Department of Energy

Washington, DC 20585

February 3, 2004

Mr. Alan Parker, [ ]
Kaiser-Hill Company, LLC
10808 Highway 93
Unit B
Golden, CO 80403-9200

EA 2004-02

Subject: Preliminary of Violation and Proposed Civil Penalty -$522,500

Dear Mr. Parker:

This letter refers to the recent investigation by the Department of Energy (DOE) at the Rocky Flats Environmental Technology Site (RFETS) of the March 2003 [ ] [radioactive material] uptake, the March 2003 building [ ] airflow reversal, the May 2003 building [ ] glovebox fire and the building [ ] Basis for Interim Operation/Technical Safety Requirements issues.

An Investigation Summary Report describing the results of that review was issued to you on November 24, 2003. An Enforcement Conference was held on December 16 and 17, 2003, 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 presented by Kaiser Hill, LLC (KHLL) representatives during the Enforcement Conference, DOE has concluded that violations of DOE's Nuclear Safety Management Rule (10 CFR 830) and Occupational Radiation Protection Rule (10 CFR 835) have occurred. The violations are described in the enclosed Preliminary Notice of Violation (PNOV).

Section I of the PNOV describes work process and radiological control violations associated with a March 31, 2003, [radioactive material] contamination event in [ ]. The event involved an inadequately secured contamination control sleeve which covered a radioactively contaminated air mover hose. The contamination spread occurred when the inadequately secured sleeve came loose in the worker's hands. As a result, radioactive contamination became airborne and was spread throughout the room. Two workers received [radioactive material] uptakes, the maximum uptake being 330 millirem (mrem) committed effective dose equivalent (CEDE).

Section II of the PNOV addresses violations associated with the March 2003 airflow reversal in building [ ] in which air movers were being connected to the building's

ventilation system without an adequate hazards analysis, work planning, and ventilation system monitoring. The air movers were intended to exhaust the fumes from a diesel-powered fork truck used in decommissioning activities. When the first air mover was being brought up to maximum flow, an airflow reversal occurred, and radioactive contamination from the contaminated ventilation system became airborne and spread throughout several rooms. DOE identified two significant deficiencies in the work planning and controls for this activity. First, key engineering assumptions used in determining the acceptability of adding additional airflow to the building's ventilation system were not verified, and were later found to be inaccurate. This directly contributed to the flow reversal. Second, KHLL personnel failed to monitor duct flow conditions when the air movers were started. As a result of this event, airborne contamination measurements equal to 352 derived air concentrations were recorded at the area's radiation control boundary, and several workers received uptakes of radioactive material, the highest dose being 220 mrem CEDE. Additionally, building management ordered a precautionary evacuation of the facility.

Section III of the attached PNOV addresses deficiencies associated with the building [ ] glovebox [ ] fire. Although the actual consequences of the fire were limited, the potential consequences were extremely significant. The event also highlighted programmatic deficiencies related to the combustible control program. DOE's investigation of this event identified multiple instances of failure to effectively implement procedural requirements relating to work planning, surveillance for combustibles, chemical decontamination, and emergency response. Notable among these was KHLL's failure to recognize the unique nature of the hazards associated with glovebox [ ] in the development of a work package and hazard analysis. Section III also cites deficiencies associated with KHLL assessments of the [ ] combustible control program. Although assessments of program implementation were performed, they were ineffective in identifying procedural deficiencies and accurately assessing the compliance status of the program.

Section IV of the PNOV addresses multiple violations related to building [ ] safety basis and quality assurance work process requirements. Safety basis requirements establish the limits and controls approved by DOE for the safe operation of nuclear facilities and to prevent unacceptable consequences in the event of an accident. DOE's review found that KHLL has repeatedly violated the safety basis requirements for building [ ]. DOE's review further determined that these violations were programmatic in nature and that fundamental causes of these violations had not been identified and addressed with effective corrective actions. In some cases, these violations existed for years without detection by KHLL management or independent assessment processes. These violations included inadequate control of combustible liquids stored in these facilities, the processing of unapproved campaign material in the [ ] [ ] system ([ ]), and the failure to control and properly store potentially vulnerable Type 3013 containers of weapons grade [radioactive material]. Although no actual harm to workers, the public, or environment resulted from these violations, they reflect a lack of discipline in formality of KHLL's operations. Additionally, had one of the

accidents postulated in the safety basis occurred, the violations could have resulted in significant adverse consequences.

Section IV.A of the PNOV addresses programmatic violations related to inadequate control of combustible material. Section IV.B addresses violations related to [ ] processing of unapproved materials and inadequate control and storage of Type 3013 containers. Section IV.C addresses training and qualification violations that were found to be a contributor or causal factor for a number of the safety basis and radiological control violations.

Section V of the PNOV addresses quality improvement violations that were identified during the DOE investigation. Section V.A addresses deficiencies with the KHLL investigation into the building [ ] airflow reversal event. The KHLL investigation attributed the event to equipment failure, rather than probing deeper to uncover more substantive issues in work planning and control. Section V.B addresses deficiencies related to the continuing failure to correct quality problems and the recurrence of similar problems with the combustible material control program in building [ ]. Even though corrective actions have been taken to address the history of prior events and identified deficiencies, these actions have proven ineffective in achieving long-term improvement and satisfactory performance.

