



Department of Energy
Washington, DC 20585

December 22, 2005

Mr. Richard D. Raaz
President and General Manager
Washington TRU Solutions, LLC
P.O. Box 2078
Carlsbad, NM 88221-2078

EA-2005-08

Subject: Preliminary Notice of Violation and Proposed Civil Penalty - \$192,500

Dear Mr. Raaz:

This letter refers to the Department of Energy's (DOE) Office of Price-Anderson Enforcement's (OE) investigation of the Mobile Visual Examination and Repackaging Facility (MOVER) radiological uptakes that occurred from April to August 2004 at the Lawrence Livermore National Laboratory (LLNL). An investigation summary report was issued to you on September 24, 2005. An Enforcement Conference was held on October 26, 2005, in Germantown, Maryland, with you and members of your staff to discuss the findings in the investigation report. An Enforcement Conference Summary is enclosed.

Based upon our evaluation of these issues and information presented by you and your staff during the Enforcement Conference, I have concluded that violations of DOE's nuclear safety rules, specifically Quality Assurance Requirements (10 CFR 830 Subpart A) and Safety Basis Requirements (10 CFR 830 Subpart B) have occurred. The violations are described in the enclosed Preliminary Notice of Violation (PNOV).

Section I of the PNOV describes a Severity Level II violation associated with the operation of the MOVER facility without a required safety basis and associated documentation. DOE considers the safety basis process to be an essential part of determining design adequacy and ensuring that adequate controls exist to safely operate nuclear facilities. OE concluded that the less than adequate level of understanding by Washington TRU Solutions (WTS) of the design and operational limitations of MOVER was a significant contributor to the uncontrolled radioactive releases and subsequent radiological uptakes that occurred.

Section II of the PNOV describes a Severity Level II violation associated with failures to follow existing WTS work processes intended to ensure the control of nonconforming items and appropriate responses to abnormal conditions, events, and alarm conditions. Section III of the PNOV describes a Severity Level II violation associated with failures

to maintain an adequate design record for MOVER. Section IV describes a Severity Level II quality improvement violation for failures to determine causes and correct deficiencies associated with abnormal conditions, failures to correct receipt inspection issues with glovebox port containment bags, and deficiencies with the initial WTS MOVER investigation and corrective actions.

While I recognize some of the fundamental changes you are attempting to make with the Central Characterization Project (CCP) operations, only limited mitigation was warranted. None of the violations received mitigation for self-identification since the underlying deficiencies were disclosed by the events. Partial mitigation of 25 percent was given for two of the four violations for causal determination and corrective actions; additional mitigation was unwarranted due to observed weaknesses concerning the WTS response to the MOVER event as well as the multiple missed opportunities to resolve abnormal conditions. The lack of proactive response by WTS towards identifying and correcting quality problems was particularly troublesome. DOE also found disconcerting WTS's deployment of a mobile facility without an adequate understanding of its design, performance, and operating limitations. This was coupled with an organizational safety culture and level of conduct of operations performance that tolerated or accepted the existence of abnormal conditions without adequate resolution.

At the Enforcement Conference, members of your staff described a number of corrective actions intended to prevent the work process, design basis, and quality improvement deficiencies from recurring. Your continued personal attention to the issues and corresponding corrective actions, including any additional adjustments based on effectiveness reviews, is essential to ensuring that WTS CCP achieves a positive step change in performance. Representatives from the DOE Carlsbad Field Office and my office were encouraged by the actions you outlined in the enforcement conference that are intended to improve operational awareness and more timely resolution of performance deficiencies, as indicated by your recent stand-down of glovebox activities at a nother host site until adequate resolution of deficiencies occurred.

During the enforcement conference, WTS representatives questioned the conclusion in our investigation summary report concerning the apparent MOVER safety basis violation. It was asserted that MOVER should not be considered a nuclear facility, but only a system within a facility. As a result, WTS concluded that a safety basis for MOVER was not required.

