

United States Government



Department of Energy

memorandum

Carlsbad Field Office
Carlsbad, New Mexico 88221

DATE: May 6, 2002

**REPLY TO
ATTN OF:** CBFO:QA:ALH:GS:02-1044:UFC 2300.00

SUBJECT: CBFO Audit Report A-02-21, Idaho National Engineering and Environmental Laboratory

TO: Edward Zeimianski, ID

The Carlsbad Field Office (CBFO) conducted an audit of the Idaho National Engineering and Environmental Laboratory (INEEL) new TRU waste characterization activities on April 9 - 11, 2002. The audit team concluded that, overall, the INEEL technical and Quality Assurance procedures within the scope of this audit were adequate relative to the flow down of requirements from the CBFO Quality Assurance Program Document (QAPD) and Waste Acceptance Criteria (WAC). The audit team also concluded that the defined software QA program as implemented for the NDA platforms, the absolute SGRS and WAGS Systems, the PAN/WAGS and PAN/SGRS Systems, and the DXRS were satisfactorily implemented and effective in accordance with the INEEL Program Plan for Certification of INEEL Contact-Handled Stored Transuranic Waste and implementing procedures. The CBFO audit report is attached.

Four deficiencies, which were corrected and therefore classified as Corrected During the Audit, and One Observation, were identified during the audit.

If you have any questions or comments concerning this report, please contact me at (505) 234-7423.

Ava L. Holland //signature on file//
Ava L. Holland
Quality Assurance Manager

Attachment

cc w/attachment:
I. Triay, CBFO
K. Watson, CBFO
L. Chism, CBFO
J. Wells, ID
D. Winters, DNFSB
E. Feltcorn, EPA
M. Eagle, EPA
S. Zappe, NMED
B. Walker, EEG
T. Monk, BBWI
T. Preston, BBWI
P. Roush, WTS
J. May, CTAC
T. Bowden, CTAC
CBFO Mailroom



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U.S. DEPARTMENT OF ENERGY
CARLSBAD FIELD OFFICE

AUDIT REPORT

OF THE

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL
LABORATORY

IDAHO FALLS, IDAHO

AUDIT NUMBER A-02-21

APRIL 9 – APRIL 11, 2002

NEW TRU WASTE CHARACTERIZATION ACTIVITIES



Prepared By: Jeffrey D. May
Jeffrey D. May
Audit Team Leader

Date: 4/24/02

Approved By: Ava L. Holland
Ava L. Holland
CBFO QA Manager

Date: 4/25/02

1.0 EXECUTIVE SUMMARY

Carlsbad Field Office (CBFO) Audit A-02-21 was conducted to evaluate the adequacy, implementation, and effectiveness of new nondestructive assay (NDA) equipment and capabilities related to the Idaho National Engineering and Environmental Laboratory (INEEL) transuranic waste characterization and certification programs.

The audit was conducted to evaluate the NDA of summary category groups S3000 retrievably stored, contact-handled homogeneous solid waste and S5000 retrievably stored, contact-handled heterogeneous debris waste using the Waste Assay Gamma Spectrometer (WAGS) and the Stored Waste Examination Pilot Plant (SWEPP) Gamma Ray Spectrometer (SGRS) Systems in absolute mode. The audit also evaluated the NDA assay of category groups S3000 retrievably stored, contact-handled homogeneous solidified organic waste streams using the Passive-Active Neutron (PAN) System in combination with the WAGS System and in combination with the SGRS System. Concurrent with the evaluation of the new NDA Systems, an evaluation was conducted of the Data Review Expert System (DRXS) for NDA validation and INEEL's software quality assurance (QA) program as they are implemented for the NDA platforms in use at INEEL.

The audit was conducted at the INEEL facility April 9 through April 11, 2002. The audit team concluded that, overall, the INEEL technical and QA procedures within the scope of this audit were adequate relative to the requirements of the CBFO Quality Assurance Program Document (QAPD) and Waste Acceptance Criteria (WAC). The audit team also concluded that, except for the areas identified in this report, the defined software QA program as implemented for the NDA platforms, the SGRS and WAGS Absolute Systems, the PAN/WAGS and PAN/SGRS Systems, and the DRXS were satisfactorily implemented and effective in accordance with the *Program Plan for Certification of INEEL Contact-Handled Stored Transuranic Waste* and implementing procedures.

