ROCKY FLATS CLOSURE PROJECT UPDATE: PREPARING FOR CLOSURE IN 2005

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ABSTRACT

Closing the U.S. Department of Energy's (DOE) Rocky Flats Environmental Technology Site is a goal shared by many: the State of Colorado, the communities surrounding the site, the U.S. Congress, the Department of Energy (DOE), Kaiser-Hill and its team of subcontractors, the site's employees, and taxpayers across the country.

At the end of calendar year 2004, based on the amount of work completed to date and the work remaining, it now appears that the closure of Rocky Flats may be achieved one year earlier than first thought possible – December 2005. As a result of completing the project one year early, Kaiser-Hill expects to complete the job for approximately $400 million below contract target cost of $3.97 billion.

INTRODUCTION

On January 24, 2000, the DOE and Kaiser-Hill signed a first-of-its-kind closure contract to complete the Rocky Flats Closure Project by a target date of December 15, 2006, at a target cost of $3.97 billion. The closure of the site will ultimately enable the establishment of a federal wildlife refuge. Figure 1 illustrates the closure project's end state.

Fig.1. Rocky Flats Closure Project end state.

The physical completion criteria established in the closure contract are:

- All buildings are demolished, except any structures with a DOE-declared continuing mission.
- All Individual Hazardous Substance Sites are remediated or dispositioned per the Rocky Flats Cleanup Agreement.
- All wastes are removed except for some materials that can be left in place, recycled or used as fill materials in accordance with regulatory requirements.
- Building foundations, utilities, or other remaining structures, paved roads and/or parking lots are covered by a minimum of 3 feet of fill after final grade.
- Water leaving the site in Woman and Walnut Creeks meets the water quality standards established by the Colorado Water Quality Control Commission.

To accomplish this undertaking, Kaiser-Hill developed an approach that safely achieves cleanup of the site on an accelerated schedule and at the lowest feasible cost. Key elements of Kaiser-Hill's approach include:

- Emphasizing safety as the foundation of all work
- Eliminating the highest health risks first
- Reducing the site's mortgage costs to make additional funds available sooner to accomplish more cleanup activities
- Focusing the highest attention on the critical path and near critical path activities (the critical path activities are those activities which, if they slip, will significantly impact project completion)
- Rewarding employees to work safely, cost effectively and efficiently
- Encouraging the use of and employing proven, innovative technologies and approaches to increase work efficiency and safety.

ROCKY FLATS CLOSURE PROJECT STATUS

More than 85% of the way through the Closure Project, Rocky Flats is currently under cost and ahead of schedule. Kaiser-Hill projects that the project will be delivered at approximately $400 million below the target contract cost of $3.97 billion and as much as one year before the contract target completion date of December 2006. Through December 2004, the project cost and schedule performances against the Closure Project Baseline (CPB) are as follows:

- Cost variance is +$225 million (7%)
- Schedule variance is +$202 million (6.7%)
- Current projected closure date is no later than December 31, 2005
- Current projected estimate at completion is no more than $3.6 billion.

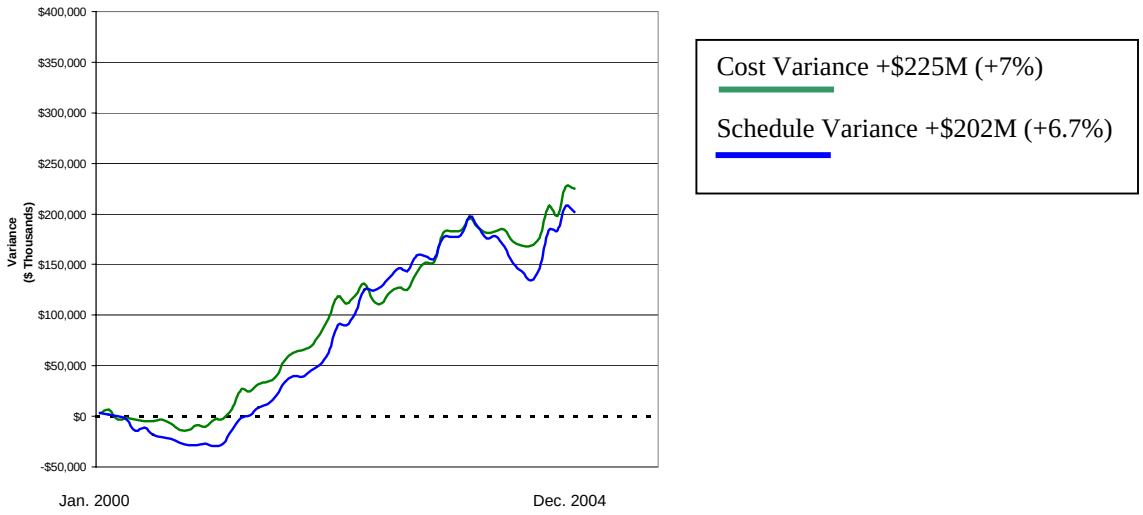

Fig. 2. Rocky Flats Closure Project baseline cost and schedule variances.

