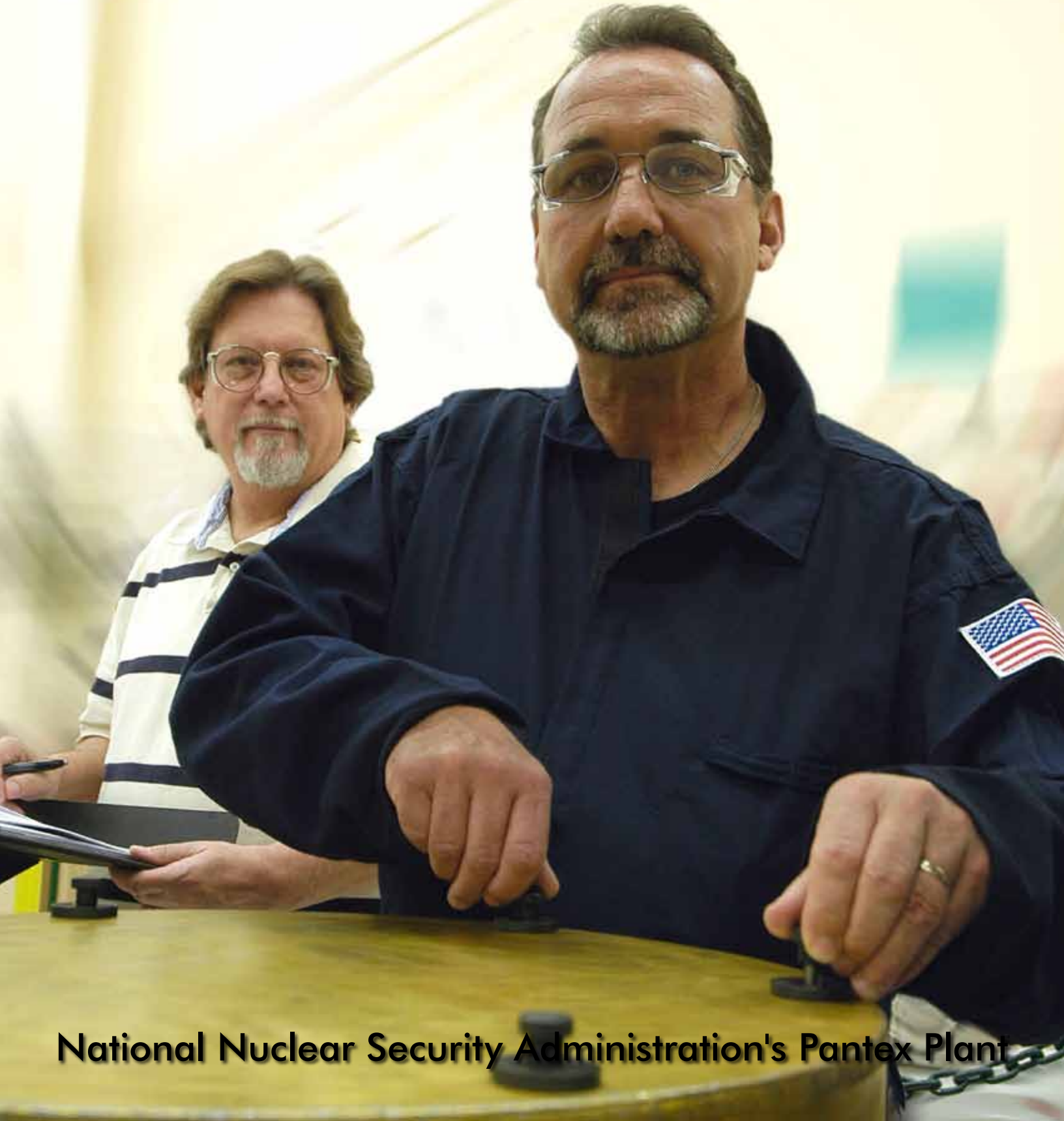


# PANTEXAN

Spring 2011 | Volume 57 | Issue 2



**National Nuclear Security Administration's Pantex Plant**

# Plant Tradition

For Trish Walsh, it turns out that civilian service is a family thing. The Pantex Site Office general engineer was surprised to learn from her mother that her great grandfather, Charlie Montie Reynolds, and grandmother, Hellen Catherine Reynolds Lester, once worked for the War Department in Amarillo; her great grandfather as a pump operator for the Post Engineers and her grandmother as a secretary.

