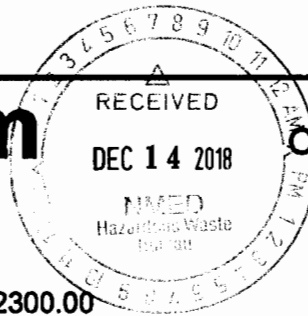


United States Government

Department of Energy

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**memorandum**Carlsbad Field Office  
Carlsbad, New Mexico 88221

**DATE:** DEC 14 2017  
**REPLY TO**  
**ATTN OF:** CBFO:OQA:MPN:BA:17-2623:UFC 2300.00

**SUBJECT:** Issuance of Report for Surveillance S-18-16 of an Indeterminate Condition Identified During Audit A-17-04 of the Advanced Mixed Waste Treatment Project

**TO:** Mr. James Malmø, DOE-ID

The Carlsbad Field Office (CBFO) conducted Surveillance S-18-16 of an indeterminate condition identified during Audit A-17-04 of the Advanced Mixed Waste Treatment Project (AMWTP). The surveillance was conducted December 4 – 7, 2017; the surveillance report is enclosed. The surveillance included adequacy review for compliance to the applicable requirements of DOE/WIPP-02-3122, Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC), Revision 8, Appendices H and I.

The surveillance team evaluated two subpopulations of waste stream BNINW216, Summary Category Group (SCG) S3000, for compliance with the WAC Appendices H and I. The surveillance team verified that AMWTP had completed each applicable requirement for waste stream BNINW216. The surveillance team further conducted a verification of training for AMWTP personnel associated with the Enhanced Acceptable Knowledge (AK) process.

Four Corrective Action Reports (CARs) were identified during the surveillance, three affecting AMWTP will be transmitted to you in separate correspondence. While the surveillance team identified a total of four CARs during the surveillance, none of the CARs impact the ability of AMWTP to implement the Enhanced AK process. The indeterminate condition regarding AK that was identified in Audit A-17-04 has been found to be adequately implemented by AMWTP.

If you have any questions concerning the surveillance, please contact me at (575) 234-7483.



Martin P. Navarrete  
Senior Quality Assurance Specialist

Attachment



Mr. James Malmo

-2-

DEC 14 2017

cc: w/attachment

B. Hawks, EM-93	*ED
E. Espinosa, EM-4.21	ED
R. Murray, EM-3.113	ED
T. Shrader, CBFO	ED
J. Carswell, CBFO	ED
M. Brown, CBFO	ED
J. R. Stroble, CBFO	ED
D. Miehl, CBFO	ED
M. Fineran, CBFO	ED
M. Stapleton, CBFO	ED
H. Cruickshank, CBFO	ED
J. Zimmerman, DOE-ID	ED
T. Jenkins, DOE-ID	ED
J. Vliet, DOE-ID	ED
D. Pruitt, DOE-ID	ED
G. Byram, AMWTP	ED
J. McCoy, AMWTP	ED
E. Gulbransen, AMWTP	ED
E. Dumas, AMWTP	ED
J. Floerke, AMWTP	ED
G. Tedford, AMWTP	ED
A. Morse, AMWTP	ED
J. Ellis, EPA	ED
T. Peake, EPA	ED
E. Feltcorn, EPA	ED
R. Joglekar, EPA	ED
J. Kieling, NMED	ED
R. Maestas, NMED	ED
D. Biswell, NMED	ED
E. Tellez, NMED	ED
T. Runyon, CTAC	ED
P. Martinez, CTAC	ED
M. Leroch, CTAC	ED
C. Castillo, CTAC	ED
J. Vernon, CTAC	ED
D. Harvill, CTAC	ED
G. White, CTAC	ED
Site Documents	ED

CBFO QA File

CBFO M&RC

\*ED denotes electronic distribution

## CBFO SURVEILLANCE REPORT

**Surveillance Number:** S-18-16      **Date of Surveillance:** December 4 – 7, 2017

**Surveillance Title:** Surveillance of Indeterminate Condition Identified During Audit A-17-04

**Organizations:**    Carlsbad Field Office (CBFO)  
                              Advanced Mixed Waste Treatment Project (AMWTP)

