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**DOE-ID Operations Summary  
For the Period July 1, 2015 – July 31, 2015**

***EDITOR'S NOTE:** The following is a summary of contractor operations at the Idaho National Laboratory Site, managed by the DOE- Idaho Operations Office. It has been compiled in response to a request from stakeholders for more information on health, safety and environmental incidents at DOE facilities in Idaho. It also includes a brief summary of accomplishments at the Site. POC: Danielle Miller, (208) 526-5709.*

***Advanced Mixed Waste Treatment Project (AMWTP)***

July 7: Personnel at the Advanced Mixed Waste Treatment Project determined that a waste retrieval fire scenario included in the safety analysis may not accurately reflect the correct amount of material at risk should a fire ignite as a result of a fuel spill. Operating restrictions have been imposed in those areas, and the scenario is being analyzed to determine adequacy. [EM-ID--ITG-AMWTF-2015-0008]

***Notable Accomplishments: See the “A Decade of Cleanup Progress at EM’s Idaho Site” feature below***

***Idaho Cleanup Project (ICP)***

June 18: A thermal event occurred in a repackaging hot cell at the Idaho Nuclear Technology and Engineering Center while performing cutting operations on a piece of Remote-Handled Transuranic (RH-TRU) waste. The RH-TRU waste contained sodium which reacted due to a low level of oxygen. The operator applied MET-L-X extinguishing agent and pulled a manual fire alarm. All non-essential personnel were evacuated. There were no injuries and no facility or equipment damage. [EM-ID--CWI-ICPWM-2015-0001]

July 19: Personnel at the Integrated Waste Treatment Unit determined that the facility had not been operated in accordance with administrative controls outlined its Technical Safety Requirements during a ventilation system impairment. [EM-ID--CWI-IWTU-2015-0006]

July 25: Personnel at the Integrated Waste Treatment Unit (IWTU) determined that a lockout/tagout (LO/TO) installed on a carbon reduction reformer (CRR) airlock inlet valve did not provide adequate isolation of all potentially hazardous energy sources. Work was stopped and the LO/TO was re-evaluated prior to repairs. [EM-ID--CWI-IWTU-2015-0007]

July 25: While performing a review of all active lockout/tagouts, personnel at the Integrated Waste Treatment Unit (IWTU), discovered an installed LO/TO that identified isolation of the incorrect isolation valve for a pressure gauge removal/replacement, isolation of the incorrect valve did not provide adequate isolation of a hazardous energy source during the work activity. [EM-ID--CWI-IWTU-2015-0008]

## ***Notable Accomplishments: A Decade of Cleanup Progress at EM's Idaho Site***

In 2005, CH2M-WG Idaho, LLC (CWI), one of EM's main cleanup contractors at the site, began work in the Idaho Cleanup Project. Since then, workers with CWI have decontaminated and decommissioned old reactors, retrieved buried wastes and soil, and remediated groundwater, among other activities.

That same year, Idaho's Advanced Mixed Waste Treatment Project (AMWTP) ramped up operations to prepare and ship legacy transuranic and other waste for off-site disposition to help meet commitments to the state of Idaho.

"In the past 10 years, DOE and its contractors have conducted a lot of important cleanup work, and dramatic action has been taken to keep our commitments to the state of Idaho and its citizens," said John (Jack) Zimmerman, DOE-Idaho Deputy Manager for the Idaho Cleanup Project. "Environmental cleanup success has been vital to developing trust among our regulators and stakeholders. That trust is critical to our ability to continue to perform the nuclear energy and national and homeland security research and development which are at the heart of the Idaho National Laboratory's long-term mission."

A major area of emphasis has been protecting the Snake River Plain Aquifer, a Lake Erie-sized underground water supply for more than 300,000 residents in southeastern Idaho.

"Without a doubt, the aquifer is in better shape today than 10 years ago," CWI President and Chief Executive Officer Tom Dieter said.

At the northern end of the site, workers treated 600 million gallons of water from the aquifer using a pump-and-treat system and bioremediation, in which a food-grade whey is injected into the aquifer to encourage microorganisms to feed on the waste.