In reviewing this argument, DOE OE considered both the definition of a nuclear facility set forth in 10 CFR 830 as well as the physical attributes of MOVER. Nonreactor nuclear facilities, as stated in the rule, are "facilities, activities, or operations" that involve radioactive and/or fissionable materials in such form or quantity that a nuclear hazard potentially exists to workers. MOVER operations involved the processing of material above the hazard category 3 threshold while at Argonne National Laboratory-East (ANL-E) and LLNL. Thus, those operations involved a nuclear hazard to workers as defined by the rule. In addition, the MOVER is a self-contained process requiring

only an external power source for operation. It contains a glovebox for TRU waste processing, a control room, high efficiency particulate air filter ventilation, as well as fire protection and radioactive monitoring systems. OE consequently concluded that MOVER represented a nuclear facility with a specific process (TRU waste characterization) versus a system or component. We further note that MOVER also qualifies under the rule as a “nuclear activity or operation” in addition to being a nuclear facility. WTS as the managing and operating contractor for the MOVER facility clearly has the responsibility for meeting any applicable DOE safety basis rule requirements.

In reaching this decision, OE notes that DOE’s Office of Environmental Management (DOE EM) determined as well that a safety basis was needed for MOVER operations. Subsequent to the deployment and operation of MOVER at ANL-E, DOE EM approved a Basis for Interim Operations (BIO) in November 2003 for the CCP Mobile Characterization Units (MCU), which included the MOVER. The BIO MCU segments were characterized as a hazard category 2 nuclear facility and the BIO contains a unique set of technical safety requirements controls that cover specific design features, as well as administrative and programmatic controls for the MOVER and other MCUs. In its approval letter, DOE EM stated that the CCP MCU BIO represented the 10 CFR 830 required safety basis for the segmented units.

WTS also stated at the enforcement conference that ANL-E had included MOVER as an acceptable activity under the approved documented safety analysis (DSA) for the ANL-E facility in which MOVER was located while at ANL-E. This determination was made through implementation of the ANL-E unreviewed safety question process. However, this approach and any corresponding conclusion can only reasonably be used to determine the effect MOVER and other MCUs may have had on the safety of co-located ANL-E facilities and their operations. It did not resolve the need for or serve as a substitute for a DSA, including an adequate design review, as well as development of specific MOVER hazard controls. Furthermore, any determination as to whether MOVER is a nuclear facility is governed by the terms of 10 CFR 830 and not determinations made by ANL-E representatives.

The failure by WTS to perform an adequate design evaluation and to establish adequate operational controls for MOVER contributed to unplanned uptakes received by personal working in MOVER. DOE considers the safety basis process to be a necessary part of determining design adequacy and ensuring that adequate controls exist to safely operate nuclear facilities. WTS, as the contractor responsible for the design and operation of MOVER was required by 10 CFR 830 to develop a safety basis that was approved by DOE prior to the initial operation.

You are required to respond to this letter and to follow the instructions specified in the enclosed PNOV when preparing your response. Your response should document any additional specific actions taken to date. Corrective actions will be tracked in the reports filed in the Noncompliance Tracking System (NTS). You should enter into the NTS (1) any additional actions you plan to take to prevent recurrence and (2) the target completion dates of such actions.

After reviewing your response to the PNOV, including your proposed corrective actions entered into NTS, DOE will determine whether further enforcement action is necessary to ensure compliance with DOE nuclear safety requirements.

Sincerely,



Stephen M. Sohinki

Director

Office of Price-Anderson Enforcement

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Enclosures:
Preliminary Notice of Violation
Enforcement Conference Summary
List of Attendees

cc: J. Shaw, EH-1
R. Shearer, EH-1
A. Patterson, EH-1
M. Zacchero, EH-1
L. Young, EH-1
A. Rankin, EH-1
P. Rodrik, EH-6
Docket Clerk, EH-6
B. Loesch, EH-31
C. Lagdon, EH-31
J. Rispoli, EM-1
C. Anderson, EM-2
L. Vaughan, EM-3.2
L. Piper, DOE-CBFO
R. Farrell, DOE-CBFO
J. Hoff, WTS PAAA Coordinator
R. Azzaro, DNFSB

