Department of Energy
Washington, DC 20585

June 16, 2015

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dr. Thomas Mason
Laboratory Director
UT-Battelle, LLC
1201 Oak Ridge Turnpike
Suite 100
Oak Ridge, Tennessee 37830

WEA-2015-05

Dear Dr. Mason:

This letter refers to the Office of Enterprise Assessments Office of Enforcement's investigation into the facts and circumstances associated with the implementation of the UT-Battelle, LLC (UTB) worker safety and health program elements for the assessment and control of ergonomic and material handling hazards related to three events at Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee. The Office of Enforcement provided the results of the investigation to UTB in an investigation report dated February 12, 2015. An enforcement conference was convened on March 24, 2015, with you and members of your staff to discuss the report's findings and UTB's response. A summary of the enforcement conference and list of attendees is enclosed.

The Department of Energy (DOE) considers the material handling and ergonomic program deficiencies at ORNL, made evident by one manual lifting event and two material handling events between June 2013 and June 2014, to be of high safety significance. UTB's inadequate implementation of this program contributed to actual or potential injuries to workers engaged in material handling activities. Specifically, two of the three events resulted in severe injuries to workers, and one of these two could have resulted in a fatality. In the third event, a worker narrowly avoided a potentially serious injury by stepping away from a falling laboratory glovebox weighing approximately 800 pounds.

Based on an evaluation of the evidence in this matter, including information presented at the enforcement conference, DOE concludes that UTB violated requirements prescribed under 10 C.F.R. Part 851, *Worker Safety and Health Program*. Accordingly, DOE hereby issues the enclosed Preliminary Notice of Violation (PNOV), which cites three Severity Level I violations and one Severity

Level II violation with a total proposed base civil penalty, before mitigation, of $262,500.

Because the violations were identified through self-disclosing events, DOE is not granting mitigation for timely self-identification and reporting. DOE acknowledges UTB's post-incident measures, which included a common cause analysis of eight ergonomics and material handling events that occurred from June 2013 to August 2014 (three of the eight events are the subject of this PNOV). DOE also recognizes that UTB identified the need to address laboratory cultural issues in order to improve material handling performance. To this end, UTB enlisted the assistance of external subject matter experts to drive the necessary long-term behavioral and performance changes among management and field personnel and prevent recurrence of such events in the future.

In consideration of these factors, DOE has concluded that 50 percent mitigation is warranted for UTB's actions addressing the Part 851 violations cited in the enclosed PNOV. As a result, the proposed mitigated civil penalty is $131,250.

Pursuant to 10 C.F.R. § 851.42, *Preliminary Notice of Violation*, you are obligated to submit a written reply within 30 calendar days of receipt of the enclosed PNOV and to follow the instructions specified in the PNOV when preparing your response. If you fail to submit a reply within 30 calendar days, then in accordance with 10 C.F.R. § 851.42(d), you relinquish any right to appeal any matter in the PNOV, and the PNOV, including the proposed civil penalty assessment, will constitute a final order.

After reviewing your reply to the PNOV, including any proposed additional corrective actions entered into DOE's Noncompliance Tracking System, DOE will determine whether any further activity is necessary to ensure compliance with DOE worker safety and health requirements. DOE will continue to monitor the completion of corrective actions until this matter is fully resolved.

Sincerely,

Steven C. Simonson

Steven C. Simonson
Director
Office of Enforcement
Office of Enterprise Assessments

Enclosures: Preliminary Notice of Violation (WEA-2015-05)
Enforcement Conference Summary
Enforcement Conference List of Attendees

cc: Johnny Moore, DOE-SC OSO
Debbie Jenkins, UT-Battelle

Enclosure 1

Preliminary Notice of Violation

UT-Battelle, LLC
Oak Ridge National Laboratory

WEA-2015-05

A U.S. Department of Energy (DOE) investigation into the facts and circumstances related to program elements for the assessment and control of ergonomic and material handling hazards revealed multiple violations of DOE worker safety and health requirements by UT-Battelle, LLC (UTB). DOE's investigation included an evaluation of recent events at Oak Ridge National Laboratory (ORNL) that resulted in serious injury to two workers. DOE provided UTB with an investigation report dated February 12, 2015, and convened an enforcement conference on March 24, 2015, with UTB representatives to discuss the report's findings and UTB's response. A summary of the conference and list of attendees is enclosed.