The War Department served as the Pantex Ordnance Plant's oversight agency, which today is the role of the U.S. Department of Energy.

Walsh, who has worked at Pantex for 15 years, was hired at the Plant from the Department of Interior, Bureau of Mines on the heels of its closure. Her husband, Daniel (Rocky) Walsh, also works at Pantex and is a Facility and Systems Design department manager.

"I liked working out here before I knew for sure that my grandparents had worked out here," said Walsh. "I don't believe the reasons for working out here have changed much since 1943. I know the mission has changed a lot since back then but it is still stable employment that pays well, and we are still supporting our troops and contributing to the defense of our country."

*If you've got ties to the Pantex Plant's rich history, we'd like to hear from you at [public\\_affairs@pantex.com](mailto:public_affairs@pantex.com).*



## On the Cover

New tooling for the B83 allows for precise movement of the weapon through subassemblies, giving workers better control and enabling them to do the job more safely. The custom tooling divides in half the time and number of facilities required to process a B83 unit and will be implemented fully this year.

# PANTEXAN

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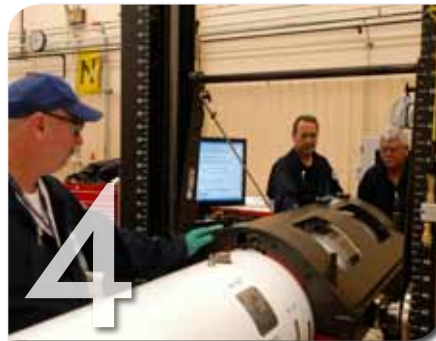
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# Only at Pantex: Satellite-enabled Incident Command Vehicle

## Communications system aids emergency responders

Communications during a real event is crucial, at times resulting in lives saved and property protected. Pantex's new Incident Command Vehicle features a satellite-based communications network designed to go where the action is to do just that.

Unique to the National Nuclear Security Administration complex, the ICV was built from the ground up by emergency vehicle manufacturer Rosenbauer to enable incident commanders to travel where necessary during real events or exercises and communicate via satellite using data, voice or video teleconferencing – unclassified or classified – in an enclosed work environment.

Though the Emergency Communications Network is a DOE capability provided to all DOE sites, Pantex chose this style and arrangement because it gives incident commanders more tools to do their jobs. The ICV seats two in the cab, can house eight at desks in the working section and features heating and air conditioning, electricity, radios, computers, telephones, video conferencing, maps and other equipment.

“We wanted to be able to provide the most reliable means to communicate between the

Incident Command Team and anyone they need communications with,” said Scott Nelson, Emergency Services Dispatch Center section manager. “If a real event occurs at Pantex and this vehicle is used, you can be assured the incident commanders inside it are getting the best resources available.”

Involved in the project were the Pantex Emergency Management Department, Fire Department, Information Technology, Cyber Security, Safeguards and Security and the Projects Division.

“I’m always excited when we can bring a tool online that will save lives,” said Nelson. “I have been working in the emergency world for 24 years in either law enforcement, fire departments or emergency medical services. Bringing this type of communications system to the field for responders to use is a huge leap forward for our site.”

The ICV's satellite communications system was installed by the Remote Sensing Laboratory at Nellis Air Force Base, and the same satellite capability is available at Pantex's Emergency Operations Center and at the Alternate Emergency Operations Center.



# Message from the Site Manager and General Manager

We enter spring with renewed enthusiasm, poised to again perform at our best. One reason for the excitement is the innovative thinking on the part of Pantexans that's led to the creation of several new tools. These tools will undoubtedly help us to better deliver the nuclear deterrent.

