



U.S. Department of Energy

~~Office of River Protection~~

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

MAY 31 2007

07-ESQ-052

Mr. W. S. Elkins, Project Director
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Dear Mr. Elkins:

CONTRACT NO. DE-AC27-01RV14136 – ASSESSMENT REPORT A-07-ESQ-RPPWTP-005
– BECHTEL NATIONAL, INC. (BNI) COMMERCIAL GRADE DEDICATION (CGD)
ASSESSMENT, MARCH 12 THROUGH 23, 2007

This letter forwards the results of the U.S. Department of Energy (DOE), Office of River Protection (ORP) assessment of the BNI CGD process conducted March 12 through 23, 2007 (attached).

The assessment concluded that the CGD activities reviewed were adequate; CGD packages adequately established supplier dedication method; identified appropriate critical characteristics; and documented valid strategies for verifying acceptability of items. BNI applied heightened management effort to assure each CGD package was properly planned and documented. However, the Team noted that success was primarily due to this heightened management attention and guidance from the CGD Review Board. The required CGD replanning for 36 procurements to assure they met current Quality Assurance Manual (QAM) requirements also served as good “on-the-job” training and was a significant contributor to the consistent application of QAM requirements.

The assessment concluded that the main CGD Procedures (24590-WTP-3DP-G04T-00909, “Commercial Grade Dedication,” and 24590-WTP-3GPG-ENG-0014, “Dedication of Commercial Grade Items”) did not adequately capture all the CGD criteria in the BNI QAM. For example, QAM criteria related to the methods for dedicating items was not captured in the procedures. The above procedures also did not provide sufficient details to adequately implement the QAM criteria or to ensure that the application of these complex CGD processes would produce consistent and acceptable results as required by the QAM. A specific example of this would be the process for applying CGD to items with added engineered features. The procedure needed more process detail and better definitions to satisfy QAM requirements. The QAM also lacked sufficient criteria for applying CGD to “engineered items.” The Team also concluded training provided for CGD, though compliant with BNI procedures, did not meet the intent of the DOE requirements captured in the QAM.

As a result of this assessment, the Price-Anderson Amendments Act (PAAA) Nonconforming Tracking System (NTS) Report NTS-RP-BNRP-RRPWTP-2006-0003, “Commercial Grade Dedication,” BNI had submitted to ORP for closure verification will be returned because

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corrective actions related to revising procedures and providing training were incomplete (this NTS is part of a pending PAAA enforcement investigation); approval of 24590-WTP-QAM-QA-06-001, "Quality Assurance Manual," will be delayed until criteria on the use of CGD of engineered items is added to the QAM; and ORP will return the Authorization Basis Amendment Request 24590-WTP-SE-ENG-06-0166, "Modification to Safety Requirements Document to allow the Use of NQA-1-2004 for Commercial Grade Dedication," pending QAM changes.

At the time of this assessment, BNI was in the process of lifting the BNI Management Suspension of Work (MSW), 24590-WTP-MSOW-MGT-06-0001, which put a hold on CGD procurements. The Team believes BNI should reconsider their decision of lifting the MSW. The Team believes that one of the criteria for lifting the MSW has not been met; in particular, the one that requires revising CGD procedures to meet QAM requirements. Based on this assessment report, additional work to the procedure is still required to satisfy that condition. Prior to releasing the MSW, BNI is requested to provide ORP with a presentation explaining the rationale in making that decision.

BNI received evidence that improvements to the CGD procedure were still needed in a December 2006 evaluation performed by Sequoia Corporation, but BNI did not write a Project Issues Evaluation Report on the evaluation results as required by the BNI corrective action management program. As a result, improvements to procedures and training mentioned in the evaluation were not formally reviewed and their disposition documented. However, BNI management had communicated to DOE that the CGD process had been fixed and was compliant with requirements. The Team found no evidence that BNI had completed implementing the Sequoia Corporation noted improvements, or that BNI had conducted a comprehensive review of the CGD processes to verify the reported improvements did not impact program adequacy.

At this time, ORP is not able to approve the BNI process for the CGD of items with added engineered features, and directs BNI not to release any of these procurement types until the conditions noted in this assessment have been resolved and ORP approval is obtained. ORP requests BNI consider performing an independent assessment of the adequacy of the entire CGD process after the corrective actions for this assessment have been completed and after the Sequoia Corporation reported Observations and recommendations are addressed. The closure of the CGD NTS report should also depend on the results of this assessment.

The assessment resulted in three Findings, five Observations, one Assessment Follow-up Item (AFI), and one recommendation. Within 30 days of receipt of this letter BNI should respond to the assessment Findings, the Observations, and the AFI. For the Findings, the response should include:

- The causes of the Findings.

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- The corrective steps that have been taken to control or remove any adverse impact to identified noncompliance situations (remedial actions) and the results achieved.
- The corrective steps that will be taken to prevent further Findings.
- The date when all corrective actions are completed, verified, and compliance with applicable requirements is achieved.

The response to the assessment Observations and the AFI should include intended actions and expected completion dates.

If you have any questions, please contact me, or your staff may call William J. Taylor, Assistant Manager, Office of Environmental Safety and Quality, (509) 376-7851.

Sincerely,



Shirley J. Olinger, Acting Manager
Office of River Protection

ESQ:SAV

Attachment

cc w/attach:

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

ASSESSMENT: Commercial Grade Dedication Assessment

REPORT: A-07-ESQ-RPPWTP-005

FACILITY: Waste Treatment and Immobilization Plant Construction

LOCATION: Richland, Washington

DATES: March 12 through 23, 2007

ASSESSORS: Samuel A. Vega, Lead Assessor
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APPROVED BY: P. P. Carrier, Team Lead
Verification and Confirmation Official

Executive Summary

The U.S. Department of Energy (DOE), Office of River Protection (ORP) conducted an assessment of Bechtel National, Inc. (BNI) Commercial Grade Dedication (CGD) processes from March 12 through 23, 2007. The purpose of the assessment was to assess BNI's implementation of CGD requirements described in Policy Q-07.1 of 24590-WTP-QAM-01-001, "Quality Assurance Manual" (QAM). This included assessing the adequacy of procedures and procedure implementation, and the effectiveness of BNI's application of CGD activities in procuring materials and services for safety related applications. The Team also performed closure verification of BNI corrective actions associated with the Nuclear Safety Management rule noncompliance NTS-ORP-BNRP-RRPWTP-2006-0003, "Commercial Grade Dedication," and sampled implementation of other BNI corrective actions related to CGD.