Pursuant to Section 234C of the Atomic Energy Act of 1954, as amended, and DOE regulations set forth at 10 C.F.R. Part 851, *Worker Safety and Health Program*, DOE hereby issues this Preliminary Notice of Violation (PNOV) to UTB. The violations included deficiencies in: (1) management responsibilities; (2) hazard identification and assessment; (3) hazard prevention and abatement; and (4) manual material handling limits and training and information. DOE has grouped and categorized the violations as three Severity Level I violations, and one Severity Level II violation.

Severity Levels are explained in Part 851, Appendix B, *General Statement of Enforcement Policy*. Section VI(b)(1) states that "[a] Severity Level I violation is a serious violation. A serious violation shall be deemed to exist in a place of employment if there is a potential that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment."

Section VI(b)(2) states that "[a] Severity Level II violation is an other-than-serious violation. An other-than-serious violation occurs where the most serious injury or illness that would potentially result from a hazardous condition cannot reasonably be predicted to cause death or serious physical harm to employees but does have a direct relationship to their safety and health."

Because the violations were identified through self-disclosing events, DOE is not granting mitigation for timely self-identification and reporting. DOE acknowledges UTB's post-incident measures, which included a common cause analysis of eight ergonomics and material handling events that occurred from June 2013 to August 2014 (three of the eight events are the subject of this report). The common cause analysis identified statements of topics on which to focus corrective actions. DOE also recognizes UTB's identification of the need to address cultural issues to satisfactorily improve material handling performance. To this end, UTB enlisted the

assistance of external subject matter experts to drive the necessary long term behavioral and performance changes among management and field personnel to prevent recurrence of such events. After consideration of these factors, DOE has concluded that 50 percent mitigation is warranted for UTB's responses that address the Part 851 violations described in this PNOV. As a result, the proposed mitigated civil penalty is $131,250.

As required by 10 C.F.R. § 851.42(b) and consistent with Part 851, appendix B, the violations are listed below. If this PNOV becomes a final order, then UTB may be required to post a copy of this PNOV in accordance with 10 C.F.R. § 851.42(e).

I. VIOLATIONS

A. Management Responsibilities

Title 10 C.F.R. § 851.10, *General requirements*, subsection (a), states that "[w]ith respect to a covered workplace for which a contractor is responsible, the contractor must: . . . (2) [e]nsure that work is performed in accordance with: (i) [a]ll applicable requirements of [10 C.F.R. Part 851]; and (ii) [w]ith the worker safety and health program for that workplace."

Title 10 C.F.R. § 851.20, *Management responsibilities and worker rights and responsibilities*, subsection (a) states that: "[c]ontractors are responsible for the safety and health of their workforce and must ensure that contractor management at a covered workplace: . . . (3) [a]ssign worker safety and health program responsibilities, evaluate personnel performance, and hold personnel accountable for worker safety and health performance."

UTB Management System document *Worker Safety and Health Program* (WSHP), Issue Date: May 21, 2013, paragraph 4.0, *Worker Safety and Health Program*, subparagraph 4.1, *Management Responsibilities*, section 4.1.1, *Place of Employment Free of Recognized Hazards*, states that "[t]he 10 CFR 851, *Worker Safety and Health Program*[,] requires ORNL and ORNL sub-contractors and lower tier subcontractors, to provide a place of employment that is free from recognized hazards that are causing or have the potential to cause death or serious physical harm to workers." The document further states that "[t]his provision is addressed through this program description and the Worker Safety and Health Policies for [ORNL]." Finally, "[a]s part of the Policies, ORNL has adopted the following principles:

- "Provide a safe and healthy workplace by developing and implementing work processes and equipment that abate hazards.
- Maintain a culture where individuals performing work understand and support the concept that all injuries are preventable.
- Comply with applicable requirements for performing work and work-related activities on and off site, including requirements in ORNL's Standards Based Management System."