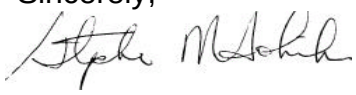
In accordance with the General Statement of Enforcement Policy, 10 CFR 820, Appendix A, the violations described in the PNOV have been classified as ten Severity Level II problems with an aggregate civil penalty of $522,500. In determining these Severity Levels, DOE considered the actual and potential safety significance associated with each event or issue under consideration and the programmatic and recurring nature of the violations. DOE has applied 50 percent mitigation to the violations associated with the March 31, 2003, [radioactive material] contamination event in building [ ] based on comprehensive and timely corrective actions. Further mitigation for identification and reporting was not applied since this was a self-disclosing event. For the remaining violations, no mitigation was considered for the self-identification and reporting of these violations because they were either self-disclosing events, long standing, DOE identified, or not reported into the Noncompliance Tracking System (NTS). Mitigation for the causal analyses and corrective actions was not considered for the remaining violations due to KHLL's incomplete causal analyses and ineffective corrective actions.

DOE continues to be concerned with KHLL's recurrent work control deficiencies as evidenced by the December 2003 hydrolasing event reported as NTS-RFO--KHLL-771OPS-2004-0001. This event involved the inappropriate modification of equipment and the failure to follow work control procedures, including radiation safety requirements, contained in the radiation work permit. As a result, radioactive contamination was spread outside the contained system and at least one worker received an uptake of [radioactive material].

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 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: F. Lockhart, RFFO
L. Bressler, PAAA Coordinator, RFFO
R. Sexton, PAAA Coordinator, KHLL
J. Roberson, EM-1
S. Johnson, EM-5
L. Vaughan, PAAA Coordinator, EM
A. Acton, IG-33
B. Cook, EH-1
A. Kindrick, EH-1
A. Weadock, OE
S. Adamovitz, OE
S. Zobel, OE
R. Azzaro, DNFSB
Docket Clerk, OE

PRELIMINARY NOTICE OF VIOLATION
and
PROPOSED IMPOSITION OF CIVIL PENALTY

Kaiser-Hill Company, LLC
Rocky Flats Environmental Technology Site

EA 2004-02

As a result of a Department of Energy (DOE) evaluation of the March 2003 building [ ] [radioactive material] uptake, the March 2003 building [ ] airflow reversal, the May 2003 building [ ] glovebox fire, and multiple Basis for Interim Operation (BIO)/Technical Safety Requirements (TSR) issues at buildings [ ] and [ ], a significant number of 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.

I. Violations Identified During the Investigation of the Building [ ] [Radioactive Material] Uptake

A. Work Control Deficiencies

10 CFR 830.122 (e), *Criterion 5 – Performance/Work Processes* requires that the contractor "(1) 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."

10 CFR 835.104 requires that "Written procedures shall be developed and implemented as necessary to ensure compliance with this part, commensurate with the radiological hazard created by the activity and consistent with the education, training, and skills of the individuals exposed to those hazards."

Contrary to the above, work performed in conjunction with positioning an air mover in building [ ], room [ ] on March 31, 2003, was not performed consistent with technical standards and administrative controls in that:

Procedure 3-PRO-228-RSP-01.02, Revision 0, *HEPA Ventilation and Radiological Engineered Controls*, Section 3 states "Ventilation units supplied with HEPA filtration present a hazard to workers if access is gained to the internal surfaces of the unit… All HEPA filtered ventilation equipment, once used to support radiological work, will be controlled as internally contaminated…Prior to moving any HEPA unit, ensure that the unit is properly contained, surveyed

and labeled." However, the high efficiency particulate air (HEPA) unit was not properly contained such that on March 31, 2003, the contamination control sleeve pulled loose in the radiological control technician's (RCT) hands. Subsequent investigation revealed that the sleeve had not been adequately taped to the hose in accordance with site training and procedural requirements. As a result, [radioactive material] contamination was spread throughout the room, becoming airborne, and two workers received unplanned, uncontrolled uptakes of [radioactive material] up to 330 millirem (mrem) committed effective dose equivalent (CEDE).

B. Radiological Control Deficiencies

10 CFR 835.1001(a) requires that "Measures shall be taken to maintain radiation exposure in controlled areas As Low As Reasonably Achievable (ALARA) through physical design features and administrative control. The primary methods used shall be physical design features (e.g., confinement, ventilation, remote handling, and shielding). Administrative controls shall be employed only as supplemental methods to control radiation exposure."

Contrary to the above, measures were not taken to maintain radiation exposures ALARA through the effective use of physical design features or administrative controls for the work performed on March 31, 2003, in [ ], room [ ] while positioning an air mover. Specifically, the containment sleeve was not taped securely to the open end of the contaminated air mover hose after previous use of the air mover and was not adequately inspected prior to use. As a result, the containment sleeve pulled off the hose and [radioactive material] contamination was spread throughout the room, becoming airborne, and two workers received unplanned, uncontrolled uptakes of [radioactive material] up to 330 mrem CEDE.

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

II. Violations Identified During the Investigation of the [ ] Airflow Reversal

10 CFR 835.1001(a) requires that "Measures shall be taken to maintain radiation exposure in controlled areas ALARA through physical design features and administrative control. The primary methods used shall be physical design features (e.g., confinement, ventilation, remote handling, and shielding). Administrative controls shall be employed only as supplemental methods to control radiation exposure."

