



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

P.O. Box 450  
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04-ESQ-072

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

Dear Mr. Henschel:

CONTRACT NO. DE-AC27-01RV14136 – CONFIGURATION MANAGEMENT (CM)  
ASSESSMENT REPORT A-04-ESQ-RPPWTP-011

This letter forwards the results of the U.S. Department of Energy, Office of River Protection assessment of the Bechtel National, Inc. (BNI) CM program for the Waste Treatment and Immobilization Plant conducted during the period July 26 through August 9, 2004. For CM, the Contractor had selected the International Standard Organization (ISO) 10007:1995(E), "Quality Management – Guidelines for Configuration Management," as their committed Safety Requirements Document implementing standard. The primary purposes of this year's assessment were to: 1) assess the new CM Plan Revision 3 and its effective implementation of the CM Standard ISO 10007 for the conduct of work during the design and construction of the facility; 2) assess the Contractor's closure of the assessment follow-up item A-03-OSR-RPPWTP-017-A01 (closure of the 2003 CM Path Forward); 3) assess the use of CM database Component Information System (CIS); and 4) review subcontractor CM.

The assessors concluded BNI continued to comply with the CM Standard, and was effectively implementing the CM program in the design and construction phase. No Findings were identified as a result of this assessment and one assessment follow-up item (AFI) was opened as a result of this assessment. The AFI (A-04-ESQ-RPPWTP-011-A01) will follow the resolution of undocumented deficiencies associated with the ability of the Contractor to include subcontractor components in the CIS database. Details of the assessment are in the attached assessment report.

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

Sincerely,

ESQ:JEA

Roy J. Schepens  
Manager

Attachment

cc w/attach:

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

ASSESSMENT: Configuration Management

REPORT: A-04-ESQ-RPPWTP-011

FACILITY: Bechtel National, Inc.

LOCATION: 2435 Stevens Center  
Richland, Washington 99352

DATES: July 26-August 9, 2004

ASSESSORS: J. Adams, DOE Team Lead Assessor  
J. Orchard, DOE ORP Assessor  
R. Smoter, Consultant

APPROVED BY: P. Carrier, Verification and Confirmation Official  
WTP Safety Regulation Division

## **EXECUTIVE SUMMARY**

### **Configuration Management (CM)**

#### **INTRODUCTION**

From July 26 through August 9, 2004, the U. S. Department of Energy, Office of River Protection, Office of Environmental Safety and Quality assessed the Waste Treatment and Immobilization Plant (WTP) Contractor's program for the implementation of its Safety Requirements Document configuration management standard International Standards Organization 10007:1995(E), "Quality Management – Guidelines for Configuration Management." The assessment team utilized Assessment Technical Procedure, I-102, "Configuration Management" for the following specific areas reviewed:

- CM Program;
- Follow-up on 2003 Configuration Management Path Forward (CMPF);
- Contractor Management Assessment and Oversight;
- CM Assessment of Implementation of Component Information System (CIS); and
- Subcontractor CM.

The Contractor was implementing the CM program via 24590-WTP-PL-MG-01-002, "RPP-WTP Configuration Management Plan Rev 3, dated February 20, 2004," (the CM Plan), which was the basis for compliance with "International Standard ISO 10007:1995(E), Quality Management – Guidelines for Configuration Management," (the CM Standard).

#### **SIGNIFICANT OBSERVATIONS AND CONCLUSIONS**

- The Contractor issued CM Plan Revision 3 on February 4, 2004, which continued to adequately implement the project CM Standard for the design and construction phase of the WTP. The Contractor was adequately addressing the transition to commissioning phase through on-going Contractor development activities, which were incorporated to the CM Plan. The Contractor had established project procedures and CM databases which adequately implemented the CM Plan for the design and construction phase of the project (Assessment Note A-04-ESQ-RPPWTP-011-01);
- The Contractor's actions summarized in the 2003 CMPF document were either completed or subsumed by follow-on activities which are being appropriately

managed and tracked. The Contractor has established a 2004 CMPF<sup>1</sup> summarizing these and other CM program transition and improvement efforts. On this basis, assessment follow-up item A-03-OSR-RPPWTP-017-A01 is closed (Assessment Note A-04-ESQ-RPPWTP-011-02);

