



Department of Energy
Washington, DC 20585

December 16, 2005

Dr. Jeffrey Wadsworth
President and Chief Executive Officer
UT-Battelle, LLC
P.O. Box 2008
Oak Ridge, TN 37831-6255

EA-2005-06

Subject: Preliminary Notice of Violation and Proposed Civil Penalty - \$110,000

Dear Dr. Wadsworth:

This letter refers to the recent investigation by the Department of Energy's (DOE) Office of Price-Anderson Enforcement (OE) at the Oak Ridge National Laboratory (ORNL) of two facility categorization events during 2004. The events included (1) Building 7982 and the subsequent identification of Area North of Building 2026 and (2) Building 9204-3 at the Y-12 site. OE also investigated issues related to nuclear material placed in waste containers in the Building 7920 Limited Access Area that exceeded limiting conditions in the Building 7920 Documented Safety Analysis.

An Investigation Summary Report describing the results of that review was issued to you on September 23, 2005. An Enforcement Conference was held on October 25, 2005, in Germantown, Maryland, with you and members of your staff to discuss these findings. A Conference Summary report is enclosed.

Based upon our evaluation of these issues and information provided by UT-Battelle, LLC, representatives during the Enforcement Conference, DOE has concluded that violations of DOE's *Nuclear Safety Management Rules* (10 CFR 820 and 830) have occurred. The violations are described in the enclosed Preliminary Notice of Violation (PNOV).

Section I of the PNOV addresses facility hazard categorization issues that resulted in safety basis and work process violations associated with operating nuclear facilities with inventories of radiological materials in excess of limits established by nuclear safety rule requirements. As a result of the inventories in excess of authorized limits, adequate safety basis documentation, hazards analysis and associated controls were not established. Additionally, procedures were either inadequate to prevent exceeding the radiological material limits or were not in existence to establish and maintain the limits.

Section II of the PNOV addresses quality improvement violations. The facility categorization limit violations were of a long-standing nature dating back to contract turnover of ORNL to UT-Battelle, and involved multiple facilities. Further, as the Safety Basis Requirements of the nuclear safety rules became applicable following contract turnover, another opportunity to review existing conditions failed to result in the identification and establishment of formal safety basis documentation and controls for these facilities. In addition, other enforcement actions of a similar nature at other DOE sites presented further opportunities to identify the facility categorization issues, but appropriate investigative actions were not taken by UT-Battelle. Once the first deficient facility was identified, UT-Battelle's determination of the full scope of the facility categorization issues was gradual and evolved over a period of many months. Ultimately, UT-Battelle recognized the larger scope of the problem and performed independent reviews with ongoing corrective actions that appear to be comprehensive.

Section III of the PNOV addresses violations associated with Management Assessments. At the time of the OE Investigation, UT-Battelle had not been performing management assessments that addressed compliance with documented safety analysis (DSA) requirements, assumptions and limiting conditions, or assuring that facilities were properly categorized for the formal establishment of hazards controls.

In accordance with the General Statement of Enforcement Policy, 10 CFR 820, Appendix A, the violations described in the PNOV have been classified as Severity Level II problems with an aggregate civil penalty of \$110,000. In determining these Severity Levels, DOE considered the actual and potential safety significance associated with each event or issue under consideration.

With respect to the Safety Basis and Work Process violations, UT-Battelle's identification of the facility hazard categorization issues was not timely, and thus no mitigation is provided for timely self-identification and reporting. UT-Battelle's extent-of-condition review included two third-party reviews to investigate the facility hazard categorization process and the quality of ORNL facility categorization. Additionally, comprehensive actions were taken to address the facility hazard categorization process and problem conditions identified. Based on these extensive corrective measures, 50 percent mitigation is provided with respect to these violations.

For the Quality Improvement issues, the violation itself is due to the long-standing nature of the hazard categorization problems and the failure to identify these in a timely manner and take appropriate corrective actions, despite many opportunities to do so, as noted in the PNOV. Thus no basis exists for mitigation of the quality improvement violations.