Contrary to the above, physical design features, i.e. ventilation, intended to maintain exposures As Low As Reasonably Achievable (ALARA) during decontamination and decommissioning (D&D) activities at the Advanced Size Reduction Facility (ASRF) were not implemented or controlled in an effective manner. Specifically, during the planning and work activities associated with connecting the ASRF air movers to the existing facility Zone 2 ventilation on March 26, 2003:

A. KHLL personnel failed to verify key engineering assumptions for connecting two ASRF air movers to the Zone 2 ventilation duct including the following: (1) the damper at plenum PL-250 was assumed to be 100 percent open as indicated by the actuator position; (2) the exhaust grills were assumed to be drawing 1,500 cubic feet per minute (cfm) each (based upon industry standards, not on actual measurements); and (3) the total existing airflow in the duct was assumed to be 15,000 cfm (ten exhaust grills at 1,500 cfm each). These assumptions were later determined to be inaccurate. As a result of connecting the ASRF air mover, the Zone 2 duct became pressurized and an airflow reversal occurred.

B. KHLL personnel failed to monitor the duct flow conditions when the air movers were started. As a result of this failure to monitor, the workers did not become aware of the airflow reversal until the continuous air monitors in the area alarmed.

As a result of the failure to verify engineering assumptions and the failure to monitor the duct flow conditions, an airflow reversal occurred and resulted in radioactive contamination spread throughout rooms [ ] area, [ ] vault and the room [ ] step-off pad area. Airborne contamination measurements of 352 derived air concentration were recorded at the area's step-off pad. Additionally, one individual received an uptake of 220 mrem CEDE, and six individuals received uptakes between 10 mrem to 100 mrem CEDE.

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

III. Violations Identified During the Investigation of the Building [ ] Glovebox Fire

A. Work Control Deficiencies

1. Work Planning/Hazard Identification

10 CFR 830.122 (e), *Criterion 5 – Performance/Work Processes* requires that the contractor "(1) 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, work was not performed consistent with the technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements, using approved instructions, procedures, or other approved means in that:

a. Manual MAN-071-IWCP, *Integrated Work Control Program*, revision 4, effective March 28, 2002, states in chapter 4, "*Type 1 Work Package Process*," that a "…Type 1 [work package (WP)] is a WP that is used for activities that are performed one time…." However, the removal of glovebox [ ] was not

planned as a Type 1 WP but was instead included in the Standard Work Package (SWP) for the set [ ] group of gloveboxes in room [ ], of which glovebox (GB) [ ] was the only vertical GB in the set. MAN-071-IWCP, chapter 5, states that an SWP is used for "…activities that are repetitive, including repetitive D&D activities…." The set [ ] horizontal GBs were to be removed by segmentation and packaging whereas GB [ ] was to be removed by *in situ* size reduction.

b. MAN-071-IWCP states, in chapter 3, that the purpose "…of the [Job Hazard Analysis (JHA)] is to identify and analyze the hazards and controls for a specific work activity…" and that the "…JHA process **SHALL** be the method by which unique, activity-specific hazards and associated safety controls for a particular activity are analyzed, integrated, and documented." However, the JHA developed for the removal of all horizontal gloveboxes in room [ ] was also utilized for removal of GB [ ] despite the fact that GB [ ] presented a clearly unique configuration, e.g., vertical orientation and limited visibility into the enclosure. Nonetheless, the JHA did not identify or reflect this unique nature. Known hazards associated with GB [ ], including heavy guillotine doors and the presence of an unknown quantity of discarded combustible material, were also not identified in the JHA. Furthermore, the JHA was not updated as work progressed from the other gloveboxes in room [ ] to GB [ ].

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

2. Work Procedures

10 CFR 830.122 (e), *Criterion 5 – Performance/Work Processes* requires that the contractor "(1) 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, work was not performed consistent with the technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements, using approved instructions, procedures, or other approved means in that:

a. Procedure PRO-1470-DECON-[ ], *Chemical Decontamination of Equipment or Gloveboxes Contaminated with [Radioactive Material],* Revision 0, effective May 15, 2002, states in section 7.2.6, *Cerium Decontamination using a Hand Spray Bottle*, that waste towels used for chemical decontamination be bagged out of the glovebox and disposed of as wet combustible waste. However, subsequent to the May 6, 2003, GB [ ] fire, visual inspection of the fire debris and analytical sample results indicated that chemical decontamination waste from the prior chemical decontamination of GBs [ ] and [ ] were disposed of in GB [ ], rather then being

bagged out of the respective GBs and disposed of as wet combustible waste.

b. PRO-1470-DECON-[ ], section 7.2.6, states that pre-prepared solutions of chemical agents used to decontaminate a glovebox are to be bagged-in to the glovebox prior to use. However, during chemical decontamination activities in GBs [ ] and [ ], the D&D workgroup mixed the cerium nitrate solution inside the glovebox just prior to use.

c. Procedure PRO-1638-FIRE CTRL-[ ], *Buildings [ ] Combustible Control*, Revision 0, effective December 5, 2002, in section 8, *INSTRUCTIONS—WEEKLY GLOVEBOX INSPECTION*, provides inspection requirements for conducting weekly visual inspections of gloveboxes for the accumulation of combustible materials. However, combustible material surveillances were not adequately conducted in that weekly glovebox surveillances failed to identify and document the accumulation of a significant quantity of combustible material in GB [ ]. Additionally, despite the fact that observation of GB [ ]'s interior was quite limited, no notations were made on the weekly glovebox surveillance form (appendix 4 of PRO-1638-FIRE CTRL-[ ]) to document that the surveillance could not be performed as required.

