

United States Government



# memorandum

Carlsbad Field Office  
Carlsbad, New Mexico 88221

DATE: May 8, 2002

REPLY TO  
ATTN OF: CBFO: QA: MLC: GS:02-1054:UFC 2300.00

SUBJECT: CBFO Surveillance Report S-02-12, Idaho National Engineering and Environmental Laboratory

TO: Edward Ziemianski, ID

The Carlsbad Field Office (CBFO) conducted a surveillance of the Idaho National Engineering and Environmental Laboratory (INEEL) Transuranic waste payload assembly, certification, and loading processes on April 1-5, 2002. The CBFO surveillance report is attached.

There was one CBFO Corrective Action Report generated as a result of this surveillance that was forwarded to you under separate cover.

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:

L. Chism, CBFO	
D. Winters, DNFSB	
P. Roush, WTS	
I. Triay, CBFO	*ED
K. Watson, CBFO	*ED
D. Winters, DNFSB	*ED
S. Monroe, EPA	*ED
M. Eagle, EPA	*ED
S. Zappe, NMED	*ED
B. Walker, EEG	*ED
R. Taft, ID	*ED
J. Wells, ID	*ED
T. Monk, BBWI	*ED
T. Preston, BBWI	*ED



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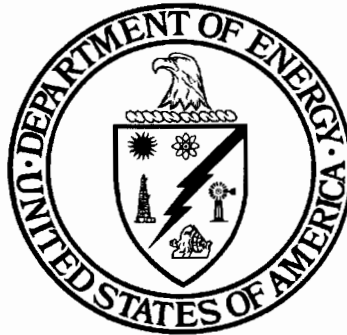
**U.S. DEPARTMENT OF ENERGY  
CARLSBAD FIELD OFFICE**

**SURVEILLANCE REPORT  
OF THE  
IDAHO NATIONAL ENGINEERING AND  
ENVIRONMENTAL LABORATORY (INEEL)**

**SCOVILLE, IDAHO**

**SURVEILLANCE NUMBER S-02-12**

**April 1 - 5, 2002**



**Payload Assembly, Certification, and Loading Processes**

**Prepared by:** Wayne Ledford //signature on file// **Date:** 4/25/02

Wayne Ledford  
Surveillance Team Leader

**Approved for Issue by:** Ava L. Holland //signature on file// **Date:** 5/8/02

Ava L. Holland  
Carlsbad Field Office  
Quality Assurance Manager

## **1.0 EXECUTIVE SUMMARY**

Carlsbad Field Office Surveillance S-02-12 was conducted to evaluate the adequacy, implementation, and effectiveness of conduct of operations and quality assurance as applied to the payload assembly, certification, and loading process. The surveillance was in response to a payload incorrectly shipped to WIPP on March 19, 2002. One Corrective Action Request was issued during the surveillance, related to documentation of closure of a nonconformance report. Three conditions adverse to quality were corrected during the surveillance. Two Observations and two Recommendations were offered for Idaho National Engineering and Environmental Laboratory management consideration.

## **2.0 SCOPE**

Carlsbad Field Office (CBFO) Surveillance S-02-12 was conducted to evaluate the adequacy, implementation, and effectiveness of conduct of operations and quality assurance as applied to the payload assembly, certification, and loading processes. The surveillance was in response to the shipment of an incorrect payload to WIPP on March 19, 2002.

### **SURVEILLANCE TEAM**

Wayne Ledford	Surveillance Team Leader, CTAC
Kerry Watson	Management Representative, CBFO
Casey Gadbury	Surveillance Team Member, CBFO
Steve Calvert	Surveillance Team Member, CTAC
Kim Jackson	Surveillance Team Member, WTS
Marlin Horseman	Surveillance Team Member, CTAC
Jim Clark	Surveillance Team Member, CTAC
Kathleen Leonard	Surveillance Team Member, Hanford
Mario Chavez	Surveillance Team Member, SNL
Ben Walker	Observer, EEG
Henry Hepler	Observer, DOE-HQ, EM-5

## **4.0 SURVEILLANCE PARTICIPANTS**

Personnel contacted during the surveillance are identified in Attachment 1.

