



Department of Energy
 Carlsbad Field Office
 P. O. Box 3090
 Carlsbad, New Mexico 88221
MAY 12 2016

ENTERED



Mr. Val Cannon, Manager
 Quality Assurance
 Nuclear Waste Partnership LLC
 P.O. Box 2078
 Carlsbad, NM 88221-2078

Subject: Surveillance Report S-16-20, NWP Waste Data System Program

Dear Mr. Cannon:

The Carlsbad Field Office (CBFO) conducted Surveillance S-16-20 to evaluate the adequacy, implementation, and effectiveness of the Nuclear Waste Partnership LLC (NWP) Waste Data System Program. The surveillance was conducted April 5 - 7, 2016, at the Skeen-Whitlock Building in Carlsbad, NM. The surveillance report is enclosed.

The surveillance team verified that NWP procedures adequately address upper-tier requirements and provide adequate guidance and work steps for performance of the Waste Data System management. No conditions adverse to quality were identified during the surveillance. The surveillance identified one observation, as noted in the enclosed report. No recommendations were provided for management's consideration.

If you have any questions concerning the surveillance report, please contact me at (575) 234-7491.

Sincerely,

Dennis S. Miehls
 Senior Quality Assurance Specialist

Enclosure

cc: w/enclosure

M. Brown, CBFO	*ED	C. Smith, NMED	ED
J.R. Stroble, CBFO	ED	V. Daub, CTAC	ED
M. Navarrete, CBFO	ED	R. Allen, CTAC	ED
D. Standiford, CBFO	ED	P. Martinez, CTAC	ED
J. Britain, NWP	ED	P. Y. Martinez, CTAC	ED
B. Allen, NWP	ED	D. Harvill, CTAC	ED
S. Punchios, NWP	ED	G. White, CTAC	ED
A. Boyea, NWP	ED	CBFO QA File	
T. Peake, EPA	ED	CBFO M&RC	
J. Kieling, NMED	ED	*ED denotes electronic distribution	
R. Maestas, NMED	ED		



CBFO SURVEILLANCE REPORT

Surveillance Number: S-16-20 **Date of Surveillance:** April 5 – 7, 2016

Surveillance Title: NWP Waste Data System

Organization: Nuclear Waste Partnership LLC (NWP)

Surveillance Team:

Dennis S. Miehl	Management Representative, Carlsbad Field Office (CBFO), Office of Quality Assurance
Priscilla Y. Martinez	Surveillance Team Leader, CBFO Technical Assistance Contractor (CTAC)
Katie Martin	Team Member, CTAC
Jim Schuetz	Team Member, CTAC

Surveillance Scope:

The scope of the surveillance was to evaluate the implementation and effectiveness of the NWP program requirements and associated implementing procedures governing the Waste Data System.

The surveillance team evaluated implementation and effectiveness of software quality assurance (SQA) controls applied by NWP to the maintenance of the Waste Data System (WDS), a web-based software application that incorporates elements of the Waste Isolation Pilot Plant (WIPP) Waste Information System (WWIS) software application.

Results:

Activities Evaluated

The surveillance team interviewed NWP Waste Information Tracking Systems (WITS) personnel and reviewed SQA documents regarding the WWIS/WDS web-based data management application. This evaluation covered hardware and data management activities of the Manager of Packaging/WITS, management of changes to the WDS software by Database Administrator (DA) and WITS personnel, and maintenance and control of administrative reference tables contained in the WDS.

Application of SQA to changes to the WWIS/WDS code and data were evaluated. Requests for changes to code modules, generation of statements of work for contractor programming, software design, software requirements, testing, test reporting, and promotion of code changes to the production environment were included in the evaluation of SQA activities. Review and approval of requests for data changes and modification of data and data tables contained in the WWIS/WDS were included in the evaluation of maintenance and control of administrative reference tables.