### Surveillance Team:<sup>1</sup>

Martin Navarrete	Quality Assurance Representative, CBFO Office of Quality Assurance
Jim Vernon	Surveillance Team Leader, CBFO Technical Assistance Contractor (CTAC), NQA-1 Lead Auditor
Dick Blauvelt	Team Member, Technical Specialist, CTAC – Acceptable Knowledge, Quality Assurance NQA-1 Auditor
Randy Fitzgerald	Team Member, Technical Specialist, CTAC – Acceptable Knowledge
Ricardo Chavez	Team Member, Technical Specialist, CTAC – Acceptable Knowledge, Quality Assurance NQA-1 Auditor
Prissy Yanez	Team Member, CTAC, Quality Assurance NQA-1 Auditor

### Surveillance Scope:

In accordance with DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis (WIPP DSA)*, Revision 5b, Section 18.1, an independent assessment was conducted by the CBFO Office of Quality Assurance (OQA). This independent assessment is a smaller assessment of a specific activity; therefore, Surveillance S-18-16 was conducted December 4 – 7, 2017.

The surveillance team re-evaluated an indeterminate condition that was identified during CBFO Audit A-17-04 of the AMWTP, in particular, the Enhanced Acceptable Knowledge (AK) process. The surveillance included an adequacy review for compliance to the applicable requirements of DOE/WIPP-02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant (WAC)*, Revision 8, Appendices H and I.

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<sup>1</sup> All of the team members and technical specialists were selected on the basis of meeting the technical qualifications and knowledge of the item and/or process being assessed.

### **Surveillance Results:**

The surveillance team evaluated two subpopulations of waste stream BNINW216, Summary Category Group (SCG) S3000, for compliance with the WAC Appendices H and I. The two subpopulations of waste stream BNINW216 are defined in the Enhanced Acceptable Knowledge section of this report. The surveillance team verified that AMWTP had completed each applicable requirement for waste stream BNINW216. The surveillance team further conducted a verification of training for AMWTP personnel associated with the Enhanced AK process. The specific requirements and the activities evaluated are discussed below.

### **Activities Evaluated:**

#### *Personnel Qualification and Training*

The surveillance team conducted interviews with responsible personnel in the AMWTP Training Department. The following implementing procedures were reviewed to determine the degree to which the procedures adequately address upper-tier requirements:

- MCP-33, Rev. 13, *Personnel Qualification and Certification*
- MCP-48, Rev. 14, *Job Analysis, Design, Development and Release*
- MCP-68, Rev. 6, *Training Program Evaluation*
- MCP-85, Rev. 16, *Training Records Administration*
- PRD-4374, Rev. ID: 1, *WIPP Training Requirements Implementation Matrix*

The surveillance team also reviewed:

- QCSPM01A, Rev. 3, *Job Analysis and Task to Training Matrix for Site Project Manager Designee*
- QCAKE01A, Rev. 5, *Job Analysis and Task to Training Matrix for Acceptable Knowledge Expert*
- QCWCO1A0, Rev. 4, *Job Analysis and Task to Training Matrix for Waste Certification Official*

The results of the review confirmed that the procedures adequately address upper-tier requirements.

Personnel training records associated with Acceptable Knowledge Expert (AKE), Site Project Manager (SPM), and Waste Certification Official (WCO) were examined to verify implementation of associated requirements and to verify personnel performing the Enhanced AK process were appropriately trained and qualified.

The records review provided evidence of the AMWTP training program implementation. The surveillance team evaluated AMWTP qualification/requalification packages (qualification cards) and related individual training files for the associated AMWTP positions through job analysis documentation and employee training history documentation from the training database (TRAIN system).

No personnel qualification and training concerns were identified during the surveillance.