The Team reviewed personnel training, activities associated with establishing critical characteristics of an item considered for CGD, the assessment of the subcontractor processes and control, and the determination of the dedication methods to verify and test an item's critical characteristics. The Team did not look at the item receiving, verification, and testing of critical characteristics, or the handling and control of CGD items. These topics will be covered in a future assessment.

The assessment concluded that the CGD activities reviewed were adequate; CGD packages adequately established supplier dedication method; identified appropriate critical characteristics; and documented valid strategies for verifying acceptability of items. BNI applied heightened management effort to assure each CGD package was properly planned and documented. However, the Team noted that success was primarily due to this heightened management attention and guidance from the CGD Review Board. The repetition of redoing the CGD planning for 36 procurements to assure they met current QAM requirements also served as good on-the-job training and was a significant contributor to the consistent application of QAM requirements.

The assessment concluded that the main CGD Procedures (24590-WTP-3DP-G04T-00909, "Commercial grade Dedication," and 24590-WTP-3GPG-ENG-0014, "Dedication of Commercial Grade Items,") did not adequately capture all the CGD criteria in the BNI QAM. For example, QAM criteria related to the methods for dedicating items was not captured in the procedures. The above procedures also did not provide sufficient details to adequately implement the QAM criteria or to ensure that the application of these complex CGD processes would produce consistent and acceptable results as required by the QAM. A specific example of this would be the process for applying CGD to items with added engineered features. The procedure needed more process detail and better definitions to satisfy QAM requirements. The QAM also lacked sufficient criteria for applying CGD to "engineered Items" and was not based on any industry consensus standard. Implementing criteria should be based on industry accepted standards or guidance. However, the Team was not able to locate any standards or guidance on the CGD of engineered items. If none exists, BNI should have developed an implementing standard or strategy sufficiently detailed for DOE to approve its application.

The Team also determined that training for CGD was not adequate for such a complex process. Formal training on the CGD procedures consisted of a reading assignment. Informal was also provided in the form of indoctrinations on the CGD procedure, and management guidance. An evaluation performed by Sequoia Corporation in December 2006 also identified a need to improve procedures and training. At the time of this assessment, BNI had initiated actions develop a systematic approach to training to augment the current formal training with classroom training and comprehension testing. In addition, ORP Assessment A-07-ESQ-RPPWTP-006 also identified issues with CGD training related to DOE Order 5480.20 and BNI's application of a Systematic Approach to Training which were captured in BNI Project Issues Evaluation Report (PIER) 24590-PIER-MGT-07-0326.

As a result of this assessment, ORP will return to BNI the closure package for the Price-Anderson Amendments Act (PAAA) Nonconforming Tracking System (NTS) Report NTS-RP-BNRP-RRPWTP-2006-0003, "Commercial grade Dedication." BNI had submitted the closure package to ORP for closure verification. ORP has determined that corrective actions related to revising procedures and providing training were incomplete (this NTS is part of a pending PAAA enforcement investigation). ORP will not recommend closure of the NTS report to the Office of Enforcement. Approval of 24590-WTP-QAM-QA-06-001, "Quality Assurance Manual," will also be delayed until criteria on the use of CGD of engineered items is added to the QAM. ORP will return the Authorization Basis Amendment Request 24590-WTP-SE-ENG-06-0166, "Modification to Safety Requirements Document to allow the Use of NQA-1-2004 for Commercial Grade Dedication," pending QAM changes. Also, the Team determined the conditions for release for the BNI Management Suspension of Work (24590-WTP-MSOW-MGT-06-0001) have not been met because the condition for closure to revise procedures to be compliant with the QAM had not been met. BNI management is requested to reconsider releasing the hold until the issues in this report and the Sequoia Corporation reported Observations and recommendations are addressed.

The Team identified three Findings, five Observations, and one Assessment Follow-up Item (AFI):

A-07-ESQ-RPPWTP-005-F01: CGD procedure did not meet BNI Quality Assurance Program Description requirements.

A-07-ESQ-RPPWTP-005-F02: BNI had not initiated their PIER process to capture several Observations and recommendations associated with an evaluation conducted for BNI by Sequoia Corporation.

A-07-ESQ-RPPWTP-005-F03: Drawings for Q-level raceways that include Commercial Material (CM) sub-components did not clearly indicate the boundaries between Q and CM content as required by BNI procedures.

A-07-ESQ-RPPWTP-005-O01: BNI procedure processes in WTP-3DP-G04T-00909, "Commercial Grade Dedication," lacked sufficient detail.

A-07-ESQ-RPPWTP-005-O02: BNI corrective action verification process needs improvement.

A-07-ESQ-RPPWTP-005-O03: The intended use of the Commercial Grade Evaluation Form and the required detail is not clear, resulting in using references instead of the actual required information. This adds work and renders the document difficult to use by support organizations.

A-07-ESQ-RPPWTP-005-O04: Continuing training provided during weekly staff meetings had not been formally documented.

A-07-ESQ-RPPWTP-005-O05: BNI should develop some basic knowledge proficiencies for each position and a process to validate that individuals have the necessary understanding of the CGD process and requirements.

A-07-ESQ-RPPWTP-005-AFI01: Review completed BNI efforts to incorporate the recommendations and Observations from the program evaluation conducted in December 2006 by the Sequoia Corporation. This report contained several recommendations and Observations for improving CGD training.

A-07-ESQ-RPPWTP-005-R01: ORP recommends BNI verify all procedures supporting CGD activities are adequate and meet current QAM requirements prior releasing the Management Suspension of Work.