- The Contractor Engineering organization had established and implemented an effective system for scheduling, planning, conducting and reporting internal management assessments, including the identification and resolution of problems. The assessors also concluded the Contractors Quality Assurance organization had participated in independent audits, which also provided useful input for corrective actions (Assessment Note A-04-ESQ-RPPWTP-011-03);
- The Contractor's CM databases were being maintained as required by the procedures. The information in the CM instrument database "INtools" is required to have sufficient design information in order to procure instrumentation. The CIS is not used to procure equipment, but is used to build the master equipment list for the commissioning phase. The equipment CM database, CIS was still in the process of becoming the master equipment list, and was only required to relate quality information for the unique numbered component. In addition, the assessors concluded design related changes made by Integrated Safety Management Cycle 3 were incorporated correctly into the Piping and Instrumentation Drawings and CM databases (Assessment Note A-04-ESQ-RPPWTP-011-04); and
- The Contractor had implemented an effective process for maintaining CM for systems delivered by a subcontractor turnover process. However, issues for the maintenance of the CM Database for subcontractor CM had been previously identified<sup>2</sup>, but not documented as deficiencies in the Contractor's deficiency tracking systems. This item will be tracked by A-04-ESQ-RPPWTP-011-A01 (Assessment Note A-04-ESQ-RPPWTP-011-05.)

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<sup>1</sup> CCN 089929, dated May 14, 2004, CM Path Forward (Benchmark Mar 2004).

<sup>2</sup> CCN 078425, dated January 7, 2004, CM Team Meeting Minutes in Subcontractor Drawing Component Identification.

## **Assessment of Implementation of the Waste Treatment and Immobilization Plant (WTP) Contractor's Program for Configuration Management (CM)**

### **Assessment purpose and Scope**

From July 26 through August 9, 2004, the U. S. Department of Energy, Office of River Protection, Office of Environmental Safety and Quality assessed the WTP Contractor's program for the implementation of its Safety Requirements Document (SRD) CM standard International Standards Organization (ISO) 10007:1995(E), "Quality Management – Guidelines for Configuration Management." The CM Standard was implemented by 24590-WTP-PL-MG-01-002, "RPP-WTP Configuration Management Plan Rev 3," dated February 20, 2004, (the CM Plan). The assessment team utilized Assessment Technical Procedure, I-102, "Configuration Management" for the specific areas reviewed: The team interviewed Contractor personnel and reviewed documents and records to determine whether the CM was being implemented per the CM standard and in accordance with approved procedures. The assessors focused on the revision of the CM program as defined by the CM Plan Revision 3, the effectiveness of Contractor oversight, the CM databases, and subcontractor CM.

In addition, the assessors conducted interviews and reviewed documentation for the closure of previous assessment follow-up item (AFI) A-03-OSR-RPPWTP-017-A01 which involved resolution of deficiencies of the previous assessment.

### **Significant Observations and Conclusions**

#### **Overall Conclusion**

The assessment team found the CM process was in conformance with the Quality Assurance Manual and the established Authorization Basis (AB) requirements defined in the SRD Safety Criteria and detailed in the implementing standard ISO 10007. The CM program, procedures, and databases continue to improve through the engineering management assessment process. CM was effectively implemented through procedures into design medium as the procurement and construction processes proceeded with the exception noted in A-04-ESQ-RPPWTP-011-A01. The Contractors Configuration Management Path Forward (CMPF) continued to be updated to reflect deficiencies and management policy decisions needed to improve the CM program. The Contractor's efforts to maintain the CMPF as a "timing document" was viewed by the assessors as a positive practice because it displayed the relative priority and importance management placed on individual items and provided emphasis needed to accomplish these actions.

## **Configuration Management Assessment Report**

### Scope

The assessors' interviewed personnel and reviewed documents to:

1. Determine the Contractor's CM Program was in compliance with the AB as defined by the implementing SRD standard ISO 10007 using the revised CM Plan Revision 3 and associated implementing procedures;
2. Verified actions defined in the 2003 CMPF (which was followed by AFI A-03-OSR-RPPWTP-017-A01) were completed;
3. Verify the effectiveness of Contractor oversight processes of Engineering Management Assessments (MA) and Quality Assurance (QA) audits;
4. Performed vertical slice reviews of two systems (one in the Low-Activity Waste [LAW] Building and one in the Pre-Treatment Bldg) to:
  - a) Verify the implementation of CM via the CM databases as defined by approved procedures;
  - b) Assess the flow down of an Integrated Safety Management Cycle 3 design requirement change through the Safety Case Requirement to the Design Criteria Database (DCD), and ultimately to the revised Piping and Instrumentation Drawings (P&ID) prints;
  - c) Review a sampling of P&IDs equipment to determine the major equipment on sampled systems was properly input to the Component Information System (CIS) database for all major components.
5. Reviewed the Contractor process for turnover of a subcontractor system to verify a process existed for establishing CM upon the turnover of equipment and systems from the subcontractor.