The procedures reviewed and objective evidence assembled and evaluated during the surveillance provided evidence that the applicable requirements for personnel qualification and training are adequately established for compliance with upper-tier requirements, satisfactory in the implementation of these requirements, and effective in achieving the desired results.

#### *Enhanced Acceptable Knowledge*

The surveillance team examined the status of Enhanced AK products for two subpopulations of SCG S3000 waste stream BNINW216. This waste stream consists of sludge from the first and second stages of wastewater treatment at Rocky Flats Building 774. The two subpopulations consist of: 1) 15 Standard Waste Boxes, each containing four 55-gallon drums and seven individual 55-gallon drums for a total of 67 containers stored in the Waste Handling Building (WHB) at WIPP; and 2) twenty-two 55-gallon drums stored at Idaho National laboratory (INL) and designated as Lot 1. The containers in both subpopulations were previously certified. The CTAC AK surveillance team utilized the WAC Appendices H and I in this review and the results are as follows: (It should be noted that where specific Idaho Cleanup Project [ICP] procedures have been identified in the following results summary, reviews have established consistency with upper-tier requirements).

#### *Appendix H – Enhanced Acceptable Knowledge*

##### Interface Waste Management Documents List (IWMDL)

Since all the containers in these subpopulations were previously certified, the requirement for an IWMDL does not apply.

##### Certified Program Enhanced Chemical Compatibility Evaluation

The surveillance team examined the single Chemical Compatibility Evaluation (CCE), CCN 319981, which was developed, submitted, reviewed, and approved for the entire BNINW216 waste stream. This examination included a detailed review of technical assumptions, and the sources associated with the chemicals/materials listed on Attachment 1 *Waste Stream BNINW216 Chemicals/Materials of Concern* and Attachment 4 *Waste Stream BNINW216 Insignificant Trace Chemicals/Materials*. The rationale for assignment of Reactivity Group Numbers (RGNs) was evaluated for consistency with guidance, the concentrations of the chemicals/materials, and the evaluations of potential incompatibilities on Attachment 2 *Waste Stream BNINW216 Reactivity Group Number Compatibility Evaluation* were reviewed to assure compliance with ICP procedure MCP-4015, Rev. 2, *Preparation of Chemical Compatibility Evaluation and Basis of Knowledge Assessment*. In addition, the team reviewed issues identified and resolved in Document Review Records from the CBFO/National TRU Programs, (NTP) review process. The team also examined applicable minutes from the Basis of Knowledge (BoK) Review Board meetings, including the results of a compensatory measures review of the CCE performed by a board member, and reviewed and approved by the Board. In addition, the surveillance team observed the CCE approval letter from CBFO and reviewed a completed copy of the CBFO Form 4.15-2, Chemical Compatibility Evaluation Checklist.

One concern was identified regarding the consistent listing of RGNs between Attachment 1 *Waste Stream BNINW216 Chemicals/Materials of Concern*, Attachment 2 *Waste Stream BNINW216 Reactivity Group Number Compatibility Evaluation*, and Attachment 3 *EPA Hazardous Waste Compatibility Chart for Waste Stream BNINW216* from the CCE procedure, as documented in MCP-4015, Rev. 2 (see CBFO Corrective Action Report [CAR]18-004). In addition, two other issues involving reaction code assignment and CCE revision history were identified (see CAR18-005) utilizing DOE/CBFO-94-1012, *Quality Assurance Program Document* (CBFO QAPD) as the requirements document. None of these issues has any impact on the conclusions reached by the CCE. The surveillance team determined that with these issues addressed, the CCE and supporting documentation was complete and compliant with upper-tier requirements.

