



# THE STAR SUMMER 2015







CNS managers meet Pantexans at July 2014 events marking the beginning of the CNS contract. Similar events were held at Y-12.

July 1, 2014. To most, this date signaled the start of the July 4 holiday festivities, but to the work force of the Pantex Plant in Amarillo and the Y-12 National Security Complex in Oak Ridge, it was the day we became "OneTeam" as the National Nuclear Security Administration Production Office and Consolidated Nuclear Security completed one of the largest and most complex contract transitions in the history of the Department of Energy.

CNS leaders were excited to begin this venture with two successful and critical contributors to the national defense mission. Now, on our one-year anniversary, we welcome you to *The Star*, a publication that will share our stories, successes and lessons learned as we continue our "OneVision" of becoming the model of performance excellence for the Nuclear Security Enterprise. Our publication's name represents our employees and the states in which they work.

This inaugural issue highlights some of the contributions that our employees (the real stars) have made during our journey. Each article ties back to our strategic goals, core values and daily absolutes (see inside cover). We are proud of our work, and we are glad you are with us. All of our stakeholders—including government representatives, community members and employees—have been part of the proud history of these two sites. Join us as we shape our future together while continuing to protect our nation and make the world safer.

Jim Haynes CNS President and Chief Executive Officer

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Cover photo: Construction progress continues at the Uranium Processing Facility site in Oak Ridge; read more about UPF on pg. 4.

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#### Hub of the High Explosives Center of Excellence

The Pantex Plant manufactures high explosives to support the nation's nuclear deterrent. Nuclear weapons require both high-explosive charges and special nuclear material. Pantex's experts manufacture the main-charge high explosive by making the raw munitions powder, heating it in ovens and pressing it into a solid. The main-charge high explosive surrounds the nuclear core, or pit, of a weapon.

For more than 50 years, the Pantex Plant has manufactured highexplosive charges for every weapon in the nation's nuclear stockpile. Much of that work is carried out in six aging facilities. But soon, highexplosive operations will be conducted in the site's newly built High Explosives Pressing Facility. The one-of-a-kind HEPF will consolidate processes in a single modern facility, increase manufacturing throughput by 180 percent, and over the life of the facility, save \$92 million in high-explosive transportation costs.

For Lennon Mings, HEPF represents a quantum leap in high-explosives operations. "This is a huge advancement," said Mings, a highexplosives pressing engineer. "While Pantex has always been at the forefront of pressing operations, HEPF will allow us to increase not only productivity but also our capability both in the size of explosive components and in improved process control, which equates to a better quality product."

Mings and other Pantex engineers and technicians helped design the processes in the new facility so that equipment and tools are within easy reach, which drives efficiency, nearly doubles throughput without adding personnel and increases worker protection. Moreover, detailed information in the design model will aid in machine maintenance and repair.

Not surprisingly, the new facility will change how Mings does his job. "HEPF will be more reliable, which will free up my time to play a more active engineering role in operations," he said. "I won't spend nearly as much time troubleshooting issues with ovens and ancillary equipment that support pressing."

In addition to more efficient processes and a revitalized infrastructure, other HEPF benefits include improved safety and reduced transportation costs. The 45,000-square-foot facility consolidates packaging, staging, pressing, machining and density operations, which decreases risks and costs associated with transporting a main-charge high explosive from one building to the next.

"Because process facilities are scattered, today a main-charge high explosive moves all over the site," said Robert McClary, who heads up Pantex's High Explosives Manufacturing organization.

"Every time you move it, there's a risk . . . the potential to drop it or have a vehicle accident. With HEPF most everything is in one place, so we significantly lower that risk and save on transportation costs."

Now that HEPF construction is complete, CNS personnel are prepping the facility for startup. Tooling is being moved in, network and security systems are being added and detailed procedures are



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being developed so that operations can begin by fall 2016. "We've got the keys to the building and now are readying it to make it operational," McClary said.

Once operational, HEPF will be the hub of the Department of Energy's High Explosives Center of Excellence for manufacturing.