Because we expect the best but must plan for the worst, we've equipped our emergency responders with a satellite-enabled Incident Command Vehicle. Putting our satellite on wheels gives us unprecedented flexibility in the event of an emergency and raises the bar complex wide when it comes to emergency communications. This out-of-the box thinking places Pantex at the forefront of emergency management.

Our new B83 tooling enables us to do more for less while making work on the weapon safer. It also showcases the use of a Pantex-developed air-powered vacuum system that reduces our reliance on electricity and eliminates lightning-related concerns. This custom tooling is a true example of Pantexan teamwork and expertise. The result is a streamlined approach that saves time and space.

Pantex-led research conducted onsite, as well as at national laboratories and universities, uncovered an environmentally friendly solvent for cleaning weapons parts. Along the way, our investigators devised unique experiments to test distinctive material functions. The non-flammable cleaner has an extraordinarily long shelf life, yields cost savings, but most importantly makes for safer operations.

These are just a few of the ways Pantex is using forward-looking approaches to enhance national security. Read more about them, as well as completion of the first B53 dismantlement, our award-winning drinking water system and the extraordinary generosity of Pantexans, in this issue of the *Pantexan*.

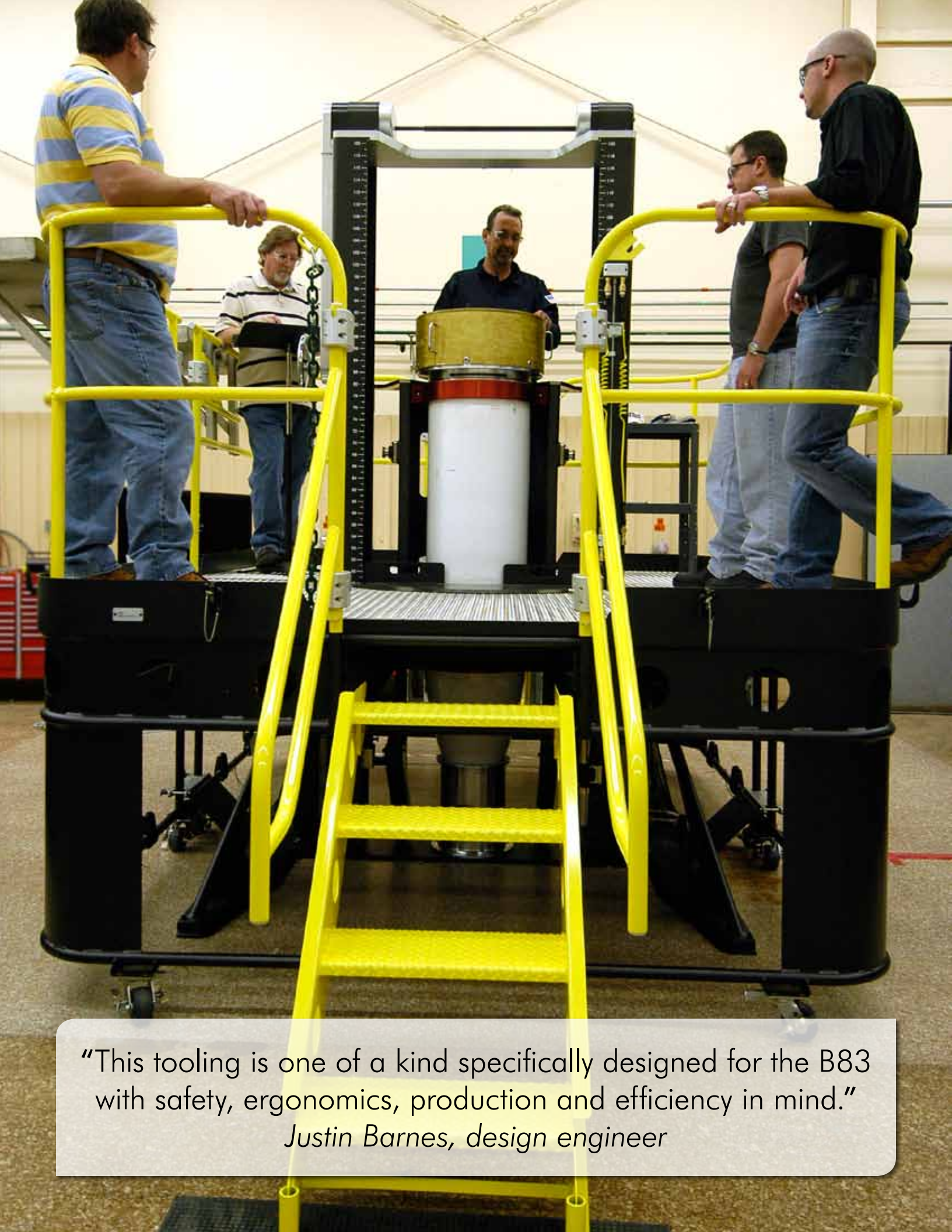


**Steve Erhart**  
Pantex Site Office Manager



**John Woolery**  
B&W Pantex General Manager

**Pantex is securing America as the NNSA's production integrator and provider of the nuclear deterrent to the Department of Defense; serving the Nuclear Security Enterprise through our highly reliable people, processes, infrastructure and business systems.**



“This tooling is one of a kind specifically designed for the B83 with safety, ergonomics, production and efficiency in mind.”

*Justin Barnes, design engineer*

# New B83 tooling goes not only hoistless, but cordless

## Time, space required for disassembly, assembly cut in half

Manipulating a 2,500-pound B83 through sub-assemblies poses unique challenges. At Pantex, those challenges are being met as near 30-year-old tooling comprised of hoists and rigging is replaced with lightweight custom tooling that “cuts the cord” on alternating current electric power, relying solely on air power instead.

Developed by B&W Pantex, the tooling divides in half the time and number of facilities required to process a B83 unit. Now in prototype, the tooling will be fully implemented later this year as part of the continuous improvement aspect of the Integrated Safety Management process known as Seamless Safety for the 21st Century.

