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

02-OSR-0270

Mr. Ron F. Naventi, Project Manager
Bechtel National, Inc.
3000 George Washington Way
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC27-01RV14136 – INSPECTION REPORT IR-02-007 - CONFIGURATION MANAGEMENT INSPECTION

This letter forwards the results of the Office of Safety Regulation (OSR) inspection of the Bechtel National, Inc. (BNI) configuration management program conducted May 13 - 17, 2002. Two Findings (one with three examples) were identified. You are requested to provide a written response to the Findings (see Enclosure 1) within 30 days, in accordance with the instructions provided in the Notice of Finding.

This inspection was the OSR's first opportunity to review BNI's s Configuration Management (CM) program under the BNI CM Plan approved in October 2001. The inspectors concluded that the basic elements of CM, as required by the implementing standard ISO 10007:1995, were incorporated in BNI's implementing procedures and BNI staff was sufficiently trained on CM to support design and construction activities. However, a number of implementation issues were identified relative to effective CM and warrant prompt management attention.

Details of the inspection, including the Findings, are documented in the enclosed inspection report (Enclosure 2). The Findings resulted from BNI's failure to:

1. Properly implement procedures related to CM.

2. Comply with the Quality Assurance Manual requirement to utilize approved procedures for performance of quality related activities.

The Findings outlined above and issues discussed in the Inspection Report indicate there is a lack of clarity in your organization with regard to key roles and responsibilities associated with the implementation of CM project-wide. This situation has resulted in confusion among your staff regarding ownership of the CM program, lack of focused management oversight of the CM program, and implementation problems that have resulted in the Findings outlined above.

During the CM inspection exit meeting, the Project Manager committed to identify and correct the underlying issues associated with implementing the CM program. In this regard, the OSR was encouraged by the Project Manager's commitment to initiate an effort using the Contractor’s "Six Sigma" process to address CM program implementation issues. This effort should address

responsibilities associated with CM program implementation and strengthening accountability with regard to these responsibilities.

In your response to the Findings, please include a discussion regarding management ownership of CM, the key management responsibilities associated with implementing the program, and what measures have been taken to clarify these responsibilities and strengthen accountability for CM program implementation.

If you have any questions regarding this inspection, please contact me or Pat Carier of my staff, (509) 376-3574. Nothing in this letter should be construed as changing the Contract, DE-AC27-01RV14136. If in my capacity as the Safety Regulation Official, I provide any direction that your company believes exceeds my authority or constitutes a change to the Contract; you will immediately notify the Contracting Officer and request clarification prior to complying with the direction.

Sincerely,

Robert C. Barr
Safety Regulation Official
Office of Safety Regulation

OSR:JEA

Enclosures

cc w/encls:
W. R. Spezialetti, BNI

NOTICE OF FINDING

The responsibilities of Bechtel National, Inc. (the Contractor) as they relate to conventional non-radiological worker safety and health; radiological, nuclear, and process safety; environmental protection; and quality assurance (QA) are defined in Section C, Standard 7, "Environmental, Safety, Quality, and Health" of the River Protection Project Waste Treatment Plant (RPP-WTP) Contract[1].

Section C, Standard 7, Section (e)(3), "Quality Assurance" of the Contract states, "The Contractor shall develop a QA program, supported by documentation that describes overall implementation of QA requirements." The Contractor's QA program is defined in 24590-WTP-QAM-01-001, *Quality Assurance Manual*, (referred to as the QA Manual).

During an inspection of the Contractor's configuration management (CM) program conducted May 13 thru 17, 2002, the OSR identified the following Findings:

1. QA Manual, Policy Q-05.1, *Instruction, Procedures, and Drawings*, states in part, "Activities affecting quality shall be prescribed by … documented instructions, procedures, and drawings of the type appropriate to the circumstances…" The procedure 24590-WTP-GPP-CPRO-001, Rev. 0, *Production of River Protection Project-Waste Treatment Plant Procedures,* Section 3.4, states in part, "Procedures are required when a defined task or activity:

   - Accomplishes work or activities defined in the Authorization Basis (AB) or any other project requirements documents
   - Requires specific direction for tasks that require repeatability and consistency and produce records."

   Contrary to the above, there was no formal, approved project procedure or instruction for a Project Document Control (PDC) activity affecting quality – namely, the processing of configuration documents (generated by the Engineering organization in accordance with formal, approved procedures) into the CM database. (Section 1.4, IR-02-007-02-FIN)

   Failure to have an adequately prescribed procedure that reflects the QA Manual requirement was considered a Finding.

2. QA Manual, Policy Q-05.1, *Instruction, Procedures, and Drawings*, requires "Activities affecting quality shall be … performed in accordance with documented instructions, procedures, and drawings of the type appropriate to the circumstances…" It also specifies "All individuals at the project shall comply with the implementing documents."

   a. Contractor implementing procedures 24590-WTP-GPP-CON-3103 Rev. 0, *Field Change Requests (FCRs)/Field Change Notices (FCNs)*, and 24590-WTP-3DP-

[1] Contract No. DE-AC27-01RV14136, dated December 11, 2000, between Bechtel National, Inc. (the Contractor) and the U.S. Department of Energy (DOE)

G04B-00062, Revision 0, *Disposition of Field Change Request/Field Change Notice*, required that approved FCRs be incorporated into revised design documents or that the FCR be deleted or superseded.

Contrary to the above, the specific changes in approved FCRs 24590-WTP-FCR-E-01-001 and 24590-WTP-FCR-E-01-002 affecting Revision 0 of design drawing 24590-BOF-E2-E54T-00001, *Site Electrical Distribution Duct Bank Plan* were not incorporated, deleted, or superseded into Revision 1 of the drawing. (Section 1.5, IR-02-007-03a-FIN)

b. Contractor implementing procedure 24590-WTP-3DP-G04T-00901, Rev. 0, *Design Change Control*, required changes to numeric revision drawings be documented via a Design Change Notice, Design Change Application, or in the revision block or notes section of the drawing.

Contrary to this requirement, various changes appearing in Rev. 1 of design drawing 24590-BOF-E2-E54T-00001, *Site Electrical Distribution Duct Bank Plan* were not specifically addressed by any of these methods. (Section 1.5, IR-02-007-03b-FIN)

c. Contractor implementing procedure 24590-WTP-3DP-G04B-00001, *Design Criteria*, Rev. 0A, required Design Input Memorandum (DIM) be prepared as part of the approval process for numeric revision design drawings, and design inputs associated with the drawing be recorded on the DIM.

Contrary to this requirement, DIM 24590-BOF-E2-E54T-00002, Rev. 1, did not reflect civil and electrical drawings 24590-BOF-P1-50-0001, *Site Plot Plan*, and 24590-BOF-E1-MVE-00001*, Main Single Line Diagram*, which contain design information that were inputs to the drawing associated with the DIM. (Section 1.5, IR-02-007-03c-FIN)

These three examples of failure to follow procedures, as described above, were considered a Finding.

The Office of Safety Regulation requires the Contractor to provide, within 30 days of the date of the cover letter that transmits this Notice, a reply to these Findings. The reply should include (1) admission or denial of the alleged Findings, (2) the reason for the Findings, if admitted, and if denied, the reason why; (3) the corrective steps that have been taken and the results achieved; (4) the corrective steps that will be taken to avoid further Findings; and (5) the date when full compliance with the applicable commitments will be achieved. When good cause is shown, consideration will be given to extending the requested response time.

U.S. DEPARTMENT OF ENERGY
Office of River Protection
Office of Safety Regulation

INSPECTION:	CONFIGURATION MANAGEMENT
REPORT:	IR-02-007
FACILITY:	Bechtel National, Inc.
LOCATION:	3000 George Washington Way Richland, Washington 99352
DATES:	May 13-17, 2002
INSPECTORS:	J. Adams, Lead Inspector C. Norelius, OSR Consultant R. Smoter, OSR Consultant R. Cooper, OSR Consultant
APPROVED BY:	P. Carier, Verification and Confirmation Official Office of Safety Regulation

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EXECUTIVE SUMMARY
Configuration Management
Inspection Report Number IR-02-007

INTRODUCTION

This inspection of the Contractor's configuration management (CM) activities covered the following specific areas:

- CM program
- Organization for managing CM program and implementation
- Identification and documentation
- Change control
- Status tracking and reporting
- Configuration audit.