For the Management Assessment violations, or self-assessments as they are performed by ORNL, OE identified the deficiency in this area with respect to lack of focus on DSA requirements in UT-Battelle management assessments. Although management assessments were being conducted for technical safety requirements compliance and unreviewed safety question determinations for hazard category 3 and above facilities,

no assessments were being conducted of compliance with DSA requirements, assumptions and limiting conditions. Additionally, for facilities below hazard category 3, assessments of material inventory conditions were not being performed to ensure that quantities were maintained below hazard category 3 threshold quantities. Further, there was no guidance or direction provided for the self-assessment program to address those issues. However, UT-Battelle has taken comprehensive steps to address this area. Thus, while no mitigation is provided for self-identification, 50 percent mitigation is provided for the corrective actions that have been taken.

It is also important to note that the mitigation provided in this enforcement action was in significant part provided in recognition of the positive steps that are being taken by you and your management team to improve nuclear safety performance at ORNL, including improvements in safety culture, work controls and assessment programs. I encourage you to maintain your personal involvement in this endeavor, because that involvement is critical to continuous improvement in safety performance at ORNL.

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 the NTS, DOE will determine whether further enforcement action is necessary to ensure compliance with DOE nuclear safety requirements. DOE will continue to monitor completion of corrective actions until these matters are resolved.

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
A. Rankin, EH-1
L. Young, EH-1
R. Collins, EH-6
H. Wilchins, EH-6
Docket Clerk, EH-6
R. Loesch, EH-31
R. Lagdon, EH-31
R. Orbach, SC-1
B. Parks, SC-31.1
R. Johnson, NE-1
J. Boda, NE-40
M. Hutmaker, NE-40
G. Boyd, DOE-ORO
R. Brown, DOE-ORO
G. Malosh, DOE-ORO
J. Moore, SC-ORO
R. Casteel, SC-ORO
D. Jenkins, UT-Battelle
R. Azzaro, DNFSB

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

UT-Battelle, LLC
Oak Ridge National Laboratory

EA-2005-06

As a result of a Department of Energy (DOE) evaluation of two events at the Oak Ridge National Laboratory (ORNL) and a facility at the Y-12 site but under the control of ORNL, multiple violations of DOE nuclear safety requirements by UT-Battelle (Contractor) were identified. The events included (1) facility hazard categorization and safety basis compliance issues involving nuclear materials in excess of hazard category 3 threshold quantities in Buildings 7982 and Area North of Building 2026 and (2) subsequent identification of Building 9204-3 at the Y-12 site also with similar hazard categorization and safety basis compliance issues not previously found through the evaluations and extent-of-condition analysis associated with the first event noted above. The Contractor also identified a related condition in the Limited Access Area of Building 7920, a hazard category 2 nuclear facility, where the material being placed in waste containers exceeded limiting conditions in the Building 7920 Documented Safety Analysis.

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 and Work Process Violations

A. Violations Associated With Development of a Documented Safety Analysis

10 CFR 830.202, *Safety Basis* requires that “the contractor responsible for a hazard category 1, 2 or 3 DOE nuclear facility must establish and maintain the safety basis for the facility.”

10 CFR 830.201, *Performance of Work*, requires that “A contractor must perform work in accordance with the safety basis for a hazard category 1, 2, or 3 DOE nuclear facility and, in particular, with the hazard controls ...”

10 CFR 830.204(b), *Documented Safety Analysis*, requires the DSA to identify the hazards, evaluate abnormal and accident conditions, and derive hazard controls to protect workers, the public and the environment.

10 CFR 830.205, *Technical Safety Requirements*, requires “A contractor responsible for a hazard category 1, 2 or 3 nuclear facility must: (1) Develop technical safety requirements that are derived from the documented safety analysis; (2) Prior to use, obtain DOE approval of technical safety requirements ...”

10 CFR 830.207, *DOE Approval of Safety Basis*, requires that “By April 10, 2003, a contractor responsible for a hazard category 1, 2, or 3 existing DOE nuclear facility must submit for DOE approval a safety basis that meets the requirements of this Subpart.”

Contrary to the above, adequate safety measures were not taken for radioactive materials in Buildings 7982 and 9204-3 and Area North of Building 2026, although each had radioactive material inventories that exceeded hazard category 3 threshold quantities, and thus qualified as hazard category 3 nuclear facilities. For example:

1. No documented safety basis was established and maintained for these facilities.
2. Work at these nuclear facilities was not performed in accordance with a safety basis and hazard controls.
3. No identification of hazards, analysis of accidents, and derivation of hazard controls was established in a DSA.
4. No technical safety requirements were developed for these facilities, nor approval by DOE of technical safety requirements obtained.
5. No DSA was submitted to DOE for approval for these facilities by April 10, 2003, or subsequently.