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List of Acronyms

AFI	Assessment Follow-up Item
BNI	Bechtel National, Inc.
CAR	Corrective Action Report
CCFA	Critical Characteristic for Acceptance
CGD	Commercial Grade Dedication
CM	Commercial Material
DOE	U.S. Department of Energy
EPRI	Electric Power Research Institute
NCR	Non-Conformance Report
NTS	Non-Conformance Tracking System
ORP	Office of River Protection
PAAA	Price-Anderson Amendments Act
PIER	Project Issues Evaluation Report
QA	Quality Assurance
QAM	Quality Assurance Manual
QAPD	Quality Assurance Program Description
SSC	Structures, Systems, and Components
WTP	Waste Treatment and Immobilization Plant

Bechtel National, Inc. (BNI)

Procurement Quality Assurance (QA)

1.0 Details

This Team evaluated BNI Commercial Grade Dedication (CGD) processes, including the establishment of supplier dedication method, the identification of appropriate critical characteristics, and the determination and documentation of valid strategies for verifying acceptability of items. The Team also reviewed personnel training for CGD, performed closure verification of corrective actions associated with NTS-ORP-BNRP-RRPWTP-2006-0003, "Commercial Grade Dedication," and sampled implementation of other BNI corrective actions related to CGD. The Team did not look at the item receiving, verification, and testing of critical characteristics, or the handling and control of CGD items. These topics will be covered in another assessment.

Implementation of the CGD processes was assessed against Electric Power Research Institute (EPRI) NP-5652, "Guideline for the Utilization of Commercial Grade items in Nuclear Safety Related Applications," which the U.S. Department of Energy (DOE) references in the "Quality Assurance Management System Guide," DOE G 414.1-2A as an acceptable implementation method. BNI was using this EPRI guide as a basis for their program.

1.1 Program Adequacy and Effectiveness

The Team reviewed the BNI QA Manual (QAM), the main procedure for implementing the CGD process, the associated BNI CGD guide, and other procedures related to CGD activities such as CGD supplier evaluations, receiving inspection, management and independent assessments, and design verification. Management and staff with responsibility associated with CGD activities were interviewed, and related documentation was reviewed. This was done to assess BNI's implementation of CGD requirements described in Policy Q-07.1 of 24590-WTP-QAM-01-001, "Quality Assurance Manual." This included assessing the adequacy of procedures and procedure implementation, and the effectiveness of BNI's application of CGD activities in procuring materials and services for safety related applications.

Policy Q-07-1 of the BNI QAM provides criteria for the application CGD activities such as performing technical evaluations (Section 3.15.2), establishing of critical characteristics (Section 3.15.3), and acceptable dedication methods (Section 3.15.4 through 3.15.7). The Team identified several instances where the BNI CGD Procedure 24590-WTP-3DP-G04T-00909, "Commercial Grade Dedication," Revision 6, and the associated guide 24590-WTP-GPG-ENG-0104, "Dedication of Commercial Grade Items," Revision 0, did not adequately implement the CGD criteria in the QAM. For example, of the three CGD methods discussed in the QAM, the criteria for applying the second method was not completely captured in the BNI implementing procedures and were incorrectly applied; the criteria for the other two methods were not included in the procedure. The process for applying CGD to items with added engineered features was not sufficiently developed because process steps necessary to meet QAM criteria were missing, and the procedure lacked sufficient direction to assure consistent application.

The BNI procedures allow the maximum latitude in regards to applying the CGD process to not only commercially provided material, but also CGD of products with features engineered specifically for the Waste Treatment and Immobilization Plant (WTP), and CGD of engineering and technical services. The Team verified that the QAM and NQA-1 2004 definitions for CGD were broad enough to allow dedication of these more complex applications of CGD. However, the QAM did not provide sufficient criteria for the CGD of engineered items, and the implementing procedures did not establish processes based on industry standard or guidance as required in DOE O 414.1C; where the contractor is directed to "Apply additional standards, where practicable and consistent with contractual or regulatory requirements and as necessary to address unique/specific work activities..."

The Team was not able to identify industry endorsement or standards related to the practice of applying CGD to products with engineered features. Discussions with Nuclear Regulatory Commission contacts indicated they occasionally allowed the practice on a case-by-case basis. Current BNI application of CGD to products with engineered features appeared to go beyond what is contained in current industry guidance on CGD. With no industry endorsement, standard, or guidance available, BNI should have developed an implementing standard or strategy sufficiently detailed for DOE to understand and approve its application prior to implementation.

The BNI QAM Policy Q-02.1 indicated QAM requirements "are to be contained in project procedures...to provide the details necessary for proper flow down and implementation of QA requirements." Policy Q-05 Stated that "Activities affecting quality shall be described to a level of detail commensurate with the complexity of the activity and the need to assure consistent and acceptable results." Following are some additional examples where the CGD procedure did not adequately flow down requirements, or the processes provided lacked the detail necessary to assure consistent and acceptable results:

- Section 3.2.2 of the QAM; a note stated CGD would be applied to "engineered items" and defined engineered items as "items for which some custom design effort is required by the supplier to meet purchaser requirements." The procedure did not capture this definition specifically and did not establish explicit criteria to bind the term "some custom design effort." The latitude allowed due to the procedure's brevity was much broader than what ORP is willing to allow.
- Section 3.2.2.1; this section indicated engineered items would be dedicated by performing a "design verification of the entire design, including RPP-WTP and supplier scope, to assure that the SSC design satisfies the safety function(s) and the RPP-WTP and supplier design are integrated." As written, the process was incomplete because the procedure did not also require the physical critical characteristics of the engineered item to be dedicated using the methods prescribed in the QAM. The Sequoia Corporation review team made a similar comment about the dedication of engineered items in stating "The corresponding acceptance criteria, design verification... might not verify the capability of the hardware... as effectively as a functional test would."
- Section 3.2.2.1; this section indicated engineered items would be "dedicated by performing a design verification of the entire design, including RPP-WTP and supplier scope, to assure

that the SSC design satisfies the safety function(s) and the RPP-WTP and supplier design are integrated.” Procedure 24590-WTP-WTP-3DP-G04B-00027, “Design Verification,” Revision 8 in Section 3.1 it stated: “Design verification shall be performed to determine the adequacy of the design... The design verification process shall be thorough and carefully completed.” The Team concluded that a design verification focused on the Structures, Systems, and Components (SSC) did not meet the requirements of the design verification procedure. The Team also felt a design verification of a redesigned item (performed by the Commercial Material [CM] supplier) focused only on the SSCs would not be thorough enough to catch any adverse impacts to the non SSC portions of the design; that could adversely impact item life or performance.