Kaiser-Hill also tracks a number of key closure project performance metrics in addition to monitoring traditional project performance parameters. Table I below shows the work completed on these metrics through December 2004, and how much work remains.

Table I. Key activities to close Rocky Flats, 1995-2006.

Key Closure Activities	Total Work Scope	Completed	Percent Complete
Special Nuclear Material Stabilization and Packaging			
• Pu Stabilization and Processing	1,895 containers	1,895 containers	100%
• Pu Residue Processing Packaging	106,000 kgs	106,000 kgs	100%
Facility Deactivation, Decommissioning and Demolition (D&D)			
• Total radioactive and Non-radioactive Facilities	802 facilities	627 facilities	78%
• Grossly Contaminated Plutonium Facilities	7 facilities (1,079,368 sq. ft.)	5 facilities (496,710 sq. ft.)	46% (sq. ft.)
Type 3 Facilities Decontamination and Dismantlement			
• Glovebox Removal	1,457 Gloveboxes	1,457 Gloveboxes	100%
• "Set" and "Area" Removal	290 D&D Work Sets and Areas	270 D&D Work Sets and Areas	93%
Offsite Shipment of Special Nuclear Material, Waste, and Other Materials			
• Pit Shipment	100% of inventory	100% of inventory	100%
• eU Parts destined for Oak Ridge	100% of inventory	100% of inventory	100%
• eU Parts destined for other DOE Sites	100% of inventory	100% of inventory	100%
• Pu Parts destined for LANL	100% of inventory	100% of inventory	100%
• Pu Parts destined for SRS	100% of inventory	100% of inventory	100%
• Pu Metals and Oxides	100% of inventory	100% of inventory	100%
• LLW Shipment	359,912 m^3	288,702 m^3	80%
• LLMW Shipment	65,231 m^3	59,183 m^3	91%
• TRU/TRUM Shipment	15,067 m^3	14,164 m^3	94%
Environmental Restoration			
• Sites projected to require remediation	360 sites	294 sites	82%

Notable Accomplishments of 2004

During 2004, a number of significant accomplishments were achieved that provided optimism that project completion could be achieved by the end of 2005.

Demolition of Plutonium Buildings 771 and 707

In October, Building 771, a 176,000 square foot facility built in 1952 and used to recover plutonium from scrap and production residues, was demolished. Building 771 was once dubbed as the "Most Dangerous Building in America" by ABC News as a result of a 1994 DOE study of plutonium facilities. Building 771 suffered from a significant amount of contamination as a result of a fire in 1957 and many leaks and spills of plutonium contaminated acid solutions. Building 771 contained 240 gloveboxes, 250 tanks and more than 30 miles of contaminated process piping

In the final month of 2004, another significant plutonium building, 707, was demolished. Built in 1969, this 228,000 square foot facility was used to manufacture plutonium triggers. Almost every plutonium trigger in the U.S. nuclear weapons arsenal was assembled in Building 707. Building 707 contained 377 gloveboxes. It presented some unique D&D challenges as a result of contamination in an overhead chainveyor used to transport plutonium from glovebox to glovebox throughout the facility, as well as some very large pieces of contaminated equipment located in gloveboxes such as a hydroform press and lathes.

Fig. 3. Building 771 was demolished on Oct. 12, 2004. Since then, the site of the building has been backfilled, contoured and re-seeded with native grasses.

Other D&D Progress

In Buildings 776/777 all 279 gloveboxes and 244 tanks have been removed. These two facilities, comprising a total of 224,000 square feet, were used to purify plutonium and to size-reduce and store plutonium wastes. Approximately 95% of the buildings have been decontaminated or encapsulated, surveyed and prepared for demolition. Due to a significant fire that occurred in the building in 1969 that severely contaminated a large portion of the facility, combined with some unique building features such as cinder block walls, Kaiser-Hill will demolish the entire facility as low-level radioactive waste and ship it offsite. Demolition is expected to start in February 2005.

