U.S. Department of Energy
OFFICE OF RIVER PROTECTION
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

06-WTP-135

OCT 12 2006

Mr. C. M. Albert, Project Manager
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Dear Mr. Albert:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF U.S. DEPARTMENT OF ENERGY (DOE), OFFICE OF RIVER PROTECTION (ORP) DESIGN OVERSIGHT REPORT: REVIEW OF SUBCONTRACTOR CONFIGURATION MANAGEMENT (CM) (D-06-DESIGN-029)

ORP has conducted a Design Oversight of the Subcontractor CM and is transmitting the resulting attached report by letter.

Design Oversight Report D-06-DESIGN-029 concluded that overall, Bechtel National, Inc. (BNI) controlled Subcontractor CM via requirements implemented via subcontracts. However, weaknesses in establishing CM were noted in the subcontractors' completed work performance (failure to install to the approved design) and CM documentation of existing requirements (CM databases and as-built drawings) submitted at work completion, during turnover by the subcontractor's. These weaknesses should be addressed to effectively establish formal CM for the completed subcontractor work as required by the Safety Requirements Document Safety Criterion SC 4.0-1, via the BNI CM Plan and procedures. The following weaknesses were noted:

1. BNI did not always inspect construction to assure adherence to approved working drawings and specifications (Finding D-06-DESIGN-029-F03-Electronic Overload Relays).

2. BNI inappropriately closed Project Issue Evaluation Report (PIER) 06-067 "Lack of Timely Extent of Condition Evaluation for CAR-05-186" (Finding D-06-DESIGN-029-F04).

3. The subcontractors' submittals were not always sufficient to permit BNI to accurately update the CM databases *InfoWorks, INtools, and Component Information System (CIS) and drawings* (AFI D-06-DESIGN-029-A01).

4. The subcontractor required submittals did not contain sufficient information to establish CM of the facility to meet the Contract requirements of the CM Plan (AFI D-06-DESIGN-029-A05).

5. Cable numbers and termination numbers were not provided on some 480 Volt Alternating Current distribution loads delaying and complicating the establishment of electrical CM necessary for operating, maintenance and testing (Observation D-06-DESIGN-029-O02).

BNI is requested to provide, within 30 days of receipt of this letter, a reply to the issues above to inform ORP of actions to be taken to address these issues and the dates for resolution.

This letter is not considered to constitute a change to the Contract. In the event the Contractor disagrees with this interpretation, it must immediately notify the Contracting Officer orally, and otherwise comply with the requirements of the Contract clause entitled 52.243-7, "Notification of Changes."

If you have any questions, please contact me, or your staff may call Lewis F. Miller, Jr., Acting Director, Waste Treatment and Immobilization Plant Project, Engineering Division, (509) 376-6817.

Sincerely,

John R. Eschenberg, Project Manager
Waste Treatment and Immobilization Plant

WED:JEA

Attachment

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

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

DOE ORP DESIGN OVERSIGHT REPORT

REVIEW OF SUBCONTRACTOR CONFIGURATION MANAGEMENT

September 2006

Design Oversight: D-06-DESIGN-029

Team Lead: James E. Adams, WED Design Oversight Engineer

Team Members: Carol Babel, WED Engineer
James Navarro, WTP Facility Representative

EXECUTIVE SUMMARY

The U.S. Department of Energy, Office of River Protection (ORP) staff conducted a design oversight of subcontractor configuration management (CM) to:

1. Determine if the subcontractor turnover documentation established CM for the systems reviewed for acceptance by Bechtel National, Inc. (BNI). This included the review of the subcontractor process for determining information (including as-built drawings) for verification of the physical facility.
2. Verify the BNI CM databases were revised for the completed subcontractor as-built condition, or input was submitted for the changes needed for BNI to establish CM of the computer databases InfoWorks[1], Component Information System (CIS), and INtools[2].
3. Evaluate systems under beneficial occupancy (use of a system to support construction without total completion or turnover to commissioning) to determine if the principles of CM are being applied for safe use of the system and maintenance of CM while in use by project management.
4. Evaluate the BNI oversight of subcontractor work completion at turnover to determine if CM has been sufficiently established.

Overall Conclusions:

The assessors concluded the subcontractors submitted the required documentation (drawings, testing records, etc) to satisfy their subcontracts, but the submittals were not always sufficient to permit BNI to accurately establish integrated CM between the subcontractor drawings and the BNI CM databases InfoWorks, INtools, and CIS; nor were the subcontractor submittals always sufficient (no electrical interconnection drawings) or accurate (as-built piping and instrumentation drawing [P&ID]) representations of the facility, based on comparison to the physical facility. The assessors also determined (by electrical walk down) BNI did not always provide adequate inspection of subcontractor work to ensure the facility was consistent with the accepted design and completed the required breaker testing (Finding **D-06- AMWTP-DESIGN-029-F03** Electronic Overload Relays). In addition, the assessors determined cable numbers and termination numbers were not provided on some 480 VAC non-safety distribution loads, because the approved design specification did not require the subcontractor to provide cable numbers or termination labeling for the work (Observation **D-06-AMWTP-DESIGN-029-O02**). This information is needed to provide CM to support test, operations, and maintenance efforts for the system. (Objectives 1 and 2)

The inconsistencies between the design and the physical configuration were documented, during the recently completed BNI Management Assessment (MA) 24590-WTP-MAR-ENG-060-0009. The BNI Project Issue Evaluation Reports (PIER), issued during this assessment, will be collectively tracked by ORP using Assessment Follow-up Item **D-06-AMWTP-DESIGN-029-A01**. The failure to establish subcontractor CM, as documented in the BNI PIERs initiated by the BNI MA, as well as additional examples in this report Section 4.1, are counter to the Contract, Standard 1, Section(C)(2)(D)(ii). The Contract CM requirements are implemented via

[1] InfoWorks is a registered trademark of InfoWorks International, Inc., Highland Park, Illinois.
[2] INtools is a registered trademark of Integraph Corporation, Huntsville, Alabama.

the CM Plan; however, the subcontractor CM requirements were not flowed down to subcontracts and procedures Assessment Followup Item (AFI) **D-06-AMWTP-DESIGN-029-A05)** sufficiently (Objectives 1 and 2).