The audit team identified four isolated deficiencies requiring only remedial corrective actions in the areas of software QA, the PAN/WAGS, PAN/SGRS, and WAGS Absolute NDA Systems. These four isolated deficiencies were corrected and verified during the audit and classified as Corrected During the Audit (CDA). One Observation was identified in the area of the SGRS and WAGS NDA Absolute Systems. The CDAs and Observation are described in Section 6.0.

2.0 SCOPE

The audit team evaluated the adequacy, implementation, and effectiveness of new nondestructive assay (NDA) equipment and capabilities related to the Idaho National Engineering and Environmental Laboratory (INEEL) transuranic (TRU) waste characterization and certification programs.

The following element was evaluated in accordance with the Carlsbad Field Office (CBFO) Quality Assurance Program Document (QAPD):

Software Control (NDA)

The following CBFO characterization technical elements were evaluated in accordance with the Waste Acceptance Criteria (WAC):

Nondestructive Assay (NDA)

- Absolute assay modes for the Stored Waste Examination Pilot Plant (SWEPP) Waste Assay Gamma Spectrometer (WAGS) System and SWEPP Gamma Ray Spectrometer (SGRS) System including NDA software for all NDA Systems.
- Data Review Expert System (DRXS) for NDA validation.
- Solidified organic waste streams for NDA characterization and certification.

Evaluation of INEEL TRU Waste Characterization Program (TWCP) documents was based on current revisions of the following documents:

INEEL Site Project Office Quality Assurance Project Plan (QAPjP) for the Transuranic Waste Characterization Program, PLN-190.

Program Plan for Certification of INEEL Contact-Handled Stored Transuranic Waste (Cert Plan), PLN-579.

Related INEEL technical and quality assurance implementing procedures.

3.0 AUDIT TEAM AND OBSERVERS

AUDITORS/TECHNICAL SPECIALISTS

Jeffrey May	Audit Team Leader, CTAC
Amy Arceo	Auditor, CTAC
Norman Frank	Auditor, CTAC
Patrick Kelly	Technical Specialist, CTAC

OBSERVERS/INSPECTORS

Ed Feltcorn	Inspector, EPA
Dave Stuenkel	Inspector, EPA Contractor
Ben Walker	Observer, EEG
Lindsey Bender	Observer, EPA

4.0 AUDIT PARTICIPANTS

INEEL individuals involved in the audit process are identified in Attachment 1. A pre-audit meeting was held at the Radioactive Waste Management Complex (RWMC) conference room on April 9, 2002. Daily meetings were held with INEEL management and staff to discuss issues and potential deficiencies. The audit was concluded with a post-audit meeting held at the Willow Creek Building, Conference Room 1 on April 11, 2002.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Adequacy, Implementation, and Effectiveness

The audit team concluded that the INEEL technical and QA procedures evaluated by the audit team adequately reflect the requirements from the QAPD and the WAC. The audit team concluded that the QA elements within the scope of the audit are being satisfactorily implemented in accordance with the INEEL QAPjP, the *Program Plan for Certification of INEEL Contact-Handled Stored Transuranic Waste*, and implementing procedures. The INEEL technical processes evaluated by the audit team were determined to be satisfactorily implemented and the processes are effective.

5.2 QA Program Audit Activities

Evaluations of applicable INEEL QA program activities are summarized below.

5.2.1 Software Quality Assurance (SQA)

5.2.1.1 NDA SQA

The computer software used to run the WAGS in absolute mode and the SGRS in absolute mode was evaluated against the INEEL MCP-1803, R16, *Configuration Control of RWMC Hardware/Software Computer Systems*. Specific evaluations were done on the following software: SAP, SRAC, GWAS, SGAP, and SAS. The evaluation included verification that the documentation required by the procedure and by the CBFO QAPD was immediately available and met content requirements. Three concerns were identified during the audit: 1) the inventory list did not include the minimum content required by the QAPD (6.2.1.1A); 2) it was not clear that the Software Configuration Control Board (SCCB) signatures on the Software Release Notice denoted that they had reviewed the lifecycle documents prior to release; and 3) The GWAS software from Canberra had been consolidated under V1.0 for INEEL, but there was no cross-tie between the Canberra version numbers and V1.0 for INEEL. All three of these concerns were isolated instances that were corrected by remedial action during the audit. The inventory list was changed to correct concerns #1 and #3, (CDAs Nos. 1 and 3). The Software Release Notice was changed to address concern #2, (CDA No. 2). Overall, it was concluded the NDA SQA was adequate, satisfactory implemented, and effective.