SIGNIFICANT OBSERVATIONS AND CONCLUSIONS

- The Contractor CM program, as described in the CM Plan, was developed from the CM Standard and included the elements required by the standard for the current phases of the project. The Contractor acknowledged the need to revise the CM Plan at a later date to provide operational CM to support the commissioning program and the production/operational phase of the project. The lack of integration of some design/construction phase CM-related procedures and processes, particularly those involving multiple organizations, caused implementation problems in the design documents. The inspectors concluded CM training was adequate to support design and construction activities for the project. (Section 1.2)

- The Contractor's CM Plan provided for an organization structure for managing the overall project in its current design and construction phases, as required by the implementing standard. However, the plan is not being implemented with regard to responsibility for oversight of the CM program for the project but this has not yet resulted in loss of CM in the design. This issue is addressed in the cover letter to this report. (Section 1.3)

- The Contractor has adequately incorporated the element of identification and documentation of configured items into the CM program for the current phase of the design; however, this element may not be adequate for expanded construction activities scheduled for the near future. Specifically, improvements are needed for (1) the entry of CM-related information into the CM database by multiple database users that impacted the accuracy of numbering of configured items (resolution of this issue is being tracked as an inspection follow-up item - IR-02-007-01-IFI), and (2) procedural controls for consistent entry of important-to-safety CM data into the CM database by PDC (this item is being cited as an inspection Finding - IR-02-007-02-FIN). (Section 1.4)

- The Contractor has established procedures that implement the Contractor’s authorization basis CM commitments related to change control. However, the inspectors noted several

weaknesses in the implementation in some portions of the change control process. Implementation weaknesses noted were:

1. The Contractor failed to follow procedural requirements related to incorporating FCRs in revised design documents. (IR-02-007-03a-FIN)

2. The Contractor failed to follow procedural requirements to document changes to revised configuration documents. (IR-02-007-03b-FIN)

3. The Contractor failed to follow procedural requirements to accurately document design inputs in a DIM associated with a configuration document. (IR-02-007-03c-FIN) (Section 1.5)

- The Contractor's program for status tracking and reporting met the requirements established in the CM Standard and the CM Plan for the current phases of the project. (Section 1.6)

- Pending completion of the management assessment of engineering and the QA Manager's review of the QA surveillances conducted, the inspectors could not reach a conclusion as to whether this aspect of the Contractor's oversight of the CM program had met applicable requirements. Follow-up of this issue will be tracked as inspection follow-up item IR-02-007-04-IFI. The inspectors concluded configuration audits of the CM program were not applicable at this time based on the current phases of the project. (Section 1.7)

Contents

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CONFIGURATION MANAGEMENT INSPECTION

1.0 REPORT DETAILS

1.1 Introduction

At the time of this inspection, the Contractor was approved to work under the Limited Construction Authorization Agreement (LCAA), and was in the early stages of construction. Construction activities consisted primarily of earthwork and installation of important-to-safety (ITS) reinforcement steel for the Low Activity Waste (LAW) and High Level Waste (HLW) facilities. The engineering organization was in the early stages of issuing approved drawings for construction and procurement through Project Document Control (PDC). The engineering organization had selected ISO 10007: 1995, *Quality Management-Guidelines for Configuration Management* (hereafter referred to as CM Standard) as the implementing standard for configuration management (CM). This standard required the implementing organization to develop an implementation plan. Annex C to the CM Standard identified four project phases for configuration management activities—feasibility, project definition, development, and production/operations. Various CM activities were identified for each phase. Based on the timeline provided in Annex C, the River Protection Project Waste Treatment Plant (WTP) project was approximately in the late "project definition"/ early "development" stage. Review of the Contractor's CM program took into consideration the expected status of CM activities at this stage of development.

The Contractor was implementing the CM program via procedure 24590-WTP-3DP-G04B-0005_0, *Configuration Managemen*t (hereafter referred to as the CM Procedure), which stated the plan was the basis for compliance to the standard. The CM Plan, 24590-WTP-PL-MG-01-002, Rev. 0, dated October 8, 2001, was approved by the Project Manager.

During this inspection, the inspectors focused on the Contractor's compliance with the Safety Criteria (SC) 4.0-1, which established the requirements for a formal configuration management program via the implementation of the CM Standard, through the CM Procedure and CM Plan, to obtain and effectively maintain formal configuration management of the design as it was transmitted to the field for construction.

1.2 Configuration Management Program (Inspection Technical Procedure (ITP) I-102)

1.2.1 Inspection Scope

The inspectors reviewed the scope and structure of the CM Plan, including the set of procedures established for implementing this plan, to assess the Contractor's implementation of the authorization basis (AB) commitments. These commitments included such elements as CM training, program oversight, and integration of major elements of the CM program required by implementing the CM Standard.

1.2.2 Observations and Assessments

The inspectors reviewed the Contractor's CM Plan, CM Procedure, referenced implementing procedures, and training records; interviewed staff and management; and observed CM related activities, to assess the compliance of the CM Plan to the AB.

1.2.2.1 CM Plan/CM Procedure

The CM program, as described in the CM Plan, was developed from implementation of the CM Standard and included the required elements for this phase of the project. The Integrated Safety Management Plan (ISMP), Section 11.0, "Organization Roles, Responsibilities, and Authorities," stated the Configuration Management Manager was responsible for the implementation of the operational configuration management program. Although the CM Standard and the CM Plan recognized the phased nature (design, construction, operations, decommissioning) of the River Protection Project-Waste Treatment Plant facility, the Contractor did not include details of operational configuration management (hereafter referred to as operational CM) as it applied in the operational[2] phase of the project, in the current CM Plan. Interviews with the Systems Engineering Manager and the Operations Manager confirmed the need for operational CM existed and an operational CM program was currently under development for insertion into the CM Plan at a date yet to be determined.

1.2.2.2 Implementing Procedures

The Contractor developed multiple implementing procedures that described processes for discreet parts of the overall CM program (change control, document control, component numbering, etc.). However, the lack of integration of some of these CM-related procedures and processes, particularly those involving multiple organizations, caused implementation problems as discussed in the following examples.

- Development and revision of engineering specifications by Design Engineering was controlled by procedure 24590-WTP-3DP-G04B-00049, *Engineering Specifications*. However, procedures could not be located detailing Engineering Automation's development of Plant Item Number Generator (PING) material data sheets (MDS). Material data sheets were developed from the characteristics and attributes in engineering specifications. The process for revising engineering specifications was not integrated (e.g., not procedurally linked) with the process used to revise PING MDSs. (See Section 1.4.2 of this report for additional details.)

- Changes to procedure 24590-WTP-3DP-G03B-00044B, *Standard Component Numbering,* did not drive necessary changes to Engineering Automation's PING database. Examples of implementation problems were identified by the CM Group in

[2] Operational CM has the objective of providing consistency among design requirements, physical configuration, and facility documentation, and to maintain this consistency though the operational life-cycle phase, particularly as changes are being made.

Spring 2002. At that time, changes to acronyms associated with item/component numbering in the engineering procedure were not communicated to the PING Administrator. This resulted in the PING software database not being revised to accept the new acronyms.

- Entry of item/component quality levels (QL) in PING was driven by procedure 24590-WTP-3DP-G04T-00905, *Determination of Quality Level*s. Engineering procedures, including the design change control process, did not provide for a "check and balance" process. Verification of the QL in PING was not required to be performed for configured items reflected in drawings prior to their issuance for construction or beyond. Lack of QL information or incorrect QL information in PING could result in the inadvertent procurement of items/components at QL levels that do not match the design requirements or the AB. (See section 1.4.2 of this report for additional details.)

1.2.2.3 CM Training

The inspectors reviewed the CM training requirements for engineering and construction personnel; reviewed the training profiles for a sampling of design, quality control, and field engineering staff; and interviewed engineering managers to assess the implementation of the training program in the area of CM. The training requirements in the procedure 24590-WTP-GPP-CTRG-002A, *Training,* "Appendix B: Position Specific Training Requirements," provided a listing of management-defined training requirements for each job title. A review of the training profile records of five recently qualified engineering personnel indicated these individuals were adequately qualified to perform ITS CM activities, and included the required CM-oriented training defined by BNI supervision. The review of a sample of recently qualified construction personnel (requirements defined in 24590-WTP-GPP-CON-1301A, *Construction Training)* indicated they also were adequately qualified to perform ITS CM activities, and also included the required CM-oriented training defined by BNI supervision. An interview with two process-engineering managers indicated managers had a good working knowledge of the CM requirements as these requirements pertained to their work activities.