B. Unreviewed Safety Question Procedure Violation

10 CFR 830.203, *Unreviewed Safety Question Process*, requires “The contractor responsible for a hazard category 1, 2 or 3 nuclear facility must implement the DOE-approved USQ process in situations where there is a: ... (4) Potential inadequacy of the documented safety analysis because the analysis potentially may not be bounding or may be otherwise inadequate.”

Contrary to this requirement Contractor did not properly follow its DOE-approved USQ procedure “Making Unreviewed Safety Question Determinations (USQDs),” September 26, 2003, when the Building 7982 extent-of-condition analysis revealed a similar situation at Building 2026. The USQ review concluded that the waste

inventory exceeding authorized limits for Building 2026 was a negative USQ. That USQD contained a conclusion that no new accidents or accidents different than those already analyzed were created. However, the designated Waste Storage Area is located outside the building adjacent to a roadway, and a vehicle accident could damage and/or cause release of radioactive materials in the waste storage area not previously considered for material inside Building 2026. Contractor's USQ procedure requires that if the response to any of the listed seven questions is yes, then a USQ exists and the issue is to be submitted to DOE for approval. One of those questions is - "Could the change create the possibility of a different type of accident than any previously evaluated in the documented safety analysis?" Accordingly, the Contractor procedure for conducting USQ determinations was not met for the Building 2026 condition.

C. Safety Basis Work Process Violations

10 CFR 830.122(e), *Quality Assurance Criteria, Criterion 5 –Performance/Work Processes*, 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."

Contrary to the above, several examples of failure to incorporate requirements (standards, administrative controls, and other hazard controls) into approved instructions, procedures or other means were identified:

1. For Building 7982, the September 15, 1997, Preliminary Hazard Screening (PHS-03/PX/Rev. 0, IT-21) limit of 500 mCi for radioactive material quantities was not incorporated into work control procedures. Thus, adequate controls for the radiological hazards were not developed.
2. For Buildings 7982 and 9204-3 and Area North of Building 2026, Contractor failed to establish adequate procedural control on radiological material inventory levels to ensure hazard category 3 threshold quantities were not exceeded.
3. Contractor's general procedures that governed waste operations or waste movement failed to include measures, including hazard categorization, to ensure that such activities did not affect radiological material inventory limits.
4. A change in waste profiling methodology occurred during the time interval in which these facilities exceeded hazard category 3 threshold quantities. Contractor procedures were not adequate to ensure that Facility Safety Engineers were aware of the changed methodology so that they could evaluate impacts on hazard categorization and safety basis.
5. Contractor's procedure "Determining Facility or On-site Transportation Activity Hazard Category," dated March 12, 2004, requires that the facility manager for facilities below the hazard category 3 threshold quantity maintain the inventory at

less than the hazard category 3 threshold. However, for Buildings 7982 and 9204-3 and Area North of Building 2026, the facility managers failed to maintain the inventory at less than hazard category 3 limits.

6. For Building 7920, Contractor failed to establish controls incorporating the preliminary hazard analysis initial condition activity limits of 500 mCi for waste drums staged in the Limited Access Area (LAA), and failed to comply with such activity limits in the preliminary hazard analysis for the LAA of Building 7920.

Collectively, these violations constitute a Severity Level II problem.

Civil Penalty - \$27,500

II. Quality Improvement – Problem Identification

10 CFR 830.122(c), Criterion 3 – *Management/Quality Improvement*, requires that the contractor “(1) Establish and implement processes to detect and prevent quality problems...(3) Identify the causes of problems and work to prevent recurrence as a part of correcting the problem.”