The field walk-down of the Fire Protection System, which was in service under beneficial occupancy procedure (used by Construction forces prior to completion and turnover) was adequately controlled for CM purposes using the field sketch drawings program. (Objectives 3)

The review of the recently completed BNI Management Assessment (24590-WTP-MAR-ENG-06-0009) concluded BNI had previously identified the field issues ORP identified in their walk-downs with the exception of the electrical issues identified in this report. However, the review of the closure of PIER 06-0067 (Failure to perform a timely extent of condition review of a CAR) determined the PIER was inappropriately closed without addressing the issue raised by the PIER (timeliness of the corrective action process for an extent of condition review), which may have contributed to the high number of PIERs documented for the recent management assessment (Finding **D-06-AMWTP-DESIGN-029-F04**). The BNI MA also identified a series of recommendations to enhance the CM program. These are considered necessary program improvements to adequately implement the establishment of CM for subcontractor work (AFI **D-06-AMWTP-DESIGN-029-A05)** (Objective 4).

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LIST OF ACRONYMS

AFI	Assessment Followup Item
BNI	Bechtel National, Inc.
BOF	Balance-of-Facilities
CAR	corrective action report
CDR	construction deficiency report
CIS	Component Information System
CM	configuration management
CMMS	Computerized Maintenance Management System
DOE	U.S. Department of Energy
FY	fiscal year
MA	management assessment
MCC	motor control center
ORP	Office of River Protection
P&ID	piping and instrumentation drawing
PIER	Project Issue Evaluation Report
QA	Quality Assurance
WED	WTP Engineering Division
WTP	Waste Treatment and Immobilization Plant

1.0 INTRODUCTION

A major component of the U.S. Department of Energy (DOE), Office of River Protection (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 provides compliance to DOE Order (O) 226.1, *Implementation of Department of Energy Oversight Policy*, Section 4.0, via the periodic assessment of configuration management (CM) and scheduled via the ORP Integrated Assessment Program (ORP M 220.1) Rev. 4, on the annual integrated schedule. The fiscal year (FY) 2006 assessment schedule provides for this assessment as the last of the FY by WED.

This design oversight focused on the establishment of configuration for a subcontractor designed and built system as determined by review of submitted records turned over to BNI at the completion of work, including as-built drawings and other system CM records. The review included BNI ability to establish and maintain the system configuration through its CM Plan for turnover to commissioning and into the operating contractor. The CM program base requirements are identified in the "Configuration Management Plan" (24590-WTP-PL-MG-01-002, Rev. 3), which is based on compliance to the Safety Requirements Document (SRD) Safety Criterion 4.0-1 and 4.0-3, which identify the implementing standard, ISO 10007: 1995 (E), *Quality Management Systems: Guidelines for Configuration Management.*

The design oversight consisted of document reviews, field walkdowns, and BNI management and staff interviews. The team clarified and evaluated the initial information through early August 2006 and prepared the report in late September 2006. The preliminary report was informally reviewed by BNI for factual accuracy before issuing the final report.

2.0 BACKGROUND

The project has constructed several Balance-of-Facilities (BOF) systems using subcontractor design and build contracts. The systems are completed and ready for turnover from the subcontractor to BNI. This design oversight report evaluates the subcontractor efforts to comply with the BNI CM Plan and provide CM of the system using as-built documentation to BNI for the maintenance of CM by BNI for turnover to the commissioning phase.

3.0 OBJECTIVES, SCOPE, AND APPROACH

3.1 Objectives

ORP conducted this design oversight as part of its responsibility as the WTP owner to ensure that the CM program implementation followed the approved CM Plan and implementing procedures. The specific objectives of this oversight are to:

1. Determine if the subcontractor turnover documentation established CM for the systems reviewed for acceptance by BNI. This included the review of the subcontractor process

for determining information (including as-built drawings) for verification of the physical facility.

2. Verify the BNI CM databases were revised for the completed subcontractor as-built condition or input was submitted for the changes needed for the BNI CM computer databases InfoWorks, Component Information System (CIS), and INtools.
3. Evaluate systems under beneficial occupancy (use of system by construction prior to turnover to commissioning) to determine if the principles of CM are being applied.
4. Evaluate BNI's oversight of subcontractor turnover to determine if CM is being established at completion of work.

3.2 Scope

This oversight included a review of the subcontractor turnover submittals for two BOF systems (Cooling Tower and Steam Plant), as well as BNI as-built documentation for one system in use under beneficial occupancy (Fire Protection). The design oversight also conducted interviews with subcontractor and BNI management and staff, walked down field conditions for CM, and reviewed field-controlled prints files for correlation to the CM databases CIS, INtools, and InfoWorks.

3.3 Approach

ORP conducted oversight within the guidelines of ORP DI 220.1 Rev. 1, "Conduct of Design Oversight." Information was collected from various BNI and DOE documents, and interviews with BNI design staff were conducted. See Section 6.0 for a full listing of reviewed documents and personnel contacted.

The approved design oversight plan, "Review of Contractor Configuration Management of As-Built Systems," is provided in Appendix A.

4.0 RESULTS

4.1 Adequacy of Subcontractor Submittals for the Establishment of Configuration Management for the Steam Plant and Cooling Tower

The BNI CM Plan establishes CM as the combination of (1) the incorporation of design requirements to the approved design, (2) the physical installation of the approved design, and (3) supporting documentation in databases aligning both. The assessors conducted document reviews and field walkdowns to verify items 2 and 3 were properly completed by subcontractors upon completion of work notices to BNI, which provided a sufficient and accurate basis for the establishment of CM for these systems.

Cooling Tower System (Mechanical and Instrumentation)

The assessors reviewed BNI and subcontractor procedures and requested documentation submitted by the subcontractors to determine if the subcontractor turnover submittals were sufficient documentation to support establishment of CM for turnover of the system using BNI procedures listed in Section 6.2.