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

3. Fire Response

10 CFR 830.122 (e), *Criterion 5 – Performance/Work Processes* requires that the contractor "(1) 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, work was not performed consistent with the technical standards, administrative controls, and other hazard controls adopted to meet regulatory or contract requirements, using approved instructions, procedures, or other approved means in that:

a. Procedure PRO-369-HSP-31.14, *Employee Response to Fire*, revision 1, states in section 4.1, *Reporting a Fire*, that "…employees **SHALL** immediately report fire or heavy smoke to the Fire Department utilizing…" a Fire Phone, Manual Pull Station, or emergency number 2911. However, when first learning of the GB [ ] fire on May 6, 2003, the D&D Supervisor reported the fire directly to the building Configuration Control Authority (CCA). The CCA then called 2911.

b. Building [ ] employees have been trained in the use of a fire extinguisher in accordance with course number 021-225-01, *Live Fire and Fire Watch*

Training. This course, in part, emphasizes that if a worker is in "…a supplied air suit, DO NOT ATTEMPT TO FIGHT THE FIRE. EVACUATE THE AREA IMMEDIATELY!" However, on May 6, 2003, the two D&D workers wearing PremAire (encapsulating, supplied air) suits failed to evacuate the immediate area upon identification of the fire and fought the glovebox fire until they used all of the fire extinguishers in room [ ]. Additionally, the work supervisor did not direct the two workers to immediately exit the containment enclosure, and the Building Emergency Support Team supplied extinguishers from other locations to the two D&D workers.

c. Procedure PRO-369-HSP-31.14 states in section 4.2, *Response to a Fire Alarm*, that when a fire is reported by a means that does not activate a building's fire alarm, a Life Safety/Disaster Warning (LS/DW) announcement that the fire department is responding to a fire "**SHALL** be treated as if it were an audible alarm." Furthermore, procedure PRO-V58-BERO-14.[ ], *Building [ ] Emergency Response Operations*, revision 2, states in attachment 8, *Fire/Explosion*, that the first response, upon notification of a fire, is to begin "…an appropriate building evacuation (immediate or controlled)." Instructions in section 4, *Building Evacuation*, describe steps to be followed for an immediate or controlled evacuation. However, on May 6, 2003, personnel on the basement and sub-basement floors not involved in the fire response were instead directed to assemble in the building's dining area. This was shortly followed by a similar announcement to personnel in the building [ ] Material Accountability Area. Building [ ] was not evacuated until after the fire department arrived.

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

B. Management Assessment Deficiencies

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

Contrary to the above, KHLL did not ensure that its managers adequately assess their management processes and identify and correct problems that hinder the organization from achieving its objectives in that:

1. In November 2002, KHLL conducted an assessment of building readiness to implement the newly issued building [ ] Combustible Control Program procedure, PRO-1638-FIRE CTRL-[ ], revision. 0. This procedure had been developed, in part, because of problems identified with the completeness of the surveillance checklists contained in the predecessor combustible control procedure, 4-PRO-159-SURV.

   Although the November 2002 assessment did identify issues associated with

building readiness, it failed to identify deficiencies associated with the over-simplified surveillance form provided in PRO-1638-FIRE CTRL-[ ] to document required weekly glovebox combustible material inspections.

2. In August 2003, a KHLL self-assessment of the building [ ] GB combustible control surveillance program reported that the program was adequately implemented but required improvements. Combustible materials were noted in a large number of gloveboxes; however, none were identified as constituting a noncompliance with PRO-1638-FIRE CTRL-[ ] requirements.

   A DOE Rocky Flats Project Office surveillance conducted at the same time, however, identified markedly different results. The DOE surveillance identified that approximately 37 percent of the GBs contained in building [ ] did not meet PRO-1638-FIRE CTRL-[ ] surveillance criteria for combustible materials.

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

IV. Violations Identified During the Investigation of the Buildings [ ] BIO/TSR Issues

A. Safety Basis and Work Control Deficiencies Associated with Control of Combustible Materials

1. Safety Basis Deficiencies

   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 that ensure adequate protection of workers, the public, and the environment."

   Contrary to the above, KHLL failed to perform work in accordance with the Safety Basis for nuclear facilities [ ] in that:

   Building [ ] Complex BIO TSR, revision 2, dated September 10, 1997, *Administrative Control* (AC) 5.4.1 requires that "A program shall be established, implemented, and maintained to control combustible materials and ignition sources to ensure compliance with the limits analyzed in the hazard/accident analysis." In July 2001 DOE approved the BIO and TSRs as the Documented Safety Analysis.

   Building [ ] Complex BIO, revision 5, revised January 2002, TSR 5.4.2, *Combustible Material and Ignition Source Controls*, Item (9) requires "Combustible/flammable liquids shall be stored in approved containers that are kept in flammable liquid storage cabinets…" and Item (10) requires "Use of flammable liquids outside of approved storage cabinets is controlled by limiting

containers of flammable liquids in fire areas where radiological materials are present to four gallons (total quantity). The presence of larger quantities must be evaluated and approved by a fire protection engineer in cases where a four-gallon limit is not practical."