1.2.3 Conclusions

The inspectors concluded the CM program, as described in the CM Plan, was developed from the CM Standard and included the elements required by the standard for the current phases of the project; however, the Contractor acknowledged the need to revise the CM Plan, at a later date, to provide operational CM to support the commissioning program and the production/operational phase of the project. In addition, the lack of integration of some design/construction phase CM-related procedures and processes, particularly those involving multiple organizations, caused implementation problems in the design documents. The inspectors also concluded CM training was adequate to support design and construction activities for the project.

1.3 Organization for Managing CM Program and Implementation (ITP I-102)

1.3.1 Inspection Scope

The inspectors reviewed the CM Plan and procedures, interviewed BNI management and staff, and observed the CM program implementation across project organizational interfaces to assess the effectiveness of the organization for managing CM throughout the project.

1.3.2 Observations and Assessments

The inspectors reviewed the CM Procedure and the CM Plan, to understand the organizational structure and responsibilities for CM. The CM Plan provided specific responsibilities for the Engineering Manager, the CM Manager/Supervisor, and line managers. The Executive Summary of the CM Plan also stated Quality Assurance performed formal audits to assess effective implementation of CM. The CM Procedure did not address organizational responsibilities for managing CM across the project; however, the procedure, Section 3.1, "CM Planning," stated, "The project shall prepare a CM Plan to comply with customer directives. This plan should describe how the project will manage and conducts its CM effort over the duration of Bechtel National, Inc.'s involvement."

Section 3.1 of the CM Plan stated, "The Engineering Manager has overall responsibility to develop and oversee the implementation of the Configuration Management Program for the WTP Project." The CM program was developed and approved effective October 8, 2001. During an interview, the Engineering Manager stated that the Engineering organization does not have the authority or responsibility to oversee CM for the entire project, but rather, it only has the responsibility as the design authority for oversight of CM within the Engineering Department. The inspectors' initial conclusion to this interview statement was the Engineering Manager did not believe he was responsible for CM oversight for areas such as procurement, construction, and document control, which are critical areas for CM during this phase of the project. Based on interviews with other managers in the project, combined with the level of Findings discussed in this report, the inspectors concluded the CM Plan was not being implemented relative to the assignment of responsibility for the overall implementation and oversight of CM for the project. This is not considered a Finding because lack of oversight had not yet resulted in a loss of CM in the design or field construction; however, this issue is addressed in the cover letter to this inspection report.

During the interview with the Configuration Management Supervisor and the Construction Field Engineering Manager, the responsibility for maintaining CM in the field was clearly accepted by the Construction Field Engineering Manager, who had established a set of checks and balances to ensure the field was utilizing the approved up-to-date drawings for construction, including:

- Multiple sets of controlled stick files maintained by PDC
- A standing request to PDC for updates of changes posted to the controlled stick files

- Resident Engineers who observed work in the field and were charged with the responsibility to ensure that work was done to controlled and stamped drawings

- Close communication between the field engineers and the design engineers such that any questionable situations would be red flagged promptly

- Trained field engineers and QC engineers that were knowledgeable relative to what CM is and how to maintain it.

The inspectors interviewed the PDC Manager to assess the CM responsibilities of PDC and to observe a demonstration of the Altris database (the electronic document management system) relative to the inter-linkage of design change authorizations (DCA) to their associated documents. PDC acknowledged the responsibility for maintaining the information transmitted from the Engineering organization and was responsible for properly inputting, distributing, and maintaining this information for the project.

The inspectors interviewed the Commissioning and Testing (C&T) Manager to assess the propriety of the existing CM Plan for operational CM, and the C&T Manager's responsibilities for CM under the existing plan at this time. Neither the CM Procedure nor the CM Plan had the concurrence of the C&T Manager. However in discussions with inspectors, the C&T Manager demonstrated knowledge in operational CM and stated that an individual in his staff had been assigned to work with the CM Supervisor to draft a revision to the existing CM Plan for operational CM. This was not expected to take place in the immediate future, but was needed for system turnovers and the subsequent commissioning program. It was clear to the inspectors that a great deal of thought had been put into the issue, including how subcomponent configured items were going to be procured under the control of CM. The inspectors concluded that operational CM was being considered and developed to support the construction phase of the project.

1.3.3 Conclusions

The inspectors concluded the CM Plan provided for an organizational structure for managing the overall project in its current design and construction phases, as required by the implementing standard. However, the plan was not being implemented with regard to responsibility for oversight of the CM program for the project but has not yet resulted in loss of CM in the design. This issue is addressed in the cover letter to this inspection report.

1.4 Identification and Documentation (ITP I-102)

1.4.1 Inspection Scope

The inspectors reviewed the Contractor's process to identify and document configured items and configuration documents, including the numbering conventions that would be used for the RPP-WTP. This process provides for the management of hierarchical relationships between

configured items and configuration documents. The inspectors also reviewed the technical baseline (TB) and its relationship to the CM database. Ownership and control of the CM database (and ultimately the TB) for use in all phases of the project lifecycle were also reviewed.

1.4.2 Observations and Assessments

1.4.2.1 Configured Item Selection

The inspectors reviewed the CM Plan, the CM Procedure, and the CM Standard. The CM Standard stated a top-down process with selection criteria should be established for selecting configured items. The CM Plan stated that a decomposition process ("a top-down process that breaks down the project into manageable elements") was used to select the items to be under CM on the project. The items selected were all systems, structures, and components (SSCs) and their interfaces, plant-installed software, configured interfaces (physical and administrative), and AB documents. Although neither the CM Procedure nor the CM Plan provided a description of the selection process used for configured items, the inspectors concluded the categories of items selected to be under CM were appropriate for the RPP-WTP in the design and construction phase. However, the extent to which configured item selection cascaded down to subcomponents and piece-parts was not stipulated in the CM program. Designation of some subcomponents and piece-parts as configured items and linkage of these to related components and systems may need to be in place to support operational CM. The need for subcomponent and piece-part breakdown occurs in the procurement of spare parts during production/operation phase.

1.4.2.2 Configured Item Identification

1.4.2.2.1 Numbering Convention Requirements

The CM Plan paralleled the CM Standard relative to specifying the conventions for uniquely numbering configured items and establishing relationships between the items, their associated configuration documents, and changes to each. Numbering conventions were established for managing the following:

- The hierarchical (or subordinate) relationship between configured items
- The hierarchical (or subordinate) relationship of components in each configured item
- The relationship between configured items and configuration documents
- The relationship between configuration documents and changes to those documents.

The inspectors reviewed project procedures to determine if numbering conventions had been established for configured items (SSCs, interfaces, plant-installed software, and AB documents). Procedure 24590-WTP-GPP-PADC-001, *RPP-WTP Document Numbering,* specified the conventions for numbering configuration documents such as AB documents and interface control documents (ICD's); as well as design drawings, system descriptions, and specifications; etc. The

inspectors reviewed several of these documents and confirmed that they were uniquely numbered in accordance with the cited procedure.

The Contractor established numbering conventions for plant items/components in procedure 24590-WTP-3DP-G03B-00044B, *Standard Component Numbering*. Before the effective date of this procedure, the Contractor used a similar but different numbering convention for items/components. As configuration documents associated with these items/components were revised, the "old" numbers were being replaced with "new" numbers following the conventions established in the cited procedure. Unique numbers were assigned to configured-items through the PING software database. This was an interactive database accessed by a "user" population that was assigned "ID numbers." It was complemented by and integrated with INtools, a software database used to assign unique numbers to instruments. PING/Plant Items List (PIL), INtools, and Altris databases comprised the WTP "CM Database." PING/PIL and INTools databases were owned and maintained by Engineering Automation. Altris was owned and maintained by PDC.