5.2.1.2 DRXS (Data Review Expert System)

The DRXS software used to assist in the review of data from the PAN-Gamma Systems was evaluated against the INEEL MCP-1803, R16, *Configuration Control of RWMC Hardware/Software Computer Systems*. No concerns specific to the DRXS software were identified. All required documents were immediately available and met procedural requirements. Overall, it was concluded the DRXS software control was adequate, satisfactory implemented, and effective.

5.3 Technical Activities

Evaluations of applicable INEEL technical activities are summarized below.

5.3.1 Nondestructive Assay (NDA)

The audit team evaluated NDA Systems at the INEEL RWMC. The systems were located at the SWEPP Facility and consisted of the following:

- One (1) WAGS Absolute System, a photon-based measurement system used to assay TRU wastes in 55-gallon (208-liter) drums;
- One (1) SWEPP SGRS System operated in the absolute mode, a photon-based measurement system used to assay TRU wastes in 55-gallon (208-liter) drums;
- One (1) PAN System used in conjunction with the WAGS in the isotopic ratio (IR) mode for the analysis of solidified organic matrix samples;
- One (1) PAN System used in conjunction with the WAGS in the IR mode for the analysis of solidified organic matrix samples;

Additionally, the DRXS was evaluated for use in evaluating NDA data from the PAN/WAGS (IR mode only) and PAN/SGRS (IR mode only). These systems are described below.

Two concerns were identified during the audit: 1) the testing report sheets within the evaluated batch data reports had an incorrect title, and 2) the WAGS Absolute System had two consecutive replicate failures and the SGRS Absolute System's replicate hypothesis test uses the total measurement uncertainty (TMU) instead of only the counting statistical errors. The first concern was an isolated instance that was corrected by remedial action during the audit by issuing a Transuranic Reporting, Inventory, and Processing System (TRIPS) Change Request (CDA No. 4). The second concern was classified as an observation and reported to INEEL management for their consideration (Observation No. 1).

5.3.1.1 Waste Assay Gamma Spectrometer (WAGS), Absolute Mode

The WAGS System in the absolute mode is a stand-alone photon-based system used to assay containers of TRU waste. This system is used to determine the isotopic composition of a drum's contents, quantify the masses for the radionuclides of interest,

and compute derived quantities such as total and TRU activity for the waste container. The WAGS can also be operated in the IR mode, where it provides only the concentrations of specific radionuclides relative to Pu-239 (i.e., isotopic ratios). However, for this audit only the operation of the WAGS in the absolute mode was evaluated. The WAGS Absolute System is calibrated in terms of energy and covers a range of approximately 59 to 1400 keV. The applicable range of weapons grade plutonium (WG Pu) measurable on this system is from the minimum detectable concentration (MDC) to approximately 200 grams. There is no matrix-related limit; however, the current operation encompasses two modes, *sludge mode* and *combustibles mode*, with a different operational routine for each. Data are provided for a group of radionuclides, including Pu-238, 239, 240, 241 and 242¹; U-233, 235 and 238; and Am-241. Other techniques are used to derive values for U-234, Cs-137, and Sr-90.

Evaluation of the WAGS Absolute System consisted of reviewing all applicable site procedures to ensure they were consistent with the upper level requirements (i.e., CBFO WAC), and indicating areas where INEEL procedures were inadequate. Using the reviewed INEEL procedures, a checklist was prepared and used to evaluate the following items:

- Operability and condition of equipment
- Instrument calibration and qualification, performance testing required by DOE/WIPP-069, Revision 7, and traceability of calibration sources
- Applicability of calibration to waste type (matrix) and radionuclide content of samples
- Implementation and effectiveness of instrument/measurement controls
- Verification that INEEL procedures are executed
- Completed data packages to ensure data are reported and reviewed as required
- Data storage and retrievability

This evaluation involved interviewing INEEL NDA personnel, observing practices and examining records. Overall, it was concluded the WAGS Absolute System and its implementing procedures were adequate, satisfactory implemented, and effective.