“As technology and materials advance in the industry so should the tooling. The old process used heavy tooling that required a hoist where the new tooling is light enough to be hand lifted,” said Justin Barnes, design engineer. “This in turn allows us to completely do away with the hoist giving us better control to do our job safer.”

Comprised of a bomb stand, personnel platforms, unit handling fixtures and air-powered vacuum carts, the new B83 tooling was designed with safety, ergonomics, production and efficiency in mind, added Barnes. The stand, which is the centerpiece, is more than 10 feet tall, weighs 3,700 pounds and is equipped with a gear-reduction system for handling heavy loads and quickly raising special tools to the top of the stand.

The capabilities and flexibility of the new carts allowed for removal of AC-powered equipment.

In addition to a radiation safety piece of equipment, three previously AC-powered tools have been converted to an air-powered system that Pantex developed. And, said Daniel Orr, senior design engineer, the use of air-powered vacuum systems has generated much interest in the Nuclear Explosive Safety community because it completely eliminates lightning-related problems.

“The B83 was modeled from other programs like the W88 and B53, which set the standards when they first started up,” explained Barnes. “Every weapon is different, and the way they are assembled and disassembled is different, but the B83 might point tooling to a more simplistic approach to achieve success.”

This upgrade project allowed organizations throughout the plant to take more ownership than ever and be proud of the role they have played, said Richard Ray, senior design engineer. And, according to Shawn Hudson, weapons training specialist, feedback from the production technicians is that the tooling has made life easier, and they love it.

“We applaud the Pantex Tooling and Machine Design team that created the special tooling system by leveraging decades of nuclear security expertise,” said NNSA Deputy Administrator for Defense Programs Don Cook. “This system will allow NNSA to use fewer resources to dismantle the B83 in support of the President’s goal of reducing the size of the nation’s stockpile. This is a clear example of NNSA and Pantex’s commitment to being effective stewards of the taxpayers’ money while promoting an important dismantlement program.”

# Pantex dismantles first B53, reducing nation's stockpile

Retired mini-van-size weapon untouched for 20 years

Touted as the “modern compact thermonuclear bomb” when it was introduced in the early 1960s, the B53 weapon system is now undergoing dismantlement at the Pantex Plant. The first such dismantlement was completed in December 2010.