1.4.2.2.2 Numbering System Results Review

The PING "user" population consisted mostly of design engineers. As they developed conceptual, preliminary, and final system/component designs, they accessed PING to "build" and acquire unique numbers that related to specific items and components on "smart" drawings. "Smart" drawings are those that were developed via specific interactive software (such as that used to develop plant & instrumentation diagrams [P&ID's]). Only "smart" drawings were electronically integrated with their PING-generated item/component numbers. Other drawings (civil/structural, general arrangement, etc.) required manual transcription of item/component numbers to the items/components reflected on the drawings. Because "users" who had access to PING could enter or edit data, the database was dynamic. Periodically, hardcopy paper printouts of PING were generated and maintained as the PIL. The PIL represents the "configuration of record" of numbered, configured items at the point in time at which paper printouts are produced.

The numbering system used a "component group code" to identify a family of similar components or assemblies, and a "system or area locator code" to identify operational systems and processes within specific WTP facilities, and the physical location of items within the WTP infrastructure. A "sequence code" used for components was comprised of a component identifier, a numerical sequence, and an alpha character for duplicate components.

Through demonstrations of the PING database by the PING Administrator, the inspectors made various queries to determine the accuracy of PING data relative to items/components from selected Revision 0 (or above) design drawings. To the extent that some of the selected items/components had related items/components associated with them, these were also queried through PING. For the queries performed, numbering accuracy was confirmed from configured items to related components, and from configured items to related drawings. The relationships of configured items to one another were also verified to be correct. The inspectors concluded that the PING database was effective as an information technology (IT) platform for uniquely numbering configured items and establishing interrelationships between configured items and

associated design drawings. However, as discussed below there were implementation problems at the user level with this database.

During the interview with the Systems Engineering Manager, the inspectors asked if there were any known problems associated with the implementation of the CM program that had been brought to the Engineering Manager's attention. The Systems Engineering Manager provided a list, which had been compiled by the CM Supervisor based on an informal review of the CM program. The System Engineering Manager also stated that no management assessment report was planned or issued on these listed problems and no Corrective Action Reports (CARs) had been generated at the time of the interview. The CM Supervisor's list of 21 presumed and actual problems associated with PING/PIL that was compiled in March/April 2002, included, among others, the following examples:

- Incorrect use of PING piping contents code "AO" for several facility pipe numbers when this code was reserved as a "catch all for P&IDs"

- Designation of system codes for systems in certain facilities whose design does not include those systems

- Mismatches between system designators for valves and the system designators for the pipelines in which the valves are installed

- Duplicate numbers for the same pipeline segments.

These examples were discussed with both the CM Engineer and the PING Administrator to determine how such problems could exist and the extent to which the PING software might prevent them. Both agreed the causes of these problems were mistakes made by PING users, and the software would not prevent such mistakes from occurring. The inspectors were informed the CM Supervisor's list of presumed and actual problems had been communicated to Engineering management for review, evaluation, and action. Therefore, the safety impact, if any, of the collection of these problems was not yet known. Based on the above, the inspectors concluded that there was a problem with inconsistent entry of CM-related information into the CM database by multiple PING users that impacted the accuracy of numbering of configured items. Resolution of this problem will be tracked as an inspector follow-up item (IR-02-007-01-IFI) because of the possible adverse impact that misnumbering of configured items may have on CM program effectiveness.

1.4.2.3 Configuration Documentation

1.4.2.3.1 Configured Document Review (DCA)-Discovery, Analysis, and Correction

The inspectors selected several configuration documents issued at Revision 0 or above (approved for construction or procurement) for review and query through the electronic document management system, Altris. In particular, queries were performed to determine if selected

documents were appropriately linked to their configured items, to related configuration documentation, and to applicable change documents.

The inspectors reviewed Design Change Application (DCA), 24590-PTF-DCA-PR-01-001, Rev. 0, "Change to Carousel Ion Exchange Columns, Addition of Hydrogen Mitigation, and Removal of Miscellaneous Vessels." Project Document Control (PDC) was requested to query Altris using this DCA to determine if affected configuration documents (drawings and system descriptions) would be identified through associated electronic linkage within Altris. DWG-W375LP-PR00021, Rev. 1, and SD-W375LP-PR00002, Rev. 1, were two of the approved configuration documents that were cited as being affected by the DCA. The queries were performed starting with the affected documents, and then re-queried starting with the DCA. Although the queries confirmed the DCA had been posted to the "hard copy" drawing (it was cited in the drawing revision block), it was unclear whether the DCA had been posted to the affected system description (since the document itself did not reference the DCA). However, neither the drawing nor the system description had been electronically linked to the DCA within Altris. This error had no adverse effect on construction, since the DCA had been posted to the physical drawing. However, an engineer who attempted to revise the drawing or system description in the future would not see all posted changes against the drawing or system description in the CM database (Altris). This impacts the engineers' ability to safely change the design with full knowledge of the status of the approved design. The inspectors performed an expanded sampling of all approved DCAs, as of the date of this inspection because of the above problem. There were eight approved DCAs. Seven of the eight DCAs (including the one discussed above) were not electronically linked to their affected configuration documents.

The inspectors notified the PDC Manager of this problem on May 15, 2002. Discussions with the PDC Manager the following day indicated she had reviewed and confirmed the problem, identified its cause, and taken action to correct it. The PDC Manager took timely corrective action that included (1) confirming that this problem did not exist with other Engineering change documents, (2) counseling the individual who made the error, and (3) discussing with PDC personnel the expectation that the desktop guide be rigorously followed. No Corrective Action Report (CAR) was initiated to the inspectors' knowledge. The problem occurred because of the following sequence of events. PDC has an informal desktop guide used by PDC personnel to process documents into and through the electronic data management system. A DCA would normally be processed by posting the DCA number against its affected document(s), from which a "change request" would be issued. Once implemented, the "change request" would be the vehicle by which the affected documents would be electronically linked to the DCA. Change requests for seven of the eight approved DCAs were not generated and executed because the PDC personnel who entered the DCAs did not rigorously follow the desktop guide. The lack of these change requests resulted in the electronic linkage not being accomplished.

In addition, this informality also resulted in PDC personnel issuing Revision 0 drawing to fulfill an inspector request in lieu of the Revision 1 drawing that was the "drawing of record."

The lack of formal, approved project procedure or instruction governing the processing of configuration documents (generated by Engineering in accordance with formal, approved procedures) by PDC into the CM database is considered a Finding (IR-02-007-02-FIN) under

QA Manual-24590-01-0001, Rev. B, *Quality Assurance Manual*, Policy Q-05.1, "Instructions, Procedures, and Drawings." This Policy stated in part, "Implementing documents include documents such as, instructions, procedures and drawings. The type of document to be used to perform work shall be appropriate to the nature and circumstances of the work being performed. Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, and drawings of the type appropriate to the circumstances …"
As stated above, there was no formal, approved project procedure or instruction for a PDC activity affecting quality; namely, the processing of configuration documents (generated by the Engineering organization in accordance with formal, approved procedures) into the CM database.

1.4.2.3.2 Technical Baseline Programmatic Assessment

The inspectors reviewed the TB to assess if it was adequately controlled and included all applicable configuration documents. According to the CM Plan, the TB represents the configuration as defined by configuration documents at a specific point in time, and serves as reference for further activity. The inspectors reviewed the recently issued report, 24590-WTP-RPT-ENG-01-001, Rev. 0, *Technical Baseline*. This report specified the types of documents that are controlled as configuration documents within the TB. The list was complete and accurate relative to alignment with the CM Plan. The TB documents that were specific to configured items were maintained in Altris as a "tagged" subset of all project documents. These could be individually or collectively retrieved on demand. The configuration documents were under document control, AB control, design control, and interface control based on the document type.

The inspectors discussed the purpose and use of the TB with several Contractor personnel during the inspection, including the author. There was inconsistent knowledge and perspective relative to this issue. The TB Manager believed the TB was used for design change control, while others did not. The Systems Engineering Manager believed the TB serve only to support acquisition of permits from outside agencies. However, the inspectors concluded that these inconsistencies did not have an adverse impact on project safety because all changes to the design used the CM database of Altris as the resident location of the design.

1.4.2.3.3 Technical Baseline Accuracy

The TB contained all configured data, one of which was the PIL. The inspectors reviewed records associated with the PIL to verify the accuracy of the TB. The PING database was periodically printed as a hard copy and retained as the PIL. This quality record contained the numbered, configured items at that instant in time. Because the PIL was generated from PING, it included information related to configured items, such as the QLs, seismic, and Quality Assurance Requirements Document (QARD) High Level Waste (HLW) requirements established for each SSC through the design and Integrated Safety Management processes. Because this information, documented in the PIL, was critical to procuring configured items to specified design/AB requirements, the inspectors reviewed controls that assured the entry and accuracy of such information into PING.