Contrary to the above requirements, UTB failed to adequately ensure that work was performed in accordance with the applicable requirements of 10 C.F.R. Part 851 and with the provisions of its WSHP regarding manual material handling and movement of equipment. UTB failed to adequately assign worker safety and health responsibilities or evaluate personnel performance regarding these responsibilities. Specific examples include the following:

1. UTB did not adequately ensure that supervisors and managers implemented processes and equipment that abated hazards, maintained a culture where individuals understood and supported the concept that all injuries are preventable, and complied with requirements for performing work on and off site. For example:

   a. During ORNL lagoon work on June 3, 2013, UTB did not address concerns voiced by workers about the weight of pipes to be manually lifted and relocated a distance of approximately 30 feet. The two pipes that were moved on the day of the event weighed 220 and 270 pounds.
   b. UTB did not ensure that supervision at the ORNL Excess Property Sales Warehouse was adequately engaged in work planning and oversight on March 31, 2014, to mitigate hazards from the transport of a surplus scattering chamber that weighed approximately 1,585 pounds. UTB personnel moved the high center-of-gravity (CG) chamber while it was mounted on a cart that was not intended for transport.
   c. During the move of a new M Braun glovebox and stand into ORNL building 7920, laboratory 209, on June 4, 2014, UTB did not effectively recognize that hardware and task conditions had changed from those covered by the work package and did not pause or stop work to address the unanalyzed hazards. The improper use of one, instead of two, hydraulic lifts caused the glovebox, which weighed approximately 800 pounds, to fall and narrowly miss hitting one rigger.

2. UTB personnel did not recognize the hazards revealed by a precursor event on February 24, 2014, during transport of the scattering chamber to the Excess Property Sales Warehouse, at which time the chamber shifted and punctured the side wall of the delivery truck. The UTB supervisor did not make appropriate notifications, recognize that the event provided an indication of the chamber's top-heavy configuration, or reassess the material handling aspects of the move as a result of the incident. Such a re-evaluation might have prevented the warehouse worker injury accident that resulted from inappropriate material handling techniques.

Collectively, these noncompliances constitute a Severity Level I violation.
Base Civil Penalty – $75,000
Proposed Civil Penalty - $37,500

B. Hazard Identification and Assessment

Title 10 C.F.R. § 851.21, *Hazard identification and assessment*, subsection (a), states: "[c]ontractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness" and "[p]rocedures must include methods to: (1) [a]ssess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring;… (4) [a]nalyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards; (5) [e]valuate operations, procedures, and facilities to identify workplace hazards; (6) [p]erform routine job activity-level hazard analyses; and… (8) [c]onsider interactions between workplace hazards and other hazards such as radiological hazards." Subsection (c) states that "[c]ontractors must perform the activities identified in paragraph (a) of this section, initially to obtain baseline information and as often thereafter as necessary to ensure compliance with the requirements in this Subpart."

Title 10 C.F.R. § 851.23, *Safety and health standards*, subsection (a) states: "[c]ontractors must comply with the following safety and health standards that are applicable to the hazards at their covered workplace:…. (9) American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values (TLV®) for Chemical Substances and Physical Agents and Biological Exposure Indices," (2005) . . . " Subsection (b) states that "[n]othing in this part must be construed as relieving a contractor from complying with any additional specific safety and health requirements that it determines to be necessary to protect the safety and health of workers."

The ACGIH® *Lifting* TLV®, Table 1, *TLVs® for Lifting Tasks*, states a maximum value of 32 kilograms (70.5 pounds) for lifts "close" to the body and travel distance of from "knuckle height to below [the] shoulder."

The ACGIH® *Lifting* TLV® further states that "[i]n the presence of any factor(s) or working condition(s) listed below, professional judgment should be used to reduce weight limits below those recommended in the TLVs®:

- "High asymmetry: lifting more than 30 degrees away from the sagittal plane…
- One-handed lifting…
- Constrained lower body posture, such as lifting while seated or kneeling…
- Lifting unstable objects (e.g., liquids with shifting center of mass or lack of coordination or equal sharing in multi-person lifts)…
- Poor hand coupling: lack of handles, cut-outs, or other grasping points…
- Unstable footing (e.g., inability to support the body with both feet while standing)."

The National Institute for Occupational Safety and Health (NIOSH) *Applications Manual for the Revised NIOSH Lifting Equation*, publication number 94-110, dated January 1994, *NIOSH Lifting Equation*, calculates a Single Task Analysis Recommended Weight Limit (RWL) of approximately 51 pounds under the most permissive conditions (i.e., those allowing the greatest manual lift weight).