#### Basis of Knowledge for Evaluating Oxidizing Chemicals in TRU Waste

The surveillance team reviewed two BoK Assessment Reports for the two BNINW216 subpopulations. RPT-1596, *Basis of Knowledge Assessment Report for First and Second Stage Sludge [BNINW216] (Waste Handling Building Containers)*, was written to the requirements in DOE/WIPP-17-3585, *Basis of Knowledge for Evaluating Oxidizing Chemicals in TRU*

*Waste in the Waste Handling Building Container Storage Unit Since February 14, 2014, and covered waste containers, including those from waste stream BNINW216, stored in the WHB. RPT-1598, Basis of Knowledge Assessment Report for First and Second Stage Sludge [BNINW216] (Certified Not Shipped Lot 1), was written to the requirements in DOE/WIPP-17-3589, Basis of Knowledge for Evaluating Oxidizing Chemicals in TRU Waste. The contents of these two procedures have some differences in numbering and language but represent, for the most part, the same requirements. For each of the BoK Assessment Reports, the rationale for the evaluation of the criteria listed in section 5 of the respective procedures was examined in detail based upon information provided in the AK record, including the Acceptable Knowledge Assessments (AKAs) and the CCE. The bases for and assumptions made were given particular attention where calculations were carried out, for example, in the respective procedures' sections titled *Oxidizing Chemicals Sorbed in Inorganic Sorbents*, and *Inorganic Sludges with Oxidizing Chemicals Not Mixed with Sorbents*.*

In addition to examination of the AMWTP BoK Assessment Reports, the surveillance team also examined the minutes from the BoK Review Board meetings, CBFO BoK approval letters, and a copy of the completed Attachment 1 *Acceptable Knowledge Checklist for Evaluating Oxidizing Chemicals in TRU Waste Using the BoK Criteria* from DOE/WIPP-17-3589. This attachment was completed by AMWTP and submitted with RPT-1598.

The surveillance team determined that the BoKs and supporting documentation were complete and compliant with upper-tier requirements.

#### Certified Program Acceptable Knowledge Assessments

The surveillance team examined the AKAs developed specifically for each subpopulation, document C1639A for the containers in the WHB, and document P2599A for the containers in Lot 1. Each document was reviewed in some detail with respect to the AKA procedures contained in ICP procedure MCP-4010, Rev. 2, *Collection, Review and Management of Acceptable Knowledge Documentation*. The elements examined included historic waste management practices and procedures at Rocky Flats; applicable waste management activities applied to the containers at the INL; the identification of absorbents, immobilization products, and neutralization agents used at Rocky Flats and the INL; and the list of containers covered by the AKA. Of particular interest was the review of remediation and/or repackaging operations conducted at the INL on the containers in the respective Attachment 1's *Container Specific Information*.

The review process involved several AMWTP documents, including the latest revision to RPT-TRUW-09, *AK Summary for First/Second Stage Sludge (BNINW216)*, Rev. 9, several relevant AK source documents, and applicable sections of AMWTP waste management and packaging/repackaging procedures such as INST-OI-12, *Real Time Radiography Operations*, and INST-OI-68, *Drum Treatment Facility Operations*. In addition, the surveillance team reviewed comments provided during the internal review of the AKAs, and conducted a detailed review of the container information on the respective Attachment 1 *Container Specific Information* forms and extracted from the Waste Tracking System.

The surveillance team concluded that even with minor administrative issues driven by the CBFO QAPD identified during the surveillance (see CAR 18-005), the AKAs and supporting documentation were complete and compliant with upper-tier requirements.

#### AK Briefings

Since the AK Summary Report for the BNINW216 waste stream, RPT-TRUW-09, Rev. 9, has not been revised since the Enhanced AK requirements became effective, there was no AK Briefing required. However, AMWTP provided documentation of the forms used to present relevant information and verified attendees to the briefing for another waste stream. The example provided was compliant with the process for AK Briefings as noted in AMWTP procedure MCP-4010, Rev. 2. However, an issue was identified in that procedure wherein action steps were listed in a note. Notes cannot be used to describe procedural steps, as specified in the CBFO QAPD (see CAR18-005).

#### *Appendix I – Previously Certified Waste Preclusion of Shipments*

Certified Program will implement an enhanced AK process including an enhanced chemical compatibility evaluation for the waste streams, or waste stream sub-populations, and submit to CBFO for review.