Entry of item/component QLs in PING was driven by procedure 24590-WTP-3DP-G04T-00905, Rev. 0, *Determination of Quality Level*s. This procedure required users to identify the ITS category of the SSC by referencing the Standards Identification Program Database (SIPD). The ITS category identified the appropriate QL for the component. The procedure required that the QL be added "where necessary" to the PING field for designating this information. The determination of whether to add QL information to the PING database was made by referring to Section 3.4 "Project List for QA Program and QARD Applicability," and listed the project documents and indices/schedules that identified SSCs to which the project QA program applied. Thus, this guidance was unclear as to the conditions under which QL information was required to be entered and documented in PING (e.g., when such entries are necessary). To determine whether this procedure was well understood by project personnel, the inspectors took the following action:

As stated above, the CM Supervisor provided a list of problems related to CM implementation after the Systems Engineering Manager indicated during an interview that the Engineering Manager had been informed of CM issues. From this list of 21 presumed and actual problems associated with PING/PIL compiled by the CM Supervisor in the March/April 2002 timeframe, the inspectors selected several listed problems concerning QLs in PING that did not match the SIPD safety classifications for the items/components. The inspectors confirmed these were not associated with any Revision 0 (or above) configuration documents, and questioned one engineer about his QL entries in PING (associated with HLW C5 Cell design). None of the specific items/components were misclassified by the engineer in PING, however, HEPA filters that were classified "SDC" in SIPD (which required they be assigned QL 1) had no entry in the QL field of PING. When questioned as to why the QL information was not entered, the engineer indicated that it would be entered at a later date prior to the associated drawing being revised to Rev. 0. Based on this, the inspectors asked the engineer which procedure required that the QL level be entered in PING and be verified accurate prior to the drawings being revised to Revision 0. The cognizant engineer stated that he was not familiar with such a procedure, but it was his expectation from a "good engineering practice" viewpoint that this would be done. The inspectors also interviewed the WTP Engineering Manager about this issue. It was his expectation that engineers verify the QL of plant items/components prior to revising associated drawings to Revision 0. He believed established engineering procedures and processes directed this to be performed. The inspectors reviewed the population of engineering procedures that could possibly direct this action, but did not identify any procedures requiring the verification of QL as discussed above.

The inspectors interpretation of the procedures concluded the accuracy of the QL designation in PING directly impacts the accuracy of associated item/component Material Data Sheets (MDSs) that were derived from PING to procure items/components. This conclusion is based on the lack of procedural specificity or software program logic (to require the QL level to be established prior to the MDS sheet being completed in PING), which may result in inadvertently procuring items/components at QL levels that do not match the design requirements or the AB.

The inspectors discussed with the PING Administrator the generation of MDSs from the PING database. MDSs were developed through collaboration between Engineering Automation and the Engineering technical disciplines. Characteristics/attributes of specified items were extracted

from engineering specifications to create MDSs in PING. The electronic MDSs related to categories of items (centrifugal pumps, control dampers, stainless steel vessels, etc.), but not to specific items. Users who wanted to procure specific items/components filled out the applicable fields in the appropriate MDSs, which was then automatically assigned a unique MDS number linked to the unique item/component being procured. In essence, the completed MDS became the unique design specification for the configured item being procured.

The inspectors questioned the PING Administrator relative to the controls for assuring the MDS is revised when the "parent" design specification is revised. This would be particularly important if any of the specified attributes/characteristics were changed in the revised specification. The PING Administrator was unable to cite the procedural controls that assured revisions to specifications resulted in revisions to the associated MDSs in PING. The inspectors were informed in an interview with a representative of Design Engineering that procedure 24590-WTP-3DP-G04B-00046, *Engineering Drawings*, addressed this issue since the procedure classifies MDSs as drawings. This would make MDSs subject to drawing change control and purportedly linked such changes with changes to related engineering specifications. Specifically, the Contractor cited Exhibit A of the subject procedure (which is divided into discipline-specific sections) as listing MDSs under drawing control; however, not all disciplines with listed documents included MDSs (most notably, Mechanical, Electrical, and Instrumentation & Controls did not list MDSs in their sections). Further discussion of this topic with Contractor engineering personnel, confirmed no other procedures controlled the interface between engineering specifications and MDSs in PING.

Although no adverse impacts were identified as a result of the above listed problems, once item/component procurement escalates as designs are finalized, these problems, if not corrected, have the potential to adversely impact CM of configured items**.** The inspectors concluded these were additional examples of the lack of integration between procedures as described under Section 1.2.2 of this report.

1.4.3 Conclusions

The inspectors concluded the identification and documentation element of the CM program was adequate for the current phase of the design; however, if not significantly improved, this element may not be adequate for expanded construction activities scheduled for the near future. This conclusion is based on the following:

- Selection of configured items for the project was adequate for current design and construction activities; however, cascading down CM to sub-components and piece-parts was not part of the selection process for configured items under the current CM program. This should be addressed as part of operational CM to support the production/operations phase of the project.

- The CM database was generally adequate as an IT platform for numbering and creating relationships between configured items, configuration documents, and changes to these. Inconsistent entry of various data pertaining to configured-items by multiple users

challenged control of configuration of items and associated documents. Based on the above, the inspectors concluded there was a problem with inconsistent entry of CM-related information into the CM database by multiple PING users that impacted the accuracy of numbering of configured items. Follow-up on the Contractor's resolution of this problem will be tracked as inspection follow-up item IR-02-007-01-IFI.

- The Quality Levels (QLs) of configured items were not always entered, or incorrectly entered, in the CM database.

- Problems existed with the electronic linkage of CM change documents to affected configuration documents within PDC due to lack of formal, approved procedures for processing such changes to the electronic document management system. This was considered an inspection Finding, IR-02-007-02-FIN.

1.5 Change Control (ITP I-102)

1.5.1 Inspection Scope

The inspectors reviewed procedures and project records, and interviewed contractor personnel, to determine if CM was being adequately addressed in the Contractor's change control processes.

1.5.2 Observations and Assessments

The inspectors noted the Contractor's CM Plan described specific formal processes for controlling changes to configured items. The inspectors also noted the Contractor established approved procedures for implementing the change control processes described in the CM Plan. The complete administrative process for implementing configuration changes involved a large number of Contractor procedures; however, the following were the key procedures specifically related to implementing the Contractor's formal configuration change control processes:

- *Field Change Requests (FCRs)/Field Change Notices (FCNs*), 24590-WTP-GPP-CON-3103, Rev. 0

- *Disposition of Field Change Request/Field Change Notice*, 24590-WTP-3DP-GO4B-00062, Rev. 0

- *Design Change Control*, 24590-WTP-3DP-GO4T-000901, Rev. 0

- *Authorization Basis Maintenance*, 24590-WTP-3DP-GO4T-000901, Rev. 0

- *Nonconformance Reporting & Control*, 24590-WTP-3DP-GO4T-000901, Rev. 1

- *Supplier Deviation Disposition Request*, 24590-WTP-GPP-SREG-002, Rev. 1

- *Engineering Interface Control*, 24590-WTP-3DP-GO4B-00025, Rev. 0.

The inspectors reviewed the Contractor's procedures identified above, to assess the adequacy of the procedure implementation relative to the Contractor's AB commitments. The inspectors determined the procedures adequately implemented various approaches to making configuration changes, and these approaches were appropriate with respect to source of the change as well as the complexity and significance of the change.

The inspectors reviewed reports of change control records and sampled records associated with the change control processes identified above, to determine the review approach. The inspectors decided to review the DCN/DCA change process, implemented by the engineering organization as well as the Field Change Request (FCR) change process, which was implemented in a coordinated fashion by the construction and engineering organizations. The inspectors concentrated most of their effort on the FCR process, because the process was relatively new to the WTP project, and because there was more activity associated with the FCR process at the time of the inspection.

From a review of DCN, DCA, and FCR records sampled and discussions with Contractor personnel, the inspectors found the Contractor was implementing its change control procedures with the following exceptions.