- QAM Policy Q-07.1 provided definitions for CGD which included the dedication of services, but the procedure did not provide a comprehensive process for dedicating services. The only reference to the dedication of services was found in the last paragraph of Section 3.2.2.2 where it stated “A separate package (Commercial Grade Dedication Evaluation Form) shall be developed outlining the design services being performed by the supplier...dedication of services shall be performed in accordance with Section 3.2.2.1 and address the entire integrated design.” Section 3.2.2.2 applied only to engineered items and the associated design services. The form referenced in the quote was focused only on items. It was not structured to clearly accommodate stand-alone services not associated with engineered items. The Team understands the criteria for dedicating an item or a service are the same. For example, you would still need to do a technical evaluation, and you would still apply the NQA-1 methods for dedicating the service, and you would still perform a CGD survey, but instead of verifying the Critical Characteristics for Acceptance (CCFA) of an item, you would be looking at the contractor’s performance capability and the dedication activities would focus on demonstrating the contractor’s processes are sufficiently robust to satisfy NQA-1 requirements. The current BNI procedure and the CGD evaluation form were too focused on the dedication of CCFAs related to the physical attributes of items. They did not contain the flexibility to also be applied to a broad range of services, and did not address the difference in approach between dedicating stand-alone services and items.
- Section 2.3; the definition for Certificate of Conformance provided did not match or satisfy the definition provided in NQA-1 (the QAM did not contain a definition) which stated “A document signed or otherwise authenticated by an authorized individual certifying the degree to which items or services meet specified requirements.” The procedure did not provide sufficient direction on how to authenticate a Certificate of Conformance, or who was the authorizing individual or agent. The EPRI guide (NP-5652) indicated the purchaser functioned as the authorizing agent and verified the activities associated with the certification were appropriate and would satisfy requirements.
- Section 3.3.3; discussed the evaluation which established the dedication methods. The criteria for applying the second method were not completely flowed-down into the procedure and were incorrectly applied. For example, the procedure indicated BNI could augment the supplier’s processes with additional testing. The QAM and the EPRI Guide indicated this method relies only on the contractor’s processes for assuring the critical characteristics meet requirements. The criteria for Methods 1 and 3 were not included in the procedure. Also missing from the procedure was a comprehensive process to assure consistent and acceptable

results. Much of the section contained only statements or quotations from the QAM, but did no include process steps to accomplish the required actions.

- Section 2.0; the last paragraph, stated that BNI qualified suppliers were permitted to perform CGD of their suppliers. However, the procedure did not indicate that suppliers were required through contract clauses to notify BNI when they commercially dedicate a sub-supplier. Additionally, there was no written direction provided in any procedure to describe what actions to take when a supplier notified BNI of their intent to apply CGD to a sub-supplier. The process was incomplete.
- Section 2.0; The QAM indicated CGD was to be in accordance with ASME-NQA-1-2004, however the procedure reference to NQA-1-1989 is confusing and should be removed.

Based on the above discussed procedure weaknesses, the following Finding has been identified:

A-07-ESQ-RPPWTP-005-F01: CGD Procedure 24590-WTP-3DP-G04T-00909 did not meet BNI Quality Assurance Program Description (QAPD) requirements. QAM criteria was not adequately or completely applied to procedures, and processes in procedures were not sufficiently developed to incorporate QAM criteria.

The Team found Procedure 24590-WTP-3DP-G04T-00909, “Commercial grade Dedication,” difficult to follow. In many places, it lacked direction as to who was to perform discussed activities; supporting procedures were not always referenced, topics were scattered throughout the procedure, guidance on how and when to apply the different methods was missing, and some of the procedure processes were not complete.

Some specific examples in Procedure 24590-WTP-3DP-G04T-00909 include:

- Section 2.3; the definition for “dedication” stated it was “an acceptance process performed in accordance with this procedure...” the Team noted that not all the dedication activities were described in the procedure. A more correct statement would be “An acceptance process performed in accordance with the BNI QAM requirements...,” which is more in line with the ASME-NQA-1-2004 definition.
- Section 3.2.1;
 1. Provided process steps but did not indicate who was responsible for performing those steps. Some additional information was provided in Exhibit A and in Section 3.1, “Role and Responsibilities.” However, the information was still incomplete and was difficult to follow because it was different locations of the procedure.
 2. Step 9 stated: “Shall be conformed to the CGD Survey results.” This statement lacked clarity and the procedure did not provide additional direction.
 3. The process prescribed in this section was not sufficiently detailed to assure consistent and acceptable results. For example Steps 6, 8, 10, 11, and 12 require action but the

procedure did not indicate who does the action, how the action is initiated, who the interface for the action is, or what procedure governs the action.