The assessor reviewed the following documents and as-built drawings for the Cooling Tower system:

1. "Open Items by Contractor/Subcontractor for All Item Types," Facility: BOF, Contractor/Sub: Thompson Mechanical, date: 8/3/2006, 4 pages.
2. "Items by Contractor/Subcontractor for All Item Types," Facility: All Facilities, Contractor/Sub: Thompson Mechanical, date: 8/3/2006, 26 pages.
3. River Protection Project Waste Treatment Plant, EXHIBIT "D," Engineer, Procure and Construct (EPC) Subcontract, 24590-CM-HC1-MECM-00001, "Mechanical Draft Cooling Tower Facility," Rev. 54, SCOPE OF WORK.
4. "Subcontractor Built Facilities Component Identification," 24590-WTP-MAR-ENG-06-0009, Rev. 9, date 8/18/2006.
5. "Consolidated System Description of the WTP Plant Cooling Water (PCW) Systems," 24590-WTP-3YD-PCW-00001, Rev. 0.
6. CIS database printouts, dated 8/3/06, along with the equipment lists and valve lists, for Cooling Tower.
7. InfoWorks database printout, updated, for Cooling Tower.
8. Printout report, "Surveillances Performed on each Subcontract," subcontractor company, Thompson Mechanical, includes surveillance numbers and description, undated. Reviewed approximately 20 reports from this list.
9. Set of Project Issue Evaluation Reports (PIER) generated for MAR-ENG-06-009.
10. Complete set of as-built drawings (24590-CM-HC1-MECM-00001-27-06, 07, 08, 24-29, and 34-37) for the Cooling Tower and Support Building Facility.

The assessors determined the cooling tower subcontractor submitted a set of as-built drawings to meet contractual requirements. However, the assessor also noted the subcontract statement of work did not specify the types of drawings to be submitted by the subcontractor to satisfy the final acceptance for the subcontract. This is discussed further in the electrical walkdown section.

The assessors reviewed the database printouts for CIS, INtools, and InfoWorks. A 100% sampling of the CIS was verified to be on the piping and instrumentation drawing (P&ID). However, the *INtools* listing was not current to the P&ID drawings and an InfoWorks linkage had not been made for components installed by the subcontractor preventing the components from being traced back to the subcontractor purchase specification, which was also documented in the PIERs 06-0066, 06-0069, and 06-0080.

Steam Plant System (Mechanical and Instrumentation)

The assessors reviewed the following documents, database printouts, and as-built drawings for the Steam Plant (subcontractor University Mechanical Contractors, Inc.) to understand the documents used to provide CM input to BNI.

- Punch-list of open items;
- CIS for equipment, valve, inline component, and pipeline information;

- *INtools* for instrument and actuated valve and damper information;
- *InfoWorks* for implementation of procedure-directed relationships between documents and components; and
- As-Built Drawings.
  - 24590-CM-HC1-MBF0-00001-04-05, Rev. 00F, M0.1, Slab Piping
  - 24590-CM-HC1-MBF0-00001-04-20, Rev. 00E, M1.1, P&ID Legend
  - 24590-CM-HC1-MBF0-00001-04-21, Rev. 00G, M2.1, P&ID Steam Plant Systems
  - 24590-CM-HC1-MBF0-00001-04-22, Rev. 00G, M2.2, P&ID Miscellaneous Systems
  - 24590-CM-HC1-MBF0-00001-04-23, Rev. 00D, M3.1, Piping Plan – Operating Level
  - 24590-CM-HC1-MBF0-00001-04-24, Rev. 00D, M3.2, Piping Plan – Upper Level
  - 24590-CM-HC1-MBF0-00001-04-00032, Rev. 00F, M2.3, P&ID Package Steam Boilers

Results of the database review determined the following:

- Nine open items remained to be closed on the punch-list. These open items were all assigned to BNI, because the subcontractor had demobilized from the site without the work being fully transferred to BNI Construction. However, none of these actions items involved any need to update or re-submit CM documentation.
- Contrary to 2450-WTP-3DP-G04B-00058, "Supplier Engineering and Quality Verification Documents," several components on the accepted as-built Steam Plant P&IDs did not exist in the CIS database. This item was addressed by BNI PIER 06-0063.
- Several components on the accepted as-built Steam Plant P&IDs did not exit in INtools database. This item was addressed by BNI PIER 06-0066.
- All components are in InfoWorks; however, the linkage tie between the components to subcontractor submittals does not exist in InfoWorks (the item could not be traced to the subcontractor). This item was addressed by BNI PIER 06-0069.

The field walkdown of the Steam Plant mechanical system consisted of a sampling of approximately 100 different components within the Steam Plant (valves, pumps, tanks, and instruments). Configuration of as-built conditions was assessed, using approved subcontractor as-built drawings accepted by BNI, by verification of the tags on the components in the field matched the tag numbers provided on the as-built drawings. The results are as follows:

- Many valves in the Steam Plant are tagged with numbers, but the tag numbers are not shown on the as-built drawings. There are lists of valve tag numbers posted in the facility, but no way to correlate these numbers back to the as-built drawings.
- Tagging is difficult to read. Several tags looked blank, but on closer inspection a small number is faintly stamped at the top of tag; examples (S-PDI-8398, S-TI-8397).
- Tags on boiler HPS-BLR-00003C components in the field do not match tag numbers on the as-built drawing or are missing on the as-built drawing.
- Chemical feed system tanks in the field are not positioned in the same order as on the as-built drawing (amine and sulfite tanks are switched).

- Spare pumps installed (connected to the tank) on the chemical system tanks are not tagged in the field and are not labeled on the as-built drawing either.
- A few valves shown on as-built drawing with tag numbers, (example SCW-LV-8301) were missing a tag in the field.

All the issues identified above by the assessor were also identified by BNI PIER-06-0051 and 06-0056.

The assessors concluded several examples were identified illustrating inconsistencies between the approved design and the physical installation, as well as inconsistencies between the CM databases and the physical installation. These same inconsistencies were identified and documented via a series of PIERs in BNIs Management Assessment Report (MA) (24590-WTP-MAR-ENG-06-0009, Rev. 0, "Subcontractor Built Facilities Component Identification"). The issues identified by this assessment were bounded by the issues documented in the MA with the exception of the two Findings identified in this report. A tracking Assessment Followup Item (AFI) **(D-06-AMWTP-DESIGN-029-A01)** will verify closure of the related BNI PIERs (see Section 5.1).