However, KHLL failed to implement a TSR-required program to control, store and use combustible materials in that from July 2001 through February 2002, seventeen combustible/flammable liquid containers were placed outside the approved storage cabinets. Additionally, fire protection engineering had not evaluated nor approved the placement outside the approved storage cabinets.

Justification for Continued Operation, JCO-[ ]-02.1575-SLA, approved May 3, 2002, *Compensatory Measure 3* requires that "Combustible material in excess of a Fire Protection Engineering defined and approved combustible package significance threshold shall not be stored within ten feet of the return fans in rooms [ ] and [ ]." However, on May 8, 2002, the building [ ] CCA discovered a large wooden crate, in excess of the Fire Protection Engineering combustible package threshold, located less than ten feet from the return fan in room [ ].

2. Work Control Deficiencies

10 CFR 830.122 (e), *Criterion 5 – Performance/Work Processes* requires that the contractor "(1) 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, KHLL failed to adequately develop and implement administrative controls including written procedures and requirements for work associated with buildings [ ] in that:

Procedure PRO-1053-HSP-32.0, Revision 0, effective August 22, 2000, *Flammable and Combustible Liquids Code for Fire Safety*, section 5.2.B.1 requires "Flammable and combustible liquids shall be stored in storage cabinets when not in use." When this procedure was issued, building [ ] was not in compliance with the storage requirement, and KHLL work activities performed after August 2000 continued to generate and store flammable liquids in noncompliance with this procedure. As a result, three containers with flammable liquids were placed and remained in noncompliant storage between August 2000 and February 2002.

Procedure 4-PRO-159-SURV, Revision 3, effective August 15, 2001, *Control of Combustible Material and Ignition Sources for Building [ ]*, established the process for monitoring the control of combustible material and ignition sources in accordance with the BIO. However, this procedure was not adequate in that the specific surveillance criteria (checklists) provided in the procedure appendix were

incomplete. Specifically, the surveillance checklists were not updated to include AC 5.4.2 Key Element 9 requirements following the issue of revised AC 5.4.2 requirements in January 2002. This omission resulted in KHLL failing to perform surveillance in building [ ] to ensure combustible liquids were stored compliant with the AC 5.4.2 Key Element 9 requirements. In early 2002, seventeen containers of flammable liquids were discovered to be stored noncompliant with AC 5.4.2 Key Element 9.

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

B. Safety Basis and Work Control Deficiencies Associated with the Control of [Radioactive Material] Materials

1. Safety Basis Deficiencies

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 that ensure adequate protection of workers, the public, and the environment."

Contrary to the above, KHLL failed to adequately perform work in accordance with buildings [ ] safety basis in that:

a. *Building [ ] Complex BIO*, Revision 5, revised April 16, 2002, TSR AC 5.2.3 *Inventory Control and Material Management, Key Program Elements*, Item (o) requires that "[ ] feed oxide to be thermally stabilized in furnaces during the continuing campaign shall be visually inspected prior to stabilization to confirm the expected material condition and absence of evident organics and shall be restricted to: (1) Containers with ≥ 80% Pu assay that were historically required to have been thermally stabilized; or (2) For items in the campaign plan database as of 02/14/2002, the eighteen IDCs identified as not containing organics without regard to their [radioactive material] content…; or (3) Material brushed from [ ] metals in the material preparation glovebox, [ ] glovebox sweepings of this material, and oxidized materials from [ ] processing." However, from February 25 to July 11, 2002, seven [radioactive material] stabilization and processing system ([ ]) batches were processed that contained item description code (IDC) 061 items that were not allowed to be processed since they potentially contained oxides in excess of the control limits.

b. *Building [ ] Complex BIO*, Revision 5, revised April 16, 2002, TSR AC 5.2.3 *Inventory Control and Material Management, Key Program Elements* (q), requires that "No more than four [ ] 3013 containers that are vulnerable to failure and less than 20 days old may be outside the vaults AND no more than one [ ] 3013 container that is vulnerable to failure and greater than 20 days old is permitted outside the vaults." However, on November 17, 2002, [

] management discovered eight vulnerable 3013 containers, less than 20 days old, located outside a vault.

c. *Building [ ] Complex BIO*, Revision 5, revised April 16, 2002, TSR AC 5.2.3 (r) requires that "A [ ] 3013 partial or assembled can charged with fissile/nuclear materials that is vulnerable to failure must be emptied or vented for repackaging within 50 days of its original packaging." However, during the investigation of the November 17, 2002, event in building [ ] (discussed in item b above), a DOE Facility Representative identified eight 3013 containers that had exceeded the 50-day requirement for venting.

d. *Building [ ] Complex BIO*, page change PGC-[ ]-03.0497-SLA, approved by DOE on December 10, 2002, TSR AC 5.2.3 (p) requires that "[[ ] 3013 partial or assembled cans charged with oxides that are vulnerable to failure or potentially vulnerable to failure shall be in vented 10-gallon drums when stored in vaults." However, on January 21, 2003, KHLL personnel discovered that three potentially vulnerable containers stored in a vault were not packed in ten-gallon drums.