- Section 3.2.3; the last paragraph discussing post installation uses the terms “as appropriate” and “as necessary.” These terms are vague and do not provide sufficient detail to assure consistent and acceptable results. For example, conditions for the use of post installation are not discussed. Process controls discussed in the EPRI guide were missing; to assure the dedication process is not completed until post installation testing is finished; to assure pending post installation testing is tracked until completed; and to assure the inadvertent use of items before the dedication post installation testing is completed. The procedure did indicate a Non-Conformance Report (NCR) was to be written, but it failed to explain the purpose of the NCR, and there was no reference to the NCR or post installation testing procedures. Also, the post installation testing process was difficult to follow because it was discussed in several statements dispersed throughout the procedure.
- Section 3.3.1 did not provide a clear process with sufficient direction and detail to assure consistent and acceptable results. For example, the discussion in this section explained what information was required in the CGD evaluation form, but did not provide a process for collecting the required information, and the section did not reference the guide 24590-WTP-GPG-ENG-0104 which provides more direction on completing the form. The section also required a preliminary review of the completed form before it went to final review, but the section did not indicate who was to perform the review, how completion of the review was documented, and how the completed form was to be submitted to the CGD Readiness Review Committee for final review.
- The commercial grade item evaluation form discussed two environmental conditions (“harsh” and “mild).” These terms are not defined in the procedure or in the guide.

The Team also identified concerns similar to those noted in the procedure when the guide 24590-WTP-3GPG-ENG-0014, “Dedication of Commercial Grade Items” was reviewed, but because the guide is a non mandatory document, comments will not be provided in this report. However, one Observation made was that much of the information provided in the guide seemed to belong in the procedure.

This condition of incomplete procedures processes and examples of procedure improvements discussed above is captured in the following Observation:

A-07-ESQ-RPPWTP-005-O01: BNI procedure processes in WTP-3DP-G04T-00909, “Commercial Grade Dedication,” lacked sufficient detail.

The Team reviewed a draft report of a December 2006 evaluation of the CGD processes BNI had commissioned Sequoia Corporation to conduct. This evaluation resulted in several recommendations and Observations. The draft evaluation report indicated: “Although the end results of the evaluations reviewed are acceptable, several opportunities to improve effectiveness and consistency of the CGD process exists and should be pursued.” The Team determined the improvements suggested in the Observations and recommendations indicated BNI procedures were not complete and required work. The Team felt the Sequoia Corporation’s Observations

and recommendations warranted BNI attention, and DOE Office of River Protection (ORP) will track how BNI addresses them as part of the following Assessment Follow-up Item (AFI):

A-07-ESQ-RPPWTP-005-AFI01: BNI should incorporate the recommendations and Observations from the program evaluation conducted in December 2006 by Sequoia Corporation. This report contained several recommendations and Observations for improving the procedure and the CGD training which highlighted procedure weaknesses which need BNI attention.

At the time of the ORP assessment, BNI had not yet entered any of the Sequoia Corporation's report Observations and recommendations into the Project Issues Evaluation Report (PIER) system for tracking, and documentation of BNI's evaluation and their final determination of how to address them. Not generating a PIER was not in accordance with BNI Procedure 24590-WTP-GPP-MGT-022, "Project Issues Evaluation Reporting (PIER)," Revision 1, which required documenting in a PIER "Opportunities for improvement such as suggestions for improvements, recommendations, and error likely situations." When discussed with BNI, PIER 24590-WTP-PIER-MGT-07-0325 was generated.

This procedure noncompliance was captured in the following Finding:

A-07-ESQ-RPPWTP-005-F02: BNI had not initiated their PIER process to capture several Observations and recommendations associated with an evaluation conducted for BNI by Sequoia Corporation.

The Team discussed supplier evaluations performed for CGD with responsible BNI management, read the related BNI procedures, and reviewed 12 CGD supplier evaluation reports. The Team found the CGD supplier evaluations were adequate and properly documented. The Team determined through interviews that CGD supplier evaluation and receiving inspection procedures had not yet been revised to meet Revision 7 of the QAM (BNI process allows a 90 days grace period to implement). The Team felt these procedures were key procedure for assuring the CGD process functioned correctly and needed to be reviewed and updated for the Contractor to have a complete and integrated CGD process. This discussion resulted in the following recommendation:

A-07-ESQ-RPPWTP-005-R01: ORP recommends BNI verify all procedures supporting CGD activities are adequate and meet current QAM requirements prior releasing the Management Suspension of Work. This would assure all processes (such as supplier surveys, receiving inspections, non-conformance reporting, etc.) are in line with the CGD requirements and adequately support and interface with each other.

Based on interview discussions, a review of corrective action closure verification for Non-Conformance Tracking System (NTS) report NTS-ORP-BNRP-RRPWTP-2006-0003, and the Team's review of corrective action closure verification process as explained in Procedures 24590-WTP-GPP-QA-201, "Corrective Action," Revision 17, and 24590-WTP-GPP-QA-101, "Price-Anderson Amendments Act/Worker Safety and Health Program Compliance and Reporting," Revision 16, the Team determined corrective action verification efforts lacked consistency in the rigor applied and generally focused on the individual corrective actions and

did not include verification that the original Finding (or problem) was adequately addressed. DOE O 414.1C specified that Contractor QA programs were to "Establish and implement processes to detect and prevent quality problems,... identify, control, and correct items, services, and processes that do not meet established requirements,... identify the cause of problems, and include prevention of recurrence as part of corrective action planning..." Policy 16-1 of the BNI QAPD requires that for significant conditions adverse to quality processes be established for the identification, determination of the cause, and establishment of corrective actions to preclude their recurrence. In each case, the requirement's focus was to fix the problem or condition. In order to meet the intent of the DOE Order and the QAM, corrective action verification should include more than just checking that each individual corrective action was completed as specified, but should also include an effort to verify that the original problem (as noted in the causal analysis) had been adequately addressed.

ASME-NQA-1-1989, in Requirement 16, "Corrective Action," it states that "follow-up action shall be taken to verify implementation of the corrective action." Policy 16.1 of the QAM, Section 3.1.1.E, required "Follow-up action shall be taken to verify implementation of corrective action." In Section 3.4 of the same policy it states "Completion of corrective action shall be verified" the corrective action Procedure, 24590-WTP-GPP-QA-201, required Quality Assurance/Supplier Quality to "Perform final verification after all corrective actions have been completed." However, the procedure did not provide a process specifying how this was to be accomplished or documented.