Title 10 C.F.R. § 851, Appendix A, Functional Area 6, *Industrial Hygiene*, states that: "[c]ontractors must implement a comprehensive industrial hygiene program that includes at least the following elements: (a) [i]nitial or baseline surveys and periodic resurveys and/or exposure monitoring as appropriate of all work areas or operations to identify and evaluate potential worker health risks; (b) [c]oordination with planning and design personnel to anticipate and control health hazards that proposed facilities and operations would introduce; (c) [c]oordination with cognizant occupational medical, environmental, health physics, and work planning professionals."

The UTB WSHP, paragraph 4.0, *Worker Safety and Health Program*, subparagraph 4.4, *Hazard Prevention and Abatement*, states that "[l]aboratory wide procedures for hazard prevention and abatement are presented in the following subject areas and subject area procedures:

- "*Occupational Hazard Control*
- *Work Control*
- *Proposing Research Work*
- *Implementing ISM* [Integrated Safety Management] *in Research and Development*
- *Work Control for Operations, Maintenance and Services*
- *Implementing ISM in Office Environments*
- *Maintaining ISM in Laboratory Space*."

The UTB WSHP, *Occupational Hazard Control*, dated March 3, 2014, *Guideline: Exposure Assessment Decision Tool*, paragraph 2, *Physical Hazards*, states: "When assessing a manual lift, the hierarchy of limits and evaluation methods are recommended as follows:

1. The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs)…
2. The National Institute of Occupational Safety and Health (NIOSH) Revised Lifting Equation for lifts that are not classified as a mono-lifting task…
3. Other consensus organizations limits/evaluation methods such as found in the Canadian Centre of Occupational Health and Safety (CCOHS)."

The UTB WSHP, subparagraph 4.4, further states that "[t]he selection of hazard controls is based on the following hierarchy:

- "Elimination or substitution;
- Engineering controls;
- Work practice and administrative controls; and
- Personal protective equipment."

The UTB WSHP, Appendix C, *Functional Area Descriptions*, Section C.6, *Industrial Hygiene*, states that "[t]he [industrial hygiene] program captures the following…elements:

- "Initial or baseline surveys of all work areas or operations to identify and evaluate potential worker health risks….

- Initiate periodic resurveys and/or exposure monitoring as appropriate.
- Conduct/document exposure assessments for chemical, physical (non-radiological), and biological agents/stressors using peer recognized exposure assessment methodologies….
- Use of appropriate industrial hygiene standards."

Contrary to the above requirements, UTB failed to adequately identify and assess hazards before the start of work involving manual material handling and movement of laboratory equipment. Additionally, UTB failed to adequately consider the interactions among workplace hazards that aggravated workplace conditions related to the material handling tasks. Specific examples include the following:

1. During two mechanically assisted material handling events, UTB did not effectively evaluate workplace operations and procedures to identify workplace hazards, consider interactions between workplace hazards, or perform hazard assessments as often as necessary after the initial baseline to ensure compliance with requirements.

    a. UTB did not adequately assess workplace operations and procedures during the sequential transport of a surplus scattering chamber weighing approximately 1,585 pounds. Through a series of material handling steps, the scattering chamber was moved between locations and ultimately fell onto, and severely injured, a UTB Salvage Handler employee due to a number of interrelated factors, including its high CG/unstable configuration, small diameter transport wheels, irregular working surfaces, and the position of the injured worker on a downward incline from the load. Furthermore, UTB did not ensure that the work plan hazard analysis included an evaluation of all the hazard factors and a previously-identified "riggers needed" notation.

    b. UTB did not adequately reassess the potential material handling hazards from changes in hardware configurations and mechanical lift equipment, and the interaction between hazards, when moving a new M Braun glovebox into building 7920, laboratory 209, on June 4, 2014. UTB did not reassess the potential hazards from using only one hydraulic lift instead of the two that had been used previously. Additionally, UTB did not fully account for the potential interactions between the separate material handling (physical) and radiological (health) hazards presented by moving the glovebox into a congested and active radiological lab.

2. UTB did not adequately identify and assess hazards before the start of ORNL lagoon work on June 3, 2013. UTB did not include the tasks of lifting and moving pipes in the lagoon work order and did not establish the weight of the pipes (220 and 270 pounds) in advance of the work to determine whether mechanical lift assistance would be necessary. Furthermore, UTB did not consider the interactions among workplace hazards that aggravated the lagoon pipe manual lifts, including the need to carry the pipes across uneven gravel/grass walking/working surfaces, lack of hand-hold points to grasp and carry the pipes, multiple-person lifts, and potential lift asymmetry due to the pipe length.