2. Work Control Deficiencies

10 CFR 830.122 (e), *Criterion 5 – Performance/Work Processes* requires that the contractor "(1) 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, KHLL failed to adequately develop and implement administrative controls including written procedures and requirements for work associated with buildings [ ] in that:

a. Procedure PRO-593-SPS-002, *Oxide Stabilization,* Revision 0*,* was not maintained to accurately identify the IDCs that were approved for processing. Specifically, a revision was made to the [ ]*Stabilization and Packaging System* ([ ]*) Campaign Plan Report*, KDT-031-02, Revision 4, dated April 30, 2002, which changed the approval status of IDC 07-11-061 to unapproved. This change was not carried forward to the *Oxide Stabilization* procedure, Appendix 8 – *Approved List of Oxide IDCs for Processing* (page dated June 4, 2002), which continued to list this IDC as approved. As a result, non-approved [ ] batches containing IDC 061 material were processed between February 25, 2002, and July 11, 2002.

b. Procedure PRO-593-SPS-002, *Oxide Stabilization,* Revision 0, was deficient in that it did not establish adequate requirements and controls for the staging and approval of material to be processed. Specifically, between February 25, 2002, and July 11, 2002, non-approved PuPSP batches containing IDC 061 material were staged for the operators by campaign

planning personnel. This staging activity was not controlled by a procedure or other appropriate controls, and failure to segregate this material such that it would not be available for processing contributed to the processing of unapproved batches. In addition, the *Oxide Stabilization* procedure did not require independent verification or approval by supervision or management of the IDC Items prior to processing. One operator was solely responsible for determining if the IDC item was acceptable, even though the procedure requires a second operator and a trained supervisor to be available during operations.

c. Procedure PRO-1323-3013INV-[ ], *3013 Can Inventory Control in Building [ ]*, Revision 0, effective March 19, 2001, Section 8.1 AC 5.2 *Requirements*, (4) states "If any non-compliant conditions are discovered as a result of the floor inventory, THEN notify the following: CCA…" However, on November 17, 2002, the building [ ] Campaign Manager discovered four 3013 [ ] containers that exceeded the allowable limit for vulnerable containers located outside of a vault. Movement of four 3013 containers into the vault was authorized to correct the noncompliance; however, the CCA was not notified as required.

d. Procedure PRO-T60-SNM-001, *Category I and II SNM Movement Buildin [ ]* Revision 4, Section 3, *Limitations and Precautions* (page change January 10, 2003) requires "Vulnerable and potentially Vulnerable [ ] 3013 containers (containers with a blue or red Data Package folder) containing oxide that are to be transferred/moved into a vault SHALL be packaged into a 10-gal drum in accordance with PRO-X09-10GAL-DRUM, *10-Gallon Drum Pack and Unpack*." This procedure, Section 5*, Instructions* (page change January 10, 2003), requires the Supervisor to "perform tasks/activities in accordance with the *Category I and II Material Movement Checklist* in Appendix 2. The checklist contains a specific step, number 6, for placing [ ] containers into 10-gallon drums when stored in the vault. However, on January 20, 2003, a KHLL supervisor failed to use the checklist in Appendix 2 as required by procedure PRO-T60-SNM-001 and placed three 3013 containers into a vault without first placing them into the required 10-gallon drums.

e. Procedure PRO-T60-SNM-001, *Category I and II SNM Movement, Building [ ],* Revision 4, also requires in Section 3, *Limitation and Precautions* (page change January 10, 2003), that "transfers/movements shall be performed only after the receiving organization has signed the NMSL section of the Nuclear Material and Drum Transfer Request." However, on January 20, 2003, a KHLL supervisor and two operators initiated movement of three 3013 [ ] containers to room [ ], without first obtaining all approvals and prerequisites for this movement.

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

3. Training Deficiencies

10 CFR 830.120 (b) Criterion 2, *Training and Qualification* requires that the contractor "(1) Train and qualify personnel to be capable of performing their assigned work."

Contrary to the above, personnel were not adequately trained and qualified to perform their assigned work in that:

a. In August 2000 when PRO-1053-HSP-32.0, *Flammable and Combustible Liquids Code for Fire Safety*, Revision 0, was issued, KHLL personnel did not recognize that requirements for storage of combustible liquids had changed. No formal implementation plan was developed nor were necessary personnel trained to the new requirement. KHLL personnel identified that the responsible Fire Protection Engineer failed to recognize the procedure modifications were significant and different from the facility practices. A second opportunity was missed in January 2002 when the TSR AC 5.4 language was modified to include specific controls for combustible liquid storage.

b. On May 3, 2002, KHLL personnel performed an implementation surveillance to ensure compliance with *Justification for Continued Operation* JCO-[ ]-02.1575-SLA, approved May 3, 2002, and failed to identify a noncompliant condition of a large wooden crate located less than ten feet from the return fan in room [ ]. KHLL's causal analysis identified that the person who performed the surveillance did not have a clear understanding of the JCO requirement or the location of the return fans. Although a Job Task briefing was performed as required by surveillance procedure 4-PRO-159-SURV, *Control of Combustible Material and Ignition Sources for Building [ ]*, Revision 3, effective August 15, 2001, Section 5.1, step 3, the assessor's witness statement and KHLL's causal analysis identify that this briefing was not adequate.

c. Between February 25 and July 11, 2002, seven [ ] batches were processed that were not approved for processing. The procedure, PRO-593-SPS-002, *Oxide Stabilization*, step 4.1 (4) (page change dated June 2002) requires two operators and one supervisor trained on the procedure to be available to perform operations involving the handling of fissile material. The KHLL causal analysis identified the root cause of this event as a training deficiency and further identified that the operators did not fully understand the procedure requirements on how to determine the approved IDC Items. Operators were confused by the use of prefix numbers to separate approved and unapproved IDC numbers in the list contained in appendix 8 of the procedure.