Contrary to the above, several violations occurred related to quality improvement requirements, namely:

- A. Contractor processes were inadequate over several years to identify and correct the hazard categorization and documented safety analysis deficiencies for these facilities. The multiple examples of facilities at ORNL that exceeded hazard category 3 threshold quantities existed for several years. Building 7982 and Area North of Building 2026 exceeded hazard category 3 threshold limits since November 2000 and August 2001, respectively. Building 9204-3 exceeded hazard category 3 threshold limits under Contractor’s stewardship from commencement of their contract.
- B. Contractor did not adequately respond to prior notice of a similar problem in an enforcement action for Los Alamos in December 2002 (EA-2002-05). That action involved accumulation of waste causing hazard category threshold quantities to be exceeded, and the facility having no DSA.
- C. Contractor did not adequately respond to prior notice of a similar problem in an enforcement action in November 2003 for Bechtel Jacobs Corporation (BJC) in Oak Ridge (EA-2003-09). That action included a finding by DOE that BJC did not have controls in their waste handling and generation procedures to ensure that such activities and movements did not affect the hazard categorization of facilities. As a result of the Building 7982 event, Contractor concluded that it had a similar problem with ORNL procedures.

- D. DOE issued Subpart B to Part 830, effective February 9, 2001, with requirements to evaluate facilities and submit a safety basis for hazard category 1, 2 and 3 DOE facilities by April 10, 2003. At that time, Contractor had another opportunity to identify the facility hazard categorization and safety basis deficiencies for these facilities. However, the Contractor's review was not sufficiently comprehensive at that time to detect these problems.
- E. Contractor conducted an initial extent-of-condition review in October 2004 for the Building 7982 hazard categorization and safety basis issue ("EOC Review for 7982 Waste Occurrence, NTS-ORO-ORNL-X10REDC-2004-002, Action #2, ACTS Action #6856.1.7"). That extent-of-condition review, while positive in finding the problem in the Area North of Building 2026, was not sufficiently comprehensive in that it only looked at waste storage areas in the Non-reactor Nuclear Facilities Division. It failed to identify the Building 9204-3 problem or the potential radiological inventory issues with the other facilities identified in the subsequent extent-of-condition review conducted by Washington Group International (Report WSMS-OR-05-001, Revision 1, May 2005).

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty - \$55,000

III. Management Assessment Issues

10 CFR 830.122(i), Criterion 9 – *Assessment/Management Assessment* requires that the contractor "Ensure managers assess their management processes and identify and correct problems that hinder the organization from achieving its objectives."

Contrary to the above, Contractor's management assessments (self-assessments as they are called at ORNL) and management assessment program were not adequately focused on identification of safety basis issues. For example:

- A. Contractor could identify no management assessments of these facilities that focused on hazard categorization or ensuring that radiological material inventories were below hazard category 3 threshold quantities.
- B. The Contractor's management or self assessment program does not establish controls to ensure that such assessments regularly focus on, among other safety issues, compliance with safety basis requirements, assumptions or limiting conditions, nor focus on radiological material inventories to ensure compliance with hazard categorization and safety basis requirements of Part 830.

Collectively, these violations constitute a Severity Level II problem.
Civil Penalty - \$27,500

Pursuant to the provisions of 10 CFR 820.24, UT-Battelle, LLC, is hereby required within 30 days of the date of this Preliminary Notice of Violation (PNOV) to submit a written reply to the 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 Oak Ridge Office; Assistant Secretary of Science; and Director, Office of Nuclear Energy. 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 will 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 remission or further 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 civil penalty, unless the violations are denied, or remission or additional mitigation is requested, UT-Battelle, LLC, shall pay the civil penalty of \$110,000 imposed under section 234a of the Act by check, draft or money order payable to the Treasurer of the United States (Account 891099) mailed to the Director, Office of Price-Anderson Enforcement, Attention: Office of the Docketing Clerk, at the above address.

If UT-Battelle, LLC, should fail to answer within the time specified, the Contractor will be issued an order imposing the civil penalty. Should additional mitigation of the proposed civil penalty be requested, UT-Battelle, LLC, 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 16th day of December 2005

ENFORCEMENT CONFERENCE SUMMARY

ORNL Facility Categorization and Waste Inventory Issues

On October 25, 2005, the Department of Energy's Office of Price-Anderson Enforcement (OE) held an Enforcement Conference with UT-Battelle, LLC in Germantown, Maryland. The meeting was called to discuss the facts, circumstances, and corrective actions pertaining to two events at the Oak Ridge National Laboratory (ORNL) involving facility categorization and waste inventory issues.