## **5.0 SUMMARY OF SURVEILLANCE RESULTS**

### **5.1 Surveillance Activities**

#### **5.1.1 Event Cause and Corrective Action**

The surveillance team reviewed the Idaho National Engineering and Environmental Laboratory (INEEL) cause and corrective action activities related to an event involving a payload incorrectly shipped to WIPP. The results of a surveillance performed by DOE-

ID was also reviewed. After discovery, INEEL identified five teams to investigate the event. Investigative actions performed by the teams involved a review of the processes related to payload certification, assembly, and loading. The investigation also covered the Site Project Office (SPO), quality verification, and operations activities and procedures. Later, three of the teams were combined.

An extensive root cause analysis was performed, including a review of previous events. Process charts with error notations indicated that errors (18) occurred at eleven steps in the process. The INEEL analysis indicated that this event could have been avoided if proper procedures and correct implementation had been followed. It appears that precursors to the actual waste characterization and the assembly and the loading activities (such as the verification and the subsequent evaluation of RTR Operator qualifications) may not have been effective.

The eighteen errors identified by INEEL are summarized in the following table, along with a description of the process step where the problems were identified.

<b>No.</b>	<b>Error/Step Description</b>	<b>Type of Error</b>
1.	Paperwork changes not addressed	Procedural Error
2.	Form changes made without procedure	Procedure Not Properly Used
3.	Physical verification of packs not required by procedure	Procedural Error
4.	Procedures didn't cover switching payload packs	Procedural Error
5.	Packs switched by pen and ink change	Procedure Not Properly Used
6.	Changes not effectively communicated	Communication Problem
7.	Interface between TCO and Shift Desk not defined	Roles & Responsibilities
8.	Hold tag not placed on pack with NCR'd drum	Procedure Not Properly Used
9.	Responsibility to Tag NCR'd Pack not recognized	Roles & Responsibilities
10.	Procedure doesn't cover pack switching	Procedural Error
11.	Pack location changes communicated by pen and ink	Procedure Not Properly Used
12.	Packs changed with a lack of proper communications	Communication Problem
13.	Physical markings do not identify pack numbers	Procedural Error
14.	Responsibility for proper marking of packs not indicated	Roles & Responsibilities
15.	Paperwork file is incorrect	Procedural Error
16.	Real-time TRIPS data not used to verify load	Procedural Error
17.	Quality involvement was not effective	Procedural Error/Roles and Responsibilities
18.	Field data not required to be verified	Procedural Error

The events and the INEEL investigation are described in INEEL Deficiency Report (DR) 27322 and Occurrence Report ID-BBWI-RWMC-2002-0003.

Corrective actions were identified, but not all were completed at the time of the surveillance. Activities to be completed include:

- 1) Final INEEL verification of corrective action completion and effectiveness;
- 2) Elimination of timely orders from the revised process chart and placement of the chart in document control;
- 3) Additional detailed description of the required contents of procedures, including checklists and other activities;
- 4) Training of all appropriate personnel in the use of the Transuranic Reports, Inventory, and Processing System (TRIPS) and methods for access and verification;
- 5) Improved definition and communication of all roles and responsibilities;
- 6) Improved communication of each event to all appropriate personnel;
- 7) Inclusion of (or reference to) the Quality Engineer Checklist in procedures;
- 8) Observation by management of the actual performance of revised processes and methods;
- 9) Follow-up self-assessment to verify continued implementation of all actions; and
- 10) Improved communications between the Site Project Office (SPO) and operations personnel.

Many of these actions (such as procedural revisions, clarification of roles and responsibilities, and TRIPS training) had been initiated and were at differing stages of completion during the surveillance. DOE-ID was monitoring the completion of these activities as part of their oversight of the responsible INEEL contractor.

The goal at INEEL is to have two weeks of shipments assembled in queue. The actions taken to resolve this incorrect shipment event and previous events will help to ensure that any last minute changes (for example, load weights and deficiencies discovered late in the process) are properly resolved and processed.