"I grew up in Amarillo and for many years didn't know the important role that Pantex plays in national security," said Monty Cates, director of Explosive Operations at Pantex. "Now, as an employee, I can tell you we meet the mission daily. When we leave our homes in the morning to come to work, our goal is to protect our families and our nation. We know HEPF is key to securing America's future."

#### **HEPF Fast Facts**

- 45,000 square feet
- 16 air handlers
- 582 sprinkler heads
- 709 electrical devices
- 726 light fixtures
- 8,750 linear feet of fire protection piping
- 14,160 linear feet of process piping
- 52,073 linear feet of electrical conduit
- \$66.7 million construction contract cost to date



The newly constructed High Explosives Pressing Facility at the Pantex Plant will consolidate and improve operations, nearly double throughput and save millions in transportation costs. The facility is planned to be operational by fall 2016.

# Road to success: UPF completes site readiness

### Setting the stage for the next steps

The Uranium Processing Facility project celebrated its first major milestone with the completion of site readiness work, delivered on time and under budget. The readiness work, completed in March, supports the start of site infrastructure and services work.

"UPF is essential to our nation's uranium mission," said John Eschenberg, former UPF Federal Project Director. "Site readiness work sets the standard for UPF and opens the door for other site infrastructure projects to begin. We've accomplished a lot of work in an area that stretches across approximately a five-mile linear footprint. Most importantly, we have accomplished all of these activities securely, on schedule, under budget and with high quality."

The Site Readiness Construction subproject began in 2013. Its completion signifies a significant step forward toward the National Nuclear Security Administration's commitment to complete UPF by 2025 for a cost not to exceed \$6.5 billion. UPF is the Department of Energy's single-largest capital investment in Tennessee since World War II and NNSA's largestever construction project and will replace the nation's aging uranium processing operations. Work completed includes relocation of Bear Creek Road; a new bridge; relocation of several potable water lines; rerouting of overhead electrical lines; construction of a haul road that segregates construction equipment from site traffic and alleviates traffic congestion while the UPF project is under construction; mitigation for wetlands impacted during road construction; development of the west borrow and wet spoils areas to receive soils for later project phases; demolition of multiple structures; and construction of sediment basins to protect the natural resources from erosion and sedimentation.

"The UPF team has demonstrated an exceptional commitment to the fundamental principles of any successful construction project: safety, high quality, cost and schedule," UPF Project Director Brian Reilly said.

To execute the work, NNSA employed an integrated acquisition and project management strategy to ensure best use of taxpayer dollars. This strategy includes a partnership among DOE, the U.S. Army Corps of Engineers and CNS.



From left: Don Peters, UPF Project Office; Lt. Col. John Hudson, commander of the Nashville District USACE; NNSA Administrator General Frank Klotz; Congressman Chuck Fleischmann; former UPF Federal Project Director John Eschenberg; UPF Project Director Brian Reilly and UPF Site Readiness Federal Project Director Eric Thompson.



### Y-12 celebrates victory

Working in buildings almost 70 years old has its challenges, so completing the Nuclear Facilities Risk Reduction capital improvement project that made Buildings 9212 and 9204-2E at Y-12 safer and extended their operational lives was cause for celebration. The celebration was even sweeter with the project being completed \$5.6 million under its \$75.7 million budget and 11 months ahead of schedule.

NFRR Project Manager Michelle Culp said, "Building 9212 is a fully functioning facility, where operations are done under highly controlled conditions. Construction work in an operating facility takes an amazing amount of coordination. We were taking out ductwork, shutting off essential facility utilities and getting into places people hadn't been in for 40 years. The goal was to do all this while employees in the facility continued to work."

Federal Project Director for NFRR Anna Beard said, "NNSA's commitment to making needed modifications was necessary to ensure Y-12 mission-critical operations are cleaner, safer, reliable and more maintainable for the worker and facility."

Culp said, "The project team and workers in the facility found creative ways to work around situations so the project and production personnel would have access where and when they needed it." The project, originally scheduled to be completed in 2016, included replacing major portions of a 40-year-old ventilation system, consolidating 11 steam stations into seven and providing improved function and maintainability. Upgrades, replacements and modifications also were made to electrical switchgear and motor control center systems. A Kathabar system was replaced with a more environmentally friendly brine chiller.