**Preliminary Notice of Violation
and
Proposed Imposition of Civil Penalty**

Washington TRU Solutions
WIPP Site

EA-2005-08

As a result of the Department of Energy's (DOE) Office of Price-Anderson Enforcement investigation of safety basis and quality deficiencies associated with the MOVER radiological uptakes that occurred from April to August 2004, multiple violations of DOE nuclear safety requirements were identified. In accordance with 10 CFR 820, Appendix A, "General Statement of Enforcement Policy," the violations are listed below. Citations specifically citing the quality assurance criteria of 10 CFR 830.122 represent a violation of 830.121(a), which requires compliance with those criteria.

I. Safety Basis Violation

10 CFR 830.202 requires that the contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility establish and maintain the safety basis for the facility. The contractor must prepare a documented safety analysis (DSA) for the facility, and establish hazard controls upon which the contractor will rely to ensure adequate protection of the workers.

10 CFR 830.207 requires that a contractor of a new DOE hazard category 1, 2, or 3 nuclear facility, or a major modification to a facility, receive DOE approval of the facility safety basis through the issuance of a Safety Evaluation Report prior to beginning operation of the facility. The effective date of this rule requirement was February 9, 2001.

Contrary to the above requirements, Washington TRU Solutions (WTS) failed to establish and maintain a DSA for the MOVER facility, which is a DOE category 3 nuclear facility, and failed to receive DOE safety basis approval prior to deploying and operating at Argonne National Laboratory-East (ANL-E) from January 2002 through August 2003. An unreviewed safety question (USQ) evaluation was performed by ANL-E to address any new hazards and potential changes to their facility and site safety basis. However, no MOVER-specific safety basis was developed, submitted, and approved by DOE.

This violation constitutes a Severity Level II problem.
Civil penalty - \$55,000

II. Work Process Violations

10 CFR 830.122 (e) (1) requires that contractors perform work consistent with technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements, using approved instructions, procedures, or other appropriate means.

The following examples were identified involving failures by WTS to control or perform work consistent with their own work processes, procedures, and requirements.

A. Control of Nonconforming Items

Control of Nonconforming Items Deficiencies Procedure WP 13-QA3004, Nonconformance Report Management Control Procedure, requires the following:

1. Control of nonconforming items must be established, tracked, and records maintained,
2. Hold tags are required to establish control of nonconforming items, and
3. Once a nonconformance report (NCR) is approved and issued, a formal revision of that NCR is required to change the information in Section B, Disposition of Nonconforming Item, or Section C, Identification of Nonconforming Item, and to remove the hold tag.

Contrary to the above work process, no record was found of an NCR FY2001-04 revision that formally approved and documented the change in MOVER status from training use only to approved for operations. Specifically, a nonconformance report, FY2001-04 was issued in October 2000 indicating that MOVER had indeterminate quality requirements, and designating the use of MOVER for training purposes only. Hold-tag 2000-34, was placed on MOVER as a control in October 2000. The status of MOVER was changed to an operational status by WTS. However, no record was found of an NCR FY2001-04 revision that formally approved and documented the change in MOVER status from training to being approved for operations. MOVER was used for inspection and sorting of TRU waste at ANL-E from January 2002 through August 2003.

B. Abnormal Condition, Event and Alarm Response

WTS Procedure Abnormal Condition, Event, and Alarm Response Deficiencies CCP-PO-005 CCP Conduct of Operations, Revision 11, Section 4.1 requires that an investigation be conducted and appropriate action be taken when an unexpected event or series of events occurs for which the cause and consequences are not readily apparent. Section 4.5 requires that CCP personnel assume alarm conditions, gauge readings, meter readings, and analytical results are accurate until

proven otherwise, to take appropriate response actions, and to report the results of these actions to appropriate facility personnel.

Contrary to the above work process, WTS failed to stop, investigate and take appropriate actions in response to several abnormal conditions that occurred from April through August 2004 during MOVER operations at Lawrence Livermore National Laboratory. These abnormal events occurred frequently and the WTS investigation identified that workers inappropriately rationalized these events as normal conditions. Specific examples of these conditions are discussed below.