3. On multiple ORNL work orders, UTB did not effectively evaluate operations or assess hazards related to manual lifting. Specific examples include:

   a. High Flux Isotope Reactor (HFIR) work plan #39783, *Rebuild Spare Magnet Assemblies*, Rev 21, created August 15, 2011, and completed on October 23, 2013, incorporated a job hazard analysis (JHA) that identified manual lifting as a hazard and identified "proper lifting technique" and "multiple person lifts" as hazard controls. The Qualitative Exposure Assessment (QEA) that supplemented the JHA identified the Process/Task/Job as manual lifting of a magnet assembly weighing approximately 188 pounds with a "variable" frequency and duration of exposure. The QEA Agent and Control Information section codes specified only administrative controls and did not specify codes for engineering controls. The QEA classified the manual lifting of the 188 pound magnet as an acceptable and "low risk" hazard.

   HFIR work plan #40439, *Replace Magnet Assembly on Rod Drive #2*, Rev 21, created July 18, 2013, and completed on April 29, 2014, incorporated a JHA that identified manual lifting as a hazard. The JHA stated: "Magnet weighs 188 pounds" and "use 2-3 people for lift if conditions allow" as hazard controls. The QEA that supplemented the JHA identified the Process/Task/Job as manual lifting of a magnet assembly weighing approximately 188 pounds, with a "variable" frequency and duration of exposure. The QEA Agent and Control Information section codes specified only administrative controls in the form of "training" and "written procedures/plan" and did not specify codes for engineering controls. The QEA classified the manual lifting of the 188 pound magnet as an acceptable and "low risk" hazard.

   UTB did not effectively evaluate operations or assess hazards for the HFIR work plans identified above (#39783 and #40439) in that it did not provide adequate justification for excluding the 188 pound magnet manual lift from consideration under the ACGIH® Lifting TLVs®. UTB did not consider the factors the TLVs cite as reasons to reduce the safe or allowable weight limits, such as high asymmetry, one-handed lifting, constrained body posture, lifting of unstable objects (e.g., lack of coordination or equal sharing in multi-person lifts), poor hand coupling, and unstable footing. Finally, UTB did not consider other industrial hygiene standards for manual lifting limits that would apply in the absence of the TLVs, such as the NIOSH Lifting Equation, publication number 94-110, which calculates limits for single task lifts.

   b. Spallation Neutron Source (SNS) JHA #1324762, *Build Ion Column Flushing System*, dated September 26, 2012, identified potential task hazards, including "Strains from manual lifting of pump components." The mitigating actions stated for this hazard were "[u]se proper lifting techniques" and "avoid lifting awkward [sic] or items greater than 50 lbs. without assistance." UTB did not effectively implements its process to evaluate operations and assess hazards in that it did not specify the weight of the objects being lifted, the frequency and duration of the manual lifts, or the starting and destination points of the lifts. Depending on these factors, manual lift weights less than 50 pounds could exceed the ACGIH® TLVs® and thus present the potential for worker injury.

c. Research Hazard Analysis and Control System (RHACS) Research Safety Summary (RSS) Report #5189.7, *CNMS Compressed Gas Cylinder Storage Area (CNMS Loading Dock)*, last modified on August 13, 2014, stated that compressed gas operations involve ergonomic hazards. Control notes included: "Personnel shall use gas cylinder handling devices, work within personal limits, and seek assistance as required." RSS #5189.7 also states that "use of the 'Buddy System' is recommended if personnel need assistance manipulating cylinders." UTB did not effectively implement its process to evaluate operations and assess hazards in that it did not specify the weights of the cylinders or place a maximum value on "personal limits" for RHACS RSS #5189.7.

Collectively, these noncompliances constitute a Severity Level I violation.
Base Civil Penalty – $75,000
Proposed Civil Penalty - $37,500

C. Hazard Prevention and Abatement

Title 10 C.F.R. § 851.22, *Hazard prevention and abatement*, subsection (a), states that "[c]ontractors must establish and implement a hazard prevention and abatement process to ensure that all identified and potential hazards are prevented or abated in a timely manner." Subsection (a) further states: "(1) [f]or hazards identified either in the facility design or during the development of procedures, controls must be incorporated in the appropriate facility design or procedure." Subsection (b) states that "[c]ontractors must select hazard controls based on the following hierarchy: (1) [e]limination or substitution of the hazards where feasible and appropriate; (2) [e]ngineering controls where feasible and appropriate; (3) [w]ork practices and administrative controls that limit worker exposures; and (4) [p]ersonal protective equipment."