The Team believes BNI could improve on the rigor and scope of its corrective action verification efforts, specifically with NTS corrective action verification. A more rigorous corrective action verification effort of Corrective Actions 5 and 8 of NTS Report NTS-ORP-BNRP-RRPWTP-2006-0003 would have identified that the CGD procedure needed further improvement and that the established CGD training was not robust. NTS reported conditions have high visibility within DOE, especially the NTS report related to CGD. The management suspension of work served as an administrative barrier to prevent future CGD procurements until the CGD process was fixed. The Team questions the BNI decision to declare the NTS report a "complete" without the benefit of a documented assessment to verify the thoroughness of the corrective actions. The Sequoia Corporation evaluation did not do this. The Team believes the Sequoia Corporation report identified additional work that was still needed to improve BNI's CGD process. This additional work should have been incorporated into the NTS.

ORP Assessment A-07-ESQ-RPPWTP-006, "BNI Training Program Improvement Initiative," also noted needed improvement in BNI's corrective action closure verification efforts and stated: "BNI had not demonstrated the necessary level of rigor in assuring the completion and closure of a CAR-specified action and two corrective action commitments specified in NTS report, NTS-ORP-BNRP-RRPWTP-2006-0002. The Team determined BNI needed to exercise a greater degree of thoroughness in the evaluation and closure of NTS commitments and CAR-specified corrective actions."

This needed improvement to the corrective action verification efforts is captured in the following Observation:

A-07-ESQ-RPPWTP-005-O02: BNI corrective action verification process needs improvement; procedures need to establish expectations; additional rigor and consistency is needed; and efforts should go beyond just verifying corrective actions were done as specified but should include efforts to verify all the corrective actions related to a problem adequately corrected the problem.

Conclusion:

The Team determined that the main CGD Procedures (24590-WTP-3DP-G04T-00909, "Commercial Grade Dedication," and 24590-WTP-3GPG-ENG-0014, "Dedication of Commercial Grade Items,") did not adequately capture the CGD criteria in the QAM (for example, CGD methods, post installation testing, dedication of engineered items, etc.). The procedure was not sufficiently detailed or complete to fully capture the processes applied, or to assure future "consistent and acceptable results" as required by the QAM. Critical processes for the application of CGD methods, and especially the process for applying CGD to items with added engineered features were incomplete. Some procedures for activities supporting CGD activities still required revision to meet current QAM requirements. The Team determined that the corrective actions for NTS Report NTS-RP-BNRP-RRPWTP-2006-0003 related to training and procedure revision were incomplete. ORP could not recommend the Office of Enforcement close the NTS because additional work was still required as identified in this report and the Sequoia Corporation report.

The Team also noted that the QAM did not provide sufficient criteria for applying the concept of "engineered items." The expectation ORP had when it approved the QAM was that the BNI CGD procedures would provide definitions and industry based criteria sufficient to adequately bind and control the processes for dedicating items with added engineered features. The Team found no evidence that the application for engineered items was based on industry endorsement and/or guidance. As a result, the ORP review of 24590-WTP-QAM-QA-06-001, "Quality Assurance Manual," Revision 0, will require BNI to identify an implementing standard or develop an implementation strategy sufficiently detailed for DOE to approve its application. ORP will also return the Authorization Basis Amendment Request 24590-WTP-SE-ENG-06-0166, "Modification to Safety Requirements Document to Allow the Use of NQA-1-2004 for Commercial Grade Dedication," due to this pending QAM changes.

Improvement of the BNI corrective action verification efforts is needed, specifically with NTS corrective action verification. Corrective action verification should include efforts to determine if collectively the corrective actions related to a problem adequately addressed that problem.

One of the conditions for releasing the BNI Management Suspension of Work (24590-WTP-MSOW-MGT-06-0001) required the CGD procedure to be revised to meet QAM requirements. The Team concluded that this condition was not complete because additional work to the procedure was still needed. The Team recommends that BNI reconsider its decision to release the management suspension of work until the Sequoia Corporation evaluation Observations and recommendations are implemented, the Findings and Observations of this report are addressed, and BNI verifies corrective actions have adequately addressed the problem causes stated in the root cause analysis.

1.2 Supplier Dedication Packages

The Team reviewed the BNI QAM, the EPRI guidance documents, and the BNI implanting procedures related to the CGD of materials for safety related use. The Team also interviewed responsible personnel and management involved in the CGD process. Twelve CGD evaluations and selected associated documents were reviewed and six were discussed with responsible engineering personnel. Of the twelve packages reviewed, none had problems that indicated inadequate material deficiencies. The CGD activities reviewed were adequate; CGD packages adequately established supplier dedication method; identified appropriate critical characteristics; and documented valid strategies for verifying acceptability of items. BNI had applied heightened management efforts to assure each CGD was properly planned and documented.

The Team noted that application of the "Commercial Grade Item/Commercial grade Services Evaluation Form" was not always in accordance with the procedures and the sample forms provided in the CGD procedure. For example, sample forms in the procedure included a detailed test sampling plan for Nondestructive Testing and inspection. The procedure direction indicated it was preferable to use this sampling plan but allowed the option to use others. When other sampling plans were used, a general reference to the applicable standard was provided. The form did not provide a detailed sampling plan, and the reference provided was not specific enough to indicate where in the standard the sampling plan was located. Another example is that safety basis documents were referenced instead of providing the required information on the form as the directions in the procedure implied. The Team felt understood that the intent of the form was to have one organization (Engineering) identify, capture, and document in one location all the information necessary for all participants to support the CGD of an item. By including only references, other participating organizations must locate and review the references and determine Engineering's intent (causing additional work instead of minimizing it). When this was discussed with some of the engineers involved, they indicated they understood the references. The Team's understanding was that this form was used for scoping CGD supplier surveys, it was also used to develop the Material Acceptance Plan for receiving inspection, and for planning any required testing. These application practices noticed by the Team were viewed as indicators that some BNI staff did not fully understand the intended use of the evaluation form.