Beard said, "Achieving these improved conditions earlier than planned reached beyond the project's goals and expectations." "The NFRR project was a really big step toward upgrading facilities in dire need of investment," said Steve Erhart, NNSA Production Office manager during NFRR. "The infrastructure improvements will enable the 70-year facilities to safely operate until replaced by the Uranium Processing Facility."

Most Y-12 organizations contributed to the project, with the majority of field work being completed by Y-12 employees. The team completed more than 2,000 days of work safely and without a lost workday.



NNSA Administrator Frank Klotz and NFRR Federal Project Director Anna Beard celebrate the project's completion.

### Getting to the core of work

#### A day in the life of a pit at Pantex

With underground testing long out of the question, the health of the country's nuclear weapons stockpile relies in part on pit testing conducted at Pantex. At Pantex's Special Nuclear Material Component Requalification Facility, pits—a nuclear weapon's heart—are probed for analytical data.

"When we obtain a pit, it is unpackaged, cleaned, visually inspected and weighed, and a leak check is performed to ensure it's sealed," Special Nuclear Materials Department Manager Randall Hodges said. "That's when it goes to either the Laser Gas Sampling System for surveillance or the integrated pumpdown and fill station for requalification."

Akin to a blood draw, the Laser Gas Sampling System enlists a laser to drill a hole into the pit tube the diameter of a human hair to obtain a small amount of gas. The same laser welds the hole shut, and the gas sample is transported to the gas lab where a determination is made about its composition.

A second process is comparable to a blood transfusion. The integrated pumpdown and fill station's highenergy laser drills a hole in the pit tube, the gas is replaced, and the laser welds the hole shut. These gas samples also head to the gas lab for analysis. Both systems support the overall Pantex mission. Requalification allows a pit to stay in the stockpile; surveillance involves obtaining information on a pit, then sharing it with the national laboratories to help certify to the President that the nuclear weapons stockpile is at an extremely high level of quality.

"Our most important work involves the surveillance and reprocessing of nuclear material for nuclear weapons," David Cole, Weapons Operations director, said. "It has to be very high quality given the lack of underground testing. We can't build new, so we've got to take components that were not designed to remain in the stockpile this long and make them last longer."

A pit's visit to the Special Nuclear Material Component Requalification Facility involves much more than "blood work," and the entire process can take four to five days. Microfocus X-ray ensures that the pit's weld is acceptable. Then, it revisits both the weigh station and leak test station.

Additional steps include the dye penetrant station, coordinate measuring machine and Tube Evaluation Test System. The pit is then re-marked and its condition documented at the pit imaging station. Finally, it is repackaged and sent back to the warehouse for future use in another weapon. A second Laser Gas Sampling System, referred to as LGS2, will soon double Pantex's operational capacity, increase reliability and provide higher quality and more consistent welds.

"The laser in LGS2 is a newer technology system that runs off laser diodes rather than flash lamps, and produces more consistent operation as it ages," Nate Davis, former Special Nuclear Materials Technical Department manager, said. "It also allows the use of fiber transmission of the laser rather than a complicated mechanical/optical train, which alleviates maintenance time involved in aligning the optics."

A second requalification process, to be designed in house, is expected to be installed at the end of fiscal 2016.



Rachael Hughes uses the weigh station's precision scale to determine a pit's weight before and after gas sampling.



### Hats off to the Class of 2015

### Y-12 apprentices graduate

Graduations abound during late spring and early summer, and Y-12 held one of its own and recognized 14 graduates of the Apprenticeship Program.

"This is our fourth apprentice graduation ceremony," Beth Green, Y-12 Infrastructure, said. "Counting this year's graduates, 57 crafts people have graduated from our program."

The seven electricians and seven pipefitters of this graduating class were trained to union specifications for journey worker status. Throughout their five-year training, the apprentices were paired with respective craft journey workers who passed on their own lessons learned and specific on-the-job skills.

Graduate T. Beeman said, "The best thing about the apprenticeship was getting to rotate between each shop. We did something most electricians at Y-12 didn't do, and that's see the many sides of the plant in general."