The surveillance team examined the single CCE, CCN 319981, which was developed, submitted, reviewed, and approved for the entire BNINW216 waste stream. The CCE was found to be complete and compliant with upper-tier requirements.

Certified Programs will implement the Basis of Knowledge document in the AK process for evaluating oxidizing chemicals in TRU waste streams to determine acceptability or need for treatment.



The surveillance team examined RPT-1596, the BoK for the BNINW216 containers stored in the WHB, and RPT-1598, the BoK for the BNINW216 containers certified not shipped Lot 1. The BoKs were found to be complete and compliant with upper-tier requirements.

CBFO will concur with enhanced chemical compatibility evaluation and implementation of the Basis of Knowledge for the evaluated waste stream.

The surveillance team examined the BoK approval of the BNINW216 containers stored in the WHB, memorandum CBFO:ONTP:NCD:JRS:PG:17-2378:UFC 5900.00, and the BoK approval of the BNINW216 containers from Lot 1, memorandum CBFO:ONTP:NCD:JRS:PG:17-2379:UFC 5900.00. The CBFO concurrence with the CCE and implementation of the BoKs was found to be complete and compliant with upper-tier requirements.

CBFO will approve waste streams with acceptable enhanced chemical compatibility evaluation documentation provided by the Certified Programs.

The surveillance team examined the CCE approval from CBFO, memorandum CBFO:ONTP:NCD:JRS:PG:17-2378:UFC 5900.00. The CBFO approval of the BNINW216 CCE evaluation documentation was found to be complete and compliant with upper-tier requirements.

WIPP M&O Contractor Payload Engineers will evaluate TRUCON codes to ensure compliance with the enhanced chemical compatibility evaluation.

The surveillance team examined the evaluation of the TRUCON codes associated with BNINW216, TRUCON codes ID 111/211 and ID 127/227. The WIPP management and operating (M&O) contractor payload engineers evaluated the BNINW216 TRUCON codes to ensure compliance with the enhanced chemical compatibility evaluation, and the approval was found to be complete and compliant with upper-tier requirements.

The WIPP M&O Contractor will implement additional checks in the WDS for each container before those containers can be used to populate payloads in WDS.

The CBFO OQA has previously evaluated the additional checks in the Waste Data System (WDS) associated with the enhanced AK process in Surveillances S-17-07 and S-17-32, and found the additional checks in the WDS to be complete and compliant with upper-tier requirements. The entry of Enhanced AK data by AMWTP is described in AMWTP procedure MCP-4004, *TRU Waste Certification*, Rev. 3. While the additional checks

have been implemented in the WDS, two concerns were identified by the surveillance team regarding WDS data entry (see CAR18-006 and CAR18-007).

The WIPP M&O Contractor will obtain written approval from CBFO prior to release of waste streams for shipment.

At this time, the CBFO written approval to ship the waste stream or subpopulation for BNINW216 has not been received. The impact of not receiving the CBFO written approval to ship the waste stream or subpopulation for BNINW216 is explained in the Surveillance Team Conclusions section of this report.

The WIPP M&O Contractor will verify each container requested is part of a CBFO-approved waste stream and authorizes shipment in WDS.

This requirement is applicable to Nuclear Waste Partnership LLC only, yet the surveillance team verified that all of the BNINW216 containers that are stored in the WHB and Lot 1 are a part of a CBFO-approved waste stream.

#### **Corrective Actions:**

##### **Corrective Action Reports/Deficiencies Corrected During the Surveillance**

###### **CAR 18-004**

The Chemical Compatibility Evaluation Memorandum (CCEM) for waste stream BNINW216, Attachment 3, *EPA Hazardous Waste Compatibility Chart for Waste Stream BNINW216*, and Attachment 2, *Waste Stream BNINW216 Reactivity Group Number Compatibility Evaluation*, do not list the same RGNs and therefore are inconsistent.

