Release for Construction Prior to Seismic Redesign*
- 24590-PTF-RCPSR-PM-05-0015, *Release for Construction Prior to Seismic Redesign*
- 24590-PTF-RCPSR-PM-05-0017, *Release for Construction Prior to Seismic Redesign*
- 24590-PTF-RCPSR-PM-05-0016, *Release for Construction Prior to Seismic Redesign*
- 24590-HLW-CPC-CON-04-074, Concrete Pour Card released for pour June 27, 2005
- 24590-HLW-DBN-S13T-00637, Drawing Change Notice, dated June 22, 2005

Identification and Control of NCRs Associated with Revised Ground Motion (RGM) Spectra

The Design Oversight reviewed the RGM Plan and attended several presentations by Engineering, which explained the controls and status associated with the Nonconformances (NCR) generated for the RGM changes introduced by ABAR 24590-WTP-SE-ENS-05-0017. The RGM Plan stated, *"A tracking system will be used to monitor the status of incorporating the revised seismic criteria into the design of SSCs. A list or log will be prepared of the following engineering deliverables."* The RGM Plan also stated, "*This list will be issued to identify the IFC design deliverables that have not been verified as compliant with the revised seismic criteria. This list will form the basis for a general NCR that identified facilities with indeterminate and/or potentially changing design due to the revised seismic criteria. The interim disposition of this NCR will allow work to proceed on the affected SSCs in accordance with this plan. The associated list will be incrementally closed out as the revised seismic criteria are incorporated into the associated design deliverables.*" The Design Oversight reviewed of the QAIS printout of status of NCRs 24590-WTP-NCR-CON-05-0196 and determined the list did provide for update capability as work was completed for the purpose of closure of the overall NCR.

During the presentations listed above, the Design Oversight determined one NCR was being generated for each building with sub-NCRs being generated at three different levels- concrete dwgs/calcs, structural dwgs/calcs, and ISOs for Plant Design. Each of the major buildings had a parent identifier code with the HLW building having the NCR number 24590-WTP-NCR-05-0196. The number 24590-WTP-NCR-05-0196-01 was the HLW building concrete drawings and calculations. Under this code identifier number, a sub-listing of items represented each individual drawing controlling concrete work in that building. For the example in this case, the concrete for the HLW Vitrification Building concrete construction joint plan at elevation 0'-0" was design document number 24590-HLW-DB-S13T-00013 with the change document number 24590-HLW-DBN-S13-000637 assigned for the completed Interim Seismic Calculation completion releasing the concrete pour for slab 1003. This status was in turn tracked in the Quality Assurance Information System (QAIS) printout for the item number with columns for "Verified to ISC Status and the individual NCR number.

The Design Oversight reviewed the printout in the QAIS system for NCR 24590-WTP-NCR-CON-0196, which was a 36 page printout of individual drawings needing verification to meet Interim Seismic Bounding Criteria (ISC Status) against an example of recently released concrete work to verify the release process was controlled and in accordance with the plan. Specifically, the drawing change notice (DCN) 24590-HLW-DBN-S13T-00637 was reviewed and determined HLW Slab 1003 could be released. The Contractor provided a tabularized flowchart for five examples with a five step process starting from the identification of the construction action (i.e. concrete pour ID PCC0019B), using concrete pour card (24590-PTF-CPC-CON-05-037), and processing through the steps:

1) Is design documentation issued for construction (IFC)? - YES

2) Is the associated design documentation listed in the Seismic NCR? - YES

3) Does the Seismic NCR indicate the associated design documentation has been verified to comply with the revised seismic criteria (interim or final)? - YES

4) Does the work involve concrete placement? - YES

5) Has the associated design been updated to incorporate the revised seismic criteria (e.g. DCN for drawing that holds concrete placements)? - YES

For the above example the affected calculation was 24590-PTF-DGC-S13T-0003 with the calculation change (ECCN 24590-PTF-S13T-00011) to the affected drawing 24590-PTF-S13T-0005 and ultimately approved on drawing change notice 24590-PTF-DBN-S13T-00030. The Design Oversight concluded the process was being implemented with adequate controls per the existing procedures.

In addition to the review of the concrete work release process, the Design Oversight reviewed the RSC Plan to determine how work was controlled for non-concrete work, which involved the installation of equipment which was based on cost/benefit analysis. The Design Oversight reviewed a sampling of five *Release of Construction Prior to Seismic Redesign* forms, which provided a description of the work, impact of delay, evaluation of risk for doing work versus delaying work, and the approval signature. The Design Oversight determined there was a technical basis provided for each situation, which utilized the criteria supplied in the RGM Plan. The form was signed by the Area Project Manager and distribution to the Area Project Engineering Manager and the Construction Manager. Although the form is somewhat subjective in its analysis because no costs are actually calculated, the intent of the plan is being implemented. As a recommendation, the cost/benefit analysis is probably being written up by a technical individual other than the APM with the APM providing concurrence. This would be a useful addition to the form to show one-over-one management cost controls. However, this has no bearing on any design adequacy or safety issues.