Electrical Walk-down of Steam Plant and Cooling Tower Systems

The assessors performed a walkdown of the 480 VAC motor control center (MCC) distribution panels for both the Steam Plant and the Cooling Tower. The assessors requested the electrical interconnection wiring diagrams for the walk-down, but were informed by BNI the subcontract was not required to as-built drawings of the electrical interconnections. The electrical interconnections would show cable numbers and termination numbers allowing re-landing of cables if removed and facilitate design changes if needed. The lack of sufficient drawings to operate, maintain, or test the facility/system is inconsistent with the CM Plan requirement that subcontractors are responsible for establishing initial CM at turnover. Hence, the assessors made the Observation **(D-06-AMWTP-DESIGN-029-O02)** that the original subcontracts put in place for subcontractor work were established prior to the approval of the CM Plan and were not revised subsequent to the establishment of this CM requirement.

The electrical walk-down was conducted with BNI design engineering representative (provided vendor internal wiring prints for Cutler-Hammer (24590-CM-HC1-00001-10-00096 and 24590-CM-HC1-00001-34-01), two electricians, an electrical code inspector, and a BNI Quality Assurance (QA) representative for the internal wiring check. The panels were determined to be de-energized by the electricians who prepared a START card for signature. A sampling of 480 VAC load panels were opened to determine if the wiring was labeled and the termination points were labeled to be able to check interconnections. In the case of the Cooling Tower system MCC-8300 1A and 1B, the loads PCW-MTR-0005 and PCW-PMP-00016B were examined. For the Steam Plant, the MCC 85001A loads CIV-UH-0055, 0056, 0057, 0097, 0098, and 0099 were opened and inspected. The following observations were made:

1. The load wiring from the breakers was not routed correctly. The wiring going from the breakers was not routed through the three holes in the Siemen's overload current relay to allow sensing the overload condition. The vender schematics clearly indicate this routing was required, but it was not installed per vendor drawings. All of the breakers checked by the assessors had the same cable misrouting. Upon assessor request, BNI checked the subcontractor to verify if the subcontractor was complete with all testing since the prime contractors had reported work complete. The electrical subcontractor for the Steam Plant

reported testing was complete and turned in certified documentation that the MCCs were installed and tested per the manufacturer's recommendation. BNI issued a construction deficiency report (CDR) (24590-WTP-CDR-CON-06-0152) and recommended disposition to inspect and re-wire/test properly. The Cooling Tower subcontractor indicated work was still in progress and testing had not yet been completed, but indicated the situation was a known condition.

The failure to properly install the wiring, complete testing, and certify the results correctly for the Steam Plant is considered a Finding (**D-06-AMWTP-DESIGN-029-F03**) against BNI for failure to provide inspection for subcontractor installation to the design and perform test.

2. The inspection of the Cooling Tower internal wiring determined the vendor wiring was installed in accordance with the design drawings and the field side wiring had labeled cable numbers and terminal point numbers. However, none of this information was submitted to BNI because the subcontract did not require the submittal of electrical interconnections. This was previously identified as Observation **D-06-AMWTP-DESIGN-029-O02** for failure to specify sufficient documentation submittal in the subcontract to satisfy the requirements of the CM Plan.

3. The inspection of the Steam Plant internal wiring determined the vendor wiring was installed in accordance with the design drawings, but the field side wiring had not labeled the cables or terminal points with numbers. The subcontract did not require this labeling of cables and terminations nor the submittal of as-built interconnection wiring which is needed to operate, maintain, and test the system. This is covered by Observation **D-06-AMWTP-DESIGN-029-O02**.

4.2 Results of Fire Protection Walkdown for Configuration Management

The assessors reviewed the fire protection system, which was being operated under beneficial occupancy by Construction forces, to determine if CM was being maintained for lock and tag as well as for controlled operations. The walkdown was performed using the field sketch 24590-WTP-FSK-CON-P-5-001, sheet 1, Rev. 4, as the as-built reference, and with the P&ID 24590-BOF-M6-FSW-0001, Rev. 6, dated March 26, 2006, used as the design reference. The assessors sampled 20 valves by highlighting them on the P&ID and having the utility group locate them on 24590-WTP-FSK-CON-P-5-001 and the CIS printout. BNI located all installed valves on the CIS print and provided 24590-WTP-FSK-CON-P-5-001, which showed the location of all installed valves. All valves were located with proper tagging and all in correct position. One valve (FSW-PIV-01251) could not be verified because the position indicator had been removed for construction convenience. This was not an issue, as the valve was normally closed and went to installed piping in the Steam Plant, which was isolated. No issues were identified and the assessor concluded the system was adequately maintained for CM.

4.3 Contractor Management Self-Assessment

The assessors reviewed BNI MA (24590-WTP-MAR-ENG-06-0009) to evaluate the effectiveness of the BNI oversight of subcontractor CM and determine the adequacy of the corrective actions to identified issues.

The BNI MA was completed in late July 2006 and issued on August 18, 2006, which was during this assessment. The scope of the BNI MA was identical to the ORP assessment except it covered the simulator facility as well. The BNI MA included partial walkdowns (sampling of

the systems) and reviews of the CM databases, CIS, INtools, Computerized Maintenance Management System (CMMS), and InfoWorks. The results were documented in over 20 PIERs and 3 Quality Action Information System (QAIS) recommendations. The BNI MA report does not make a collective judgment on the compliance of the project to the CM Plan, or the effectiveness of the implementation of CM for this point in the project. However, the executive summary did provide context with the statement, "The physical condition, and design inconsistencies, are not detrimental to the intended facility design. They must be corrected to establish consistency between the design and the physical configuration, and enable traceability between documents and components to support testing, maintenance and operations."