This concern with the use of the CGD Evaluation form is captured in the following Observation:

A-07-ESQ-RPPWTP-005-003; the intended use of the Commercial Grade Evaluation Form and the required detail is not clear, resulting in using references instead of the actual required information. This adds work and renders the document difficult to use by support organizations.

CGD Packages 24590-WTP-CGD-C-03-005, "Bolting Assemblies, Bolts nuts and washers for structural steel" was initiated because in 2003 a Q level Procurement stipulating required fasteners to be purchased directly from the manufacturer, NUCOR. The delivered fasteners were not purchased from NUCOR but from a third party distributor that did not have an NQA-1 program. BNI applied the CGD process to the delivered shipment. This was an inappropriate use of the CGD process and not in accordance with QAM requirements at the time. In reality, this was a nonconforming item and should have been addressed as such. While investigating this

further, the Team found BNI had also issued a NCR, and the final resolution of the issue satisfied the requirements for addressing nonconforming items. This CGD was revisited recently as part of the CGD NTS corrective action to review the technical content of all previous CGD packages. The Team questioned why the CGD package had not been canceled as being an invalid CGD. BNI responded that they found no reason to reopen closed documentation. However, BNI had cancelled several other CGD packages because they were not adequate candidates for CGD. The Engineering staff involved did not understand the Team's concern for not correcting documentation that indicated an incorrect process was applied. This concern with not cancelling the CGD package is captured as part of Observation A-07-ESQ-RPPWTP-005-005.

Conclusions:

The Team concluded that BNI had adequately performed and documented assessed activities; CGD packages adequately established supplier dedication method, identified appropriate critical characteristics, documented valid strategies for verifying acceptability of items. BNI had applied heightened management efforts to assure each CGD was properly planned and documented.

BNI generally had developed reasonable processes that adequately applied industry guidance for CGD, although a number of procedure compliance errors were noted. These errors did not affect the adequacy of the material. The application of CGD to items with added engineered features as proposed in BNI procedures and the Quality Assurance Program were not adequate or sufficiently based on industry practice.

1.3 Training Effectiveness

The Team evaluated the experience and training of Supplier Quality Representatives, Responsible Engineers, and CGD Engineers. The Team found training consisted of required reading of CGD procedures and briefings discussing procedure changes. Continuing training consisted of briefings conducted as needed during weekly staff meetings to maintain personnel proficiency.

The Team reviewed training records, procedures, and interviewed personnel to verify training requirements were adequately applied to personnel performing CGD activities. Training to achieve and maintain proficiency was being provided in accordance with BNI procedures. A systemic approach was applied by management in developing personnel training profiles that identified required reading of BNI policies, procedures, and guides. In addition, Contractor management used the sharing of lessons learned as a tool to maintaining the proficiency of the personnel involved in CGD activities. All personnel interviewed met the requirements of the BNI associated procedures. Training records of personnel interviewed were reviewed and all were current on their training and were included on the List of Qualified Individuals. Interviews with individuals on the CGD process were knowledgeable of their responsibility and interfaces between organizations seemed to be understood and worked well.

Training records were maintained for required reading, and for any formal briefings conducted. For continuing training, only some records had been maintained. No records were being kept when training was provided during weekly staff meetings.

This issue with training records resulted in the following Observation:

A-07-ESQ-RPPWTP-005-O04: Continuing training provided during weekly staff meetings had not been formally documented.

The Team noticed there was no evidence of a process to determine if personnel who had completed required reading or training had learned the basic information necessary to perform their duties. Having personnel attend training and read required reading does not mean they understand the material and can perform their assigned task adequately.

This resulted in the following Observation:

A-07-ESQ-RPPWTP-005-O05: BNI should develop some basic knowledge proficiencies for each position and a process to validate that individuals have the necessary understanding of the CGD process and requirements.

The BNI QAM in Policy Q-02.2 indicated that indoctrination of personnel performing activities affecting quality will address "job responsibilities and authority, general criteria, including applicable codes and standards, company procedures, and quality assurance requirements." The QAM also indicated training shall be given to achieve initial proficiency, maintain proficiency, and adapt to changes. The Team believes that the training requirements established, which was done in accordance to BNI procedures, did not meet the intent of the QAM. CGD is a complicated and diverse concept to apply, and requires the interface of several disciplines and organizations. Participants in CGD activities need to understand the needs of those they interface with, and they also need to have a global understanding of CGD concepts. A reading assignment of the procedures applicable to each individual work scope does not assure this level of understanding.

Even though there was no specific evidence that individuals conducting CGD activities lacked knowledge of their specific jobs, the Team felt that at the time of the assessment there were non-process conditions in place that assured such a high level of understanding at the time of the assessment. For example, the review and reprocessing of 36 previously developed CGD packages that was performed served as an excellent on-the-job training. Reworked packages were reviewed and commented on several times, and the processes applied were also revised and refined during this effort. This resulted in a heightened level of management attention and instruction that will not exist in the future. To the Team, it was the repetition of redoing 36 CGD packages, not the required reading, which allowed staff and management to become so familiar with the process. During the course of the assessment, the Team noted instances that could be indicators that a lack of a global understanding of CGD and its overall intent has impacted past decisions. Three examples are provided below:

- The use of references when completing the CGD Evaluation Form instead of inserting the required information (Observation A-07-ESQ-RPPWTP-005-O04); indicated a lack of understanding that part of the intent of the form was a one time effort to compile and interpret required information.

- The 2003 CGD of a nonconformance condition where the Engineering staff interviewed was not aware that this was an inappropriate application of the process.
- The process provided in Procedure 24590-WTP-3DP-G04T-00909 for the dedication of an engineered item CCFAs; it only required a design verification of the provided design, where QAM criteria, NQA-1, and EPRI guidance all require the CCFAs be verified for the physical items (Part of Finding A-07-ESQ-RPPWTP-005-F01).

The Team was concerned that as the project evolved and key management and staff move into other positions with different job responsibilities (which the Team saw some evidence of that already happening), the current procedures and the current training will not be sufficient to assure that adequate and consistent work will be maintained.