**Conclusion:**

The Design Oversight determined the RGM Plan was being adequately implemented using existing procedures to ensure interim seismic calculations (ISC) were being performed prior to start of irreversible work and cost/benefit analyses were being implemented prior to start of component level work where ISC had not yet been performed. It is recommended that Engineering perform surveillance level oversight on the implementation of the RGM Plan to ensure that tracking system properly is updated to ensure the timely and proper closure of the building NCRs which are associated with this plan. No Findings or AFIs were identified.

**Submitted By:**_____ **Approved By:**_____
**Date:** **Date:**

**Personnel Interviewed:**
D. Kammenzind, BNI QA POC
G. Shell, BNI QA Manager

M. Ensminger, BNI QC Manager
M. Ehlinger, BNI QA Audit Manager
D. Pisarik, BNI Engineering Process Assurance Manager
M. Wrona, WTP Seismic Modifications Manager
S. Neubauer, Construction Field Engineer
S. Sunday, QA
J. Smith, QA
D. Miller, BNI Seismic Modification Group
D. Khan, BNI Seismic Modification Group
W. Abdul, ORP Project Manager

## Appendix D – Assessment Note D-05-DESIGN-RPPWTP-0016-03

# Implementation of Nonconformance Reporting Process in Relationship to Significant Corrective Actions Reports

## ASSESSMENT NOTE

**Inspection Note Number: D-05-DESIGN-RPPWTP-0016-03**

**Design Oversight Names(s): James Adams Dates of Inspection: August 16, 2005**

**Area/Items(s) Inspected: Implementation of Nonconformance Reporting Process in Relationship to Significant Corrective Actions Reports.**

The Design Oversight reviewed the Contractor's recent nonconformance reports, which were related or generated by significant CARs to determine if the root cause analysis and extent of condition reviews were properly identifying the non-conforming conditions and properly implementing the nonconformance process to disposition the nonconformance through to its proper closure.

**Observations and Assessments**

Analysis of Significant CARs, the Associated Root Cause Analysis (RCA) and Corresponding NCRs Identified

Documents reviewed:

- 24590-WTP-RCA-ENG-05-0001, Revision0, *Root Cause Analysis-Inconsistent Application of AISC N690 Weld Inspection Requirements*, dated June 13, 2005
- 24590-WTP-CAR-QA-05-024, NDE Requirements for Full-Penetration and Partial-Penetration Welds, dated 2/16/2005.
- 24590-WTP-CON-05-0078, dated March 07, 2005
- 24590-WTP-CON-05-0092, dated March 08, 2005
- 24590-WTP-CON-05-0095, dated March 14, 2005
- 24590-WTP-CON-05-0116, dated March 18, 2005
- 24590-WTP-CON-05-00117, dated March 18, 2005
- 24590-WTP-CON-05-00118, dated March 18, 2005
- 24590-WTP-CON-05-00119, dated March 18, 2005
- 24590-WTP-CON-05-00122, dated March 18, 2005
- 24590-WTP-CON-05-00123, dated March 18, 2005
- 24590-WTP-CON-05-00124, dated March 18, 2005
- 24590-WTP-CON-05-00126, dated March 18, 2005
- 24590-WTP-CON-05-00127, dated March 21, 2005
- 24590-WTP-CON-05-00129, dated April 18, 2005
- 24590-WTP-CON-05-00128, dated April 18, 2005
- 24590-WTP-CON-05-00163, dated April 18, 2005
- 24590-WTP-CON-05-00166, dated April 19, 2005
- 24590-WTP-CON-05-00193, dated May 13, 2005
- 24590-WTP-CON-05-00208, dated May 18, 2005
- 24590-WTP-CON-05-00221, dated May 27, 2005
- 24590-WTP-CON-05-00224, dated May 27, 2005
- 24590-WTP-CON-05-00262, dated July 26, 2005

- 24590-WTP-CON-05-00263, dated July 26, 2005
- 24590-WTP-CON-05-00264, dated July 26, 2005
- 24590-WTP-CAR-QA-05-175, Indeterminate Calculation on Structural Members, dated 8/24/2005
- 24590-WTP-CON-05-00272, dated August 24, 2005
- 24590-WTP-RCA-MGT-05-0002, Revision1, *Root Cause Analysis for Quality Level Implementation,* dated August 18, 2005
- 24590-WTP-CAR-QA-05-083, *Gaps in the Migration of Quality Level Information from Design Document to Procurement Documents*, dated May 13, 2005
- 24590-WTP-CON-05-00180, dated May 04, 2005

Identification and Control of NCRs

The Design Oversight reviewed the above documents to determine what processes were determining the existence of problems, and once discovered were the normal procedures being followed to generate CARs, their associated RCAs (RCA for CAR-05-175 was still in progress), and the NCRs required to address the situation.