The assessor reviewed the BNI MA report for the identification and documentation of issues in the corrective action process, as well as the adequacy of the responses. The listing of the PIERs and corrective action reports (CAR) generated are contained in the references, and were still being evaluated by BNI for corrective actions required as of the writing of this report. However, the topics and areas covered by the PIERs are in some cases repeats of CARs, such as 2590-WTP-CAR-QA-05-186 (PIER 06-67 and 68). Within the CAR-05-186, actions 3 and 4 required an extent of condition review that was never performed until noted in the MA report as item SPF-4 (24590-WTP-PIER-MGT-06-0067). This PIER was closed by the PIER Review Board based on the initiation and completion of the extent of condition effort in CAR-QA-05-186 after the PIER was written and without addressing the issue the PIER identified, which was the timely completion of the extent of condition review. This is considered inappropriate closure of the PIER and is documented as Finding **D-06-AMWTP-DESIGN-029-F04** for failure to properly implement the corrective action program. The following are the results of the ORP evaluation of the BNI MA report:

- The assessors confirmed all items found by the ORP assessors were previously identified by BNI MA, except for the two Findings issued by this assessment. AFI **D-06-AMWTP-DESIGN-029-A01** covered issues dealing with as-built and CM database issues.
- The assessors reviewed the recommendations made in PIERs 24590-WTP-06-0052, 0068, 0070, 0079, 0089, 0090, and 0092, and agree these recommendations would not only enhance the CM program, but are essential to sufficiently clarify the program to support implementation of the CM Plan as well as be compliant to the BNI Quality Assurance Manual Policy Q-05.1 as stated in the BNI MA. The assessors confirmed all PIERs were issued and evaluated, with three being identified as CARs 24590-WTP-QA-06-0-006 (PIER-06-0077), 24590-WTP-QA-06-039 (PIER-06-0151), and 24590-WTP-QA-06-050 (PIER-06-0080). This series of PIERs and CARs will be tracked by AFI **AMWTP-DESIGN-029-A05**
- The assessors confirmed the misrouting of electrical cable through the electronic overload relay was identified in CDR-06-0152, after this assessment identified the issue.
- The assessors considered the BNI MA an adequate assessment for the scope identified with the exception of the Findings identified above.

5.0 OPEN ITEMS AND RECOMMENDATIONS

5.1 Open Items

D-06-AMWTP-DESIGN-029-A01: This AFI tracks closure of PIERs, generated by BNI's MA (24590-WTP-MAR-ENG-06-0009), associated with inconsistencies between the approved

design and physical inspections (PIERs 06-0051, 06-0056, 06-0061, 06-0062, 06-0063, 06-0066, 06-0067, 06-0069, and 06-0116).

D-06-AMWTP-DESIGN-029-O02: Cable numbers and termination numbers were not provided by subcontractors as CM submittals to BNI for the 480 VAC non-safety distribution loads because the approved design specification did not require the subcontractor to provide cable numbers or termination labeling for the work. This information is needed to provide CM to support test, operations, and maintenance efforts for the system.

D-06-AMWTP-DESIGN-029-F03

Requirement: Contract DE-AC-27-01RV14136, dated December 11, 2000, between DOE and BNI, Section C "Statement of Work," Standard 4 "Construction, Procurement, Acceptance Testing," Section f, "Construction and Acceptance Testing," provides for the following:

1) BNI shall maintain an adequate construction inspection system and acceptance testing system, and perform such inspections and testing, as well as ensure that the work performed under the contract conforms to Contract requirements.

    "(iv.) Inspection of construction to assure adherence to approved working drawings and specifications."

Condition Contrary to Requirement: Contrary to the above, the assessors determined the wiring for MCC-1A 480 VAC load center (over-current protective relays) was routed incorrectly and would not allow proper functioning of the over-current relays per drawing 24590-CM-HC1-MBFO-00001-00096, Rev. A. No turnover punchlist item or walk-down process could be identified indicating this was a known open item for the Steam Plant subcontractor. This is considered a Finding (**D-06-AMWTP-DESIGN-029-F03**) against the Contract, for failure to inspect construction to assure adherence to approved working drawings and specifications.

Discussion: While conducting an assessment for as-built condition of the system, the wiring of the MCCs associated with the Cooling Tower and Steam Plant systems were found incorrectly installed. Per the approved drawings, the load-carrying cables going from the field loads to the individual breakers were inserted through three holes in the electronic overload relays, thus allowing the over-current condition to be sensed for breaker trip. However, inspection showed this not to be the case. The Cooling Tower Contractor indicated this was a known condition to support future testing. However, the electrical sub-tier subcontractor for the Steam Plant Facility, currently a sub-tier to another onsite subcontractor, acknowledged installation and testing was completed for this subcontract and there was an error for this subcontract. BNI immediately generated a CDR to identify the deficiency for the Steam Plant Facility subcontractor and start the disposition process in order for rework to begin. The Steam Plant Facility subcontractor had completed work and submitted a letter of completion with turnover documentation. As stated above, BNI initiated a CDR for the subcontractor that had completed efforts and demobilized. Since the completion letter had been received and Engineering had accepting the work as meeting design, this is considered completed and accepted work, although BNI subcontract administration has not yet signed acceptance of the respective facilities for construction. BNI extent of condition review in the CDR (CDR-CON-06-0152) has required inspection of all MCC electronic overload relay wiring to the breakers in the Steam Plant Facility following BNI's identification of the issue during the ORP assessment.

D-06-AMWTP-DESIGN-029-F04:

Requirement: Contract DE-AC-27-01RV14136, dated December 11, 2000, between DOE and BNI, Section C "Statement of Work," Standard 7 "Environmental, Safety, Quality, and Health," Section (e)(3) "Quality Assurance," (QA) provides for the following:

> BNI shall develop a QA Program, supported by documentation that describes overall implementation of QA requirements. (1) QA for radiological, nuclear, and process safety shall be conducted in accordance with 10 CFR830.120.

The BNI Quality Assurance Manual provides for the corrective action program under 24590-WTP-GPP-QA-201 Rev. 16, which requires in Section 3.2.7, item 2, "Ensuring timely execution of corrective action assigned to them."

Contrary to Requirement: The extent of condition required for CAR 24590-WTP-CAR-QA-05-186, dated August 5, 2005, did not complete its extent of condition review after nearly one year. The BNI PIER 06-0067 was written to address the lack of timeliness of the extent of condition review, but was closed without addressing the issue. This is considered a Finding, **(D-06-AMWTP-DESIGN-029-F04)** for failure to implement the corrective action program.

Discussion: The CAR QA-05-186 was written following BNI CM assessment in 2005, which identified a series of CM issues associated with the establishment of CM for a subcontractor system (Cooling Tower). After nearly a year, the extent of condition had not been defined and, when BNI revisited the topic of CM a year later (just prior to ORP assessment), the lack of CM conditions still existed in other subcontractor systems. The extent of condition review would have identified this and started corrective actions. The purpose of extent of condition reviews is to prevent this. The example involved is not an important-to-safety system, but this is still an abuse of the system, costing the project time and money.