At the site's south end, workers removed the equivalent of about 32,000 55-gallon barrels of radioactive and hazardous waste from 3.8 acres of the Radioactive Waste Management Complex. They also destroyed 242,000 pounds of vapors from solvents used to clean equipment decades ago.

"With these two projects, we're removing the waste source, which is crucial to protecting the aquifer for the long term," said Dieter.

CWI also remediated 136 suspected or confirmed waste sites; removed unexploded ordnance left after military gun proofing from 178,100 acres of land; demolished three large spent fuel reprocessing facilities; and demolished 221 facilities and structures, including three reactor vessels. CWI transferred 3,186 spent fuel units to safer dry storage and washed and grouted 11 of 15 underground storage tanks. Seven of those tanks held high-level radioactive liquid waste from historic spent nuclear fuel reprocessing. Work is under way to address the remaining tank waste.

Overall, EM has completed 99 percent of more than 500 enforceable milestones at the Idaho Site on time or ahead of schedule.

## **Pit 9 Success**

Another major success achieved at the Idaho Site is the completion of the cleanup of Pit 9, which helped to provide a number of important lessons learned for the overall effort to retrieve buried waste. The Pit 9 remediation project was initiated in the 1990s, and was intended to help demonstrate a “privatization” approach for cleaning up buried waste through the use of a fixed-price contract. The initial subcontractor had planned to use a remote process to dig up the waste in Pit 9 and process it for final disposal, but the work was never completed and the subcontract was ultimately terminated.

In 2011, crews from CWI retrieved what would ultimately be approximately 700 cubic meters of waste from the one-acre Pit 9 section, which contained materials from the former Rocky Flats site in Colorado buried in the late 1960s. Cleanup of Pit 9 was completed in 2011, nine months ahead of CWI’s schedule and for less than a tenth of the cost of early cleanup estimates that topped \$500 million.

## **Making Progress on Removing TRU Waste**

In 2005, DOE took ownership of AMWTP, which is now managed by Idaho Treatment Group, LLC. Since then, an additional 55,000 cubic meters of transuranic waste has been safely and compliantly retrieved, characterized, treated, and shipped by the AMWTP workforce. Innovative techniques, sophisticated equipment, and a professional workforce have made AMWTP a premier waste treatment facility.

### ***Idaho National Laboratory (INL)***

July 6: A diesel generator supporting the Advanced Test Reactor’s Volt Diesel Bus Battery-Backed Power system was declared inoperable following an unexpected shutdown during a monthly Standby Diesel and Equipment Operational Test. [NE-ID--BEA-ATR-2015-0027]

July 8: One inflatable isolation bulkhead seal was discovered to be leaking at the Advanced Test Reactor fuel canal. Isolation bulkheads installed in the canal have dual inflatable seals. Operations in the canal were stopped. [NE-ID--BEA-ATR-2015-0028]

July 15: A software program used for seismic calculations for the Fuel Manufacturing Facility vault racks was determined to contain a programming error, resulting in potential non-conservative evaluations. Interim controls were established at the facility to prohibit further addition of material to the storage racks. Upon further investigation, INL determined that the seismic analysis for the FMF vault racks was still accurate and not impacted by the software issue. [NE-ID--BEA-FMF-2015-0001]

July 16: Personnel at the Analytical Laboratory discovered that a close off valve to a non-RCRA waste tank was not seated properly. As a result the tank was not shut off from the recirculation line, and therefore the waste in the tank had to be disposed of as RCRA waste. [NE-ID--BEA-AL-2015-0001]

July 23: The Advanced Test Reactor was manually scrammed as a result of a leaking seal on an emergency cooling pump. Investigation into the source of the leak identified an inboard bearing seal on an Emergency Coolant Pump (ECP) as the cause for the leak rate. The ECP was isolated and declared out-of-service. Per safety requirements, emergency coolant pumps must be operable during reactor power operations. [NE-ID--BEA-ATR-2015-0029]