The UTB WSHP, subparagraph 4.4, states that "[t]he selection of hazard controls is based on the following hierarchy:

- "Elimination or substitution;
- Engineering controls;
- Work practice and administrative controls; and
- Personal protective equipment."

Contrary to the above requirements, UTB failed to adequately establish and implement a process to prevent identified and potential material handling hazards using the regulatory-required control hierarchy. Specific examples include the following:

1. UTB did not implement engineering controls, such as using a forklift or similar material handling equipment, to move two pipes that weighed 220 and 270 pounds a distance of about 30 feet during the ORNL lagoon work on June 3, 2013.

2. UTB did not implement either elimination/substitution or engineering controls for the move of a surplus scattering chamber, weighing approximately 1,585 pounds, at the ORNL Excess Property Sales Warehouse on March 31, 2014. UTB could have eliminated

the tip-over hazard from the top-heavy scattering chamber by either disassembling the unit and loading each component separately or using a forklift or other hoisting equipment to handle the chamber. UTB could have further eliminated, or at least minimized, hazard exposure for all personnel by arranging for customer pickup at the original chamber location (coupled with the prior engineering controls), thereby reducing the number of moves and consequent worker exposure.

3. UTB did not implement engineering controls in the form of an adequate number of lifts and appropriate cribbing for moving a new M Braun glovebox and stand into ORNL building 7920, laboratory 209, on June 4, 2014

4. HFIR work plans #39783 and #40439, identified manual lifting of a 188 pound magnet as a hazard. The JHA identified "proper lifting technique" and "multiple person lifts" as hazard controls. The QEA Agent and Control Information section codes specified only administrative controls in the form of "training" and "written procedures/plan." UTB did not ensure that the work plans communicated engineering controls, such as a mechanical lift, in preference to administrative controls, such as multiple-person manual lifts. Furthermore, UTB did not provide details of the equipment available in the workplace that would constitute a lifting aid as stated in the document.

5. SNS JHA #1324762 identified potential task hazards, including "Strains from manual lifting of pump components." UTB, via the JHA, identified mitigating actions for the hazard as "[u]se proper lifting techniques" and "avoid lifting awkward [sic] or items greater than 50 lbs. without assistance." UTB did not ensure that the work plans contained unambiguous statements about the engineering controls available in the work area for manual lifts of awkward items or those greater than 50 pounds.

Collectively, these noncompliances constitute a Severity Level I violation.
Base Civil Penalty – $75,000
Proposed Civil Penalty - $37,500

D. Manual Material Handling Limits and Training and Information

Title 10 C.F.R. § 851.25, *Training and information*, subsection (a), states that "[c]ontractors must develop and implement a worker safety and health training and information program to ensure that all workers exposed or potentially exposed to hazards are provided with training and information on that hazard in order to perform their duties in a safe and healthful manner." Subsection (c) states that "[c]ontractors must provide training and information to workers who have worker safety and health program responsibilities that is necessary for them to carry out those responsibilities."

Contrary to the above requirement, and those previously cited, UTB failed to use appropriate industrial hygiene standards and implement a training program to ensure that workers were provided with information on material handling hazards to perform their duties safely. Specific examples include:

1. UTB did not use appropriate lifting standards in that its human resource and medical physical requirement and job summary documents, which became manifest in work practices and employee understanding of lifting limits, specified as an essential function that workers have the ability to manually lift weights in excess of those specified by the ACGIH® Lifting TLVs® and the NIOSH RWLs. Additionally, UTB job documents did not reflect consideration of the factors or working conditions that the ACGIH® Lifting TLVs® cite as potentially further reducing the maximum safe or allowable weights. Specifically:

   a. UTB specified an essential function capability to lift a maximum of 100 pounds "frequently" for its machinist, boilermaker, rigger/iron worker and carpenter job titles.
   b. UTB specified an essential function capability to lift a maximum of 75 pounds "frequently" for its laborer job title.