d. The KHLL causal analysis related to the discovery on November 17, 2002, of eight 3013 containers that exceeded the 50-day venting requirement, identified that the level of knowledge of personnel responsible for tracking time limitation requirements from the BIO AC controls was less than adequate. Specifically, the training and implementation efforts for the BIO page changes associated with this activity were not sufficient in rigor to assure that Campaign Planning personnel had a full understanding of the technical and procedural aspects of the new ACs.

e. A BIO page change, PGC-[ ]-03.0497-SLA, containing requirements for placing 3013 containers into ten-gallon drums, was effective on December 10, 2002, and training on this change and changes to the *Category I and II SNM Movement, Building [ ]* procedure, PRO-T60-SNM-001 Revision 4 (page change dated January 10, 2003), included supervisor and operator personnel. However, on January 20, 2003, less than two months after the training was conducted, a KHLL supervisor and two operators moved three potentially vulnerably containers into a vault without placing the 3013 containers in ten-gallon vented drums as required.

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

V. Quality Improvement Deficiencies

10 CFR 830.1220 (c*) Criterion 3 – Management/Quality Improvement* requires that the contractor "(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. (3) Identify the causes of problems and work to prevent recurrence as a part of correcting the problem."

Contrary to the above, KHLL's processes to identify causes and correct quality problems were not effectively established and implemented in that:

A. The KHLL investigation of the March 26, 2003, building [ ] airflow reversal event identified both the direct and root cause of the event as equipment failure. Corrective actions for the event were developed based on this conclusion. A subsequent KHLL re-analysis of the event, prompted by the Office of Price-Anderson Enforcement (OE), identified significant work planning issues associated with the event that had been overlooked during the contractor's initial investigation.

B. Recurring deficiencies in the implementation of the building [ ] Combustible Control Program indicate KHLL corrective actions have been ineffective to prevent recurrence. Examples of these deficiencies include the following:

1. In July 2000 KHLL reported (RFO-KHLL-[ ]-2000-0054) a programmatic deficiency with compliance to AC 5.4 combustible control requirements. The

associated causal analysis identified deficiencies in management involvement and oversight, assessments, training, and program implementation. KHLL reported corrective actions as complete on April 30, 2001.

2. In June 2002 KHLL reported (NTS-RFO-KHLL-[ ]-2002-0001) programmatic deficiencies with storage of combustible liquids. The KHLL causal analysis and the OE investigation into these deficiencies identified inadequate program implementation, inadequate training, and a weak assessment program contributed to these deficiencies. In addition, corrective actions resulting from prior programmatic deficiencies were not adequate to prevent recurrence of similar problems.

3. In June 2002 KHLL reported (RFO-KHLL-[ ]-2002-0033) a deficiency associated with the procedural (4-PRO-159-SURV) checklist used to inspect spacing of combustible packages and ventilation Zone 1/1A ductwork. It was identified that the checklist omitted two rooms ([ ] and [ ]) from the required monthly surveillance and one room ([ ]) from the required annual surveillance. As part of the corrective actions to this deficiency, KHLL developed a new Combustible Control Program procedure (PRO-1638-FIRE CTRL-[ ]) to replace procedure 4-PRO-159-SURV. Despite the implementation of this new procedure, as part of the investigation into the May 2003 GB [ ] fire, KHLL identified deficiencies with the overall implementation of the glovebox combustible control surveillance program and the simplified procedural form or checklist used to document these surveillances.

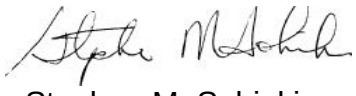
4. During the enforcement conference with DOE held on December 16-17, 2003, KHLL management indicated they had initiated a comprehensive look at the building [ ] Combustible Control Program in August 2003. They concluded there was a breakdown of the program in the building and indicated that prior corrective actions had focused on individual events and that management had neither fully recognized nor addressed the underlying causes.

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

Pursuant to the provisions of 10 CFR 820.24, Kaiser-Hill, LLC is hereby required within 30 days of the date of this Preliminary Notice of Violation (PNOV), to submit a written statement or explanation 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, 1000 Independence Avenue, SW, Washington, D.C. 20585-0270 if sent by US Postal Service. If sent by overnight carrier, the response should be addressed 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 Director, Office of the Rocky Flats Project Office and to the Assistant Secretary, EM-1. 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 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, KHLL shall pay the civil penalty of $522,500 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 one of the above addresses. If KHLL 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, KHLL 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 Germantown, MD
this 3rd day of February 2004

Kaiser-Hill Company, LLC
Rocky Flats Environmental Technology Site
Radiological and Safety Basis Deficiencies
Enforcement Conference Summary

On December 16 and 17, 2003, representatives with the Department of Energy's (DOE) Office of Price-Anderson Enforcement (OE) held an informal enforcement conference with representatives from the Kaiser-Hill Company, LLC (KHLL). This conference was held to discuss potential violations associated with the building [ ] [radioactive material] uptake in March 2003, the building [ ] air flow reversal in March 2003, the building [ ] glovebox fire in May 2003 and certain building [ ] Basis for Interim Operation (BIO)/ Technical Safety Requirements (TSR) issues. OE conducted an investigation of these radiological and safety basis deficiencies at the Rocky Flats site and described the issues in an Investigation Summary Report dated November 24, 2003. The enforcement conference was held with KHLL to discuss the potential violations, status of corrective actions, and potential areas for mitigation. A list of the conference attendees is attached. Material provided by KHLL personnel during the conference has been incorporated into the docket file.