DOE/CBFO-94-1012, *CBFO Quality Assurance Program Document (QAPD)*, Revision 12, and DOE/WIPP-09-3427, *WDS User's Manual*, Revision 11, were used as the upper-tier reference

documents stating SQA requirements for this activity. The following documents were evaluated during the surveillance:

- WP 05-WH.02, Rev. 2, *WIPP Waste Handling Operations WDS User's Manual*
- WP 08-NT.15, Rev. 8, *Waste Data System Maintenance of Administrative Reference Tables*
- WP 08-NT1002, Rev. 3, *WDS Administrative Reference Tables*
- WP 08-NT.01, Rev. 30, *Waste Data System Program and Data Management Plan*
- WP 08-NT.04, Rev. 22, *Waste Data System Software Quality Assurance Plan*
- WP 08-NT.14, Rev. 7, *Waste Data System Contingency and Incident Response Plan*
- WP 08-NT1004, Rev. 3, *Waste Data System Verification, Validation, and Deployment of Application Software*

The team reviewed NWP controlling documents, procedures, and WWIS/WDS user manuals for compliance with requirements of the upper-tier documents and WP 13-1, *NWP Quality Assurance Program Description*. The surveillance team determined that the documents listed above provide adequate flow-down of upper-tier requirements and provide adequate guidance and work steps for users to apply SQA to management of the WWIS/WDS.

Program Adequacy, Implementation, and Effectiveness

The software contractor, Information System Laboratories, Inc. (ISL), performs code modifications and provides SQA and configuration control of all aspects and modules of the WWIS/WDS under the direction of NWP WITS. NWP WITS performs acceptance and installation testing of all ISL code changes prior to deployment. Beta testing is performed by selected users as determined necessary by the NWP senior engineer based on the scope of a code change and following a beta test plan. WITS personnel utilize the Approval Request/Variation Request forms for documentation of review and approvals of contractor scope of changes and change documentation.

The surveillance team determined that NWP adequately identifies, reviews, and approves change requests to the WWIS/WDS. ISL adequately translates software requirements into design, implements code, and generates SQA life-cycle documents. NWP and ISL utilize "Matrix," a web-based software management application, to track each change through the requirements, design, code modification, testing, and approval phases, including change and management of impacted life-cycle documents. The "Matrix" code is maintained by ISL under the approved ISL SQA program. The surveillance team reviewed implementation of SQA to WWIS/WDS version 6.1 and determined that changes were reviewed and approved and that code was modified, tested, and installed in accordance with procedures.

The surveillance team evaluated testing of software changes including use of the WDS Automated Testing Tool (ATT). The senior engineer determines if and how the ATT function will be implemented for changes to the CHTES or T3ES E-TRAMPAC modules based on the scope of a specific change. Testing of changes using defined test cases and the ATT are adequately performed and documented in test reports based on implementation of approved test plans. The ATT is maintained by ISL under the approved ISL SQA program.

NWP manages data within the WDS software application and implements the Data Change process. The surveillance team determined that WITS personnel adequately review, approve, perform, and document changes made to data for the WDS.

WITS management and personnel were interviewed regarding the WDS Contingency and Incident Response Plan. The physical configuration of computer hardware servers was verified.

The surveillance team determined that specific WITS personnel are designated and qualified regarding handling of an event where computer software or hardware does not function properly. These personnel notify users of the event and perform restoration of WDS code and/or data in the case of a hardware or software failure. WDS production code resides on virtual servers *Zia* and *Laguna* that are located in the Skeen-Whitlock Building (SWB) in an environmentally controlled area. Racks for these servers are adequately fed with power from breaker boxes and breakers are mapped to identify breaker control of specific rack units. An uninterruptable power supply (UPS) is included in the power supply to the WDS racks and is administered by the SWB building manager. Testing and maintenance of the UPS is performed by a subcontractor under the direction of SWB building management. Changing of the status of a breaker (energizing, de-energizing, or resetting) for server racks is performed by building management personnel under the direction of WITS personnel. The surveillance team determined that management of computer hardware and building management support for operation of the WDS computer servers is adequate.