### CM Program (Assessment Note A-04-ESQ-RPPWTP-011-01)

- The assessors reviewed 24590-WTP-PL-MG-01-002, "WTP Configuration Management Plan," Revision 3, and determined the CM plan adequately addressed the key CM elements of the CM Standard (Configuration identification, Status tracking and reporting, Change control, and Configuration audit);
- The assessors interviewed the Engineering Process and Procedures Manager, the Systems Engineering Manager and the CM Supervisor and noted the CM Plan had

been extensively improved since the last CM assessment performed in July 2003 by the completion of work listed in the 2003 CMPF. Examples of these areas of improvement are provided in Assessment Note A-04-ESQ-RPPWTP-011-01;

- The assessors reviewed the status tracking and reporting element of CM by reviewing the procedures controlling the Contactors CM databases Electronic Data Management System (EDMS), CIS, and “INtools.” The assessors determined the CIS and “INtools” databases manage the unique numbers for WTP equipment and instrumentation under CM, provide linkages between these components/instruments and WTP design documents, and provide access to various data related to the description and classification of components under CM. EDMS is the Contractor’s document control database for the WTP project. With regard to CM, EDMS is used to identify linkages between design documents, identify linkages between design documents and design change documentation, and to provide for retrieval of configuration audit documentation. The assessors verified the Contractor had established procedures for maintaining information in these databases. No issues were identified during this review. The details for the CM database review are found in assessment note A-04-ESQ-RPPWTP-011-04.

Review of Completed CM Path Forward Actions (Assessment Note A-04-ESQ-RPPWTP-011-02)

- The assessors concluded the actions summarized in the 2003 CMPF document were either completed or subsumed by follow-on activities which were appropriately managed and tracked by the Contractor. The Contractor has established a 2004 CMPF (CCN 089928) summarizing these and other CM program transition and improvement efforts;
- AFI A-03-OSR-RPPWTP-017-A01 was written to track the resolution of actions summarized in the 2003 CMPF. The assessors interviewed the Engineering Process and Procedure Manager and the Lead Assessor for the 2004 CM MA, and reviewed closure documentation for the issues listed below to close the above AFI. Specific areas reviewed (see assessor note A-04-ESQ-RPPWTP-011-02 for more details;)
  - “Engineering design change control procedure requires revision to align with CM Plan,” (related to CMPF Item 1.1);
  - “CM-related construction procedures were not always routed to CM group for review,” (related to CMPF Items 1.2 and 1.3);
  - “CM Plan requires revision to reflect actions associated with CM Path Forward,” (related to CMPF Item 1.4);

- “Engineering Process Assurance planning should include assessment of CM implementation,” (related to CMPF Item 3.2);
  - “CIS Database Improvements,” (related to CMPF Items 4.1 and 4.2 and Section 1.5.2.1 of the 2003 CM Assessment Report);
  - “Establish criteria for selecting WTP ‘configured items,’” (related to CMPF Item 4.3 and Sections 1.2.2.2 and 1.5.2.1 of the 2003 CM Assessment Report);
  - “Reconcile CM and Engineering documentation sets,” (related to CMPF Item 4.3);
  - “Address Programmatic Issue associated with Engineering Data and Information Inconsistencies,” (related to CMPF Item 5.1); and
  - “Procedures not adequately developed for implementing Status Tracking and configuration audit elements of the configuration management plan,” (related to CMPF Items 6.1 and 7.1 and Sections 1.2.2.2, 1.4.2, 1.7.2 and 1.8.2.1 of the 2003 CM Assessment Report).
- Based on the above, the assessors concluded the actions were either completed or subsumed in the 2004 CMPF; hence, AFI A-03-OSR-RPPWTP-017-A01 is closed.