“The B53 was the last of the stockpiled weapons to be authorized by NNSA for assembly/disassembly activity. No work has been performed on these weapons in over 20 years,” said Roger Jacobs, B53 process engineer. “The sheer size of the B53 is what makes it unique.”

Prior to work on the weapon, the NNSA completed an extensive safety review in October 2010 that included approval of a Documented Safety Analysis and completion of a Nuclear Explosive Safety Study.

“Gaining authorization to begin dismantlement of the B53 is a significant step forward for NNSA and the nation,” said NNSA Deputy Administrator for Defense Programs Don Cook. “It confirms NNSA’s commitment to support President Obama’s goal of reducing the number of nuclear weapons and their role in the U.S. national security strategy. Completion of the SS-21 project for the B53 marks the first time in over a decade that NNSA has the required authorizations in place to work on all nuclear weapon types in our nation’s inventory.”

The B53 weapons system, which was introduced into the stockpile in 1962, served a key role in the United States’ nuclear deterrent until its final retirement in 1997. The B53 was built at Iowa Army Ammunition Plant in Burlington, Iowa

and is one of the longest-lived weapons ever fielded. This megaton-class weapon is about the size of a mini-van and weighs approximately 10,000 pounds. Its size and weight provided many challenges for the project team responsible for developing a dismantlement process that meets the requirements of NNSA’s SS-21 process.

The dismantlement of the B53 weapon system is consistent with President Obama’s goal of reducing the number of nuclear weapons. In an April 2009 speech in Prague, the President said, “we will reduce the role of nuclear weapons in our national security strategy and urge others to do the same.”

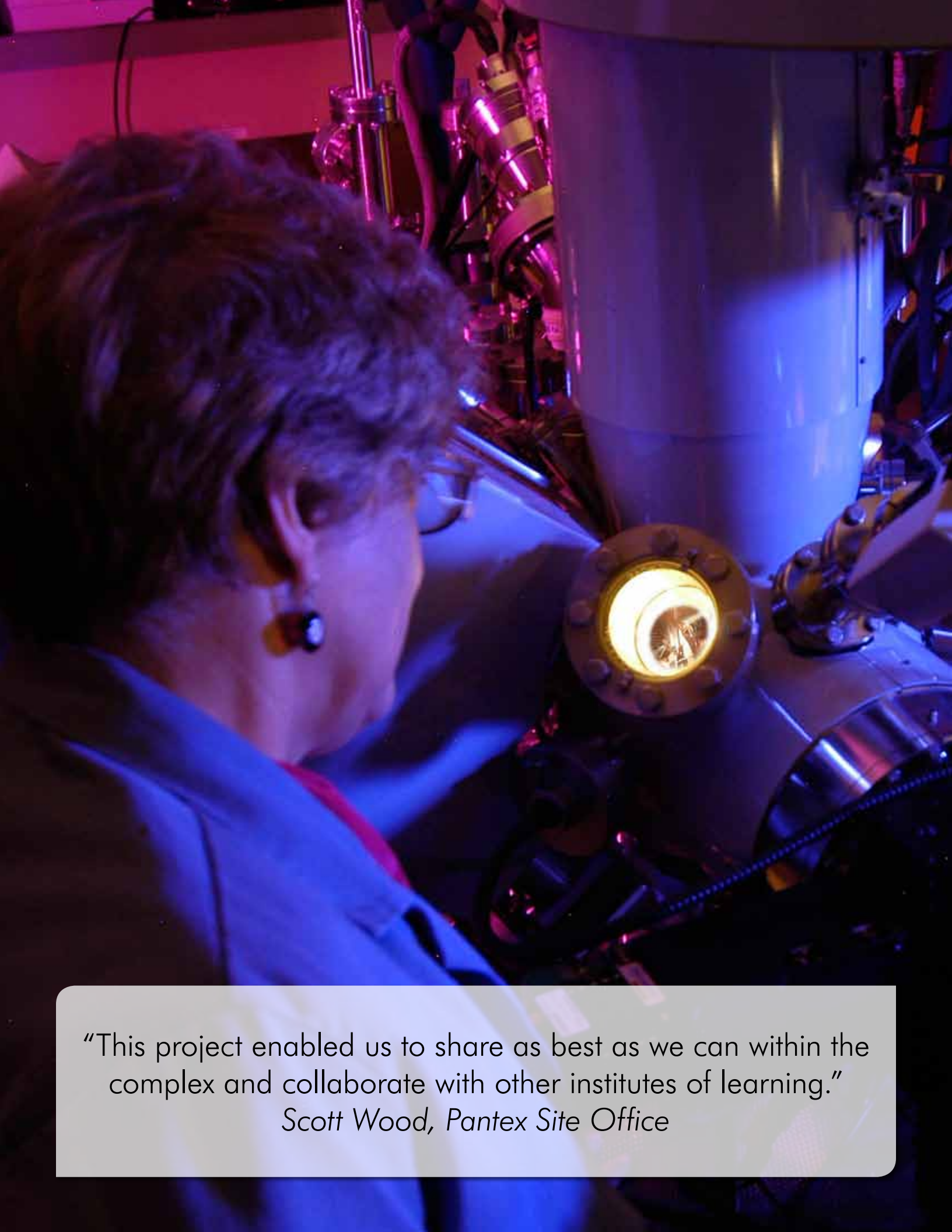
As a key part of its national security mission, NNSA is responsible for safely dismantling weapons that are no longer needed and disposing of the excess material and components. The dismantlement process includes four steps: retiring a weapon from service; returning it to NNSA’s Pantex Plant; taking it apart by physically separating the high explosives from the special nuclear material; and processing the material and components, reuse, demilitarization, sanitization, recycling and ultimate disposal.







