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**DOE-ID Operations Summary**
**For the Period August 26, 2013 through September 30, 2013**

***EDITOR'S NOTE:*** *The following is a summary of contractor operations at the Idaho National Laboratory, managed by 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)*

August 2013: The Idaho Treatment Group (ITG) identified a reoccurring issue regarding an increase of the migration of radioactive contaminants onto personnel wearing anti-contamination clothing underneath supplied breathing air (SBA) suits while working in highly contaminated areas. Radiological conditions were consistent and no common cause was apparent. A stop work was issued pending further evaluation into the reason contamination enters SBA suits that have no obvious breach. Extensive mockups were performed to identify the cause of the migration of contamination before resuming work. The conservative measures ITG has taken regarding the series of contamination events this year have been commendable. ITG has recognized the problem, involved the workforce, experts, and the vendor, and continues to develop meaningful measures to preclude the contamination events from recurring. . [EM-ID--ITG-AMWTF-2013-0017]

***Notable Accomplishments:*** Nothing to Report

## *Idaho Cleanup Project (ICP)*

Nothing to Report

***Notable Accomplishments:*** The Idaho Cleanup Project is using distillation to treat sodium contaminated waste and debris.

Developed in the first century and perfected by moonshiners in the 19th century, distillation will be used at the Idaho Nuclear Technology and Engineering Complex (INTEC) to remove sodium from RH-TRU waste

The method of separating mixtures with heat will isolate about 100 pounds of ignitable, reactive metal sodium from metal and debris designated as remote-handled waste because of its high-activity level. Due to its sometimes violent reactivity with air and water, sodium must be removed before the waste can be shipped to the Waste Isolation Pilot Plant (WIPP) in New Mexico for permanent disposal. The waste is primarily a product of experiments from the Engineering Test Reactor, Experimental Breeder Reactor-II and fast reactor tests.

The Idaho Cleanup Project will treat the sodium-contaminated debris in a hot cell, where the waste will be sorted and segregated before it is loaded into baskets that are lowered into the distillation unit. The material will be heated, and vapors will be drawn from the debris. That sodium vapor will be condensed into a metal solid, collected and sent offsite as mixed low-level waste for treatment and disposal. The treated debris will be repackaged and sent to WIPP.

Premier Technology, a ICP small-business partner located in Blackfoot, Idaho fabricated the distillation components at its facility, where testing of the system was conducted and completed.

Following the successful testing, the equipment was transported to INTEC and will be assembled beneath the hot cell located at the INTEC area.

Startup of the distillation system is scheduled for the third quarter of FY2014.

### *Idaho National Laboratory (INL)*

August 27, 2013: A building specialist for Battelle Energy Alliance (BEA) performing work at the Engineering Research Office Building noticed smoke and flame inside the elevator equipment room and contacted the building owner representative. The building specialist pulled the manual fire alarm to evacuate the building occupants while the building owner representative used a fire extinguisher to extinguish the flame. The Idaho Falls Fire Department evaluated the area and confirmed the fire was out. After approximately 30 minutes the building occupants were allowed to re-enter the building. An investigation by Idaho Falls Fire Department personnel indicated that recent maintenance on the elevator system/motor by the building owner's subcontractor was the cause of the fire. [NE-ID--BEA-STC-2013-0003]

August 27, 2013: A life safety systems technician for Battelle Energy Alliance identified a jumper that was inadvertently left installed in a fire alarm panel at the Engineering Research Office Building preventing the fire alarm signal transmission from the panel to the Central Facilities Area Alarm Center. The jumper was immediately removed and a work order was initiated to test the functionality of the EROB fire system. [NE-ID--BEA-STC-2013-0004]

August 29, 2013: During a walk down of a facility located at the Materials and Fuels Complex, the facility foreman and construction superintendent noticed that a piece of flashing that seals the area between the interior cinder block wall and the roof was not fully seated in the space between the wall and the roof. The foreman requested that this be repositioned. Later that day, a subcontractor for Battelle Energy Alliance attempted to move the flashing back in place with his finger, and it fell all the way through the open space and into an open stairwell where two individuals had just been standing. The opening that the flashing fell through was approximately 6 inches by 8 inches in diameter in the top corner of a thirteen foot wall. Subcontractor activities were halted and access to the stairwell was secured. The piece of loose flashing is a legacy piece of material with installation date unknown, and likely goes back several decades. [NE-ID--BEA-AL-2013-0002]

August 29, 2013: The Idaho National Laboratory (INL) Fire Department placed a chemical detection instrument containing a radioactive source in to service prior to the instrument being leak tested and added to the INL Accountable source Inventory as required by INL Radiological Control procedures. Post discovery, leak detection test was performed and the instrument was added to the source inventory.

September 11, 2013: A subcontractor of Battelle Energy Alliance collecting data from chemistry control equipment at the Advanced Test Reactor unplugged the monitoring unit without prior authorization from the ATR shift supervisor. Failing to follow the prescribed hazardous energy control process caused the equipment to blow two fuses, the fuses were subsequently replaced and the unit was turned back on. Following the fuse replacement work was stopped and it was later determined that the subcontractor employees needed additional training on INL requirements and work processes. [NE-ID--BEA-ATR-2013-0032]

September 26, 2013: Battelle Energy Alliance identified that the calculations associated with a transport plan for a used fuel element transfer cask may be inadequate. The dose calculations associated with the transport plan will be recalculated. The potentially inadequate calculations do not affect safety due to the other administrative controls in place. [NE-ID--BEA-ATR-2013-0033]

September 30, 2013: A Battelle Energy Alliance health physics technician inadvertently contacted an exposed electrical circuit. The technician's arm contacted an electrical switch on a piece of equipment resulting in a shock of 120 volts. The exposed electrical circuitry was not readily visible. The employee was taken for a medical evaluation and did not sustain noticeable injury. The piece of equipment has been placed out of service until the switch can be repaired. [NE-ID--BEA-HFEF-2013-0003]

***Notable Accomplishments:*** A safer and more efficient nuclear fuel is on the horizon. A team of researchers at the U.S. Department of Energy's Idaho National Laboratory (INL) and Oak Ridge National Laboratory (ORNL) have reached a new milestone with tristructural-isotropic (TRISO) fuel, showing that this fourth-generation reactor fuel might be even more robust than previously thought.

Findings reveal that after subjecting the fuel to extreme temperatures — far greater temperatures than it would experience during normal operation or postulated accident conditions — TRISO fuel is even more robust than expected. Specifically, the team found that even at 1,800 degrees Celsius (more than 200 degrees Celsius greater than postulated accident conditions) most fission products remained inside the fuel particles, which each boast their own primary containment system.

TRISO fuel particles are the size of poppy seeds. Break one open, and it looks like the inside of a tiny jaw-breaker. An outer shell of carbon coats a layer of silicon carbide, which coats another layer of carbon and the uranium center — where the energy-releasing fission happens. Byproducts of the fission process have the potential to escape the fuel, especially at very high temperatures.

This revelation comes 11 years into INL and ORNL's joint study of TRISO fuel, which began in 2002. TRISO fuel was developed and used in Germany in the 1980s. U.S. researchers have shown that their own version of the fuel can achieve more than twice the burn-up levels — that is, the amount of the fuel that is used to release energy — clocking in at nearly 20 percent burn-up.