Contractor Management Assessment and Oversight (Assessment Note A-04-ESQ-RPPWTP-011-03)

- The assessors reviewed the “2004 Engineering Management Self Assessment Plan and Schedule,” 24590-WTP-PL-ENG-03-018, Revision 1, dated January 23, 2004. Completed MA entitled “Configuration Management Assessment, June 2004,” 24590-WTP-MAR-ENG-04-0011, Revision 0, dated July 21, 2004, was selected for review. The assessors determined the Contractor had performed a vertical and horizontal assessment in eight major areas including status and effectiveness of the 2003 CMPF implementation, follow-up on Corrective Action Reports, material control traceability, verification of physical configuration records, traceability of design documentation to configured items, metric trending etc. The assessors concluded the Contractor had established and implemented an effective system for scheduling, planning, conducting, and reporting internal management assessments, including the identification and resolution of problems; and
- The assessors reviewed the “WTP Quality Assurance Internal Audit Schedule,” 24590-WTP-SC-QA-02001, Revision 9, dated April 4, 2004, and selected the audit “Audit of Design Control,” 24590-WTP-IAR-QA-03-005 Revision 0, dated October 27, 2003, to assess the scope, quality, and results of the audit process oversight by QA relative to CM. The assessors’ review determined the design control



audit covered multiple areas pertinent to CM such as design criteria, design criteria database, calculations, drawings, design verification, design change control, field change request/notice, system descriptions, design specifications, material requisitions, supplier deviation requests, and others. The audit specifically reviewed the design criteria change process to determine changes made in the DCD were implemented with CM in mind. No issues were identified. Based on the WTP QA Internal Audit Schedule and the review of Audit of Design Control, 24590-WTP-IAR-QA-03-005, the assessors concluded the Contractors QA organization had performed independent audits which provided useful input relative to some of the elements of CM.

Configuration Management Assessment of Implementation of CIS (Assessment Note A-04-ESQ-RPPWTP-011-04)

- The assessors concluded the CM database CIS was implemented per the procedure. The assessors reviewed the “INtools” procedure and determined this database was used in the procurement process itself and had more complete design information than the CIS database. The CIS database was currently used as a historical document to provide the commissioning phase with configured item information and the procedure only required the unique numbering of the component and related quality information for the numbered component;
- The assessors determined (based on a sample review of the LAW Secondary Offgas/Vessel Vent Process system and Stack Discharge Monitoring System) CM was maintained for design changes required by Integrated Safety Management (ISM) Cycle 3 action item. The ISM Cycle 3 action item was properly incorporated into the P&IDs by revision traceable to the changes and with components traceable to the CM databases; and
- The assessors also reviewed the CIS data entry for the two systems (LAW Secondary Offgas/Vessel Vent Process System and Stack Discharge Monitoring System and Pretreatment Facility Cesium Ion Exchange Process Vessels System) by comparing the P&ID and the CIS database printout for major equipment shown on the P&ID and Equipment List. The assessors determined the components selected on the P&IDs had been properly entered to CIS and had been provided with the minimum required information for the chosen major components reviewed (10 items were reviewed).

Subcontractor CM (Assessment Note A-04-ESQ-RPPWTP-011-05)

- The assessors interviewed the Engineering CM organization and reviewed Section 3.2.2 of the procedure “Supplier Engineering and Quality Verification Documents,” 24590-3DP-G04B-00058, Revision 2, dated June 30, 2003. The assessors determined the subcontractors were responsible for following the

Contractors CM program by submittal of deliverables per their contract Exhibit I, Appendix B, "Subcontractor Submittal Requirements Table" and followed written direction as supplied by Bechtel National, Inc. (BNI) to allow BNI to establish CM upon turnover to BNI.

- The assessors reviewed meeting minutes of the Contractor CM Team<sup>3</sup> on the subject of the Thompson-Mechanical subcontractor (Cooling Towers) drawings component identification. The meeting minutes documented the issue of component and instrument numbering to be inconsistent between the subcontractor drawings and the BNI engineering drawings in Project Archives and Document Control. This problem was partially documented in 4590-WTP-RITS-QAIS-04-401 dated May 18, 2004, with the acknowledged need for the Contractor to develop a process to coordinate the P&IDs of a subcontractor with the CIS database to get CIS into a controlled state to support the components entry to the master equipment list as required by CM requirements of the Contractor. However, these deficiencies were not placed in the Contractor's deficiency tracking system but instead were assigned as lines of inquiry for the CIS Implementation Management Assessment per the CM Management Assessment Appendix P. Resolution of the above issue will be tracked by A-04-ESQ-RPPWTP-011-A01.

### **List of Items Opened, Closed, and Discussed**

#### Closed

A-3-OSR-RPPWTP-017-A01

#### Opened

A-04-ESQ-RPPWTP-011-A01

Failure to document known deficiencies relative to subcontractor CM input to CIS on Contractor deficiency tracking systems.

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<sup>3</sup> CCN 078425, dated January 7, 2004, "Subcontractor Component Identification"