D-06-AMWTP-DESIGN-029-A05: The series of BNI PIERs (24590-WTP-06-0052, 0068, 0070, 0079, 0089, 0090, and 0092) and CARs (24590-WTP-QA-06-0-006, 24590-WTP-QA-06-039, and 24590-WTP-QA-06-050 that were initiated by the BNI MA 24590-WTP-MAR-ENG-06-009, will be tracked for closure. These BNI recommendations are necessary to sufficiently define the subcontractor actions needed for the establishment of CM for subcontractor.

6.0 PERSONNEL CONTACTED AND REFERENCES

6.1 Personnel Contacted

- BNI Construction
  - J. Bieber
  - C. Hoobler
  - T. Minor
  - S. Neubauer
  - R. Tillenbury
  - R. Turnbow
  - J. Wright
- BNI Engineering
  - M. DeLamar
  - J. Hammen
  - T. Hugh
  - S. Lynch
  - D. Paisrcik
  - D. Simpson
  - R. Snowhite
  - T. Stuenhel

- BNI Fire Protection, C. McKnight
- BNI Quality Assurance
  - D. Kammaenzind
  - G. Shell
- BNI Subcontracts, J. Calvey

6.2 References

DOE O 226.1, 2005, *Implementation of Department of Energy Oversight Policy*, U.S. Department of Energy, Washington, D.C.

DOE O 420.1B, 2005, *Facility Safety,* U.S. Department of Energy, Washington, D.C.

ISO 10007, *Quality Management Systems: Guidelines for Configuration Management*, British Standards Institution, London, England.

ORP M 220.1, 2006, *Integrated Assessment Program*, Rev. 4, U.S. Department of Energy, Office of River Protection, Richland, Washington.

- 24590-WTP-PL-MG-01-002, Rev. 3, "WTP Configuration Management Plan," dated February 20, 2004.
- 24590-WTP-PL-ENG-04-0003, Rev. 5, "2005 Engineering Processes Surveillance Plan and Schedule," dated July 20, 2005.
- 24590-WTP-3DP-G06B-00002, Rev. 5, "Engineering Department Project Instructions: Subcontracts," dated August 1, 2005.
- 24590-WTP-3DP-G03B-00044, Rev. 5, "Standard Component Numbering," dated November 28, 2005.
- 24590-WTP-3DP-G03B-0004, Rev. 4, "Standard Component Numbering," dated June 16, 2005.
- 24590-WTP-3DP-G04B-00028, Rev. 4, "Identification of Items/Services Subject to Quality assurance Programs," dated December 15, 2005.
- 24590-WTP-3DP-G04B-00047, Rev. 3, "Engineering Deliverables to Construction and Startup/Commissioning," dated December 23, 2004.
- 2450-WTP-3DP-G04B-00058, Rev. 4, "Supplier Engineering and Quality Verification Documents," dated August 8, 2005.
- 24590-WTP-3DP-G04B-00058, Rev. 5, "Supplier Engineering and Quality Verification Documents," dated August 3, 2006.
- 24590-WTP-3DP-G04T-00903, Rev. 8, "System Descriptions and Test Acceptance Criteria," dated August 3, 2006.
- 24590-WTP-3DP-G04T-00901, Rev. 5, "Design Change Control (only the sections dealing with the Change Document List [CDL] process)," dated November 11, 2004.
- 24590-WTP-GPG-M-046, Rev. 3, "Design Guide for Component Information System," dated August 26, 2004.
- 24590-WTP-GPG-ENG-078, Rev. 5, "System Descriptions," dated August 2, 2006.
- 24590-WTP-GPP-CON-4103, Rev. 0," Subcontract Surveillance, Acceptance, and Closeout," dated July 29, 2004.

- 24590-WTP-GPP-CON-6201, Rev. 4, "Equipment Preservation and Maintenance," dated June 30, 2005.
- 24590-WTP-GPP-CON-4101, Rev. 8, "Construction Procedure: Construction Subcontract Management," dated January 11, 2006.
- 24590-WTP-GPP-CON-1601, Rev. 0, "Construction Procedure: Control of Punchlist Items," dated December 12, 2005.
- 24590-WTP-CON-7105, Rev. 2, "Construction Procedure: Subcontractor Submittals," dated October 14, 2004.
- 24590-WTP-LIST-CON-04-0001, Rev. 5, "Systems Under Construction Custody," dated September 14, 2005.
- 24590-BOF-3PS-G000-T0004, Rev. 2, "Performance Specification for the Steam Plant Facility," dated September 20, 2005.
- 24590-WTP-GPP-PADC-010, Rev. 1, "Supplier and Subcontractor Submittal Document Control," dated September 12, 2005.
- 24590-WTP-GPP-PADC-010, Rev. 1, "Construction Procedure: Supplier and Subcontractor Submitted Document Control," dated September 12, 2005.
- 24590-WTP-MAR-ENG-05-0012, "Configuration Management Assessment-September 2005," dated October 14, 2005.
- 24590-WTP-MAR-ENG-06-0009, Rev. 0, "Subcontractor Built Facilities Component Identification," dated August 18, 2006.
- 24590-WTP-MAR-ENG-04-0016, Rev. 0, "CIS Management Assessment Report – CIS Implementation," dated December 21, 2004.
- 24590-WTP-SC-QA-01-00, Rev. 11, "WTP Quality Assurance Internal Audit Schedule," dated April 27, 2005.
- 24590-WTP-PIER-MGT-06-0051, Rev. 0, "Installed components not shown in design," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0052, Rev. 0, "Need process detail for facility walkdown," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0056, Rev. 0, "Unique component tag numbers," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0061, Rev. 0, "Components are identified in design contrary to 24590-WTP-3DP-G03B-00044," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0062, Rev. 0, "Subcontractor drawings for facilities turned over to Construction are not as-built," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0063, Rev. 0, "Component Tag Numbers," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0066, Rev. 0, "Components on as-built not in INtools," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0067, Rev. 0, "No extent of condition in corrective action report," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0068, Rev. 0, "Notice of planned engineering procedure changes," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0069, Rev. 0, "Components in InfoWorks do not have relationship to subcontractor submittals," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0070, Rev. 0, "Labeling permanent plant components," dated July 31, 2006.