1. Abnormal Contamination Conditions

The WTS ALARA review for MOVER operations, WSMS-TR-02-0007, Section 3.6.2, identified that the glovebox was designed to prevent the release of radioactive material and that the operational procedures would minimize any potential for a release.

Contrary to the assumption in the ALARA review, abnormally high loose surface contamination conditions were frequently found on the glovebox seal area outside of the glovebox. In addition, PVC cutters that were used outside the glovebox by the operators to cut the bags during bag-out operations were found in the work area with high levels of contamination on several occasions. The WTS investigation report identified that the operators wiped the contaminated areas, which likely dispersed the radioactive contamination into the air. Although workers were in respirators when the airborne conditions occurred, the potential for creating airborne radiation conditions in the work area was not investigated, nor were appropriate actions taken to mitigate this concern. Workers were allowed to remove their respirators based upon an assumption that no airborne contamination existed in the work area. The bioassay results identified that workers without respirators had been exposed to airborne radioactivity on several occasions.

2. Abnormal Bag Seal Ring Conditions

On August 19, 2004, the bag seal ring failed to tighten properly and no replacement was located in the immediate area, although replacements were available at the LLNL site. Contrary to procedure CCP-PO-005 CCP, Conduct of Operations, the workers continued to perform work with a less than adequate bag seal ring and ultimately a bad seal on the glovebox bag. Subsequently, contamination was found on the bag-in port, indicating that the bag seal had leaked during operations.

3. Abnormal Ventilation System Conditions

The ventilation system was adjusted each day prior to radiological operations per instructions in CCP-TP-044, CCP Startup and Shutdown of the MOVER. The

pre-Operations Checklist identified specific limits for delta-pressure (DP) readings between the glovebox and the work area that were required to be established before operations could be performed. The checklists included a note stating that if any of the DP conditions were not in compliance, then work must be stopped and the technical supervisor notified. Contrary to this requirement, the MOVER control room alarm frequently sounded during operations, indicating that the minimum value of DP between the glovebox and work area was not met. However, the workers failed to stop work and take appropriate actions to investigate this recurring condition. The WTS investigation discovered that no inspections or preventive maintenance of the ventilation system had been performed, and the blower failed at least twice during the period between April and August 2004. When the ventilation system failed, the DP between the glovebox and work area was lost.

These violations constitute a Severity Level II problem.
Civil penalty - \$41,250

III. Design and Design Basis Documentation Violations

10 CFR 830.122 (f) requires that WTS incorporate applicable requirements and design basis in design work and design changes, identify and control design interfaces, verify or validate the adequacy of design products using individuals or groups other than those who performed the work, and verify or validate work before approval and implementation of the design.

10 CFR 830.122 (d) requires that WTS prepare, review, approve, issue, use, and revise documents to prescribe processes, specify requirements, or establish design, and to maintain those records.

Contrary to the above, WTS failed to incorporate MOVER design changes into the MOVER design documentation record. The WTS investigation identified that modifications to MOVER, after it was placed into service at ANL-E, were not incorporated into and maintained as quality records. Specifically, when MOVER was transferred to WTS, NCR 2001-04 was issued indicating that quality records were not adequate. This NCR identified that a WIPP approved design document had not been prepared, and design attributes, quality levels, and acceptance criteria had not been established. WTS, with help from Los Alamos National Laboratory, reconstituted some of the design basis and tested selective functions and systems of the MOVER. However, the WTS investigation identified that WTS failed to incorporate design changes to MOVER into the design documentation. The WTS investigation also concluded that modifications to MOVER were not incorporated into and maintained as quality records, after it was placed into service at ANL-E

This violation constitutes a Severity Level II problem.
Civil penalty - \$41,250

IV. Quality Improvement Deficiencies

10 CFR 830.122 (c) requires that WTS (1) establish and implement processes to detect and prevent quality problems, (2) identify, control, and correct items, services, and processes that do not meet established requirements, and (3) identify the causes of problems and work to prevent recurrence as part of correcting the problem.