Completing the program is no easy feat, but it prepares CNS for the future. "The apprentices have worked a minimum of 8,000 hours on the job, learning their crafts, and have achieved a passing grade in the classroom," Tim Milligan of the Atomic Trades and Labor Council said.

> Pipefitters Rebecca Hawn and Ryan Bunch put their skills to the test.

Beeman feels it's important to have the Apprenticeship Program. "People learn life skills that they can use anywhere. Y-12 is unique, and to have someone trained basically from the ground up on how to work here and what protocols to follow helps a great deal. Y-12 has helped me grow in my career and I am grateful for the opportunity."

ATLC President Steve Jones agreed with Beeman's view about the program. "The recent graduates are the ones who will take our place and carry on the proud tradition of being some of the most skilled tradespeople in the world," he said. "More than 30 years ago, I had the same opportunity these graduates have been given. As a result, I have provided for my family. I ask our graduates to take care of the program for those who will follow. Have a good work ethic and be proud of the trade."

Y-12 Site Manager Bill Tindal also congratulated the graduates. "I really commend you for choosing a career path that gives you skills essential to our missions. The Apprentice Program is truly a partnership between CNS and the ATLC—this is a real success story of how we at Y-12 can partner for the long-term success of the site."

Beeman graduated with a new perspective of working at Y-12. "The apprenticeship allowed me to see how things run as a whole. I interacted with different people on different levels and had a great experience."



### Partnering with universities

The Department of Energy and the National Nuclear Security Administration strongly advocate close collaboration between universities and its sites. Typically, these agreements are between national laboratories and universities. However, Pantex and Y-12 broke that mold as NNSA production sites now partnering with research universities.

#### Pantex and Texas Tech University

In 2014, officials from the National Nuclear Security Administration Production Office and Texas Tech University signed a memorandum of understanding for Pantex to become a leader within NNSA in the use of renewable energy.

The MOU sets the stage for further collaboration of the Pantex Renewable Energy Project, or PREP, and TTU's desire to promote a national research center near Pantex (see related story, pg. 12).

The core of the MOU is PREP, a five-turbine, 11.5 megawatt wind farm that was built on federal land east of the main Pantex Plant. Through the MOU, TTU and its National Wind Institute will receive access to information about PREP and the plant's energy usage, which will be used to study ways to make renewable energy more reliable and efficient. Energy savings from the wind farm are expected to average \$2.8 million annually over the 18-year contract term.

"As the site of the largest federally owned wind farm, Pantex is well positioned to be a leader in the federal government's emphasis for increased use of renewable wind energy," former NPO Manager Steve Erhart said. "Given the historical connection between Texas Tech and Pantex, it makes perfect sense to join our resources to help secure the energy future for our country and our planet."

The property of the original Pantex Ordnance Plant was leased to the university for \$1 when the plant closed after World War II. The federal government reacquired some of the land in 1951 to open the Pantex Plant. TTU now owns about 6,000 of the plant's original 18,000 acres, which is farmed for research purposes and used as a security buffer for Pantex.

As part of the goal to expand the relationships between Texas universities and CNS, specific plans are in place to develop MOUs that define mutual strategic interests and implement basic ordering agreements to accelerate contractual interactions.

## Y-12 and University of Tennessee

In 2011, an MOU was signed between the University of Tennessee and Y-12. It combines the university's leading research talents with Y-12's successful track record in technology development and application that bolsters national security.

In December, CNS and UT signed an MOU that expands and focuses collaboration while making our nation safer and more secure.

"By combining the talents and resources of UT and Y-12, we've developed new technologies that are benefiting us inside Y-12 and have the potential to help manufacturers and others outside," said Jim Haynes, CNS president and CEO. "We will continue to work with some of the university's brightest students as interns and grads to help us meet our important national security mission. We're working together to develop a program that's preparing suppliers for opportunities with the new Uranium Processing Facility, one of the most important projects for Y-12 and the nation." (See related UPF article, pg. 4.)

