

## **News Wire from Idaho National Engineering and Environmental Laboratory – Home of Science and Engineering Solutions**

**Welcome!** This is the latest edition (1<sup>st</sup> for 2004, 11<sup>th</sup> since June 2003) of the **INEEL News Wire**, which delivers news about key issues and current advances in both research and technology at the multiprogram Department of Energy's Idaho National Engineering and Environmental Laboratory (INEEL), located in Idaho Falls, Idaho and operated by Bechtel BWXT Idaho for the U.S. Department of Energy.

Published by the INEEL Communications Directorate, it delivers news to your desktop and is available at <http://www.inel.gov/newswire/>, along with an archive of all previous editions.

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## **Unique INEEL expertise assists cleanup of Black Hills**

Idaho Falls, Jan. 12, 2004 – Dumping hazardous metal-laden waste rock from mining gold in the Black Hills of South Dakota began as far back as 1876, the same year "Wild Bill" Hickok was killed playing poker just 15 miles away in Deadwood.

Now, more than 125 years later and after larger open-pit mining, the nearby Black Hills Gilt Edge Mine is a potential health threat to nearby communities. The U.S. Department of Energy's Idaho National Engineering and Environmental Laboratory has accepted the challenge to monitor the mine cleanup project that contains millions of gallons of contaminated water and waste rock.

What the INEEL has developed is a unique monitoring system capable of providing near real-time data of potential problems under the containment system - and do it all from a computer nearly 700 miles away at the INEEL in Idaho Falls, Idaho.

Nearly three years ago, the U.S. Environmental Protection Agency (EPA) declared the 258-acre mine a Superfund site because of its hazardous waste.

The site consists of three open pits, 150 million gallons of acidic metal-laden water, a large cyanide heap leach pad and an acid-generating rock dump. The rock dump contains approximately 20 million cubic yards of sulfidic waste rock and spent heap-leach ore material. Adding to the environmental challenge, the area is located where two headwater streams join together and empty into Bear Butte Creek, an important source of water for downstream fisheries and the town of Sturgis.

This past summer, a cap made of geotextile material was constructed, placed over the dump and covered with soil to reduce contaminated water and oxygen from infiltrating through the dump. EPA officials felt it necessary, however, to be able to monitor the effectiveness of the remediation and to know as quickly as possible whether the plan was working.

"We developed a system of over 500 surface sensors, spaced at 25-foot intervals, and eight fully instrumented monitoring wells throughout the site," said INEEL geophysicist Gail Heath. "Hydrologic and geophysical sensors placed at 10-to-30-foot intervals from the top of the wells to the bottom allow us to map the moisture and geochemical processes in the material beneath the cap. Overall, it lets us have a high level of confidence of what's going on under the cap -- and that knowledge allows us to control or mitigate unwanted conditions."

The information travels via the Internet to the INEEL database allowing customers like the EPA to have immediate and continual access. The result is one of the largest automated remote controllable monitoring systems in the world.

The INEEL can monitor what's going on at the South Dakota site by going online to evaluate the situation, thereby giving EPA information to assess the cap's performance, and as necessary, make adjustments to ensure its effectiveness. For the INEEL, the data will help improve understanding of water and chemical behavior beneath waste caps and barriers.

Complete story is available at <http://newsdesk.inel.gov/contextnews.cfm?ID=487>  
Photo of Gild Edge mine <http://newsdesk.inel.gov/photolibrary.cfm?Category=1>  
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### **INEEL to eliminate mixed low-level waste backlog in 2004; accelerates cleanup**

Idaho Falls, Jan. 8, 2004 – For decades, a backlog of containerized hazardous and radioactive mixed low-level waste has been present at the U.S. Department of Energy's Idaho National Engineering and Environmental Laboratory. With a strong commitment from the INEEL's Idaho Completion Project to reduce risk and protect the environment, this backlog will be eliminated in 2004, two years ahead of schedule under an accelerated cleanup plan.

In 2003, the INEEL exceeded a cleanup milestone by treating and disposing of more than 900 cubic meters of mixed low-level waste. This waste includes items such as protective clothing for workers, tools, equipment and other material that has been exposed to radioactive and hazardous contaminants. To date, nearly half of the total backlog has been removed from Idaho with just under 1,150 cubic meters remaining that requires treatment and disposal. Disposal of the remaining backlog inventory will be complete in September 2004.

"We are very pleased with the accelerated progress we have made removing this waste from Idaho and reducing the risk it poses to the environment," said Susan Stiger, vice president and project manager for the Idaho Completion Project. "We look forward to accomplishing this work two years ahead of schedule."

Before the project to treat the backlog began, the INEEL's mixed low-level waste was stored in six separate buildings at various locations at the INEEL. As the waste has been treated and disposed of, operations have been consolidated at the Idaho Nuclear Technology and Engineering Center and unused facilities have been closed. To date, the consolidation has resulted in the closure of four storage buildings, providing a projected annual cost savings of over \$1 million.

The INEEL's mixed low-level waste backlog is shipped out of state for safe disposal at permitted facilities.

In the past, mixed low-level waste generated at the INEEL from daily operations has been stored on site because neither an on-site nor off-site treatment and disposal facility was available to accept the waste. In 2001, this backlog totaled approximately 2,250 cubic meters of mixed low-level waste stored in more than 2,000 containers of various sizes and shapes.