Contrary to the above, WTS failed to detect and prevent quality problems at MOVER, and after quality problems were identified by an event, failed to investigate the extent of items that did not meet established requirements and determine their causes. Specific examples are as follows:

- A. WTS operated MOVER from April 2004 through August 19, 2004. During this period several abnormal conditions occurred. However, no formal or documented investigation of these conditions was conducted, no formal causes were identified, and no preventative actions were taken. (See Section II. B. 2. of this PNOV).
- B. The August 19, 2004, continuous air monitor (CAM) alarm and discovery of unplanned exposures triggered an investigation by LLNL into the event. WTS was not an active participant in the LLNL investigation and did not initiate a separate investigation. The LLNL MOVER investigation report that was provided to WTS on September 30, 2004, raised questions about the adequacy of the MOVER design and operations. In response to these allegations, DOE Carlsbad Field Office (CBFO), by letter dated November 1, 2004, directed that WTS perform a review of the causes and contributing factors associated with the MOVER unplanned exposures. WTS submitted its response to DOE CBFO on November 24, 2004. OE evaluated the WTS causal analysis and corrective actions in this response and found that they did not represent a comprehensive investigation of this event. Several examples of problem areas that were not investigated by WTS include (1) the failure to have an inspection and replacement program for the glovebox seal clamps that were essential components to the containment function, (2) the failure to stop work when the seal clamp failed to tighten properly on August 19, 2004, prior to the CAM alarm, (3) the failure to investigate the cause of frequent contamination outside containment, and (4) the failure to stop work and investigate the frequent low DP alarms.

In addition, the LLNL investigation identified potential design concerns with the glovebox seal, bag, and clamping process. WTS took issue with this conclusion and provided comments to LLNL that resulted in minor changes to the LLNL report. Finally, on January 18, 2005, WTS initiated a more comprehensive investigation of this event. This investigation was not initiated until almost four months after the event. The untimely WTS investigation report, issued on March 30, 2005, found a number of conduct of operations deficiencies that had not been identified in the previous efforts by WTS and LLNL, and that had contributed to the unplanned exposure event.

C. WTS issued an NCR (LLNL-0062-04) on April 21, 2003, indicating that surplus bags procured (Purchase Order 107649) for MOVER operations at ANL-E had not been inspected and may have been used in operations at LLNL. These bags provide part of the containment function during glovebox operations and are required to be inspected for defects that could result in leaks. Initially these bags were not needed at ANL-E and had not been released for use due to the lack of the required receipt inspection. After completion of operations at ANL-E, the MOVER was sent to LLNL. WTS personnel released the bags and transported them to LLNL for use with MOVER based upon informal (undocumented) information from a quality assurance inspector that the necessary inspections had been performed. However, the inspections had in fact not been performed, and these bags should not have been released for use without the formal inspection approvals and documentation. WTS personnel began operations in April 2004 using the bags that had not been inspected. Subsequently, on April 21, 2004, WTS discovered they had not correctly controlled the bags and performed the required inspections. An NCR was issued and MOVER personnel were notified to stop using the bags.

These violations constitute a Severity Level II problem.
Civil penalty - \$55,000

Pursuant to the provisions of 10 CFR 820.24, WTS is hereby required within 30 days of the date of this Preliminary Notice of Violation (PNOV), to submit a written reply by overnight carrier to:

Director Office of Price-Anderson Enforcement
Attention: Office of the Docketing Clerk, EH-6, 270 Corporate Square Building,
U.S. Department of Energy,
19901 Germantown Road,
Germantown, MD 20874-12190.

Copies should also be sent to the Manager of the DOE Carlsbad Field Office, and the Assistant Secretary for Environmental Management. This reply should be clearly marked as a "Reply to a Preliminary Notice of Violation" and should include the following for each violation: (1) admission or denial of the alleged violations; (2) any facts set forth which are not correct; and (3) the reasons for the violations if admitted, or if denied, the basis for the denial. Corrective actions that have been or will be taken to avoid further violations must be delineated with target and completion dates in DOE's Noncompliance Tracking System. In the event the violations set forth in this PNOV are admitted, this Notice will constitute a Final Order in compliance with the requirements of 10 CFR 820.24.