###### **CAR 18-005**

In review of the AMWTP documents and procedures associated with the implementation of the Enhanced AK process, the surveillance team noted several weaknesses and editorial changes necessary in the reviewed procedures. Examples include the following:

- MCP-4010, *Collection, Review, and Management of Acceptable Knowledge Documentation*, section 4.6, describes AK Briefings. The entire section describes the required elements of the AK briefing, yet the section is primarily a note rather than procedure steps. There is one single procedure step.

- MCP-4015, *Preparation of Chemical Compatibility Evaluation and Basis of Knowledge Assessment*, section 4.1.20.1, describes the revision of the CCE, if necessary; however, there is no revision history in the several revisions of the CCE that were issued.
- The AKA for BNINW216 waste at the WHB, AK Source Document Review Summary, Item 10, Source Document Data Limitations (if any), incorrectly states: "This AKA is specific to AMWTP at Waste Control Specialists."
- The AKA for BNINW216 waste at the WHB, Attachment 1, *Container Specific Information*, 2nd row, the Inner Container listed is 10305406, yet on next-to-last column titled "Short Explanation of where the liquid is" incorrectly the liquid description for container 10213598 rather than 10305406.
- The CCEM for the AMWTP waste stream BNINW216, Attachment 2, *Waste Stream BNINW216 Reactivity Group Number Compatibility Evaluation*, includes the reaction codes GF, H for the combination of RGN 10 and RGN 23; however, the codes were inadvertently omitted from Attachment 3, *EPA Hazardous Waste Compatibility Chart for Waste Stream BNINW216*.

#### **CAR 18-006**

In review of the AMWTP procedure associated with the implementation of the Enhanced AK process, the surveillance team noted that training on the Enhanced AK process in the WDS was not provided by the WDS Data Administrators. AMWTP developed the Enhanced AK procedure to include WDS data entry based on DOE/WIPP-09-3427, *Waste Data System User's Manual*. DOE/WIPP-09-3427 does not describe the required input of Enhanced AK data into WDS, including data validation and verification as well as the number of independent reviewers.

#### **CAR 18-007**

A spreadsheet to upload the Enhanced AK data into the WDS was provided to AMWTP by the WDS Administrators. No evidence was presented to the surveillance team that the spreadsheet has been added to the AMWTP software inventory and classified.

#### **Observations**

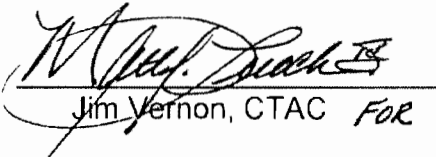
No Observations were produced as a result of this surveillance.

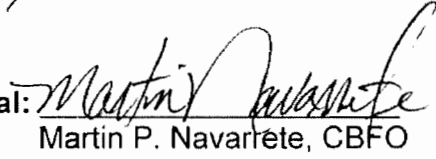
#### **Recommendations**

No Recommendations were offered as a result of this surveillance.

**Surveillance Team Conclusions:**

The surveillance team concluded that the applicable requirements of the CBFO QAPD, the WAC, the WIPP DSA, and related quality assurance and technical implementing procedures specific to the implementation of the Enhanced AK process by AMWTP have been met. While the surveillance team identified four CARs during the surveillance, none of the CARs impacts the ability of AMWTP to implement the Enhanced AK process. The indeterminate condition regarding AK that was identified in Audit A-17-04 has been found to be adequately implemented by AMWTP. At this time, all necessary requirements for WAC Appendices H and I have been met, except for the requirement for receipt of CBFO written approval to ship the waste stream or subpopulation. The CBFO written approval to ship the waste stream is a CBFO requirement to meet the WAC Appendix I requirements, not an AMWTP requirement. AMWTP has completed all of the applicable Enhanced AK requirements for the two subpopulations of waste stream BNINW216 examined during this surveillance.

Surveillance Team Leader:   
Jim Vernon, CTAC FOR Date: 12/14/17

CBFO OQA Designee Approval:   
Martin P. Navarrete, CBFO Date: 12-14-17