#### **5.1.2 Transuranic Reports, Inventory, and Processing System (TRIPS) and the WIPP Waste Information System (WWIS) Interface**

The implementation of the TRIPS software quality assurance (QA) processes and the WWIS data entry interface was evaluated. The evaluation included a review of the testing for the WWIS, payload and shipping modules in TRIPS with a review and demonstration of the payload assembly process to verify the implementation of the TRIPS module requirements. The TRIPS documentation reviewed included the TRIPS Change Requests (TCRs), mini-designs, business rules, test cases, and configuration controls for the final load check of labels, splitting the final load check in two, WWIS data copy/WCO interface, barcode label application, barcode reader application,

payload assembly, WWIS copy, offline event signature removal, certification, shipping, TRUPACT pre- and post-WWIS certification transfer, and event signature removal modules in TRIPS.

There were two deficiencies identified in this area. One, corrected during the surveillance (see CDS 2), was for not fully evaluating impact to the baseline for changes. The other concern resulted in a CAR (see section 6.1.1), and involved the corrective action process in MCP 2993, which did not communicate the disposition of corrective actions between affected parties (NCR 25000 and TCR 2074). The TRIPS/WWIS interface was determined to be adequate, marginally implemented and effective.

### 5.1.3 Independent Verification Function

The surveillance team evaluated the INEEL Radioactive Waste Management Complex (RWMC) independent verification process as a result of the March 19, 2002 incident resulting in a payload being received at the WIPP with drum numbers that did not match the information in WWIS.

A causal analysis investigation was performed by INEEL and the resulting report was documented (in draft) as *Team 3 Global Root Cause Analysis of 3100 m<sup>3</sup> Events DR 27322*, INEEL/INT-02-00249. A second report was drafted, representing a formal root cause analysis: *Violation of the TRUPACT II Container Loading Procedure Occurrence Report ID-BBWI-RWMC-2002-003*. The two reports identified corrective actions based on their findings, and proposed corrective actions to management for the RWMC program. Among the recommended corrective actions were "establishing a process review team to evaluate the current shipment certification process, payload assembly, TRUPACT loading, and transportation process for potential error-likely situations . . . and recommending process changes."

In addition, several procedure changes, administrative verification of shipment data prior to TCR certification and generation, and implementation of quality checklists for performing review of field shipment data against TRIPS, were proposed and have been or are in the process of being implemented.

Evaluation of the adequacy of the independent verification process and associated corrective actions from the root cause and causal analyses focused on the following specific areas:

- Adequacy and comprehensiveness of the formal Root Cause and Causal Analyses
- Identification and implementation of independent verification associated corrective actions resulting from the above
- Use of any interim compensatory measures until implementation of corrective actions is complete

- Review of revised and current loading procedures (TPR-1648 and TPR-1649) and associated checklists for adequacy and comprehensiveness
- Review of historic operating logs and quality checklists
- Interviews with operations and management personnel
- Review of log keeping procedures
- Review of operating logs
- Observation and evaluation of actual RWMC payload assembly and TRUPACT-II loading processes using TPR-1648 and TPR-1649 procedures
- Coordination and communication between the site program office, quality and operations personnel, and management during recent (~8/2001) operations procedures review and upgrade program including elements of independent verification

With the recent addition of critical process steps and identification of associated changes to procedures and checklists addressing previous process deficiencies, the independent verification process has been adequately upgraded to ensure positive and independent checks are in place to verify the field payload “as-built” and “as-loaded” configuration against the computer-generated TRIPS documentation. The surveillance team identified two concerns associated with independent verification (see Recommendations 1 and 2).

The first recommendation identified a lack of communication and coordination between waste-handling operations and site programs office management that may have resulted in miscommunications, less than effective procedures, poor waste-handling process coordination, and generally poor conduct of operations practices. These deficiencies are not consistent with integrated safety management and quality management principles. As in the previous case, the finding was consistent with INEEL findings that identified management deficiencies as both a root and contributing cause to the incident on March 19, 2002, and with DOE Idaho Operations Office findings in their independent surveillance of the 3100 m<sup>3</sup> Payload assembly process.