In the case of the CAR-05-024 N690 "Weld Inspection Requirements," the RCA 24590-WTP-RCA-ENG-05-0001, Revision 0, *Root Cause Analysis-Inconsistent Application of AISC N690 Weld Inspection Requirement* determined the code interpretation by different groups (HLW versus PTF engineering) caused a lack of consistency due to inadequate management guidance and subsequent training of the staff. The Design Oversight verified CAR-05-024 adequately performed an extent of condition review for the N690 code for: 1) all design drawings; 2) work performed to date which would require this code application; 3) vendor drawings; and 4) material requisitions and specifications; and generated 23 NCRs to identify non-conforming conditions requiring disposition. In addition, the RCA increased the corrective actions listing of the CAR-05-024 (CCN 118351) to address other codes, which needed the same evaluation process.

The Design Oversight review of CAR-05-175 and NCR-05-0272 determined the calculations associated with the structural steel for the analytical laboratory needed to be revised due to steel details did not conform to the design criteria and the calculations did not match the issued drawings. The total scope of this NCR and CAR are not yet know and may expand with additional NCRs and CARs, when the RCA is completed. However, the process of identification discovery sourced from the vendor, versus any internal Contractor oversight. The Design Oversight was unable to conclude the effectiveness of this example because the RCA was not complete.

The Design Oversight review of CAR-05-083, the NCR-05-0180, and the RCA MGT-05-0002 determined the CAR was an extensive and complicated rollup CAR involving a series of thirteen primary CARs and eight other CARs. The CAR-05-083 was reported under PAAA NTS-RP-BNRP-RRPWTP-2005-0003. The CAR-05-083 listed an extensive list of 24 corrective actions needed to resolve the issue with the RCA-MGT-05-0002 issuing containing three lessons learned, six other recommendations, fourteen primary recommendations, which were cross related in the CAR action items. The only NCR written to date for CAR-05-083 was NCR

24590-WTP-NCR-CON-05-180, which involved 93 QL pipe spools issued to a commercial grade supplier for fabrication with 26 of these spools which were already installed. Additional spools are expected to be listed. This NCR had a recommended disposition on May 04, 2005, but the final disposition is not yet determined as of August 08, 2005. At the time of the report, the final disposition was still indeterminate.

Tracking and Disposition of NCRs to Satisfy the CAR-05-024

The Design Oversight reviewed the listing of closed NCRs completed in the last 30 days and determined 4 of the 23 NCRs associated with CAR-05-024 had been closed. The Design Oversight reviewed the NCRs 24590-WTP-CON-05-0129, 0262, 0263, and 0264 to verify the disposition, closure and tracking of the NCRs. The Design Oversight determined all NCRs had been properly dispositioned with the need for additional NDE being required on 12 of 23 NCRs. The Design Oversight verified the NDE had been performed, the hold tags cleared, and the NCRs properly closed from the approved and closed NCR with the tracking system showing an accurate status. The Design Oversight concluded the NCR process was being adequately implemented.

**Conclusion:**

The Design Oversight concluded the above examples of significant CARs, which required RCAs and extent of condition review, did provide the associated documentation of the non-conforming conditions via the NCR program and provided good examples of identification and extent of condition reviews (with appropriate NCR being generated as the conditions were found). However, in all cases the source of the identification of the deficiency was based on an event with individuals discovering and reporting the issue. This is considered an both a position and negative Observation since no procedure is being violated and is positive because individuals properly followed procedures to identify deficiencies when discovered and negative because oversight processes are not discovering significant process implementation problems in some areas of the design process (improper code application due to lack of proper training and qualification, calculations supporting design were not done to the proper design criteria, and procurements made and installed to incorrect or inconsistent QL levels. These problems have been self-identified by the Contractor; hence, no Finding or AFI.