UT and Y-12 have worked together informally for decades to train future scientists and engineers through co-op and intern programs. The Haslam College of Business' master of business

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University of Tennessee Chancellor Jimmy G. Cheek (left) and CNS President and CEO Jim Haynes sign a memorandum of understanding during a ceremony at the Y-12 New Hope Center in December. Standing are Taylor Eighmy of UT and Tom Berg of CNS.

administration program integrated with Y-12 in 2007 and allows students to work on site projects.

### Why partnerships are so important

"The Y-12/UT partnership benefited me by providing real-world experience; it is one thing to understand concepts, practices and theory, but applying those ideas to a real-world problem is completely different. The best part is I got to build a new digital library completely from scratch, which is something not many digital archivists, let alone graduate students, get to do!" —Y-12's Natalie Hansen, project lead for the Visual Asset Library

"The fire protection engineering graduate certificate program can be an on-ramp to graduate school. We encourage students to consider graduate degrees in the different disciplines of the College of Engineering upon completion of the certificate program." —UT Professor David Icove, speaking about the new graduate

certificate program in fire protection engineering offered to CNS employees



"Texas Tech Research Farm hosts several Pantex-sponsored research projects, including work on bobcats, Texas horned lizards and pre- and post-monitoring of birds in advance of wind energy development (all by West Texas A&M University). A considerable amount of research has been performed on Pantex property by Texas Tech wildlife faculty and students. Aside from the value of the information being generated by these studies, it is a great sight to see students, professors and Pantex staff conducting field work across the site." -Pantex's Jim Ray, wildlife biologist

"Our long-standing relationship with Y-12 has enriched our students' hands-on learning experiences while developing technology that solves problems."

—University of Tennessee Chancellor Jimmy Cheek



# CNS sites recognized for sustainable activities

Pantex and Y-12 received 2014 Department of Energy Sustainability Awards. Both sites have long histories of being recognized for their environmental accomplishments.

"I'm excited and proud, but not surprised, that Pantex and Y-12 have received DOE Sustainability Awards," CNS President and CEO Jim Haynes said. "Both sites are known and respected in the DOE complex and the public for their environmental programs."

In the Texas Panhandle drought conditions are apparent, and water is an extremely valuable resource. Pantex's efforts were recognized to conserve this resource with an integrated approach to water



resource management, addressing all water types as potential resources and identifying opportunities for their use through recycling.

Pantex wastewater is distributed to four tracts of land, each totaling about 100 acres and managed through Texas Tech University in a cooperative agreement. Resulting crops are used as animal feed and distributed for flour milling purposes.

In May 2014, Pantex reached a significant milestone with a cumulative total of 1.5 billion gallons of wastewater distributed through the irrigation system since the program's inception. The project directly supports DOE and the National Nuclear Security Administration's water conservation goals and is an integral component of site remediation associated with long-term stewardship.

Y-12 was recognized for its sustainable communications efforts and its use of "one voice" to

broadcast innovative and engaging efforts that promote sitewide sustainability activities. The team uses traditional communications techniques, as well as electronic media, including websites, to disperse the site's sustainability messages. Y-12 shares information on reducing waste, energy and water use, and encourages the expansion of green buildings and sustainable landscaping. Y-12 sustainability communications encourage staff to improve sustainability at work, home and in the community.

#### Y-12 receives EPEAT award

In April, Y-12 received the Electronic Product Environmental Assessment Tool, or EPEAT, Purchaser 3 Star Level Award for Excellence in Green Procurement of Electronics. Y-12 was recognized on Earth Day by the Green Electronics Council at the 3 Star Level for purchasing EPEAT electronics in the following categories: PCs and displays; imaging equipment (copiers, scanners, multifunction devices, etc.) and televisions. Since fiscal 2011, Y-12 has had a DOE acquisition regulation clause in its procurement clauses to ensure the site receives products that meet requirements for recycled content, biobased content, Energy Star, WaterSense, alternative fuels and the EPEAT (as applicable).

#### CNS celebrates Earth Day

Pantex and Y-12 held events in celebration of the 45th anniversary of Earth Day. This year's celebration included displays of employees' children's and grandchildren's drawings depicting their love for the environment.