1.5.2.1 Failure to Follow FCR Procedure

While reviewing incorporation of approved changes to 13.8 kV electrical duct banks documented in FCRs 24590-WTP-FCR-E-01-001 and -002, and depicted in revision 1 of drawing 24590-BOF-E2-E54T-00001, *Site Electrical Distribution Duct Bank Plan*, the inspectors noted revision 1 of the drawing properly referenced the FCRs; however, there were significant differences between the configuration of the duct banks as approved in the FCRs, and the configuration of the duct banks documented in revision 1 of the drawing. From discussions with Contractor engineering personnel, the inspectors determined there was an engineering rationale for these differences; however, there were no approved change control records (e.g., DCN, DCA, or FCR) describing or providing an evaluation of the differences. Contractor procedures related to the FCR process (24590-WTP-GPP-CON-3103 and 24590-WTP-GDP-GO4B-00062) required approved FCRs be incorporated in revised design documents, or the FCR be deleted or superseded.

The inspectors considered the above issue (the failure to follow the FCR process which required the approved FCR be incorporated in revised design documents or the FCR be revised or deleted) to be an example of a Finding (IR-02-007-03a-FIN) for failure to follow procedures as required by QA Manual, Policy Q-05.1.

1.5.2.2 Failure to Follow Design Change Control Procedure

The inspectors' review of the 13.8 kV duct bank configuration drawing 24590-BOF-E2-E54T-00001, Rev. 1 noted changes not related to the changes associated with the FCRs described above. These changes involved transformers and duct bank routing associated with the BOF Switchgear Building. Based on interviews with Contractor engineering personnel, the inspectors determined the noted changes were introduced by three documents associated with the Contractor's trend program. Two of these documents, TN-24590-01-00224 and-00232, were approved and referenced on Revision 1 of the drawing. The third trend document was not approved at the time of the inspection.

Trend documents were prepared and approved in accordance with procedure 24590-WTP-GPP-GAB-00103, *Trend Program*. The two approved trend documents identified on the drawing described changes to WTP air compressors. Although the proposed change to air compressors would effect electrical loads, neither of the referenced trend documents specifically addressed changes to the 13.8 kV distribution or duct banks. However, as stated in the trend procedure, the purpose of trend program documents was to document and disposition proposed changes to the project performance measurement baseline not to document or evaluate changes to facility design or configuration.

The inspectors' review of the Contractor's CM Plan and CM Procedure did not identify the trend program as an appropriate CM process. This was consistent with the *Trend Program* procedure. Procedure 24590-WTP-3DP-G04T-00901, *Design Change Control*, required that changes to numeric revision drawings be documented via a DCN, DCA, or under certain circumstances, in the revision block or notes section of the drawing. Hence, the inspectors concluded an unapproved design change process was utilized to formally change the design.

The inspectors consider the above issue (the preparation and approval to Revision 1 of drawing 24590-BOF-E2-E54T-00001) to be an additional example of an inspection Finding (IR-02-007-03b-FIN) for failure to follow procedures as required by QA Manual, Policy Q-05.1.

1.5.2.3 Failure to Follow Design Criteria Procedure

The inspectors reviewed procedures, interviewed engineering staff, and reviewed records to assess the design input memorandum (DIM) process as it related to the design control process. Procedure 24590-WTP-3DP-G04B-00001, *Design Criteria,* required the DIMs document the design drawings that are design inputs to configuration documents associated with the DIM. The DIMs documented design inputs to configuration documents maintained in the project's CM database, and thus, defined relationships between various configuration documents. Interviews with project personnel involved in implementing change control processes, indicated low confidence in the quality and consistency of the design input memorandum (DIM) documents associated with configuration documents. The inspectors' review of DIM 24590-BOF-E2-E54T-00001, Rev. 1, associated with drawing 24590-BOF-E2-E54T-00001 determined the DIM did not adequately identify design inputs. Specifically, the DIM did not reflect civil and electrical

drawings 24590-BOF-P1-50-0001 and 24590-BOF-E1-MVE-00001, which contained design information that was an input to the drawing associated with the DIM.

The inspectors considered this failure to follow procedure to be a third example of an inspection Finding (IR-02-007-03c-FIN) for failure to follow procedures as required byQA Manual, Policy Q-05.1.

1.5.3 Conclusions

The inspectors concluded the Contractor had established procedures that implement the Contractor's AB CM commitments related to change control. However, the inspectors noted several Findings in the implementation in some portions of the change control process, which need to be addressed. These Findings are listed below.

The Contractor failed to follow procedural requirements related to incorporating FCRs in revised design documents (IR-02-007-03a-FIN).

The Contractor failed to follow procedural requirements to document changes to revised configuration documents (IR-02-007-03b-FIN).

The Contractor failed to follow procedural requirements to accurately document design inputs in a DIM associated with a configuration document (IR-02-007-03c-FIN).

1.6 Status Tracking and Reporting (ITP I-102)

1.6.1 Inspection Scope

The inspectors reviewed the Contractor's CM Standard and CM Plan and conducted interviews with staff and management to assess their adherence to the requirements of the CM Standard and the CM Plan.

1.6.2 Observations and Assessments

The inspectors' review of Section 7.5.3 of the CM Standard identified the types of reports that were required be issued at interval "necessary for management purposes." Reports listed in this section included:

- A list of configuration baseline documents
- A list of configuration items and their configuration baselines
- Current configuration status (such as "as-designed," "as built/produced")
- Status report on changes, deviations, and waivers
- Status reports on the implementation and verification of changes.

CM Plan, Section 3.2.3, established the general requirements for status tracking and reporting with more specific requirements provided in each of the four main sections of the plan (SSCs; plant installed software; interface control; and AB documents). The Plan did not specify the database(s) to be used as part of the CM program, nor does the CM Standard. Based on interviews with the CM Manager and information provided by the ES&H staff before the inspection, the inspectors determined the Contractor considered the CM database to be a combination of three separate databases: the document management system, supported by Altris; PING; and INtools. These are more fully described in Section 1.4 of this report.

Interviews were conducted with the CM Supervisor, the PDC Manager, and other engineering managers to understand the timeliness and accuracy of recorded information, and the distribution of program status reports. Interviews were conducted with those individuals responsible for management of the databases relative to the entry and retrieval of information from the databases.

During an interview, the CM Supervisor stated engineering processes and schedules controlled the timeliness and accuracy of design information. This information was provided to PDC for entry into Altris. The PDC Manager stated that she had developed reports which monitored the dates of receipt by PDC of CM related information and its entry into Altris to ensure such entry was within the goal of 18 hours from its time of receipt. No problems were identified regarding the timeliness of entry of information into the database.

The PDC Manager stated that individuals needing to use the Altris system must be approved by PDC, and access was limited based on their need for using the system. Individuals outside the PDC organization could access the system for "read-only." The information in Altris was grouped under documents, plant systems, and change events. Within those groupings, there were multiple options for searching the database for related information such as linkages, history, responsible persons, and characteristics. These related documents and drawings could be viewed and reports generated as needed.

During the above interview with the PDC Manager, the inspectors also learned the Contractor was in the process of replacing Altris with another system, INFOWORKS. The validation and verification of the new system was to be completed over the next several months. The new system will allow for direct electronic data entry of information received from Engineering. Development of electronic forms for use by Engineering was in the beginning stage. Detailed information on the content of the electronic forms was not available at the time of the inspection. The PDC Manager stated the use of electronic forms by engineering would result in an estimated 50% to 80% reduction in the reentry of the data into Altris by PDC, thus reducing the probability of errors introduced by data re-entry. INFOWORKS also would provide for direct electronic linkage with other databases that are part of the CM program. Linkage with the PING system should be accomplished in about one year.

The inspectors interviewed engineering managers to assess the implementation of the CM Standard recommendation that CM periodic reports be issued "at intervals necessary for management purposes." The Contractor’s databases, INtools, and PING were used by authorized engineers to enter or change data, and to obtain the status of technical information at any time.

Altris had the capability to provide the current status and the change history of configured items and documents entered into the system. The PDC Manager stated that routine reports would not be issued for status tracking purposes. Those users who needed information could determine the type and format of information they needed and generate such reports specific to their need. Engineering managers stated in interviews the on-demand reports met their needs because they addressed the specific items of interest to the user in a timely manner. If any particular user requested the same information in a report at an increased frequency, PDC would develop a standard format for reporting the requested information. The report would still be generated only when requested by the user.