In Buildings 371/374, comprising 358,500 square feet total and once used to recover, store, treat and package plutonium and plutonium wastes, all 428 gloveboxes and 375 tanks have been removed. All 12 canyons have been stripped out in Building 371. Demolition is planned to begin in February 2005 for Building 374 and June 2005 for Building 371.

During the year, Buildings 991 (formerly used to receive and ship nuclear weapons components), 881 (first nuclear production facility at Rocky Flats), 664 (radioactive waste shipping facility) and 447 (a uranium and beryllium production facility) were also demolished. Of special note was the demolition of Building 881. The building was a multi-story, 245,000 square foot, reinforced concrete structure built into a hillside. Following dismantlement and decontamination, the facility was demolished using explosives in large part to reduce risks to workers that conventional demolition posed. We continue to decontaminate and dismantle Buildings 883 (uranium production facility), 559 (plutonium laboratory) and 444 (uranium and beryllium production facility). We also demolished approximately 200 smaller contaminated and non-contaminated facilities during the year.

Environmental Restoration

The Environmental Restoration (ER) project continued to make exceptional progress during 2004, with heavy equipment visible in every corner of the site's Industrial Area.
The 903 Pad and Lip Area was completed during the last quarter of FY04. This required the removal, packaging and shipment of 97,800 tons of plutonium and solvent contaminated soils. We began the installation of a cap over the present landfill. All old radioactively contaminated process waste lines requiring removal have been removed except for the lines that reside under the plutonium buildings that have yet to be demolished (12,000 feet removed to date). We completed the removal of the carbon tetrachloride contaminated soil north of Building 776 and removed the contaminated sludges from Bowman's pond. We also removed all 26 process waste valve vaults.

Waste Shipping

For the fifth year in a row, Kaiser-Hill set waste shipping records. We characterized, packaged and shipped 4,926 m^3 of transuranic waste to the Waste Isolation Pilot Plant. 12,558 m^3 low-level mixed waste was shipped for treatment and disposal. 154,755 m^3 of low-level waste was shipped for disposal. Also during this time frame, 211,600 cubic meters (144,000 tons) of sanitary and industrial waste was shipped for disposal. In total, we shipped more than 180 percent of what was shipped in 2003. On average, a truck leaves Rocky Flats carrying waste every seven minutes.

As a result of projected increases in the generation of radioactive waste, we have begun shipping low-level waste for disposal by rail. The transport of low-level radioactive waste by rail affords us several benefits. First, one railcar can hold the equivalent of up to seven truckloads and will eliminate as many as 5,000 truck shipments that would otherwise travel on highways and onsite. Second, due to the size of the railcars, we will reduce the amount of waste size reduction and handling, resulting in less worker exposure to industrial hazards. Finally, shipping by railcar is more efficient and cost effective. The increases in radioactive waste are due, in large to part, to two major sources: (1) additional contaminated soils resulting from the cleanup of the 903 Pad and Lip Area, and (2) radioactive building debris. The increase in low-level waste arising from the D&D of radioactively contaminated buildings is due to: (1) the nature of the contamination (e.g., depth of penetration), (2) the construction of the building structure (e.g., cinder block walls) and, (3) the inability to decontaminate the structures to "free release" levels regardless of the techniques employed such as use of decontamination solutions, hydrolasing and dry shaving.

What's Left

The following graphic shows the remaining key work scope and our goals for when the work will be completed.

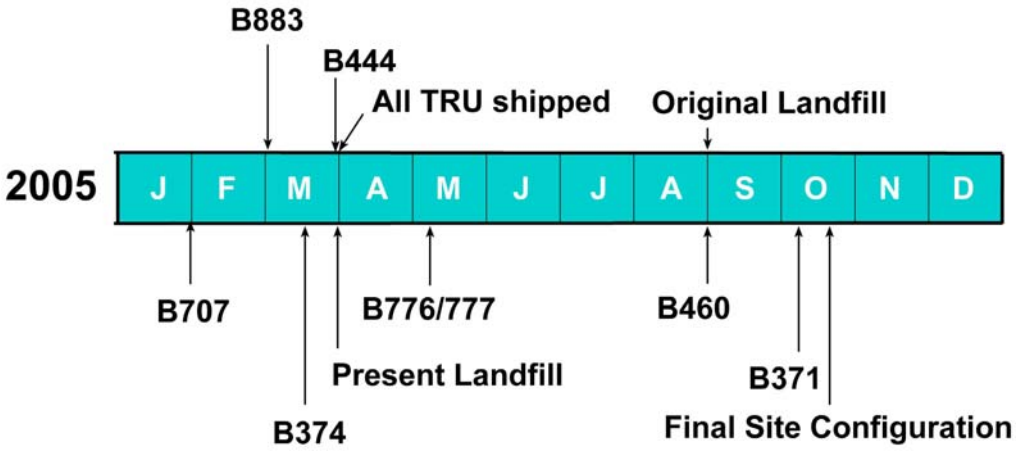

Fig. 4. Major work scope to be completed.

