Title: ARIES team achieves major milestone in support of nonproliferation

Author(s): Lunn, Maureen E.

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Commemorative coins were made for all who provided significant contribution to the ARIES program. The coins read "Reducing the global nuclear danger" on one side and "ARIES Oxide Production – 1 MT in the cans – 2009-2019" on the other.

The Advanced Recovery and Integrated Extraction System (ARIES) Program is a great example of LANL's Weapons and Global Security programs working together to achieve important nuclear security mission goals. Executed at PF-4, a facility better known for its pit production mission, the ARIES Program is helping the nation meet its nonproliferation commitments by preparing surplus weapons-grade plutonium for final disposition. ARIES recently met a major milestone of producing 1 metric ton of plutonium oxide from material removed from surplus pits. The milestone was celebrated in an awards ceremony at LANL on January 28.

Keeping weapons out of the hands of the bad guys

Kenny Hansel and Ross Thornburg weld a 3013 container closed for storage.

ARIES is a program within the NNSA's Office of Defense Nuclear Nonproliferation (DNN) Materials Management and Minimization (M^3) Program, whose objective is to achieve permanent threat reduction by minimizing and, when possible, eliminating weapons-usable nuclear material around the world.

ARIES is the method by which LANL disassembles plutonium components, including plutonium pits (the core of a nuclear weapon), in order to convert the plutonium metal in the pit to oxide, which allows the metal to then be safely and securely disposed of.

This mission dates back to 2000, when both the United States and Russia agreed to disposition 34 metric tons (MT) of weapons-grade plutonium declared excess to national defense needs. The ARIES production line was already authorized for operations with special nuclear material (SNM) in 1998, but was initially a demonstration project. The demonstration and development included equipment and automation, processes for pit disassembly, conversion of plutonium metal to oxide, oxide processing and packaging, and characterization. It continued with its demonstration work until 2012, when the program was directed to focus on producing 2 MT of plutonium as oxide by disassembling pits and converting the weapons-usable material.

So from 2012 to November 2019, the program both completed startup and readiness activities as required for operations, and exceeded production of 1 MT of plutonium as oxide. All of this material has been processed to meet the DOE 3013 Standard and packaged in 3013 containers, the nested stainless steel containers that safely hold plutonium-bearing materials for up to 50 years.

Oxide = Proliferation Resistance

Enriquez Chacon prepares a precise measurement of plutonium oxide.

Why oxide? Destroying pits and converting the plutonium into an oxidized powder form makes the material much more difficult to use in further weapons production, particularly by would-be terrorists in countries without the necessary infrastructure. Making this conversion on an industrial scale is a major success.

In the next year, ARIES intends to produce 150kg of plutonium oxide, steadily working toward the longer term goal of 2 MT.

An achievement worth celebrating

More than 30 employees, including current ARIES staff, other LANL staff, and retirees, received certificates of achievement for their contribution to ARIES. The certificates were presented by Kasia Mendelsohn, Principal Assistant Deputy Administrator, DNN (second from right) and Dave Eyler, Associate Laboratory Director of Weapons Production (far right).

Meeting the 1 MT milestone, the formalized goal set by NNSA in tandem with LANL, called for a celebration. So on January 28, the ARIES program invited the Washington D.C.-based DNN team, who has oversight over the program, Lab leadership, and approximately 200 employees for a ceremony and reception at the NSSB auditorium. The celebration followed a day of touring for the NNSA group, seeing the progress the team had made and observing some of the processes inside the Plutonium Facility.

Kasia Mendelsohn, DNN, observes the work of the ARIES program while on a tour at TA-55.

At the event, John Sarrao, LANL Deputy Director of Science, Technology & Engineering, welcomed the crowd and honored the achievements of the ARIES team. A group of employees then shared stories of the production work over the years, followed by remarks from DNN's Kasia Mendelsohn.

“The incredible expertise of our National Laboratory complex in support of NNSA’s nonproliferation efforts is truly unmatched around the world,” Mendelsohn said. “The ARIES team provides the nation’s only expertise and capability to dissemble nuclear weapons, pits, and convert that metal into an oxide form -- a critical step in the disposition of surplus plutonium. It’s your expertise and, more importantly, your dedication to this work that’s brought us to this milestone, and allows NNSA to fulfill the United States’ international commitments.”

Dave Eyler, Associate Laboratory Director of Weapons Production, then took the stage to congratulate the team.

“The world is a dangerous and complex place,” Eyler said. “I can’t tell you exactly how much that danger has reduced because of your work, but it has reduced. You should be proud of that.”

Stacy McLaughlin, Actinide Material Processing & Power (AMPP) Division Leader then read the names of those who were instrumental in the work as employees past and present came forward to receive plaques, certificates, and coins.

More than a workplace

Willie Montoya (left) joined his father, Ernie (right) to work in the ARIES program in 2000. Ernie retired in 2017. Willie still works in the program as a Manufacturing Manager.

One unexpected theme cropped up during the ceremony as employees spoke about the program – family. The gathering, which included about 20 LANL retirees who returned to celebrate the work they’d done in the past, felt more like a family reunion than a workplace event, and it didn’t go unnoticed.

“What I’m taking away from this, and what you seem to be most taking away from this, is the community and the family that you have built, and that is truly special,” Mendelsohn expressed after employees’ remarks. “That’s something you will carry with you forever.”

The group even included a few pairings of true family ties – father and son Ernie and Willie Montoya, and father and daughter Charles Richardson and Stacy McLaughlin.

“When the word ‘ARIES’ is said, many people think of plutonium oxide,” Willie Montoya, ARIES Manufacturing Manager, said from the stage as he shared about the program’s future. “But when I hear the word ‘ARIES’, I think of all of you.”

The following organizations and individuals received special recognition at the ARIES awards ceremony:

Supporting Organizations
AMPP-3, ARIES Group
DESH-TA55, TA-55 Facility Operations Group
NPI-7, Hazardous Materials Shipping Group
NPI-8, Materials Management and Business Services Group
NPI-9, Nuclear Material Support Services Group
TA55-PMDS (formerly NPI-3), Process Maintenance & Decontamination Services
PT-2, Machining Group

Certificate Recipients
James Aragon, AMPP-3
Alexyia Page Barraza, AMPP-3
John Brown, AMPP-3
Wendel Brown, PT-2
Fawn Coriz, AMPP-3
Harvey Decker, ORI-2
Curtis Emms, AMPP-3
Kane Fisher, DET-3
Daniel Garcia, ORI-1
Kyle Gardner, AMPP-3
Kenny Hansel, AMPP-3
Troy Harden, E-3
Ben Karmiol, AMPP-3
Susan Klimowicz, AMPP-3
Jane Lloyd, AMPP-1
Leonard Lujan, AMPP-3
Anthony Martinez, Retired
David “Carn” Martinez, AMPP-3
Steve McKee, AMPP-DO
Ernie Montoya, AMPP-3
Willie Montoya, AMPP-3
Larry Peppers, ES-55
Charles Richardson, ORI-DO
Bobbie Simpson, Retired
Dan Stewart, PAQ-1
Jared Stritzinger, AMPP-3
Mark Swoboda, PAQ-1
John Valdez, Retired
Sean Walsh, AMPP-3
Julia Whitworth, PPMI-DO