One Issue Collection and Evaluation (ICE) issue related to the WDS programming was discussed with WITS personnel during the surveillance. ICE issue # 248 is related to the WDS method of calculation of magnesium oxide (MgO) needed in the WIPP underground based on cellulose, plastic, rubber (CPR) emplaced. Version 2.6.1 of WDS will include capability to define and locate site derived and non-containerized materials and allow entry of details within WDS. Existing algorithms will use this information in the calculation of MgO amounts. Changes in version 2.6.1 are adequately stated, reviewed and approved and are currently in the design and implementation phases scheduled for a May 2016 release.

The surveillance team evaluated documentation, and personnel interviews were conducted during the course of the surveillance evaluating the maintenance and control of administrative reference tables contained in the WDS. The team verified that the DAs' training qualifications are current and the DAs are maintaining the Reference Data Change Log as required. Further evaluations of the WDS and interviews with the DAs concluded the Reference Data Change Log is maintained electronically and can be produced in hard copy format upon request. Roles and responsibilities of administrative reference tables are maintained and controlled by way of limiting access, function, and control to specific personnel within the WDS system.

The surveillance team verified the QA functions that apply to maintenance of administrative reference tables are incorporated into the WDS system, and personnel are performing these functions per procedural requirements.

One concern was identified during the review of documentation of requests for changes made to the administrative reference tables, and notifications that the changes were completed by the DA. WP 08-NT1002, Rev. 3, *WDS Administrative Reference Tables*, provides instructions for the maintenance of reference data in the WDS by DAs, Database Administrators (DBAs), and other authorized users. Throughout the procedure, DAs, DBAs, and authorized users perform steps in the procedure through email correspondence. Although one of the DAs interviewed during the surveillance was able to produce emails evidencing adherence to these requirements, these emails are not specified/listed as a record in the procedure.

Examples of WP 08-NT1002 procedural steps requiring email correspondence include: Section 4.0, second NOTE specifies: "DAs and other authorized WDS users are NOT to expire deactivated Assay, NDE, or VE Methods unless directed to do so via email notification from CBFO or Nuclear Waste Partnership LLC (NWP) management." Further, step 6.4.3 specifies: "Notify the Payload Engineer and other DA's via email that the new record has been entered into the reference table" and step 7.2.5 specifies: "When a hazardous code is expired in the reference table, notify all Waste Data Systems personnel and management of other affected internal or external organizations via email."

If the current practice continues, auditors may not be able to verify communication through email was performed, thus resulting in a condition adverse to quality (see Observation 1).

The surveillance team determined that NWP SQA procedures are adequate and that implementation of these procedures is satisfactory and provides for an effective application of SQA to maintenance, control, and use of the WWIS/WDS.

Corrective Actions:

Corrective Action Reports/Deficiencies Corrected During the Surveillance

No deficiencies were identified during the surveillance. As a result, there were no corrective action reports issued and no deficiencies were corrected during the surveillance.

Observations

One Observation was made as a result of the surveillance.

1. Identified during the review of documentation of requests for changes made to the administrative reference tables, and notifications that the changes were completed by the DA. WP 08-NT1002, Rev. 3, *WDS Administrative Reference Tables*, provides instructions for the maintenance of reference data in the Waste Data System by Data Administrators (DAs), Database Administrators (DBAs), and other authorized users. Throughout the procedure, DAs, DBAs, and authorized users perform steps in the procedure through email correspondence. Although one of the DAs interviewed during the surveillance was able to produce emails evidencing adherence to these requirements, these emails are not specified/listed as a record in the procedure.

Recommendations

No Recommendations were offered for management consideration as a result of the surveillance.

Surveillance Team Leader: Priscilla Y. Martinez Date: 5-12-16
Priscilla Y. Martinez

Assistant Manager/Office Director: N/A Date: N/A

CBFO QA Director Approval: D. J. Kelly Date: 5-12-16