July 27: An emergency coolant pump at the Advanced Test Reactor unexpectedly stopped running. The cause of the condition was discovered to be failure of the M1 main contactor. At the time of discovery ATR was in depressurized shutdown mode. [NE-ID--BEA-ATR-2015-0030]

July 30: An instrument channel surveillance check was unable to be performed in accordance with Advanced Test Reactor safety requirements due to an improperly placed instrument channel recorder pen. The instrument channel recorder has been repaired and placed back in to service. [NE-ID--BEA-ATR-2015-0031]

### ***Notable Accomplishments: Idaho tests help new technology ‘wow’ billionaire investors***

When local small businessman and entrepreneur Mark Melni designed a new way to make repairs to broken underground electric lines that was more than six times faster than existing methods, he was pretty sure he had an industry-changing invention on his hands. In normal situations, restoring power that much faster is just good business, and in hazardous environments, a sixfold increase in repair times could literally be lifesaving.

But before his electrical coupler could be certified for use, he had to put it to the test – literally. Unable to find a private facility that could safely provide the voltage he’d need to test his invention, he turned to Idaho National Laboratory and its Technical Assistance Program. TAP is a support program authorized by federal law to provide access to scientific and engineering expertise for small businesses.

“The TAP program provides up to 40 hours of technical assistance to small technology-based businesses in the areas of nuclear energy, other energy solutions or national security,” said Stephanie Cook, who leads INL’s technology-based economic development activities. “Our research team really enjoys working with the six to nine small businesses that participate in TAP every year.”

As Melni discovered firsthand, the program is particularly beneficial to organizations that find their problems too complex or technical to solve on their own. “The Technical Assistance Program helps entrepreneurs like me get help we couldn’t get anywhere else,” he said.

Melni’s relationship with INL started when he won an entrepreneur contest in 2010 that was sponsored in part by the lab. With his \$10,000 award money, Melni set out making prototypes of his connectors and asked INL, via its Technical Assistance Program, to provide the specialized testing that he couldn’t readily find elsewhere.

INL's Mark Hunter, an electrical foreman at the Materials & Fuels Complex, supervised the electrical tests, simulating what Underwriters Laboratory – the ubiquitous UL found stamped on all electrical devices in this country – would subject the connectors to before granting their certification. “My impression is that it's a pretty dang good idea,” said Hunter. “Voltage and amperagewise, [the connectors] exceeded anything I expected.”

Needing only to transmit 3,400 volts to be considered successful, Melni's connector withstood a whopping 41,000 volts in INL's test rig before failing. “It put us in a whole different category for voltage,” Melni said. Subsequent tests did nothing but reinforce that his connectors were up to whatever challenge could be thrown at them. Needing to withstand 450 pounds of pulling tension to be certified, the connector withstood 1,060 pounds of force before failing; needing to conduct 360 amps without heating by more than 122 degrees, the connector got only 80 degrees hotter. Submersion tests, impact tests – Melni's invention passed them all with flying colors.

The testing process was one that Melni thoroughly enjoyed. “I hesitate to use the word ‘fun’ because it sounds adolescent, but I had so much fun! The guys at INL were great – it was so cool.” It's a sentiment shared by INL's electrical foreman on the project. “It was neat to see a new invention and feel like we were part of it,” said Hunter.

That extensive testing – and maybe a bit of the fun – recently paid off: Melni successfully pitched his connectors on ABC's “Shark Tank,” a reality show that assembles a group of billionaire investors to hear out the grand ideas of hopeful inventors. So impressed was one investor, Mark Cuban (yes, the owner of the Dallas Mavericks) by the advantages Melni's connectors hold over traditional splicing techniques that he offered up a \$500,000 investment in exchange for a 12 percent stake in the company.

While Melni appreciated the investment – and the subsequent increase of his company's online presence and sales orders after the episode aired – he well knows that the success of his invention rests upon sound science and rigorous testing – INL hallmarks. “INL is one of the best things to happen to our company; it was monumental,” Melni said. “Without the lab's help, we would not be anywhere near where we are today.”