

FINDING closure

by Kelley Hunsberger

The Rocky Flats
dangerous

Plant is transformed from a
nuclear wasteland to a community asset.

For nearly 37 years,

the Rocky Flats Plant in Golden, Colo., USA, served as a top-secret, high-security nuclear weapons facility. In 1989, it abruptly stopped making weapons, leaving behind contaminated facilities, soil and groundwater. Five years later, the U.S. Department of Energy (DOE) labeled the site one of the country's "most significant nuclear vulnerabilities." That same year, Kaiser-Hill Co. LLC, Broomfield, Colo., USA, picked up the contract to begin cleanup and stabilization of the plant.

In 2000, the company won a second contract to finish the closure and cleanup of the entire 6,245-acre site, including the 385-acre industrial area. The company was given only six years and a \$3.96 billion budget—a task most thought impossible. In fact, the DOE had estimated the project would take 70 years and cost \$36 billion.

"I certainly have to admit that early on I was as skeptical as anyone that we could hit the target date of December 2006, let alone October 2005," says Howard Gilpin, vice president of safety, engineering and quality programs at Kaiser-Hill. "In 1999,

Contracting Success

Individual workers on the Rocky Flats closure project weren't the only ones who reaped the monetary rewards of meeting and beating expectations. In its contract with the U.S. Department of Energy, Kaiser-Hill Co. LLC received 30 cents for every dollar it closed under budget. "It [paid for] the contractor to be innovative, to push and to accelerate because they could make a higher fee based on what their savings would be," says Allen Schubert, PMP, who served as vice president of strategic planning on the project.

I worked in the 'bunker,' the aptly nicknamed area where Kaiser-Hill put together the proposal for the closure contract that started in 2000. It was a windowless room, underground in one of the original site buildings. I saw first-hand that our proposal depended largely on techniques and processes that no one had even thought of yet."

Mr. Gilpin wasn't the only skeptic. In an April 1999 report, the U.S. General Accounting Office cited Kaiser-Hill's own risk assessment that concluded there was only a one percent chance of closing the site by the end of fiscal year 2010. But team members not only managed to pull it off, they made it seem almost easy. With the help of innovative initiatives such as pay-for-performance incentives, the company closed the plant 14 months ahead of schedule and more than \$553 million under budget. And despite the high-risk environment the team was working in, there were no major injuries during the course of the project.

The Great Unknown

Kaiser-Hill was charged with cleaning up and disposing of nearly one-half million cubic meters of radioactive plutonium waste, says Allen Schubert, PMP, who served as vice president of strategic planning.

Yet even after it signed the contract with the DOE, the company was left with some unanswered questions about the project. "How dirty were the

Project Players



From left: Howard Gilpin, vice president of safety, engineering and quality programs; Ken Degenhart, director, prime contract, subcontracts and risk management; Nancy Tuor, president and CEO; Patrick O'Keefe, manager, closure support and communications; David Shelton, vice president, environmental systems and stewardship; Ken Ferrera, decommissioning and demolition manager; Vicki Bogenberger, chief financial officer; and Frank Gibbs, deputy project manager, remediation and industrial site services project

buildings? What was underneath the dirt? What was underneath the buildings? What were the regulators going to do? What did 'clean' mean?" says William Harroun, PMP, who was director of planning and integration.

To control these unknowns—and any changes they might lead to—Kaiser-Hill implemented a disciplined process of scope, cost and schedule variance analysis designed to support the early identification of change.

"Nothing could get left to chance," says Nancy Tuor, project manager, president and CEO, Kaiser-Hill. "That need to manage every piece of the project was a significant challenge."

Prior to the project launch, the company invested time and money in evaluating and mitigating risks. "We brought together a bunch of folks who were experts in their fields, and looked at whether or not we could accelerate the cleanup of Rocky Flats by decades and for many billions of dollars less," Mr. Schubert

PHOTO BY DON CUDNEY

says. The company concluded, “you could really make significant inroads in cleanup and reduce the risks posed by the site, by doing some pretty radical things,” he says.

One of those “radical things” was to hire the employees who had built weapons at the plant and had been working on the cleanup prior to Kaiser-Hill winning the closure contract. The company signed a contract with the union to make the Rocky Flats Steelworkers of America, Local 8031, the project’s “workforce of choice.”

“This effectively enabled the steelworkers who originally worked producing the nuclear weapon components to now clean up and close the site,” Mr. Schubert says. “This was a departure from the way many in the nuclear cleanup industry thought the cleanup should be done, which was to bring in dedicated cleanup workers.”

Most employees believed Rocky Flats would provide a source of employment for life and weren’t in any rush to see the plant close, which, not surprisingly, slowed project progress. Management needed a way to motivate employees to

Project Timeline

1952 Rocky Flats Plant opens in Golden, Colo., USA, to produce plutonium triggers for nuclear weapons.

1989 Rocky Flats stops producing nuclear weapon components.

1994 The U.S. Department of Energy (DOE) names Rocky Flats one of the “most significant nuclear vulnerabilities” in the United States.

1995 The DOE estimates closing the plant will cost \$36 billion and take nearly 70 years. Kaiser-Hill Co. LLC wins the contract to begin cleanup and stabilization of the site.

February 2000 The DOE awards Kaiser-Hill a second contract to clean up and close the plant.

June 2000 The full scope of the project is defined in a project plan submitted to the DOE.

2001 The Rocky Flats Steelworkers of America, Local 8031, and Kaiser-Hill sign an agreement making the union the project’s “workforce of choice.”

March 2001 The DOE approves the project plan.