“We will reduce the role of nuclear weapons in our national security strategy and urge others to do the same.”  
*President Barack Obama*



“This project enabled us to share as best as we can within the complex and collaborate with other institutes of learning.”

*Scott Wood, Pantex Site Office*

# Long-awaited weapons cleaner turns up “green”

## Solvent cleans components minus hazards

Sparks that ignited vapors from a cleaning solvent at Pantex years ago forced a new approach to cleaning weapons parts. But finding an ideal replacement for the commonly used, though flammable, isopropyl alcohol was an ambitious undertaking that involved multiple sites and spanned a decade.

Cleaning is paramount in the production of high-reliability weapons components, and most are cleaned prior to assembly. The cleaning method depends on the material, shape and size of the part, type of contamination and its final disposition.

“Adding a new material today to the incredibly large mix of materials that make up just one weapon system requires an enormous amount of testing and long-term aging to study all of the possible material interactions,” said Jan Birkbeck, Ph.D., Explosives Technology Division scientist. “Surprisingly, there is no universally accepted protocol in how to evaluate polymer compatibility with a solvent nor what is meant by ‘clean.’ We needed to be innovative in our approach to test and evaluate the affects the solvent might have on some of our materials.”

Rigorous testing and research conducted at Pantex, as well as national laboratories and universities, offered as a solution hydrofluoroether, itself a known fire suppressant. The result is a safer way to clean parts and systems without the burdens of bonding, task exhaust or stopping work due to lightening alerts because of the potential of fire.

“Hydrofluoroether evaporates quickly and cleanly, leaving no residue. It’s non-ozone depleting and has a very low global warming potential. It is non-carcinogenic, non-mutagenic and is reasonably non-toxic,” said Birkbeck. “You might call it a ‘green’ solvent.”

The latest in a series of tests proved that the non-flammable solvent is stable indefinitely when kept in refrigerated storage, which reduces by at least \$500,000 the material costs over one weapon’s life extension program.

Hydrofluoroether is used for current life-extension program assembly operations, pit recertification and pit cleaning prior to repackaging in sealed inserts. It also is being proposed as a cleaning solvent for use on all systems at Pantex as a replacement for isopropyl alcohol and may be employed at other sites.

“Especially considering what Pantex works with, the most important aspect is that our work be done as safely as possible,” said Bill Moddeman, Ph.D., Explosives Technology Division departmental scientist. “The reduction of flammable isopropyl alcohol removes the fuel component necessary to support a fire. The use of hydrofluoroether provides the benefits of solvent cleaning without the safety hazard.”