The Idaho Completion Project is focused on completing the majority of cleanup work from past INEEL missions by 2012. The project is managed by Bechtel BWXT Idaho for the U.S. Department of Energy.

Complete story available at <http://newsdesk.inel.gov/contextnews.cfm?ID=486>  
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### **INEEL's Hazmat Cam licensed for commercialization by View Systems, Inc.**

Idaho Falls, Jan. 15, 2004 – From the streets of New York City to the waters of Puget Sound, first responders who must confront the burgeoning threat of chemical, biological or radioactive weapons will soon have broader access to a compelling new tool to bolster their personal safety -- the Hazmat Cam.

Designed by engineers at the U.S. Department of Energy's Idaho National Engineering and Environmental Laboratory, Hazmat Cam is a lightweight

wireless video camera system that first responders carry into an incident scene. Housed in a tough, waterproof flashlight body, the camera system sends back live images to a command post located up to several miles away from the incident area. View Systems, Inc., Baltimore, Md., has signed an exclusive license with the INEEL to commercialize this technology.

"Hazmat Cam dovetails perfectly with our security technology product line," said Gunther Than, Chief Technology Officer for View Systems, Inc. "Homeland security is increasingly more important to state and local first responders, and offering the Hazmat Cam commercially makes it easier for them to acquire the technology." The system has already been purchased by several National Guard Civil Support Teams and the U.S. Army.

INEEL Hazmat Cam designer Kevin Young has spent the last year crisscrossing the country, participating in dozens of emergency exercises and demonstrating the camera system across the gamut of field conditions. Perhaps none have been so challenging as its recent use deep within a three-deck, 150-foot fishing boat in Puget Sound.

"It was like trying to send a signal from inside a steel box," said Young. "But the system was designed to be very flexible, allowing us to move a repeater antenna above deck and place the main receiver in an optimal location." This flexibility allowed Hazmat Cam to send live video from all three decks within the ship to a surface command post.

"Every team wants clear, reliable video, and the Hazmat Cam delivers," said Young. "What makes this system unique is the combination of a triple antenna, true-diversity receiver, which delivers the clear picture, and the waterproof housing, which allows submersible decontamination."

Other features include video encryption and a separate transmitter-and-receiver system called extension link that increases the line-of-sight operating range of Hazmat Cam up to five miles.

Hazmat Cam is the second INEEL technology that View Systems, Inc. has licensed. The company also offers a concealed weapons detector called Secure Scan.

It is the home of science and engineering solutions and is operated for the DOE by Bechtel BWXT Idaho, LLC. View Systems, Inc. provides products to law enforcement, government agencies, educational facilities, events and commercial businesses. View Systems has an extensive network of distributors and strategic alliance affiliates.

Complete story at <http://newsdesk.inel.gov/>

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***JASON Project links six Idaho locations to Central America***  
**Idaho students, teachers join rain-forest researchers via satellite**

Idaho Falls, Jan. 22, 2004 – While most Idahoans will be coping with a cold, snowy winter, some 7,000 Idaho middle and junior high school students and teachers will have their attention trained on hot, humid rain forests and the Panama Canal. JASON XV: Rain forest at the Crossroads, a unique learning experience, will carry them by satellite to a scientific research project in Central America. The broadcast will be beamed live to six Idaho locations.

JASON-Idaho is part of the JASON Project, which takes place Jan. 26-30 and Feb. 2-6. The U.S. Department of Energy's Idaho National Engineering and Environmental Laboratory is sponsoring the expedition for Idaho students. The JASON Project impacts nearly 18,000 Idaho students and over 400 teachers during a yearlong science program designed to bring the thrill of discovery to the classroom.

During the year, the JASON Project curriculum gives students and teachers the chance to learn about exotic locations around the world through the Internet, videos, live interactive broadcasts and professional development for teachers.

Idaho students attending the broadcast will join millions of other students from around the world by following the expedition via online reports and a live satellite link.

For the fourth consecutive year, an Idaho student has been chosen from thousands of applicants worldwide as one of 22 "Student Argonauts" who will travel to Panama to participate in the expedition.

Benjamin Losinski, who attends Clair E. Gale Junior High School in Idaho Falls, will join leading scientists and Robert Ballard - discoverer of the R.M.S. Titanic and most recently, John F. Kennedy's famous PT-109 - for the five-day excursion.

JASON XV students and researchers will work collaboratively with institutions such as The Smithsonian Tropical Research Institute (STRI), NASA, NOAA, The National Geographic Society, the Panamanian government, and colleges and universities across the globe to provide comprehensive research, management, conservation and educational programs about this region.

Schools participating in Idaho and around the world will use the expedition for hands-on learning throughout the year. Endorsed by the National Science Teachers Association, the JASON Project curriculum is correlated with Idaho

standards for science, and with national model standards for math, technology, geography and language arts.

For more information on JASON XV, visit the JASON Project Web site at [www.jasonproject.org](http://www.jasonproject.org). More information at [www.inel.gov](http://www.inel.gov).

JASON Project Broadcast Dates.

Museum of Idaho, Idaho Falls, Jan. 26-30 and Feb 2-3  
Northwest Nazarene, Nampa, Jan. 28, 30 and Feb. 2-3  
Boise State University, Boise, Jan. 27-29 and Feb. 4-6  
College of Southern Idaho, Twin Falls, Jan. 31 and Feb. 4-6  
University of Idaho, Moscow, Jan. 30  
North Idaho College, Coeur d'Alene, Feb. 5

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