ORP Assessment A-07-ESQ-RPPWTP-006, "BNI Training Program Improvement Initiative," also indicated established CGD training was incomplete because CGD related positions were omitted from the training improvement initiative actions related to systematic approach to training. Engineering took immediate action to correct this specific oversight and generated PIER 24590-WTP-PIER-MGT-07-0326, Revision 0, dated March 15, 2007.

In December 2006 the Sequoia Corporation evaluation resulted in several recommendations and Observations that included improving CGD training by adding formal classroom training on CGD concepts, workshops in practical application, and comprehension testing. The Team felt these recommendations were essential. At the time of this assessment, BNI had in place initiatives to improve the current training by implementing the Sequoia Corporation recommendations.

Instead of issuing a Finding, ORP will track progress of this initiative as part of the following AFI:

A-07-ESQ-RPPWTP-005-AFI01: Review completed BNI efforts to incorporate the recommendations and Observations from the program evaluation conducted in December 2006 by the Sequoia Corporation. This report contained several recommendations and Observations for improving CGD training.

Conclusion:

Continuing training was not always documented. The development of BNI training was in accordance with procedures and all staff interviewed had adequately completed all required training. Individuals interviewed knew and understood their responsibilities. The Team was concerned that the achieved level of knowledge was primarily due to the increased management attention and not a robust training program.

BNI initiatives to improve the training program should address the concerns with the training content identified during this assessment.

1.4 Corrective Actions

Corrective Action Reports (CAR) dealing with CGD activities and the closure documentation from NTS-RP-BNRP-RRPWTP-2006-0003 were reviewed during this assessment to determine the adequacy of associated corrective actions.

The root cause analysis associated with the NTS report was well performed. The corrective actions identified were generally completed as indicated in the NTS report (exceptions were noted with corrective action Number 5 and corrective action Number 8, which require revising the CGD procedure and providing CGD training). The extent of condition was accurate and of sufficient breadth. Validation conducted by the Contractor of the completion of corrective actions was adequate. Improvements in CGD packages reviewed were evident during the review. Improvements like the Commercial Grade Item Readiness Review Committee, the forms for documenting, and evaluating the activities associated with CGD planning have improved the rigor applied to the CGD process and reduced the potential for mistakes.

The Team reviewed CARs for BNI assessments related to CGD. During this review, the Team noted that BNI QA had identified instances where CM was installed in Q systems. The Team investigated the details and found that cable trays designated as quality level "Q" systems had components installed using "CM." One example included Reference Drawing 24590-LAW-E2-E53T-00129 which had a Q designator on conduit: FA1029Q-3/4" but only the supports were installed using Q material. The rest of the materials (conduit and connectors) were installed CM. A Special Management Report conducted by BNI to investigate the condition incorrectly concluded that the proper process had been followed and met the requirements of the engineering design criteria and Safety Requirements Document, and no further action was initiated at the time. The Team discussed this with Engineering Management, and determined this conclusion was inaccurate and based on incomplete information. The Team found there was confusion on the part of craft installing the materials and personnel doing the inspections of the material as to which parts of the design were Q materials and which were CM. The BNI procedures support the use of "Q" and "CM" components on the same drawing provided that quality boundaries are clearly shown with notes or flags or a combination of notes and flags. This was not done. There needs to be clear designation of items that are Q vs. CM so that craft workers doing installation and personnel doing inspections know the quality level of the items they are installing/inspecting.

This non-compliance with the lack of CM designators in Q level system drawings is captured in the following Finding:

A-07-ESQ-RPPWTP-005-F03: Drawings for Q-level raceways that include CM sub-components did not clearly indicate the boundaries between Q and CM content as required by BNI procedures.

Conclusion:

The Team concluded that with the exception of the condition with the Q and CM designation discussed in Finding A-07-ESQ-RPPWTP-005-F03, BNI has adequately addressed previously identified CGD problems. However, as a result of Finding A-07-ESQ-RPPWTP-005-F01 which

identifies several procedure deficiencies, ORP will not recommend closure of the NTS report until the CGD procedures have been revised to address the Finding.

2.0 Items Opened

A-07-ESQ-RPPWTP-005-F01: CGD Procedure 24590-WTP-3DP-G04T-00909 did not meet BNI QAPD requirements. QAM criteria was not adequately or completely applied to procedures, and processes in procedures were not sufficiently developed to incorporate QAM criteria.

A-07-ESQ-RPPWTP-005-F02: BNI had not initiated their PIER process to capture several Observations and recommendations associated with an evaluation conducted for BNI by the Sequoia Corporation.

A-07-ESQ-RPPWTP-005-F03: Drawings for Q-level raceways that include CM sub-components did not clearly indicate the boundaries between Q and CM content as required by BNI procedures.

A-07-ESQ-RPPWTP-005-O01: BNI procedure processes in WTP-3DP-G04T-00909, "Commercial Grade Dedication," lacked sufficient process detail.

A-07-ESQ-RPPWTP-005-O02: BNI corrective action verification process needs improvement.

A-07-ESQ-RPPWTP-005-O03: The intended use of the Commercial Grade Evaluation Form and the required detail is not clear, resulting in using references instead of the actual required information. This adds work and renders the document difficult to use by support organizations.

A-07-ESQ-RPPWTP-005-O04: Continuing training provided during weekly staff meetings had not been formally documented.

A-07-ESQ-RPPWTP-005-O05: BNI should develop some basic knowledge proficiencies for each position and a process to validate that individuals have the necessary understanding of the CGD process and requirements.

A-07-ESQ-RPPWTP-005-AFI01: Review completed BNI efforts to incorporate the recommendations and Observations from the program evaluation conducted in December 2006 by the Sequoia Corporation. This report contained several recommendations and Observations for improving CGD training.

A-07-ESQ-RPPWTP-005-R01: ORP recommends BNI verify all procedures supporting CGD activities are adequate and meet current QAM requirements prior releasing the Management Suspension of Work.

3.0 Items Closed

None

4.0 Items Reviewed

None