Pantex’s Plant Directed Research and Development program was instrumental in this research and development effort, and the team also included representatives from NNSA, the Department of the Navy, Los Alamos and Sandia National Laboratories, Kansas City Plant, Y-12 and Lockheed Martin Space Systems.

Said Scott Wood, Pantex Site Office High Explosives Operations and Campaigns manager, “As DOE’s designated High Explosives Center of Excellence, we’re part of a learning and research institution. This project enabled us to share as best we can within the complex and collaborate with other institutes of learning.”

# Safer, cleaner drinking water

State-of-the-art treatment positions Pantex ahead of industry curve



Disinfecting Pantex Plant's drinking water once required injecting chlorine gas into the raw groundwater before the water entered the distribution system. That was until a team of employees found a safer alternative that ensures even greater protection against microbial pathogens while offering enhanced security.

Pantex's mixed oxide, or MIOX, system achieves more rapid and thorough inactivation of a wider range of microbial contaminants than conventional chlorine. In the system, mixed oxidants are produced by electrolyzing salt water (brine) and separating the resulting products. The mixed oxidant solution created is a mixture of liquid chlorine and other chlor-oxygen compounds generated through electrolysis using salt, water and electricity.

According to Jeff Flowers, Environmental Stewardship Department manager, the system eliminates the potential for a release of chlorine gas, improves safety both onsite and offsite by eliminating shipping, handling and transfer of a

toxic gas and removes or reduces bio-films from the aged water distribution system piping.

"Given the risks, potential liabilities and availability of safer alternatives, it made good business sense to convert Pantex's bulk use of chlorine gas to a safer technology," said Flowers. "Regulations concerning chlorine by-products are becoming ever-more stringent. And, shipping and storing chlorine gas post 9/11 can be dangerous because a terrorist attack can threaten many lives in a single incident."

Through the efforts of the B&W Pantex team, the MIOX project was implemented ahead of the industry curve. Though 554 drinking water and sewage treatment plants in 47 states have replaced chlorine gas with safer chemicals or processes, at least 2,600 drinking water and sewage treatment plants still are using chlorine gas, according to the Center for American Progress.

"The MIOX system does a superb job of ensuring the superior quality of the water, as did previous chlorine injection,"

said Craig Snider, Pantex Site Office Environmental Compliance supervisor. “But, the MIOX system has several positives: the disinfectant attributes last longer in the large distribution system out here, it produces fewer byproducts in the disinfectant process and the Plant was able to remove the canisters of chlorine, which greatly improves the safety basis of the Plant.”

The MIOX system earned Pantex a 2011 DOE Pollution Prevention Environmental Stewardship award in the Health and Environment category. The award recognizes Pantex’s efforts to improve the overall safety of Plant and off-site personnel by eliminating the use of chlorine gas as the method of drinking water disinfection. The Pantex drinking water system in its entirety has been deemed “Superior” by the state of Texas based on compliance and operations exceeding those required by rule and regulation.

## Pantex earns “BEST” training award

For the third time in four years, the American Society for Training and Development honored B&W Pantex’s Site Technical Training Department with a “BEST Award” for its exemplary training program.

Among the credited initiatives was the Firearms Training Simulator, which offers Pantex Security Police Officers the ability to train with weapons they use every day in the field and on Plant terrain. Along with an up-armored High-Mobility Multipurpose Wheeled Vehicle, three more vehicles may be added along with ground troops, all communicating together within the same scenario.

“The Simulator allows for exercises with up to 14 officers without moving them one step from the ‘safety’ side of the house,” said David Smith, Protective Force captain. “This allows complex scenarios to be trained while in a controlled environment.”