The second recommendation identified a (previous) failure to follow proper procedures regarding log-keeping during waste-handling operations, which resulted in corrections to quality records not being properly initialed and dated during verification of payload information. The finding was consistent with INEEL and DOE-ID findings that identified failures to follow proper log-keeping procedures as a contributing cause to the incident on March 19, 2002.

In summary, the surveillance team has concluded that the independent verification processes for the payload assembly and TRUPACT II loading operations are administratively and procedurally adequate. Additionally, observations of assembly and loading operations demonstrated adequate independent verification of the “as-built” and “as-loaded” configurations. Any further corrective actions (which may have indirect implications to independent verification) previously identified by INEEL, but that may not be fully implemented, should further support and strengthen the independent

verification element of the waste-handling program during assembly and loading operations upon completion of implementation.

#### **5.1.4 Payload Assembly, Certification, Loading, and Preparation of Associated Documentation**

The revised processes for payload assembly, certification, and loading were reviewed by the surveillance team. This included a "walkthrough" of the revised procedures with responsible INEEL personnel and comparison of the revised procedures to the flowchart prepared by INEEL as part of the causal analysis performed in response to the event. The INEEL then performed a demonstration of payload assembly and loading which was witnessed by the surveillance team.

Two deficiencies were identified by the surveillance team in this area. The INEEL had not fully implemented the steps required by the flowchart in their procedures (see CDS-1) and they were not performing a final review of the shipping papers vs. the information in WWIS and TRIPS prior to shipment (see CDS-2). The procedures were revised to address these issues during the surveillance.

The CBFO Assistant Manager for the National TRU Program was present at INEEL during the surveillance, reviewed the changes to the procedures and processes in detail during the surveillance, and approved the changes prior to the end of the surveillance.

The surveillance team concluded that the revised payload assembly, certification, and loading processes were adequate, satisfactorily implemented (although implementation was limited to demonstrations during the surveillance), and effective.

#### **5.1.5 Management and Quality Assurance Oversight**

The surveillance team evaluated management and independent oversight activities related to the payload certification, assembly, and loading processes. The surveillance team determined that management and independent assessments had been performed on transportation activities, including the payload certification, assembly, and loading processes. The surveillance team noted in the area of management oversight that other types of management assessment activities have been performed in the area of transportation, including the Senior Supervisory Watch and operational monitoring programs. These activities have been documented in logbooks and other report forms; however, no formal system is in place to document and communicate the results of these activities to the Site Project Manager (see Observation 1). The surveillance team also reviewed documentation of independent oversight activities performed in the area of transportation. Independent Audit A-02-01, performed from November 26 to December 13, 2001, identified as a Noteworthy Practice an issue dealing with payload assembly documentation that contained a handwritten entry. The entry caused confusion on which drums were to be included in the subassembly. The foreman stopped work until clarification was obtained, a commendable action. However, the handwritten change caused confusion. The issue identified during the audit indicates that a problem existed with handwritten changes to payload assembly documentation



as early as December 2001. INEEL management failed to recognize the significance of this issue when it was identified. The identification of this issue established the potential for the event that occurred on March 17, 2002 (see Observation 2).

## **6.0 CORRECTIVE ACTION REPORTS, CORRECTED DURING THE SURVEILLANCE, OBSERVATIONS, AND RECOMMENDATIONS**

### **6.1 Corrective Action Reports**

One CAR was issued as a result of this surveillance. The CAR was transmitted to INEEL under separate cover.

#### **6.1.1 CAR 02-056**

NCR 25000 was closed without the completion or identification of the TRIPS Change Request (TCR) as defined in the corrective action plan. The TCR (2074) initiated in response to NCR 25000 is still open. The affected drum population covered by the NCR was changed from 440 to 384 to 382 to 19, with no basis for the change documented in the NCR or TCR.

### **6.2 Closed During the Surveillance**

Three minor deficiencies requiring only remedial corrective action were closed during the surveillance.