- 24590-WTP-PIER-MGT-06-0076, Rev. 0, "Components do not exist in CMMS that require preservation maintenance," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0077, Rev. 0, "Procedure needed for CMMS data management," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0079, Rev. 0, "Need to reassess CMMS data import function," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0080, Rev. 0, "Components used in CIS are deleted in InfoWorks," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0083, Rev. 0, "No reference in InfoWorks to redrawn P&ID," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0084, Rev. 0, "Installed components," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0089, Rev. 0, "Component identification," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0090, Rev. 0, "Component identification," dated July 31, 2006.
- 24590-WTP-PIER-MGT-06-0122, Rev. 0, "Labeling issues with subcontract facilities," dated August 8, 2006.
- 24590-WTP-RPT-ENG-02-010, Rev. 8, "Component Identifiers List," dated June 15, 2006.
- 24590-CM-HC1-MBF0-00001-24-00001, Rev. 00A, "Quality Verification Record Package (QVRP)," dated January 23, 2006.
- 24590-CM-SRA-MBF0-00001, Rev. 5, "Service Requisition: Exhibit D, Engineer, Procure, and Construct (EPC) Subcontract, Steam Plant Facility Subcontract No. 24590-CM-HC1-MBF0-00001, Rev. 7, 'Scope of Work,'" dated October 11, 2005.
- 24590-CM-HC1-MBF0-00001-08-00042, Rev. 00A, "Inspection and Testing Plan," dated September 26, 2005.
- 24590-WTP-3YD-PCW-00001, Rev. 0, "Consolidated System Description for the WTP Plant Cooling Water (PCW) Systems," dated December 29, 2004.
- 24590-WTP-3PS-M000-T0014, Rev. 0, "Engineering Specification for Labeling of Permanent Plant Components," dated September 7, 2004.
- 24590-BOF-3YD-HPS-00001, Rev. B, "System Description of High Pressure Steam (HPS) and Steam Condensate Water Systems (SCW)," dated August 23, 2002.
- 24590-BOF-3YD-FSW-00001, Rev. 0, "System Description for the Fire Service Water Storage & Distribution System," dated May 17, 2002.
- 24590-BOF-FD-M-01-001, Rev. A, "Steam Plant Facility Description," dated October 18, 2001.
- "Open Items by Contractor/Subcontractor For All Item Types," Facility: BOF, Contractor/Sub: Thompson Mechanical, dated August 3, 2006, 4 pages.
- "Items by Contractor/Subcontractor For All Item Types," Facility: All Facilities, Contractor/Sub: Thompson Mechanical, dated August 3, 2006, 26 pages.
- River Protection Project Waste Treatment Plant, EXHIBIT "D," Engineer, Procure and Construct (EPC) Subcontract, 24590-CM-HC1-MECM-00001, "Mechanical Draft Cooling Tower Facility," Rev. 54, Scope Of Work.
- "Consolidated System Description of the WTP Plant Cooling Water (PCW) Systems," 24590-WTP-3YD-PCW-00001, REV. 0.
- CIS Database printouts, dated August 3, 2006, MS Equipment Lists and MS Valve Lists, for Cooling Tower.
- InfoWorks database printout, undated, for Cooling Tower.

- Printout report, "Surveillances Performed on each Subcontract," subcontractor Company, Thompson Mechanical, includes surveillance numbers and description, undated. Reviewed approximately 20 reports from this list.

Set of Mechanical As-Built Drawings for Field Walkdown of Steam Plant Building Facility

- 24590-CM-HC1-MBF0-00001-04-05, Rev. 00F, M0.1, Slab Piping
- 24590-CM-HC1-MBF0-00001-04-20, Rev. 00E, M1.1, P&ID Legend
- 24590-CM-HC1-MBF0-00001-04-21, Rev. 00G, M2.1, P&ID Steam Plant Systems
- 24590-CM-HC1-MBF0-00001-04-22, Rev. 00G, M2.2, P&ID Miscellaneous Systems
- 24590-CM-HC1-MBF0-00001-04-00032, Rev. 00F, M2.3, P&ID Package Steam Boilers
- 24590-CM-HC1-MBF0-00001-04-23, Rev. 00D, M3.1, Piping Plan – Operating Level
- 24590-CM-HC1-MBF0-00001-04-24, Rev. 00D, M3.2, Piping Plan – Upper Level
- 24590-CM-HC1-MBF0-00001-04-25, Rev. 00E, M3.3, Piping Sections and Elevations

Set of Mechanical As-Built Drawings for Cooling Tower and Support Building Facility

- 24590-CM-HC1-MECM-00001-27-06
- 24590-CM-HC1-MECM-00001-27-07
- 24590-CM-HC1-MECM-00001-27-08
- 24590-CM-HC1-MECM-00001-27-24
- 24590-CM-HC1-MECM-00001-27-25
- 24590-CM-HC1-MECM-00001-27-26
- 24590-CM-HC1-MECM-00001-27-27
- 24590-CM-HC1-MECM-00001-27-28
- 24590-CM-HC1-MECM-00001-27-29
- 24590-CM-HC1-MECM-00001-27-34
- 24590-CM-HC1-MECM-00001-27-35
- 24590-CM-HC1-MECM-00001-27-36
- 24590-CM-HC1-MECM-00001-27-37
- 24590-CM-HC1-MECM-00001-03-11

APPENDIX A
REVIEW OF CONTRACTOR CONFIGURATION MANAGEMENT OF AS-BUILT SYSTEMS

DESIGN PRODUCT OVERSIGHT PLAN Rev. 2

REVIEW OF CONTRACTOR CONFIGURATION MANAGEMENT of AS-BUILT SYSTEMS

September 11, 2006

Design Oversight: D-06-DESIGN-029

Team Lead: James E. Adams

Submitted by:

Date 10/12/2006

James E. Adams, Team Lead
WTP Engineering Division Assessment Lead

1.0 BACKGROUND, PURPOSE AND OBJECTIVES

1.1 Background

The River Protection Project Waste Treatment and Immobilization Project (WTP) Facilities are continuing with the design and construction of the facilities in a reduced work mode (High-Level Waste and Pre-Treatment construction is nearly halted) until the design is sufficiently mature to support continuation of construction. BNI demobilized some subcontractors following completion of balance of facility systems such as the cooling tower and the steam plant. In addition, the site fire protection system has buried underground piping. BNI has placed the system in use for construction. The ORP closed the majority of the outstanding issues associated with the previous years (Fiscal Year 06) Configuration Management (CM) assessment, and contractually required DOE Order (O) 413.3, which requires new daughter standard be implemented (ANSI 649 *National Consensus Standard for Configuration Management*). In addition, the U.S. Department of Energy (DOE), Office of River Protection (ORP) has proposed the imposition of the DOE Standard 1073, *DOE Standard for Configuration Management* to the SRD and the CM Plan in the new draft revision of the Contract.