"Because Earth Day helps demonstrate different ways to support protecting the environment, I think it's important to share the love of Earth Day with the next generation so that they will care for their own communities and continue the tradition of reducing waste. Clean air, land and water help maintain Mother Earth and keep her beautiful," Vo Tudman, Pantex Waste Operations, said.

Y-12 also chose four organizations to receive a \$200 donation thanks to the Aluminum Beverage Can Committee. Employees donate ABCs that are recycled for funds. Twice a year, the committee votes for the top organizations submitted by employees. The four organizations chosen for the year's first donations were Angel Flight; Concord Adult Day Enrichment Services; Leukemia and Lymphoma Society's Light the Night Knoxville (Y-12 team) and Small Breed Rescue of East Tennessee.

#### Pantex recognized by DOE for Earth Day winning photo

Congratulations to Pantex for its winning photo (below), "The Flockers," taken by Pantex photographer John Ebling and submitted by co-worker David Koontz of Environment, Safety and Health. This photo received first place in the Community category of DOE's Earth Day photo contest. Ebling said the birds visit Pantex each year, but this past year he got closer to them when they stopped by the waste reservoir. Other winning photos can be viewed at DOE's website (http:// www.energy.gov/sites/prod/ files/2015/04/f22/DOE-15-14-2015-Photo-Winners-FINAL.PDF).



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#### Blowing in the wind

For more than a year, Pantex has collected energy from its five wind turbines that are part of the Pantex Renewable Energy Project, which was designed to generate more than 47 million kilowatt-hours of electricity annually. The PREP is the largest federally owned wind farm in the U.S. and produces enough energy to provide power to nearly 3,500 homes. The PREP reduces carbon dioxide emissions by more than 35,000 metric tons per year-the equivalent of removing 7,200 cars from the road each year or planting 850,000 trees. The wind farm plays a key role in helping Pantex achieve President Obama's directive that the federal government lead the way in clean energy and energy efficiency, with his administration's goal for the federal government to get 20 percent of its electricity from renewable resources by 2020.



Department of Energy Undersecretary for Nuclear Security and Administrator for the National Nuclear Security Administration Frank Klotz addresses attendees at the ribbon cutting for the Pantex Wind Farm.



## A triple threat against terror

### ART team dedicates new facility

In responsible hands, nuclear and radiological materials provide valuable life-saving, commercial and scientific research benefits. In the hands of terrorists or other roque actors, they're a weighty global security issue. To help combat any possible misuse, the National Nuclear Security Administration's Office of Radiological Security opened a new Alarm Response Training Academy and continues to train security forces, health and safety personnel, law enforcement and other responsible parties to develop, discuss and exercise response plans, procedures and protocols when responding to a theft event involving nuclear and radioactive materials.

"With the six specialized training courses Y-12 and ORS have developed, Y-12 is sharing experience and knowledge by teaching individuals and teams to address ever-changing threats from terrorists and the threat of radiological dispersal devices or radiation exposure devices," Toby Williams of Y-12's Global Security Analysis and Training Program said. Since 2009, almost 3,800 participants from 44 states, 19 countries and 278 sites have been trained in the dangers of nuclear and other radiological materials and how to safely and effectively respond to alarm incidents involving such materials. Many of those courses are held at Y-12's one-of-a-kind, handson training facility where adversarial attacks are rehearsed and live scenarios are played out by participants—law enforcement, radiation safety officers, public health and safety personnel—who must protect the radioactive sources in their own communities.

The ART team, which had a ribboncutting ceremony and building dedication for the new facility in October, welcomed special guests from NNSA headquarters, including Deputy Administrator for Defense Nuclear Nonproliferation Anne Harrington.



"Participant feedback on the development, delivery and execution of Alarm Response Training courses is a true testimony to Y-12's unique niche in national security," Toby Williams of Y-12's Global Security Analysis and Training Program said. Almost 3,800 individuals have participated.

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CNS held an Earth Day drawing contest. Shown is 7-year-old Justice's artwork, who won first place at Pantex. "My grandson loves to be outdoors and his picture is an artistic expression of his love for nature," Shirley Peters of Human Resources said. Caroline S., age 10, won first place at Y-12.

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