Any request for further remission or mitigation of civil penalty must be accompanied by a substantive justification demonstrating extenuating circumstances or other reasons why the assessed penalty should not be paid in full. Within 30 days after the issuance of the PNOV and proposed civil penalty, unless the violations are denied, or remission

or additional mitigation is requested, WTS shall pay the civil penalty of \$192,500 imposed under section 234a of the Atomic Energy Act by check, draft, or money order payable to the Treasurer of the United States (Account 891099) and mailed to the Director, Office of Price-Anderson Enforcement, Attention: Office of the Docketing Clerk, at the above address. If WTS should fail to answer within the time specified, the contractor will be issued an order imposing the civil penalty. Should mitigation of the proposed civil penalty be requested, WTS should address the adjustment factors described in section IX of 10 CFR 820, Appendix A.



Stephen M. Sohinki
Director
Office of Price-Anderson Enforcement

Dated at Washington, DC,
this 22nd day of December

**Washington TRU Solutions
MOVER Radiological Uptake Event
Enforcement Conference Summary**

October 26, 2005

On October 26, 2005, the Department of Energy's Office of Price-Anderson Enforcement (OE) held an Enforcement Conference with Washington TRU Solutions (WTS) senior management in Germantown, Maryland. The conference was held to discuss apparent violations identified in the OE Investigation Summary Report that was provided to WTS on September 24, 2005. The scope of the OE investigation included the MOVER radiological uptake events that occurred from April to August 2004.

The conference was opened by Mr. Stephen Sohinki, Director, Office of Price-Anderson Enforcement, who provided introductions and an overview of the conference's purpose and objectives.

The WTS presentations were opened by Mr. Richard Raaz, President and General Manager WTS, who discussed his perspectives on the fundamental safety issues surrounding the problems identified in the investigation, including the unique operating framework for the Central Characterization Project (CCP) and his personal commitment to safety and improving nuclear safety performance. Mr. Raaz indicated that WTS was in general agreement with the fundamental safety deficiencies described in the OE investigation report with one exception concerning the apparent MOVER safety basis citation.

Subsequent presentations and discussions were facilitated by WTS representatives Mr. Farok Sharif, Vice President and Assistant Manager, Thomas Lex, Chief Engineer, Mr. David Haar, Manager CCP, Mr. Jon Hoff, QA Manager, Charles Conway, Manager External Programs, and Mr. William Poulson, Senior Vice President of WGI. Topics included (1) a summary of circumstances that led to the observed deficiencies, (2) WTS lessons learned, including deficiencies in translating design information into operational considerations and evaluating host site radiological controls, (3) an overview of vulnerabilities and corresponding corrective actions, and (4) extent-of-condition review results.

Mr. Raaz then concluded WTS discussions by emphasizing his commitment to ensuring completion of corrective actions, reinforcing management expectations, paying close attention to indicators and improving communication with host sites. WTS also made a request for mitigation based on their response and corrective actions to the event.

Mr. Sohinki concluded the conference by indicating that DOE would consider the information presented in its enforcement deliberations. The conference was then adjourned.

**Washington TRU Solutions
MOVER Radiological Uptake Event**

Enforcement Conference List of Attendees

October 26, 2005

DOE – Office of Price-Anderson Enforcement

Stephen Sohinki, Director
Howard Wilchins, Senior Litigator
Peter Rodrik, Enforcement Specialist
Ronald Collins, Enforcement Specialist
Steve Hosford, Technical Advisor

DOE – Carlsbad Field Office

Lloyd Piper, Acting Manager
Richard Farrell, PAAA Coordinator

Washington TRU Solutions

Richard Raaz, President and General Manager
Farok Sharif, Vice President and Assistant Manager
Thomas Lex, Chief Engineer
David Haar, Manager CCP
Mr. Jon Hoff, Manager QA and PAAA Coordinator
Charles Conway, Manager External Programs

Washington Group International

William Poulson, Senior Vice President