Cost avoidance annually averages \$2.5 million largely due to savings from ammunition not being expended. The Simulator, which also is used for marksmanship and weapons prequalification, may in the near future be used for qualifications as well. In fiscal year 2010, the Simulator saw nearly 1,900 visits by officers who received training.



photo by John Ebling, B&W Pantex

# Pantex Postscripts



photo by Mig Owens, B&W Pantex

**Science Bowl:** On February 12 and 26, Pantex welcomed more than 325 of the sharpest young minds at the 2011 Science Bowl held at West Texas A&M University. The DOE National Science Bowl® is an academic competition that tests students' knowledge in all areas of science in which middle and high school students are quizzed in a fast-paced question-and-answer format similar to Jeopardy®. It is the only science competition in the U.S. sponsored by a federal agency. Approximately 150 volunteers served as officials. Winners were Friona Junior High and Amarillo High School, who move on to compete at the national level.

**Year without lost time:** On January 5, B&W Pantex celebrated one full year without a lost-time injury. That's approximately 6.5 million hours and sets a new all-time record for the Plant under the Occupational Safety and Health Act recordkeeping system. The accomplishment reflects employees' unparalleled focus on safety and commitment to returning home from work safe and injury free.

**Stellar performance:** B&W Pantex earned 95.6 percent of the FY2010 award fee – considered “Outstanding” performance by the NNSA's Pantex Site Office. This is the company's highest score to date. B&W Pantex accomplished this performance level while achieving a Total Recordable Case rate of 0.40, which is the best safety performance in the history of the Pantex Plant.

**Sharing expertise:** High reliability is what every DOE site desires. Insight on getting there is what Pantex shared with NNSA and DOE site representatives who converged on the Amarillo plant to explore what it means to perform as a High Reliability Organization. Attendees included seven national laboratories as well as Y-12. A future meeting is planned at Y-12 to continue the discussion forum for organizations to share their journey toward high reliability.

**Fostering small business partnerships:** B&W Pantex contracted with small businesses for more than \$95 million of work of the Plant's \$121.6 million total procurement dollars spent in fiscal year 2010, surpassing the Pantex Site Office's small business goal by 17 percent. This year's impact to greater Amarillo area businesses was more than \$34 million in total local dollars awarded.

**Valuing good health:** At the conclusion of a recent Naturally Slim wellness program sponsored by B&W Pantex, 300 Pantexans lost a combined weight of 4,388 pounds, with an average weight loss of 15.8 pounds per participant. In addition to weight loss, participants are walking more, experiencing more energy, and becoming more conscious of the food they eat – making good health a way of life.

# Community feels Pantexan generosity

## Despite economy, employees donate record amounts

“Winston Churchill’s belief ‘We make a living by what we get, but we make a life by what we give,’ exemplifies Pantexans to a T,” said Geoff Beausoleil, Pantex Site Office deputy manager. “In spite of all the obligations, worries and concerns we may have in life, we still find that little bit of extra to give back to our community so that others may benefit.”

This year’s pledges to the United Way and donations by Pantex employees to the Pantex Christmas Project and Food Drive demonstrate that willingness to give back and helped answer the call of the community in the face of economic hardship.

Funds pledged by employees to United Way will help support programs in Amarillo and Canyon, as well as many small towns throughout the Panhandle. A record 285 Pantexans pledged \$1,000 or more, and Babcock & Wilcox Company contributed \$40,000, purchased tables at campaign events and supplied four Loaned Executives.

Pantexan generosity also emerged as employees once again immersed themselves in the Pantex Christmas Project. The 55-year tradition provides gifts, clothing and food to families in need during the holiday season. Employees donated a record

4,158 toys to the Project during a Toy Drive Challenge kick-off. This year’s project helped 74 families, 10 elderly and 243 children in the community – 81 more children than last year.

“Through United Way and the Christmas Project, Pantexans have a profound impact on the community, contributing in excess of \$600,000 annually,” said John Woolery, B&W Pantex general manager. “That impact is felt not only through charitable contributions, but countless volunteer hours.”

Pantexans also donated more than \$10,000 and 1,500 pounds of food to help stock the shelves of the High Plains Food Bank during the nationwide Feds Feed Families campaign. The Food Bank converted the monetary donations into approximately 50,000 pounds of food.

“We are all aware of the economic conditions of our community and country. We are very fortunate to have good jobs here at Pantex,” said Beausoleil. “Though we may be struggling a little, we know that for many folks out there struggle is all they know. Pantexans choose to help because it is in our make up.”