Mr. Stephen Sohinki, Director, Office of Price-Anderson Enforcement, called the meeting to order. Mr. Sohinki stated that OE had convened the meeting to: (1) address the issues discussed in the September 23, 2005 Investigation Summary Report; (2) discuss corrective actions taken to prevent recurrence; and (3) discuss mitigation factors for OE consideration. Information and key areas discussed at the conference are summarized below, and material provided by UT-Battelle during the conference was incorporated into the docket.

Dr. Jeffrey Wadsworth, ORNL Laboratory Director for UT-Battelle, began the presentation by providing an overall personal and laboratory perspective of safety, in general, and nuclear safety at the Laboratory. He expressed the goal of UT-Battelle to become world class in safety and that goal's consistency with being world class in its research and isotope production missions. Dr. Kelly Beierschmitt, Director of Nuclear Operations at ORNL, then discussed the perspective of the integration of a series of focus areas that address nuclear operational and safety issues. Nuclear safety culture principles and concepts, as identified by the Institute of Nuclear Power Operations and the International Atomic Energy Agency, were used to conduct a baseline survey of current attitudes and behaviors by ORNL staff. Some of the results were shared at the Enforcement Conference.

Mr. Tim Powers, Division Director, Nonreactor Nuclear Facilities Division at ORNL discussed the facility categorization and associated waste inventory issues, reporting, initial extent-of-condition analyses performed, immediate actions and final disposition of the materials.

Ms. Karen Downer, Director, Environment, Safety, Health and Quality at ORNL discussed the timelines of the events, causal analyses, extent-of-condition analyses, initial corrective actions and UT-Battelle's management's unfolding revelation of the

scope of the facility categorization issues. The need for a more comprehensive scrub of all nuclear facility inventories was recognized simultaneously by both the ORNL DOE Site Office and UT-Battelle management. Independent reviews of the programmatic issues and actual physical inventory of radiological materials were undertaken by UT-Battelle and the results of those reviews were discussed. Continuing actions to resolve remaining potential facility categorization issues were discussed with estimates for completion presented.

Mr. Tim Powers then presented UT-Battelle's approach to addressing radiological facilities that could potentially contain Hazardous Category Level 3 quantities of nuclear materials as identified in their independent reviews. This approach included more formal management controls that UT-Battelle believes will provide confidence that radiological materials will be controlled in accordance with their safety bases. He also discussed, with input from other UT-Battelle management attendees, the reduction in nuclear facility footprints to better use constrained resources at the Laboratory. He continued discussion of the extent-of-condition analyses, associated causes identified for the events and corrective actions undertaken by the Laboratory.

Dr. Kelly Beierschmitt then concluded the discussion by stating that UT-Battelle believes it has developed a comprehensive response to the issues identified. This response relies on a defense-in-depth approach and UT-Battelle believes it significantly strengthens their nuclear operations and safety program.

Mr. Steve Sohinki stated that DOE would consider the information presented by UT-Battelle together with the entire record when OE undertakes its enforcement deliberations. Mr. Sohinki then adjourned the conference.

October 25, 2005

UT-Battelle, LLC
Oak Ridge National Laboratory
Facility Categorization and Waste Inventory Issues

List of Attendees

Office of Price-Anderson Enforcement

Stephen M. Sohinki, Director
Howard M. Wilchins, Counsel
Ronald E. Collins, Senior Enforcement Officer
Leslie Bermudez, Safety Engineer Enforcement Officer
Phil Wilhelm, Senior Enforcement Officer
Hank George, Technical Advisor

Office of Nuclear Energy

Matt Hutmaker, ORNL Nuclear Facilities Manager
Joe Boda, Facilities Program Manager

Office of Science

Barry Parks, PAAA Coordinator

Office of Environment, Safety and Health

Earl Carnes, Human Performance/INPO Coordinator

Oak Ridge Operations Office (DOE)

Johnny Moore, Deputy Assistant Manager for Science
Roger Casteel, PAAA Coordinator

UT-Battelle, LLC

Jeff Wadsworth, ORNL Director
Jeff Smith, Deputy of Operations
Kelly Beierschmitt, Director of Nuclear Operations
Debbie Jenkins, PAAA Coordinator
Tim Powers, NNFD Director
Karen Downer, ESH&Q Director
Crystal Schrof, Senior Assistant General Counsel