Closure Project Challenges

Achieving the completion criteria contained in the closure contract would be challenging within any time frame. Kaiser-Hill, its subcontractors, and all Rocky Flats workers are performing work with a scope, complexity and on a schedule that has never been attempted anywhere in the world. Key challenges of the Rocky Flats Closure Project that remain are:

- The need to continuously maintain the highest safety standards while performing work that involves increasing industrial hazards.
- The management of a highly skilled and dedicated workforce that is rapidly shrinking as closure work is decreasing. In the next year or so, more than 2,000 salaried and union employees will leave the site.
- The disposition of orphan radioactive wastes, predominately radioactive wastes that are mixed with hazardous chemicals.

Continuous Safety Improvement

A key enabler of any DOE accelerated cleanup effort is a robust and continuously improving safety program. This is particularly true for the Rocky Flats Closure Project. As the project continues to transition from a nuclear/radiological job to a more conventional industrial demolition job, the hazards continue to change and evolve. Since Kaiser-Hill shipped all the weapons-useable nuclear materials offsite and removed all gloveboxes and tanks, the site is for all practical purposes "criticality incredible." This represents not only a major project achievement but also signals the evolution of the project from one focused primarily on nuclear safety to one focused on radiological and, especially, industrial safety. Significant effort is being spent on continuously improving our safety programs regarding traffic safety (heavy equipment), electrical, hoisting and rigging, and fall protection.

The basic tenet of the Kaiser-Hill Safety Program is that continuous improvement is mandatory. As long as there is one recordable injury or one first aid case, we know we can do better. Every accident or injury is preventable and therefore we must continue to find new and innovative approaches to eliminate them.

Management of a Large Workforce in Transition

Management of a workforce that is literally working itself out of a job is an ongoing challenge. 2005 will be a particularly challenging year since nearly all of the 2,000 remaining Kaiser-Hill employees and its subcontractors will be leaving the site by the end of the year.

In April 2003, Kaiser-Hill launched an aggressive Workforce Transition Program to assist employees whose jobs will be ending as the project draws to a close. Workers have a full menu of services available to them under the Workforce Transition Program to help them move to new careers, start a new business, retire or make other choices. As part of this innovative program, Kaiser-Hill has created a high-tech Career Transition Center managed by a professional outplacement firm that provides a wide range of services including career counseling, an entrepreneurial resource program, a leading-edge internet-based, interactive career transition assistance tool, and many other innovative resources. The program also has a job development team to work with other DOE sites and with local companies and organizations to develop partnerships and create job opportunities for the Rocky Flats workforce. The program has sponsored a number of job fairs, subcontractor forums, placed full-page advertisements highlighting the workforce's job skills and worked with the governor's office to promote the workers to a variety of businesses.

Significant effort is being spent, and will continue to be spent, to help the workforce transition as the cleanup progresses to completion.

Orphan Wastes

2004 was a banner year for Kaiser-Hill in dispositioning wastes that were previously considered orphans because they did not have an apparent treatment of disposal option. We believe that we have identified a treatment and disposal pathway for 99.9% of the 4,500 m^3 of orphan wastes. However, we have approximately 5 m^3 of wastes, consisting of higher activity low-level radioactive wastes mixed with high concentrations of PCBs and/or organic solvents.

Kaiser-Hill is working with DOE to identify treatment options for these wastes. Further, Kaiser-Hill continues to work with DOE to aggressively pursue temporary offsite waste storage options at other DOE or commercial sites.

THE OUTLOOK FOR SUCCESS IN 2005

Based on its record-setting project performance in over the term of the contract and 2004 in particular, Kaiser-Hill remains optimistic about the probability of achieving closure by December 2005, one year earlier than planned and at least four hundred million dollars below the closure contract target cost of $3.96 billion. The citizens of Colorado will soon enjoy an open space "jewel" nestled in the foothills of the Rocky Mountains.

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