Based on interviews with the engineering managers, the inspectors concluded the on-demand aspect of the reports met the CM Standard guidance for issuing reports at intervals “necessary for management purposes."

1.6.3 Conclusions

The inspectors concluded the Contractor’s program for status tracking and reporting met the requirements established in the CM Standard and the CM Plan for the current status of the project.

1.7 Configuration Audit (ITP I-102)

1.7.1 Inspection Scope

The inspectors reviewed the CM Standard, the CM Plan, appropriate QA procedures, and selected QA surveillances to assess the Contractor’s adherence to the auditing requirements defined in the AB. Interviews also were conducted with CM and QA management to assess their interpretation of the oversight necessary for CM.

1.7.2 Observations and Assessments

1.7.2.1 Standard Audit Requirements

The inspectors reviewed the CM Standard to determine the applicable requirements and to assess the Contractor implementation of the standard in the area of audits. The CM Standard, Section 5.5, stated configuration audits (defined by the CM Standard as "Examination to determine whether a configuration item conforms to its configuration documents") should be performed before the acceptance of a configuration baseline to assure product compliance with its contracted or specified requirements and to assure product accuracy is reflected by its configuration documents.

The CM Standard, Section 4.2.4 also stated, "CM system audits should be performed to assess conformance to the CM procedures and plans." The CM Standard, Section 8.0 stated, "CM

system audits should be performed to documented procedures of the organization. CM system audits are performed to …verify the CM system is effective and meets the specified requirements and determines conformity of the applied CM practices to the procedures described in the respective CM Plan."

1.7.2.2 Configuration Audits

The CM Plan, Sections 3.2.4 and 4.4, provided for the conduct of configuration audits to determine whether a configured item conformed to its configuration documents. The Plan described two types of configuration audits that are normally conducted, as follows:

- Function confirmation is accomplished by identifying the individual functional and performance requirements of a configured item, and confirming through review, inspection, and test records that the requirements are achieved.

- Physical confirmation is accomplished by examining the physical or as-built and tested configured item for compliance to its configuration documents.

The CM Plan specified that the plans, procedures, and other project documents governing performance of configuration audits will be prepared as the project progresses into the latter stages of construction and commissioning. During an interview, the CM Manager stated that BNI had recently considered the types of documents that would be used in conducting configuration audits. He also stated that CM audit plans had not been developed given the timing of such audits (these are typically close to the end of construction) relative to the status of the project. No areas of concern were identified with regard to the Contractor's program relative to configuration audits.

1.7.2.3 Configuration Management System Audits

The ISMP, Section 1.3.16 stated, "Effective implementation of configuration management and supporting processes is assessed through management self-assessments in accordance with approved project procedures. Additionally, formal audits performed by Quality Assurance to their normal auditing practices verify compliance with approved project procedures."

The QA Manual, Policy Q-18.3, required management assessments to assess the adequacy and effective implementation of their management processes. Management assessments are conducted at intervals not to exceed 12 months. These assessments are performed in accordance with 24590-WTP-GPP- MGT-002-1 *Project Management Assessment.* Configuration management assessments have not been conducted since the effective date of the CM Plan (October 2001). The next scheduled management assessment of the Engineering organization was scheduled for June 2002, which included the CM program. However, the scope of that assessment as related to Engineering's oversight of CM for the project remained in question in view of the Engineering Manager's position regarding Engineering's limited role in this area. (Details of this issue are addressed in Section 1.3 of this report.)

The QA Manual, Policy Q-18.1, required "audits shall be performed to verify that performance criteria are met to determine the effectiveness of the program." It provided that "internal audits shall be scheduled at a frequency commensurate with the status and importance of the work." Interviews were conducted with the QA Manager, QA Program Manager, and QA Surveillance Manager. Based on these interviews, the inspectors determined audits of the CM program had not been conducted, and no CM audits were scheduled through the end of 2002. Rather, they stated that the approach to QA oversight of the CM program had been to conduct multiple surveillances, with emphasis on the various elements of Engineering. They also stated that these surveillances addressed many of the elements of the CM program. These managers believe that a review of the summation of the individual surveillances would provide for adequate QA oversight of the CM program. The inspectors selected the following surveillances for review:

- 24590-WTP-QA-SV-02-143, *Design Verification*
- 24590-WTP-QA-SV-01-026, *Design Change Control*
- 24590-WTP-QA-SV-02-148, *ITS Rebar*
- 24590-WTP-QA-SV-02-151, *FCR's*
- 24590-WTP-QA-SV-02-177, *Review Process for Engineering Specs*
- 24590-WTP-QA-SV-01-172, *Engineering Drawing Project Procedures*.

This review indicated five of the six surveillances addressed CM issues. This limited sample supported the statement that the surveillances addressed many elements of CM. A review of the record of surveillances confirmed that multiple surveillances had been performed with emphasis in the area of engineering. However, the areas covered were not identified or grouped in any way to link them to the various aspects of the CM program. Also, it was not clear as to how the surveillances may have addressed interfaces between different organizations as related to the CM program. Thus, it was difficult to make a judgment as to the completeness of QA oversight of the CM program. The QA Manager stated he planned, within the next few months, to perform a review and analysis of the completed surveillances to determine the adequacy of QA coverage in this area. Pending completion of the management assessment of engineering and the QA Manager's review of the QA surveillances conducted, the inspectors could not reach a conclusion as to whether this aspect of the Contractor's oversight of the CM program met applicable requirements.

This area will be reviewed and evaluated in a future inspection and will be tracked as inspection follow-up item IR-02-007-04-IFI.

1.7.3 Conclusions

Pending completion of the management assessment of engineering and the QA Manager's review of the QA surveillances conducted, the inspectors could not reach a conclusion as to whether this aspect of the Contractor's oversight of the CM program met applicable requirements. Follow-up to this issue will be tracked as inspection follow-up item IR-02-007-04-IFI. The inspectors concluded configuration audits of the CM program were not applicable at this time based on the current status of the project.

2.0 EXIT MEETING SUMMARY

The inspectors presented preliminary inspection results to members of the Contractor's management at an exit meeting held on May 17, 2002. The Contractor acknowledged the Findings and the information presented. The Project Manager indicated that he would be initiating a Six Sigma Process Improvement Team for understanding and making recommendation to him to rectify issues identified as a result of this inspection. He also indicated that not following engineering design procedures was unacceptable and corrective action would be forthcoming.

The inspectors asked the Contractor whether any materials examined during the inspection should be considered as limited rights data. No limited rights data were identified.

3.0 REPORT BACKGROUND INFORMATION

3.1 Partial List of Persons Interviewed

Kim Auclair, Systems Engineer Manager
Jim Hummer, Manager, Configuration Management
George Hagen, Manager, Project Administration Document Control
Neal Shertz, C&I Automation Supervisor
Mari Wilson, C&I Product Coordinator
George Shell, QA Manager
Dom Canazaro, QA Programs Manager
Jim Rutherford, QA Surveillance Manager
Angie Merritt, Compliance/Procedure Supervisor
Scott Porter, Electrical Designer
Nico Barangan, Electrical Supervisor, BOF
Scott Horn, Resident Engineering Supervisor
Susan Turner, Data Management Coordinator
Don Scribner, CS&A Manager
Brad Marshall, Senior Electrical Field Engineer-LAW Lead
Mark Platt, Safety Program Lead
Fred Davis, Deputy Engineering Manager
Simon Wright, Assistant Field Engineering Manager
Alan Johnson, Lead Field Welding Engineer
Roy Janysek, Assistant Lead Field Welding Engineer
James L. Smith, Supplier QA Supervisor
Steve Sallee, Supplier QA Engineer
Ron Mejiano, Senior Piping Field Engineer
Paul Opet, Senior Piping Field Engineer
Bill Klinger, Supplier QA Manager
Mike Ensminger, Quality Control Manager
Raleigh Amos, Project Field Engineer Manager
Frank Boozer, Lead QC Civil Inspector