5.3.1.2 SWEPP Gamma-Ray Spectrometer (SGRS), Absolute Mode

The SGRS System in the absolute mode is a stand-alone photon-based system used to assay containers of TRU waste, and in many respects is equivalent to the WAGS Absolute System. This system is used to determine the isotopic composition of a drum's contents, quantify the masses for the radionuclides of interest, and compute derived quantities such as total and TRU activity for the waste container. The SGRS System can also be operated in the IR mode, where it provides only the concentrations of specific radionuclides relative to Pu-239 (i.e., isotopic ratios). For this audit, however, only the operation of the SGRS in the absolute mode was evaluated. An important difference between the WAGS and SGRS Systems is the manner in which the change

¹ Pu-242 is determined using correlation techniques for all NDA systems at INEEL and other TRU generator sites.

from IR mode to absolute mode is made; the WAGS requires manual changing of systems components (cables and detector filters) whereas the SGRS requires a simple computer selection. The SGRS System is calibrated in terms of energy and covers a range of approximately 59 to 1400 keV. The applicable range of WG Pu measurable on this system is from the MDC to approximately 200 grams. There is no matrix-related limit; however, the current operation encompasses two modes, *sludge mode* and *combustibles mode*, with a different operational routine for each. Data are provided for a group of radionuclides, including Pu-238, 239, 240, 241, and 242²; U-233, 235, and 238; and Am-241. Other techniques are used to derive values for Cs-137 and Sr-90.

Evaluation of the SGRS Absolute System consisted of reviewing all applicable site procedures to ensure they were consistent with the upper level requirements (i.e., CBFO WAC), and indicating areas where INEEL procedures were inadequate. Using the reviewed INEEL procedures, a checklist was prepared and used to evaluate the following items:

- Operability and condition of equipment
- Instrument calibration and qualification, performance testing required by DOE/WIPP-069, Revision 7, and traceability of calibration sources
- Applicability of calibration to waste type (matrix) and radionuclide content of samples
- Implementation and effectiveness of instrument/measurement controls
- Verification that INEEL procedures are executed
- Completed data packages to ensure data are reported and reviewed as required
- Data storage and retrievability

This evaluation involved interviewing INEEL NDA personnel, observing practices and examining records. Overall, it was concluded the SGRS Absolute System and its implementing procedures were adequate, satisfactory implemented, and effective.

5.3.1.3 PAN-Gamma Assay System (WAGS and SGRS, IR Mode) for Organic Sludges

The PAN Assay System at INEEL provides neutron-based data on Pu-240 that are combined with isotopic distribution values from either WAGS or SGRS in the isotopic ratio mode for organic sludge samples³. This combination provides quantitative data for a group of radionuclides, including Pu-238, 239, 240, 241 and 242⁴; U-233, 235 and 238; and Am-241. Other techniques are used to derive values for Cs-137 and Sr-90. The operation of the PAN-Gamma System for organic sludges is essentially the same as for other waste matrices for which this assay system had been previously approved. This audit focused on deviations, previously approved conditions, or matrix-specific

² Pu-242 is determined using correlation techniques for all NDA systems at INEEL and other TRU generator sites.

³ The term *Organic Sludges* is not technically correct and this category of materials is properly referred to as *Solidified Organics and Special Setups*, according to INEEL/EXT-01-01590. The term *Organic Sludges* is used in this report for convenience.

⁴ Pu-242 is determined using correlation techniques for all NDA systems at INEEL and other TRU generator sites.

considerations not adequately addressed by the system's current controls and would require additional technical considerations. These systems were evaluated based on the checklist prepared for this activity, and the following items were evaluated:

- Operability and condition of equipment
- Instrument calibration and qualification, performance testing required by DOE/WIPP-069, Rev. 7, and traceability of calibration sources
- Applicability of calibration to waste type (matrix) and radionuclide content of samples
- Implementation and effectiveness of instrument/measurement controls
- Verification that INEEL procedures are executed
- Completed data packages to ensure data are reported and reviewed as required
- Data storage and retrievability

This evaluation involved interviewing INEEL NDA personnel, observing practices, and examining records. The PAN-Gamma operation for organic sludge samples using PAN neutron data in conjunction with isotopic ratio data derived from the SRGS System (IR mode) or the WAGS System (IR mode) was found to be equivalent to the system's operation for other matrices. Overall, it was concluded that this system and its implementing procedures were adequate, satisfactory implemented, and effective.