**Submitted By:**_____ **Approved By:**_____
**Date:** **Date:**

**Personnel Interviewed:**
D. Kammenzind, BNI QA POC
G. Shell, BNI QA Manager
M. Ensminger, BNI QC Manager
M. Ehlinger, BNI QA Audit Manager
D. Pisarik, BNI Engineering Process Assurance Manager
S. Sallee, BNI QC Inspector
R. Crisp, BNI QA Auditor

# Task# ORP-WTP-2005-0249

E-STARS™ Report
Task Detail Report
12/07/2005 1127

**TASK INFORMATION**

| | | | |
|---|---|---|---|
| **Task#** | ORP-WTP-2005-0249 | | |
| **Subject** | CONCUR: (05-WED-040) TRANSMITTAL OF U.S. DEPARTMENT OF ENERGY (DOE), OFFICE OF RIVER PROTECTION (ORP) DESIGN OVERSIGHT REPORT: REVIEW OF CONTRACTOR PROCESS FOR NONCONFORMANCE REPORTING (NCR) (D-05-DESIGN-016) | | |
| **Parent Task#** | | **Status** | CLOSED |
| **Reference** | | **Due** | |
| **Originator** | Almaraz, Angela | **Priority** | High |
| **Originator Phone** | (509) 376-9025 | **Category** | None |
| **Origination Date** | 09/28/2005 1123 | **Generic1** | |
| **Remote Task#** | | **Generic2** | |
| **Deliverable** | None | **Generic3** | |
| **Class** | None | **View Permissions** | Normal |

**Instructions** Hard copy of the correspondence is being routed for concurrence. Once you have reviewed the correspondence, please approve or disapprove via E-STARS and route to the next person on the list. Thank you.

bcc:
MGR RDG File
WTP OFF File
J. E. Adams, ESQ
J. J. Short, OPA
W. F. Hamel, WED
J. E. Orchard, WED
J. R. Eschenberg, WTP

**ROUTING LISTS**

1 Route List Inactive

- Adams, Jim E - Review - Concur with comments - 09/29/2005 0957
  *Instructions:*
- Orchard, John E - Review - Concur - 12/07/2005 1130
  *Instructions:*
- Short, Jeff J - Review - Concur - 10/03/2005 0742
  *Instructions:*
- Hamel, William F - Review - Concur - 12/07/2005 1130
  *Instructions:*
- Eschenberg, John R - Review - Concur - 12/06/2005 0931
  *Instructions:*
- Schepens, Roy J - Approve - Approved - 12/07/2005 1054
  *Instructions:*



**ATTACHMENTS**

*No Attachments*

**COLLABORATION**

# Task# ORP-WTP-2005-0249

**COMMENTS**

**Poster** Adams, Jim E (Adams, Jim E) - 09/29/2005 0909

Concur

Comments provided on markup. 9/29/05

**TASK DUE DATE HISTORY**

*No Due Date History*

**SUB TASK HISTORY**

*No Subtasks*

*-- end of report --*

# Task# ORP-WTP-2005-0249

E-STARS™ Report
Task Detail Report
09/28/2005 1127

**TASK INFORMATION**

| | | | |
|---|---|---|---|
| **Task#** | ORP-WTP-2005-0249 | | |
| **Subject** | CONCUR: (05-WED-040) TRANSMITTAL OF U.S. DEPARTMENT OF ENERGY (DOE), OFFICE OF RIVER PROTECTION (ORP) DESIGN OVERSIGHT REPORT: REVIEW OF CONTRACTOR PROCESS FOR NONCONFORMANCE REPORTING (NCR) (D-05-DESIGN-016) | | |
| **Parent Task#** | | **Status** | Open |
| **Reference** | | **Due** | |
| **Originator** | Almaraz, Angela | **Priority** | High |
| **Originator Phone** | (509) 376-9025 | **Category** | None |
| **Origination Date** | 09/28/2005 1123 | **Generic1** | |
| **Remote Task#** | | **Generic2** | |
| **Deliverable** | None | **Generic3** | |
| **Class** | None | **View Permissions** | Normal |

**Instructions** Hard copy of the correspondence is being routed for concurrence. Once you have reviewed the correspondence, please approve or disapprove via E-STARS and route to the next person on the list. Thank you.

bcc:
MGR RDG File
WTP OFF File
J. E. Adams, ESQ
J. J. Short, OPA
W. F. Hamel, WED
J. E. Orchard, WED
J. R. Eschenberg, WTP

**ROUTING LISTS**

1 Route List Active

- Adams, Jim E - Review - Awaiting Response
  *Instructions:*
- Orchard, John E - Review - Awaiting Response
  *Instructions:*
- Short, Jeff J - Review - Awaiting Response
  *Instructions:*
- Hamel, William F - Review - Awaiting Response
  *Instructions:*
- Eschenberg, John R - Review - Awaiting Response
  *Instructions:*
- Schepens, Roy J - Approve - Awaiting Response
  *Instructions:*

Rec'd 12/6

**ATTACHMENTS**

*No Attachments*

**COLLABORATION**