Gilbert Hoffman, Lead QC Receiving Inspector
Doug Neal, QC Surveillance Engineer
Dennis Henry, QA Surveillance Engineer
Marty Ehlinger, QA Surveillance Engineer
Dom Canazara, QA Programs Manager
Jim Rutherford, QA Surveillance Manager
Cliff Edwards, QC Engineer
Karen Vacca, Training Manager
Bill Yeo, HR Program Manager
Charlie Herbert, Construction Training Manager
Alan Nagel, NDE Specialist
Fred Marsh, Engineering Manager
Neil Brosee, Commissioning and Training Manager
Gary Kloster, Technical Baseline Manager
Abdul Dada, Process Engineering Manager
Janet Roth, Deputy Process Engineering Manager
T. Elliott, CM Engineer
C. McKnight, Fire Protection Supervisor, Design Engineering
K. Law, Fire Protection Engineer
D. Cragin, HVAC Design Engineer
C. Camp, Project Admin. Specialist

3.2 Inspection Procedures Used

Inspection Technical Procedure I-102, Rev. 3, "Configuration Management "

3.3 List of Items Opened, Closed, and Discussed

Opened

IR-02-007-01-IFI	Inspector Follow-up Item	Verify the accuracy and process improvements associated with PING entries into the CM database. (Section 1.4)
IR-02-007-02-FIN	Finding	Failure of PDC to utilize formal, approved procedures for processing quality related material into the CM database. (Section 1.4)
IR-02-007-03a-FIN	Finding	Failure to incorporate FCR into revised drawing or delete or supercede FCR. (Section 1.5)

IR-02-007-03b-FIN	Finding	Failure to document drawing changes via DCN, DCA, or in the revision block of the drawing. (Section 1.5)
IR-02-007-03c-FIN	Finding	Failure to record required design inputs on a DIM. (Section 1.5)
IR-02-007-04-IFI	IFI	Verify the CM Program oversight is consistent with regulatory requirements. (Section 1.7)

Items Closed

None

Items Discussed

None

3.4 List of Documents Reviewed

Authorization Basis Documents

Safety Requirements Document (SRD) 24590-WTP-SRD-ESH-01-001-02, Rev. 0d, Volume II, dated March 6, 2002.

Quality Assurance Manual, 24590-WTP-QAM-01-001, Rev. 0a, dated August 2001.

Quality Management—Guidelines for Configuration Management, International Standard ISO 10007, 1995.

Integrated Safety Management Plan, 24590-WTP-ISMP-ESH-01-001, Rev. 1, dated April 19, 2002.

Contractor Plan and Policies Reviewed

RPP-WTP Configuration Management Plan, 24590-WTP-PL-MG-01-002, Rev. 0, dated October 8, 2001.

Contractor Procedures Reviewed

Project Management Assessment, 24590-WTP-GPP-MGT-002, Rev. 1*,* dated February 28, 2002.

Quality Assurance Surveillance, 24590-WTP-GPP-QA-601, Rev. 0*,* dated September 28, 2001.

Independent Assessment (Audits), 24590-WTP-GPP-QA-501A, Rev. 0, dated January 22, 2002.

Configuration Management, 24590-WTP-3DP-G04B-00005, Rev. 0, dated October 8, 2001.

Engineering Specifications, 24590-WTP- 3DP-G04B-00049, Rev.0, dated January 10, 2002.

Determination of Quality Levels, 24590-WTP-3DP-G04T-00905, Rev. 0, dated October 8, 2001.

Standard Component Numbering, 24590-WTP-3DP-G03B-00044B, Rev. 0, dated April 11, 2002.

RPP-WTP Document Numbering, 24590-WTP-GPP-PADC-001, Rev. 0, dated August 15, 2001.

Field Change Requests (FCRs)/Field Change Notices (FCNs), 24590-WTP-GPP-CON-3103, Rev. 0, dated September 28, 2001.

Disposition of Field Change Request/Field Change Notice, 24590-WTP-3DP-G04B-00062, Rev.0, dated September 28, 2001.

Design Change Control, 24590-WTP-3DP-G04T-00901, Rev. 0, dated October 8, 2001.

Engineering Interface Control, 24590-WTP-3DP-G04B-00025, Rev. 0, dated October 8, 2001.

*Nonconformance Reporting and Contro*l, 24590-WTP-GPP-CON-7104, Rev. 1, dated April 1, 2002.

Field Project Document Control, 24590-WTP-GPP-CON-7107, Rev. 0, dated April 15, 2002.

Supplier Deviation Disposition Request, 24590-WTP-3DP-G04B-00063, Rev. 0*,* dated October 8, 2001.

Design Process, 24590-WTP-3DP-G03B-00001, Rev. 0, dated April 11, 2002.

Internal Review and Approval of Documents, 24590-WTP-GPP-PADC-003, Rev. 1, dated April 9, 2002.

Trend Program, 24590-WTP-GPP-GAB-00103, Rev. 1, dated December 18, 2001.

Authorization Basis Maintenance, 24590-WTP-GPP-SREG-002, Rev. 1*,* dated April 23, 2002.

Engineering Drawing, 24590-WTP-3DP-G04B-00046, Rev. 0, dated March 25, 2002.

Technical Baseline, 24590-WTP-RPT-ENG-01-001, Rev. 0*,* dated April 17, 2002.

Training, 24590-WTP-GPP-CTRG-002A, Rev. 1, dated January 30, 2002.

Records and Drawings

DCA 24590-PTF-DCA-PR-01-001, Rev. 0, "Change to Carousel Ion Exchange Columns, Addition of Hydrogen Mitigation, and Removal of Miscellaneous Vessel," and Rev. 0.

DCA's BOF-DCA-M-01-001; BOF-DCA-PR-01-001; HLW-DCA-M-01-001; HLW-DCA-PR-01-005; HLW-DCA-PR-01-006; HLW-DCA-PR-01-008; and PTF-DCA-PR-01-002).

DWG-W375LP-PR00021, Rev. 1 and SD-W375LP-PR00002, Rev. 1.

Design Input Memorandum, 24590-BOF-E2-E54T-00001, Rev. 1.

Field Change Request, 24590-WTP-FCR-E-01-001.

Field Change Request, 24590-WTP-FCR-E-01-002.

Trend Notice, TN-24590-01-00224, *Plant System Air.*

Trend Notice, TN-24590-01-00232, *Chilled Water System.*

24590-BOF-E2-E54T-00001, *Site Electrical Distribution Duct Bank.*

Surveillances

24590-WTP-QA-SV-02-143, *Design Verification.*

24590-WTP-QA-SV-01-026, *Design Change Contro*l.

24590-WTP-QA-SV-02-148, *ITS Rebar.*

24590-WTP-QA-SV-02-151, FCR's.

24590-WTP-QA-SV-02-177, *Review Process for Engineering Specs.*

24590-WTP-QA-SV-01-172, *Engineering Drawing Project Procedures.*

Other Documents Reviewed

24590-WTP-RPT-OP-01-001, Rev. 0, *Operations Requirements Documen*t, dated November 8, 2001.

Individual Training Profiles for selected individuals.

Individual Position Descriptions for selected individuals.

4.0 LIST OF ACRONYMS

AB	authorization basis
BOF	balance of facility
BNI	Bechtel National, Inc.
CAR	Corrective Action Report
CM	configuration management
C&T	Commissioning and Testing
DCA	Design Change Authorization
DCN	Design Change Notice
DIM	design input memorandum
DOE	U.S. Department of Energy
ES&H	Environment, Safety, and Health
FEM	Field Engineering Manager
FCR	Field Change Request
FCN	Field Change Notice
FIN	Finding
HLW	high level waste
ICD	interface control document
IFI	Inspection Follow-up Item
IR	Inspection Report
ITP	Inspection Technical Procedure
IT	information technology
ITS	important-to-safety
LAW	Low Activity Waste
LCAA	Limited Construction Authorization Agreement
MDS	material data sheet
NCR	Nonconformance Report
ORD	Operations Requirements Document
ORP	Office of River Protection
OSR	Office of Safety Regulation
PDC	Project Document Control
P&ID	plant & instrumentation diagram
PIL	plant items list
PING	plant item number generator
QA	quality assurance
QARD	Quality Assurance Requirements Document
QC	quality control
QCE	Quality Control Engineer
QL	quality level
RPP-WTP	River Protection Project Waste Treatment Plant
SC	Safety Criteria
SIPD	Standards Identification Process Database
SSC	systems, structures, and components
SRD	Safety Requirements Document
TB	Technical Baseline