2. HFIR work plans #39783 and #40439 identified manual lifting of a 188 pound magnet as a hazard. The JHA identified "proper lifting technique" and "multiple person lifts" by "2-3 personnel" as hazard controls. UTB did not consider that if only two workers performed the lift, as permitted in the work plan, each worker would support 94 pounds (assuming an even load distribution), exceeding both the ACGIH® TLV® maximum and the NIOSH RWL. Additionally, UTB did not consider factors or working conditions that would reduce the allowable lifting limits for the task, such as lift asymmetry, one-handed lifting, constrained lower body posture, lifting of an unstable object, poor hand coupling, and unstable footing.

3. UTB did not ensure that workers exposed to hazards from material handling operations were provided with training and information adequate to perform their duties safely. For example:

   a. UTB did not adequately train salvage handler workers and managers in the Excess Property Sales Warehouse to understand the risks of moving unstable loads, and the means of safely conducting such moves, for a 1,585 pound high-CG scattering chamber transported on February 24, 2014. Additionally, UTB did not document a pre-job briefing to cover the property work plan for this date and task for at least one salvage handler worker.
   b. UTB did not provide a pre-job briefing adequate to convey the material handling hazards to the riggers moving a new M Braun glovebox and stand into ORNL building 7920, laboratory 209, on June 4, 2014. UTB did not ensure that the task lead and riggers read and understood the work package task description and the related hazards of the glovebox move before starting the work.

4. UTB did not provide training and information to workers adequate to convey the maximum weight limits for manual lifts and the available engineering controls to provide mechanical assistance if the lifts exceeded manual limits. For example:

   a. UTB information documents provided conflicting values for manual lifts. UTB *Occupational Hazard Control* provided an ergonomic hazard guideline of 10 pounds'

weight for a tool or a part. In contrast, UTB physical requirements forms and job summaries required the ability to lift up to 100 pounds for many jobs. These widely divergent values caused confusion among ORNL personnel.

b. UTB did not provide training adequate to convey the manual weight limits. In interviews, personnel quoted permissible manual lift weight limits at ORNL as ranging from 10 to 100 pounds.
c. UTB did not provide training adequate to convey the engineering control options. In interviews, personnel indicated that training focused primarily on personal lifting technique and did not adequately cover mechanical lift assist options.

Collectively, these noncompliances constitute a Severity Level II violation.
Base Civil Penalty – $37,500
Proposed Civil Penalty - $18,750

II. REPLY

Pursuant to 10 C.F.R. § 851.42(b)(4), UTB is hereby obligated to submit a written reply within 30 calendar days of receipt of this PNOV. The reply should be clearly marked as a "Reply to the Preliminary Notice of Violation."

If UTB chooses not to contest the violations set forth in this PNOV, and the proposed civil penalties, then the reply should clearly state that UTB waives the right to contest any aspect of this PNOV, including the proposed civil penalties. In such case, the total proposed civil penalty of $131,250 must be remitted within 30 calendar days after receipt of this PNOV. Payment of the civil penalty must be made by check, draft, or money order payable to the Treasurer of the United States (Account 891099) and mailed to the address provided below. This PNOV will constitute a final order upon the filing of the reply.

If UTB disagrees with any aspect of this PNOV, including the proposed civil penalties, then as applicable and in accordance with 10 C.F.R. § 851.42(c)(1), the reply must: (1) state any facts, explanations, and arguments that support a denial of an alleged violation; (2) demonstrate any extenuating circumstances or other reason why the civil penalties should not be imposed or should be further mitigated; and (3) discuss the relevant authorities that support the position asserted, including rulings, regulations, interpretations, and previous decisions issued by DOE. In addition, 10 C.F.R. § 851.42(c)(2) requires that the reply include copies of all relevant documents.

Please send the appropriate reply by overnight carrier to the following address:

Director, Office of Enforcement
Attention: Office of the Docketing Clerk, EA-10
U.S. Department of Energy
19901 Germantown Road
Germantown, MD 20874-1290

A copy of the reply should also be sent to the Manager of the ORNL Site Office.

Pursuant to 10 C.F.R. § 851.42(d), if UTB fails to submit a written reply within 30 calendar days of receipt of this PNOV, UTB relinquishes any right to appeal any matter in this PNOV, and this PNOV, including the proposed civil penalties, will constitute a final order.

III. CORRECTIVE ACTIONS

Corrective actions that have been or will be taken to avoid further violations should be delineated with target and completion dates in DOE's Noncompliance Tracking System.

Steven C. Simonson
Director
Office of Enforcement
Office of Enterprise Assessments

Washington, D.C.
This 16th day of June 2015