5.3.1.4 Data Review Expert System (DRXS)

The DRXS is a computer-based system used to review NDA (and other) batch data reports electronically. It is a rule-based software developed under contract to INEEL and it is used to evaluate PAN-Gamma NDA results; it is not currently used for WAGS Absolute System or SGRS Absolute System data. This audit evaluated the use of the DRXS at INEEL by examining the system's operation and auditing the system's software (see section 5.3.3.2 for the software evaluation). The system appears to be adequate to review NDA batch data reports for PAN-Gamma data. Further evaluation of the system should be conducted at a subsequent audit after the system has generated a body of data that could be thoroughly evaluated by a CBFO audit team. Overall, based upon the demonstration of this system, it was concluded that this system and its implementing procedures are adequate, satisfactory implemented, and effective.

6.0 CARs, CDAs, OBSERVATIONS, AND RECOMMENDATIONS

6.1 Corrective Action Reports

6.1.2 CARs Initiated as a Result of CBFO Audit A-02-21

No CARs were initiated as a result of this audit.

6.2 Deficiencies Corrected During the Audit (CDA)

During the audit, the audit team may identify Conditions Adverse to Quality (CAQ). The audit team members and the Audit Team Leader (ATL) evaluate the CAQs to determine

if they represent a CAR condition. Once a determination is made that the CAQ is not a CAR condition, the audit team members, in conjunction with the ATL, determine if the CAQ is an isolated case requiring only remedial action and, therefore, can be Corrected During the Audit (CDA). Upon determination that the CAQ is isolated, the audit team members, in conjunction with the ATL, evaluate/verify any objective evidence/actions submitted or taken by the audited organization and determine if the condition was corrected in an acceptable manner. Once it has been determined that the CAQ has been acceptably corrected, the ATL categorizes the condition as a CDA.

Condition Adverse to Quality (CAQ) – Term used in reference to failures, malfunctions, deficiencies, defective items, and nonconformances.

Corrected During the Audit (CDA) – Isolated deficiencies that do not require a root cause determination or actions to preclude recurrence, and correction of the deficiency can be verified prior to the end of the audit. (Examples: one or two minor changes required to correct a procedure (isolated); one or two forms not signed or not dated (isolated); one or two individuals have not completed a reading assignment.)

Four isolated deficiencies, requiring remedial action only, were identified during the audit. All were corrected and verified before the completion of the audit. These are identified on the completed audit checklists and documented on the Corrected During the Audit forms. The completed checklists are maintained as CBFO QA records. Descriptions of these items and their resolutions are given below:

6.2.1 CDA No. 1

The INEEL Software Inventory and Classification (last updated 4/9/02) did not include:

- Classification criteria
- Classification per QAPD
- Correct version for SAP software from 02/25/02 to 03/19/02

Sample Size 1 of 1

INEEL revised the Software Inventory and Classification (last updated 4/9/02). This new revision addressed all concerns. This revision was reviewed, verified, and found acceptable.

6.2.2 CDA No. 2

The SCCB signatures on the Form 093, Software Release Notice, indicate that the documents listed on the Software Implementation Request (SIR) or the Software Change Request (SCR) have been reviewed and are approved by the SCCB and that the software is approved for release. This interpretation of the intent of the signatures is not documented in MCP 1803 or on Form 093.

Sample Size 1 of approximately 90

INEEL prepared a Document Action Request (DAR) 89966 on procedure MCP 1803, Rev. 16 and procedure MCP 1803 R17 DRAFT, and DAR 90318 on Form 093 R4 and Draft Form 093 R5 to address this issue. All requested and necessary changes to the above documents have been made. In addition, the change to procedure MCP-1803 required a change to Form 091. DAR 90319 on Form 091 R4 and Draft Form 091 R5 were issued to address this change. These revisions were reviewed, verified, and found acceptable.

6.2.3 CDA No. 3

There was no "tie" between GWAS V1.0 and the suite of software from Canberra. The systems engineer stated that all modules in the Canberra suite had been combined under the single V1.0 for INEEL.

Sample Size 1 of 5

INEEL revised the Software Inventory and Classification to list the modules and Canberra software versions that were included in V1.0 of the GWAS software (last updated 4/10/02). This revision was reviewed, verified, and found acceptable.