September 2001 The project experiences several delays, including a work shutdown due to the terrorist attacks on the United States on 9/11.

2004 Kaiser-Hill has one of the lowest accident rates within the DOE portfolio of projects.

October 2005 The Rocky Flats closure project is completed.

work themselves out of a job. “This was a huge mindset change,” says Jan Walstrom, deputy project manager on the project.

To help this change along, Kaiser-Hill created a performance incentive program. Annual incentives and deferred compensation were based on performance, contribution to the overall project, and the ability to meet goals, such as minimizing costs, accelerating the schedule and working safely. More than \$100 million has been paid out in employee bonus incentives.

“Employees were used to getting a ham or a turkey for Christmas—or something like that,” Mr. Harroun says. “With this project, they actually received some cash. Was that the first time it was ever done? No. But it was probably the first time it’s ever been done to this magnitude.”

The program motivated employees to think of creative ways to get the job done. “The company was very open to innovation and new ideas,” Mr. Schubert says. “So employees began to sit back and think about how can I get this particular work done in a way that I

By the Numbers

Original budget for the Rocky Flats closure project:
\$3,963,000,000

Final budget after contract scope modifications:
\$3,996,745,000

Actual cost of work performed:
\$3,442,849,982

Total Savings:
\$553,895,018



PHOTO COURTESY OF CH2M HILL

could save money and be safer? A number of significant innovations were born, resulting in many hundreds of millions of dollars in savings.”

One idea put a new twist on the standard-issue glovebox equipment. A sealed container, the glovebox allows workers to manipulate while outside hazardous areas, but changing the gloves wasn’t easy. The revamped tool was fashioned out of an old pair of [lock-jaw] pliers with a metal rod welded to it. “It certainly wouldn’t have won any beauty contests,” Mr. Gilpin says. “But it dramatically improved the way we changed glovebox gloves, something the site—and everyone else in the world—

had done essentially the same way for decades.”

Kaiser-Hill also devised a transition program so employees could concentrate on their work, instead of worrying about the future. The \$5 million program provided an online job bank, advertised workers’ skills in local newspapers and funded grants for entrepreneurs. Kaiser-Hill even met with dozens of local businesses and economic groups to market the Rocky Flats workforce. “We helped the people not be scared of being unemployed,” Mr. Harroun says. “We helped them with resumés and interviews and all the stuff that is needed to transition to a different career—a new career.”



This was an amazing accomplishment. Not only is there a lot of pride involved with it, but also, of course, a desire to take some of those lessons learned and apply them to the next cleanup job.

—ALLEN SCHUBERT, PMP

PHOTO COURTESY OF CH2M HILL

Safety First—Always

Kaiser-Hill had to ensure its workers weren't in any danger. "Plutonium is a unique radioactive material," Mr. Schubert says. "Externally, it doesn't present a lot of harm to you from a radioactive perspective. But, if you inhale it or get it inside you, either through a wound or your mouth, you could receive significant amounts of radioactive exposure."

Workers wore protective suits, and guarding employee well-being was priority No. 1. "It was the right thing to do, but it also directly impacted the bottom line," Mr. Gilpin says. "Even the most minor safety incident, where no one was hurt, usually shut down a job."

Kaiser-Hill held safety rallies, and if there were indicators that people were being pushed too hard or feeling overworked, the company would stop work.

"We'd do a safety pause for a day or sometimes even longer," he says. "It would kind of refocus everybody about what the job's about."

Anyone who stepped foot on the project site was also authorized to stop work. "If you saw something that was not being done safely, the expectation of you, an outsider, was to say something so we could get it stopped, question what was going on and then continue in a safe manner," Mr. Harroun says.

Nothing to Hide

Creating trust, credibility and a sense of ownership among stakeholders helped Kaiser-Hill work with its partners—such as the DOE—to analyze project and performance data and solve problems. "We made important commitments to our client, ourselves, the regulators, affected communities, politicians and other interested stakeholders,"

Ms. Walstrom says. To prove it was honoring those commitments, Kaiser-Hill made all project data available to the DOE, state regulators and local communities.

The DOE had full access to real-time project control systems, including:

- Critical path schedule
- Earned value-based cost and schedule performance reports
- Actual cost detail
- Cost and schedule variance analysis
- Funding variances
- Change control documents.

"We wanted folks to know what was happening on site and why," Ms. Walstrom says.

Early on, leaders initiated communication with regulators such as the U.S. Environmental Protection Agency. "We set a path forward to tell them what we were going to do, and then came back and periodically reported to them what we actually did," Mr. Harroun says.

Throughout the project's life cycle, monthly meetings were also held with community members, who set a portion of the agenda. "It was a tough audience, and they certainly forced us to do our homework," Mr. Gilpin says. "In the end, I think it served to build a common trust and understanding that we were all trying our best to do the right thing."

Closing Credits

The Rocky Flats closure project was completed in October 2005, and the site is on the verge of becoming a wildlife refuge.

The project has received its fair share of raves, including being named PMI's Project of the Year for 2006 and earning a Project Merit Award from the *Environmental Business Journal* in 2005. In addition, the project was the subject of *Making the Impossible Possible: Leading Extraordinary Performance: The Rocky Flats Story* [Berrett-Koehler Publishers Inc., 2006] by Kim Cameron and Marc Lavine.

"This was an amazing accomplishment, it really was," Mr. Schubert says. "Not only is there a lot of pride involved with it, but also, of course, a desire to take some of those lessons learned and apply them to the next cleanup job."

And the project provided plenty of lessons. "It was the perfect storm of project management," Mr. Harroun says. "So many things had to go absolutely right—in the right order—for that project to be successful." **PM**