The recently completed Bechtel National, Inc. (BNI) Root Cause Analysis of the Component Information System (CIS) dated June 2006, dealt with the quality of the CM database CIS and determined the problems with the accuracy of some of the information in the CIS were based on human performance factors. The recommended resolutions required a procedure for the implementation of CIS and some training on this procedure. This Design Oversight will focus on identifying issues associated with implementation of CM based on a review of subcontractor field as-builts for completed Balance of Facilities (BOF) systems using comparison of those as-builts with the BNI design documents with update from the InfoWork's database, the CIS and INtools databases for the installed condition of balance of facility systems. This will verify the accuracy of the CM databases to the subcontractor as-builts. The systems of concern for this assessment include demobilized subcontractor systems which have completed and submitted as-builts, subcontractor and BNI piping that is buried, and subcontractor and BNI permanent piping that is in service even if on a temporary basis.

This assessment will also status the effectiveness of the implementation of the BNI and subcontractor CM procedures; as well as BNI's control of CM following subcontractor demobilization.

1.2 Purpose

The purpose of this review is to confirm that BNI effectively implements the BNI CM Plan, for subcontractor design and constructed system, using approved BNI implementing procedures to accept subcontractor systems such that CM is provided and maintained at turnover from subcontractor. This oversight will also validate the information entered by BNI for these completed systems for components to the CIS and *INtools* databases as well as design status entered to *Infoworks*.

1.3 Objectives

The following are the specific objectives of this oversight:

1. Determine if the subcontractor turnover documentation established CM for the systems reviewed for acceptance by BNI. This includes the review of subcontractor process for determining information (including as-built drawings) for verification of the physical facility.
2. Verify the BNI CM databases CIS, *INtools,* and *Infoworks* were input to and revised for the completed subcontractor as-built condition to establish CM for to completed subcontractor closeout.
3. Evaluate systems under beneficial occupancy to determine if the principles of CM are being used to the benefit of the project.
4. Evaluate the effectiveness of BNI oversight of CM.

2.0 PROCESS

This oversight shall be conducted within the guidelines of ORP DI 220.1 Rev. 1 issued April 18, 2006, "Conduct of Design Oversight," using interviews, document reviews and field walk-downs.

2.1 Scope

This oversight will include review of the subcontractor completed systems which have had as-built drawings submitted and approved. This will include a review of the procedure and process involved in obtaining, verifying and approving the as-built condition of the systems.

2.2 Preparation

1. Identify BNI Points of Contact for the Review.

2. Establish the systems and equipment under review based on scope and elements of the configuration management processes and deliverables under review.

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

4. Review background information as provided by BNI and subcontractor, through review of available databases.

5. Review previously performed BNI and subcontractor reports associated with the as-built documentation, open issues, and the plans for and status of their resolution.

6. Table 1 lists information requested from BNI 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 BNI and subcontractor personnel to meet the oversight objectives. This effort will include participating in any applicable internal contractor and subcontractor reviews and discussions. The results of this effort will be documented in an assessment note used for preparation for the final report.

2.4 Reporting

De-brief ORP and BNI management periodically as required. Prepare a draft report based on the team members assessment notes submitted to the team lead, that summarize 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 BNI 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 DI 220.1 Rev. 1, issued April 18, 2006, "Conduct of Design Oversight," Attachment 9.4, "Design Oversight Report Outline."

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

5.0 CLOSURE

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

6.0 CRITERIA FOR ASSESSMENT

The criteria for assessment include:

1) Existing SRD committed implementation standard ISO 10007
2) Contractually imposed DOE O 413.3 which requires the implementation of daughter standard ANSI 649 as this standard applies to system as-builts
3) BNI and subcontractor approved procedures and plans (BNI CM Plan/procedures) for configuration management and as-builting of prints for completed systems.

Table 1 – Initial Information Requirements

1.	Approved As-Built drawings from the demobilized subcontractors including P&ID, piping isometric, electrical interconnection, power distribution, instrumentation , and a listing of all other as-built documentation.
2.	Listing and status of turnover punch open items associated with the system.
3.	Copy of the approved system descriptions of the system.
4	Printout of the *Infoworks*, *INtools* and CIS databases for the systems.
5	Any outstanding approved BNI or subcontractor design changes not yet incorporated to the subcontractor as-builts.
6	Any assessments performed by either subcontractor or BNI on the system configuration verification
7	Copy of procedures used to verify the completed system meets the approved design (subcontractor and BNI)

Table 2 – Schedule

Activity Description	Responsibility	Complete By
Identify and notify Team members.	Hamel	7/24/06
Develop Design Oversight Plan and approve	Adams/Hamel	7/31/06
Obtain documents from BNI and develop lines of inquiry/interview list.	BNI/Team	8/7/06
Kick-off meeting with BNI/subcontractors to outline objectives, scope, schedule, and establish points of contact.	Team	8/14/06
Field Review of Systems	Williams-steam plant Navarro-Cooling Tower Adams-Fire Protection Babel-TBD	8/15/06-8/18/06
Review BNI/subcontractor CM documents, participate in relevant internal meetings and meet with BNI and subcontractors as required.	Williams-steam plant Navarro-Cooling Tower Adams-Fire Protection Babel-TBD	8/21/06-8/31/06
Prepare Draft Design Oversight Report.	Team	9/04/06-

Table 2 – Schedule

Activity Description	Responsibility	Complete By
		9/14/06
ORP and BNI review of Report.	Team and BNI	9/18/06-9/22/06
Resolve comments and issue Final Report including close out with BNI.	Team	9/30/06