6.2.4 CDA No. 4

Batch Data Reports WAG020003, WAG020004, and SAP020005 did not have testing report sheets titled "Radioassay Data Sheet"

Sample Size 3 of 3

INEEL issued TRIPS Change Request 2461, 2002/04/10, 14:02:22 which added the title "Radioassay Data Sheet" to the Assay Event Screens for SWEPP (PAN/Gamma) SAP and WAGs. This was opened, reviewed, approved, assigned, and implemented on 4/10/02. This correction was reviewed, verified, and found acceptable.

6.3 Observations

The following Observation was identified by the audit team as an area of concern that was not yet an actual deficient condition, but which, if not controlled, could result in a condition adverse to quality.

6.3.1 Observation No. 1

During routine assaying of the drums for Audit A-02-21, the following issues occurred while performing the replicate scans for the SGRS and WAGS Absolute Systems:

- WAGS Absolute System - Two consecutive replicate failures occurred with the possible cause identified as the GWAS software for sludge replicates passing the incorrect (debris) set of data to the replicate output file. This resulted in a conservative value for the replicate measurement for sludge.

- SGRS Absolute System - The replicate hypothesis test performed by the SAP software uses the TMU instead of only the counting statistical errors.

INEEL took the following actions during the audit in accordance with their approved program:

- The system issues were documented on NCR's 27401 and 27421.
- The software issues were documented on NCR's 27448 and 27449.

Hand/spreadsheet calculations verified that the replicate scans passed when the correct input data were used for the calculations.

6.4 Recommendations

No recommendations were offered for management consideration during this audit.

7.0 LIST OF ATTACHMENTS

- Attachment 1: Personnel Contacted During the Audit
- Attachment 2: Personnel Contacted During the Audit by Area
- Attachment 3: INEEL Procedures Audited
- Attachment 4: Summary Table of Audit Results

PERSONNEL CONTACTED DURING THE AUDIT				
NAME	TITLE/ORG	PRE-AUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Dave Lent	RWMC Training Supervisor	X	X	
Cindy Fife	RWMC DGL Val Mgr.	X	X	
Brian Chesnovar	RWMC Facility Quality Rep	X	X	
Dan Menkhaus	BNFL Observer	X		
David Morgan	RWMC Physics Support Tech Lead	X	X	X
Tim Preston	BBWI SQAQO	X	X	
Keith Farmer	BBWI Characterization Mgr.	X		
Walter Tisdale	BBWI SQAQO	X		
Kenneth Krivanek	BBWI Engr.	X		X
Carl Farmer	BBWI Training	X		
Jayson Wharton	BBWI Engr.	X	X	X
Jerry Gilman	BBWI PR	X		
John Howanitz	BBWI Director	X		X
David Bright	BBWI Director	X		X
Michael Johnson	BBWI Chief of Staff	X		X
Mark Sherick	BBWI 3100m ³	X	X	X
W. Scott Roesner	INEEL 3100m ³	X	X	X
Ben Walker	EEG Observer	X		
Yale Harker	GTI Participant	X	X	X

PERSONNEL CONTACTED DURING THE AUDIT				
NAME	TITLE/ORG	PRE-AUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
David Stuenkel	EPA Inspector	X		X
Ed Feltcorn	EPA Lead Inspector	X		X
Lindsey Bender	EPA Observer	X		
Tom Monk	BBWI SPM/3100m ³	X		X
Jerry Wells	DOE-ID TRU Waste Program	X		X
John Fleissner	Canberra Tech. Dir.	X	X	X
Ed Gulbransen	Canberra Scientist	X	X	
Joe Gordon	GTI	X	X	
Jeff Shainholtz	GTI	X		
Lisa Frost	SPO Val. Lead	X		
John Dwight	RWMC Engr. Mgr.	X		X
Chris Brooks	BBWI Physics	X	X	X
Sonja Slade	BBWI CM SME	X	X	X
Art Clark	INEEL GM - Ops			X
Tom Fallon	BBWI QA Mgr.			X
Lee Sygitowicz	BBWI Waste Management Projects			X
Herb Bohrer	DIE-ID WMOD Deputy Director			X
Troy Bromley	RWMC Operations		X	
Juanita Twitchell	RWMC Operations		X	
Charles Taylor	RWMC Physics Support		X	