#### **6.2.1 CDS-1**

The TCO certification and TRUPACT shipment process flow chart (3/27/02), and in some cases the accompanying procedures, did not clearly identify that timely orders would be included in a procedure, and did not always identify the minimum content. The procedures did not clearly specify how documents are processed and retained in some cases.

The flowchart (e.g., step 7B, 21) and associated procedures did not specify what actions or documents were to be included in the field shipment file, etc.

The procedures and flowchart were updated during the surveillance to correct these deficiencies.

#### **6.2.2 CDS-2**

TRIPS Change Requests (TCRs) 1955, 2391, 2431 and 2433 changes were not reviewed for impact to the Requirement/Design or Operating Procedure. These TCR's were corrected during the surveillance.

#### **6.2.3 CDS-3**

A final review of the WWIS and payload documentation against the shipping manifest is not being performed. INEEL revised their process procedures during the surveillance to require that this review be performed.

### **6.3 Observations**

Two Observations were identified during the surveillance. Observations document conditions which, if not addressed, could lead to deficiencies.

#### **6.3.1 Observation 1**

No formal system is in place for documenting and communicating the results of management oversight activities (i.e., Senior Supervisory Watch and Operational Monitoring) to the Site Project Manager. This needs to be performed to ensure follow-up on issues identified.

#### **6.3.2 Observation 2**

Audit A-02-01, performed November 26 to December 13, 2001, identified as a Noteworthy Practice an issue dealing with payload assembly documentation that contained a handwritten entry. The entry caused confusion on which drums were to be included in the subassembly. The foreman stopped work until clarification was obtained, a commendable action. However, the handwritten change did cause confusion. The issue identified during the audit indicates that problems existed with handwritten changes to payload assembly documentation as early as December 2001. INEEL management failed to recognize the significance of this issue at the time it was identified. The identification of this issue established the potential for the event that occurred on March 17, 2002. INEEL management needs to review assessment reports to ensure that issues are identified and corrective action is taken as necessary.

### **6.4 Recommendations**

Two Recommendations were identified during the surveillance and are offered for INEEL management consideration.

#### **6.4.1 Recommendation 1**

The surveillance team recommends the integration of operations and the SPO into a cohesive team to evaluate for effectiveness and possible improvement conduct of operations issues, including items such as changes to procedures, delegation of responsibilities, and development and control of operator aids and checklists.

#### **6.4.2 Recommendation 2**

It is recommended that the requirement for initialing and dating changes to documents be reemphasized to project personnel (for example, corrections to PATCD for PK101196 on 3/10/2002). When the reason for changing a document is not obvious, personnel should note the reason on the document.

**PERSONNEL CONTACTED DURING THE SURVEILLANCE**

<b>PERSONNEL CONTACTED</b>				
<b>NAME</b>	<b>TITLE/ORG</b>	<b>PRE SURVEILLANCE MEETING</b>	<b>CONTACTED DURING SURVEILLANCE</b>	<b>POST SURVEILLANCE MEETING</b>
Allen, Rodney	TCO/3100M <sup>3</sup>		X	
Ashley, Holly	Causal Analyst/BBWI	X		
Bright, David	SAD/BBWI	X	X	X
Broers, G. J.	IMSME/RWMC Operations		X	
Crisp, Dan	BBWI	X		
Doan, E. B.	Foreman/RWMC TRUPACT Operations		X	
Dunhour, Fred	Auditee Shadow/3100M <sup>3</sup>		X	
Dwight, John	RWMC Engineering Manager/BBWI	X		
Edgerton, Brian	DOE-ID	X		
Fallon, Tom	QA Manager/BBWI	X	X	X
Farmer, Carl	Training/BBWI		X	
Finup, T. G.	Manager/RWMC Shift Operations		X	
Flynn, Fred	DOE-ID	X		
French, Bob	RC Manager/BBWI	X		
Frost, Lisa	TRIPS		X	
Griffin, Michael	WCO/3100M <sup>3</sup>		X	
Howanitz, John	Director 3100M <sup>3</sup> /BBWI	X	X	X