Mr. Stephen Sohinki, Director, Office of Price-Anderson Enforcement, opened the meeting by providing introductions and an overview of the conference's purpose and objectives. Mr. Sohinki then turned the meeting over to KHLL.

Mr. Alan Parker, [ ], Kaiser-Hill, LLC opened the KHLL presentation with an overview of the challenge KHLL was facing in the clean up of the Rocky Flats site and discussed their progress to date. Mr. Parker also identified his commitment, and that of KHLL, to correct the quality and radiological problems identified in the Investigation Summary Report. Mr. Parker further discussed three basic areas that contributed to the nuclear safety deficiencies identified in the report including, (1) inadequate independent analysis for the line organizations, (2) a site culture that allowed relaxation of strict procedural compliance, and (3) a failure to report Price-Anderson noncompliances into the Noncompliance Tracking System based on a narrow focus for causal analyses. Ms. Nancy Tuor, [ ] and CH2MHill Board Member, provided a corporate commitment to use company wide resources to improve the KHLL programs.

Mr. Tom Dieter, KHLL Vice President and Project Manager for [ ] Closure Project, discussed the building [ ] airflow reversal event. Mr. Dieter observed

that a weakness in KHLL's causal analysis of the event resulted in incorrect corrective actions. Mr. Dieter agreed with the findings presented in the OE Investigation Summary Report. No factual accuracy issues were identified.

Mr. Kelly Trice, KHLL Vice President and Project Manager for the [ ] Closure Project, discussed the circumstances of the building [ ] air mover hose uptake event. Mr. Trice explained this was a one-time event and no other similar events involving a contamination control sleeve not being properly attached to the air mover hose or unintentionally coming loose have occurred. In addition, an extensive extent of condition review was performed by KHLL of the air mover hoses and no other instances of this condition were identified. Mr. Trice agreed with the findings in the Investigation Summary Report. No factual accuracy issues related to the potential violations were identified.

Mr. Trice addressed the circumstances that resulted in the five building [ ] safety basis violations discussed in the Investigation Summary Report. Mr. Trice agreed with the deficiencies described in the Investigation Summary Report. No factual accuracy issues related to the potential violations were identified. KHLL provided written clarification for several safety basis event descriptions in the Investigation Summary Report.

Mr. Trice then summarized the May 2003 glovebox fire event in building [ ]. His summary included a discussion of the deficiencies identified in association with the fire and corrective actions taken to address those deficiencies. The following specific points were included in the discussion:

- The OE Investigation Summary Report indicated that the phased building evacuation approach used during the fire was not consistent with response actions identified in the Building Emergency Response Operations (BERO) procedure. Mr. Trice indicated he thought the methodology used was consistent with BERO definitions for a "controlled evacuation." Mr. Trice also indicated the BERO was later reviewed and revisions were made to require a full building evacuation in response to fire.

- During the discussions KHLL management indicated KHLL reviews had been performed after the fire to evaluate whether Standard Work Packages (SWP) were being inappropriately used instead of Type I packages. OE personnel indicated that they had requested evidence of such reviews both during and subsequent to the onsite OE investigation, but had been told these reviews were not documented. OE then reiterated the request for documentation of such reviews. Subsequent communication identified no such documentation existed.

- KHLL management indicated that site training for appropriate worker response to a fire had been ineffective, thereby contributing to the worker response observed during the fire.

- In light of deficiencies identified during the glovebox fire event, in August 2003 KHLL initiated a review of the facility Combustible Control Program. Management concluded that there had been a “Combustible Control Program Breakdown” in Building [ ]; KHLL also indicated that several events over the prior few years should have led to an earlier recognition of this concern by [ ] management.

Mr. Dick Sexton, KHLL Deputy Director Safety Engineering and Quality Programs, discussed institutional initiatives focusing on correcting generic weaknesses in causal analysis/corrective actions, assessment program, work controls, and PAAA program implementation.

Mr. Sohinki then concluded the conference by indicating that DOE would consider the information presented by KHLL in the enforcement deliberations.

Enforcement Conference List of Attendees

December 16 & 17, 2003

Office of Price-Anderson Enforcement

Stephen Sohinki, Director
Susan Adamovitz, Senior Enforcement Officer
Howard Wilchins, Senior Litigator
Tony Weadock, Enforcement Officer
Steven Zobel, Enforcement Officer
Steve Hosford, Technical Advisor

DOE Rocky Flats Project Office

Frazier Lockhart, Manager
Ron Bostic, Director, Nuclear Regulatory Division
Lisa Bressler, PAAA Coordinator

Office of Environmental Management

Larry Vaughan, Quality Assurance Specialist
William Boyce, Fire Protection Engineer

Kaiser-Hill Company, LLC

Alan Parker, [ ]
Nancy Tuor, [ ]
Dick Sexton, Deputy Director
Kelly Trice, Vice President & B[ ] Project Manager
Thomas Dieter, Vice President & B[ ] Project Manager