PERSONNEL CONTACTED DURING THE AUDIT				
NAME	TITLE/ORG	PRE-AUDIT MEETING	CONTACTED DURING AUDIT	POST-AUDIT MEETING
Jamie Anderson	RWMC Doc. Control		X	
Judy Webster	RWMC DCC-RM		X	
Jennefer Olson	RWMC DCC-RM		X	
Gary Twedell	GTI Scientist		X	
Greg Becker	CSM Inc Physicist		X	
Mark Adams	Training		X	

PERSONNEL CONTACTED DURING THE AUDIT BY AREA		
AREA	NAME	TITLE/ORG
QA Software (NDA)	Brian Chesnovar	RWMC Facility Quality Rep
	Tim Preston	BBWI SQAQO
	Jayson Wharton	BBWI Engr.
	Mark Sherick	BBWI 3100m ³
	W. Scott Roesner	INEEL 3100m ³
	Ed Gulbransen	Canberra Scientist
	Joe Gordon	GTI
	Chris Brooks	BBWI Physics
	Sonja Slade	BBWI CM SME
	Troy Bromley	RWMC Operations
	Juanita Twitchell	RWMC Operations
	Charles Taylor	RWMC Physics Support
	Jamie Anderson	RWMC Doc. Control
	Judy Webster	RWMC DCC-RM
Jennefer Olson	RWMC DCC-RM	
NDA	W. Scott Roesner	INEEL 3100m ³
	Chris Brooks	BBWI Physics
	John Fleissner	Canberra Tech. Dir.
	Ed Gulbransen	Canberra Scientist
	David Morgan	RWMC Physics Support Tech Lead

PERSONNEL CONTACTED DURING THE AUDIT BY AREA		
AREA	NAME	TITLE/ORG
NDA (Cont.)	Cindy Fife	RWMC DGL Val Mgr.
	Gary Twedell	GTI Scientist
	Yale Harker	GTI Participant
	Greg Becker	CSM Inc Physicist
	Joe Gordon	GTI
	Dave Lent	RWMC Training Supervisor
	Mark Adams	Training
	Mark Sherick	BBWI 3100m ³
Data Review Expert System (DRXS)	Jayson Wharton	BBWI Engr.
	Greg Becker	CSM Inc Physicist
	Chris Brooks	BBWI Physics

INEEL PROCEDURES AUDITED IN A-02-21		
NUMBER	PROCEDURE NUMBER	TITLE
1.	PLN-190	Quality Assurance Project Plan (QAPjP)
2.	PLN-579	Program Plan for Certification of INEEL Contact-Handled Stored Transuranic Waste (Certification Plan)
3.	MCP-1803	Configuration Control of RWMC Hardware/Software
4.	MCP-1815	RWMC/SWEPP Level I Data Validation
5.	MCP-2990	Radioassay Total Uncertainty Process Using Modified Statistical Sample Approach
6.	MCP-2991	Radioassay Total Uncertainty Process Using Statistical Sampling Approach
7.	QTP-004	Passive-Active Neutron (PAN) Drum Assay System
8.	QTP-011	SWEPP Gamma-Ray Spectrometer Systems
9.	QTP-031	SWEPP Waste Assay Gamma Spectrometer (WAGS) Absolute System
10.	TPR-1573	Passive-Active Neutron Drum Assay System
11.	TPR-1588	SWEPP Gamma Ray Spectrometer System
12.	TPR-1654	SWEPP Waste Assay Gamma Spectrometer (WAGS) System
13.	TPR-1719	Calibration of Gamma Radioassay Systems
14.	TPR-1768	SWEPP Waste Assay Gamma Spectrometer (WAGS) Absolute System
15.	MCP-9178	Training and Qualification,

Summary Table of Audit Results A-02-21								
Audit Elements	Concern Classification					QA Evaluation		
	Exem. P	CARs	CDAs	Obs	Rec	Adequacy	Implementation	Effectiveness
Activity								
Software QA (NDA)			1, 2, & 3			A	S	E
SGRS and WAGS Absolute Systems			4*	1		A	S	E
PAN/WAGS and PAN/SGARS Systems			4*			A	S	E
Data Review Expert System (DRXS)						A	S	E
TOTALS	0	0	4	1	0	A	S	E

Definitions

E = Effective
S = Satisfactory
I = Indeterminate
M = Marginal

CAR = Corrective Action Report
CDA = Corrected During Audit
NE = Not Effective

* Applies to PAN/SGRS, PAN/WAGS and WAGS Absolute Systems

Obs = Observation
Rec = Recommendation
A = Adequate
NA = Not Adequate