<b>PERSONNEL CONTACTED</b>				
<b>NAME</b>	<b>TITLE/ORG</b>	<b>PRE SURVEILLANCE MEETING</b>	<b>CONTACTED DURING SURVEILLANCE</b>	<b>POST SURVEILLANCE MEETING</b>
Johnsen, Tom	SPO-CBFO Interface/BBWI			X
Jones, Sharon	PA/BBWI	X		
Knox, Gregory	WM QA Lead/BBWI		X	X
Krivanek, Kenneth	GTI		X	X
Krusch, Susan	TRIPS Software QA	X		
Labruyere, Gary	SPO Issues Management/BBWI	X	X	X
Lent, Dave	Training Supervisor/BBWI		X	
Merrill, Julie	Supervisor/BBWI	X		
Miklos, Robert	3100M <sup>3</sup> Production Manager/BBWI	X		X
Monk, Tom	SPM/BBWI	X	X	X
Newbry, Dary	Facility Representative/DOE-ID	X	X	X
Novak, Ben	TRIPS	X		
Preston, Tim	SQAO/BBWI	X		
Salcido, Antonio	QE/SQAO		X	
Sherrick, Mark	BBWI	X		
Somers, W. Stephen	PAAA Coordinator/DOE-ID	X		X
Stallman, Robert	DOE-ID			X

<b>PERSONNEL CONTACTED</b>				
<b>NAME</b>	<b>TITLE/ORG</b>	<b>PRE SURVEILLANCE MEETING</b>	<b>CONTACTED DURING SURVEILLANCE</b>	<b>POST SURVEILLANCE MEETING</b>
Stiger, Susan	VP EM Programs/BBWI	X		
Sygitowicz, Lee	BBWI	X	X	X
Taft, Rod	DOE-ID	X	X	X
Tisdale, W. S.	SQAO Staff /3100M <sup>3</sup>		X	
Wells, Jerry	TRU Waste Program/ DOE-ID	X	X	X
Wolford, Lisa	BBWI	X		

<b>INEEL PROCEDURES REVIEWED DURING S-02-12</b>		
<b>NUMBER</b>	<b>PROCEDURE NUMBER</b>	<b>TITLE</b>
1.	MCP-1757	Management Assessments for the INEEL TRU Waste Characterization Program
2.	MCP-1785	TRIPS Data Management
3.	MCP-1800	Contact Handled Waste Certification
4.	MCP-1803	Configuration Control of RWMC Hardware/Software
5.	MCP-1819	TRUPACT II Receipt, Inspection, and Shipment
6.	MCP-2528	Computer Software Control
7.	MCP-2532	Independent Assessment
8.	MCP-2533	Reports to Management
9.	MCP-2544	WWIS Data Transfer
10.	MCP-2992	QA Program Surveillances
11.	MCP-2993	TWCP Action Tracking and Trend Analysis
12.	PLN-182	INEEL TRU Waste Characterization, Certification, and Transportation Quality Program (QPP)
13.	PLN-190	Quality Assurance Project Plan (QAPjP)
14.	PLN-577	TRUPACT II Authorized Methods for Payload Control Compliance Plan (TRAMPAC)
15.	PLN-579	Program Plan for Certification of INEEL Contact-Handled Stored Transuranic Waste (Certification Plan)
16.	PLN-582	TRIPS Software Configuration Management Plan
17.	PLN-583	TRIPS Software QA Plan
18.	PLN-584	TRIPS Software Verification and Validation Plan
19.	PLN-585	TRIPS Software Test Plan
20.	QTP-020	TRIPS Integrated Operational Test for the TRU Programs Characterization, Certification, and Payload Assembly Process
21.	TPR-1625	WMF-635 Dispositioning and Container Integrity
22.	TPR-1632	Transportation Certification Using TRIPS
23.	TPR-1648	TRUPACT II Payload Assembly
24.	TPR-1649	TRUPACT II Loading
25.	TPR-1665	TRUPACT-II Payload Assembly Operation in WMF-635
26.	TPR-1666	TRUPACT-II Loading Operation in WMF-635