

PANTEXIAN

SUMMER 2013



PANTEX PLANT - SECURING AMERICA

PLANT TRADITION

In August 1979, Steve Moglia was home on leave doing preliminary job searching as he approached the end of his U.S. Army enlistment. As a member of the Army's Military Police he was looking to continue in a similar job, and he applied at both Pantex and the Amarillo Police Department.

On the same week in February 1980, he was offered an opportunity to test for a position with the Amarillo Police Department or take a full-time position as a security guard at Pantex. He chose the latter and thus began what has turned into a 34-year career of various roles in the Pantex Protective Force.

Moglia's career choice has afforded him the opportunity to see the Pantex Protective Force from many angles. He has been a guard (now known as security police officer), a Special Response Team member, a lieutenant, a captain with various responsibilities from leading a shift to managing the Pantex Live Fire Ranges as the Range Master, and his current role as a Protective Force Operations officer.

"The site has changed dramatically since I started in 1980. Structures, fences, security zones and number of employees have changed; there was a significant cultural shift in 2001 when BWXT took over the management of the contract from Mason & Hanger, Silas Mason Co. There have been a number of major upgrades to Security; bottom line there is no comparison to when I started."

In his current role, Moglia is most recognized around the site as the Protective Force face of

all VIP tours. This is a crucial role that ensures visitors are given access to various areas of the Plant in an expedited fashion, while still maintaining the highest level of security. For Pantexans who know Moglia, they know that his engaging personality makes him a perfect fit for this important responsibility.

When asked to reflect on the thing he is most proud of in his distinguished career, Moglia quickly pointed to 1993 and 1994. It was during this time he and Joe Rubalcaba coached the Security Firearms Competition Teams that were successful in bringing the coveted Secretary's Trophy, awarded to the top firearms competition team in the U.S. Department of Energy (DOE), to Pantex for the first time(s).

The 1993 team also won the National Championship of SWAT, a competition of state and federal law enforcement agencies. The 1993 team was featured on television's Americas Most Wanted broadcast, highlighting its victory.

In addition to his time at the Plant, Steve does a considerable amount of volunteer work in the community, including coaching his son in Special Olympic competitions. He also uses his expertise in training others, recently traveling to the African countries of Mali and Ethiopia through a contract with the U.S. Department of State.

Steve Moglia is a great example of a young person with local ties who came to Pantex and has made a long, successful career. In his own words Moglia says he is "happy" and "blessed" to be a Pantexan.

by Larry Spaulding



Steve Moglia (bottom right) and his Security Firearms Competition Team in 1993.



Steve Moglia, Protective Force Operations officer, greets visitors from Sheppard Air Force Base and explains the security protocol prior to their tour of Pantex.

PANTEXAN

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On the Cover

David Grant (left) and Daniel Marez secure brackets to a B83 Joint Test Assembly (JTA) at Pantex before sending it elsewhere on site for telemetry testing. The production technicians are members of a specialized team that assembles and disassembles JTAs for a variety of weapons systems. Once telemetry testing is complete on the B83 JTA, the mock weapon is shipped to the military. Data obtained during its subsequent flight is used to help assess the effectiveness of the nuclear stockpile.

Steve Erhart | Manager, NNSA Production Office
John Woolery | President and General Manager, B&W Pantex
Ed Veiga | Public Affairs Manager
Mig Owens | Writer and Editor
Allison Roberts | Graphic Designer
Larry Bach'Lachman, John Ebling | Photographers
Laura Bailey, Greg Cunningham, Larry Spaulding | Contributors

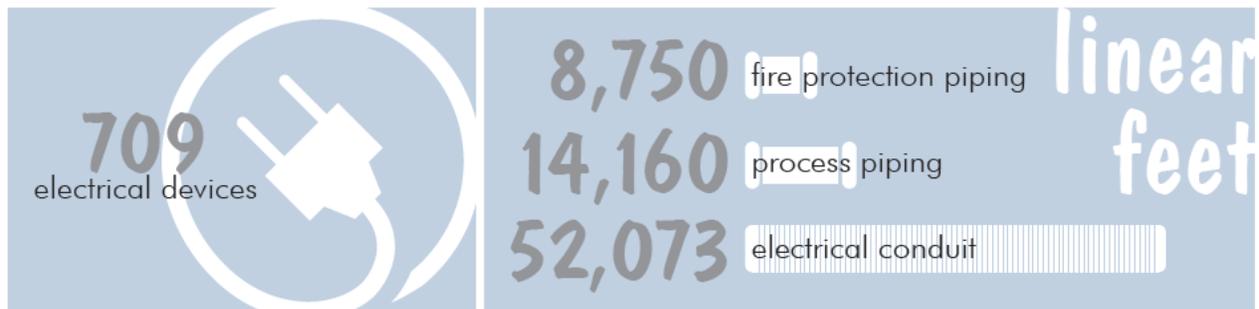
The *Pantexan* is published three times a year by Babcock & Wilcox Technical Services Pantex, LLC, management and operating contractor of the Pantex Plant for the U.S. Department of Energy's National Nuclear Security Administration. Pantex is located near Amarillo, Texas. Feedback is welcome at P.O. Box 30020, 79120-0020 or public_affairs@pantex.com.

PRESSING FACILITY CONSTRUCTION SURPASSES HALFWAY MARK

HIGH EXPLOSIVES PRESSING FACILITY By the Numbers



\$65,000,000



Quantities generated in 2008 based on original completed model.

Construction on the 45,000-square-foot High Explosives Pressing Facility (HEPF) has surpassed the halfway point. The facility will combine high explosives operations from numerous outdated buildings into one state-of-the-art facility, modernizing the DOE's High Explosives Center of Excellence for Manufacturing at Pantex. Construction of the \$65 million facility is expected to be complete next year. The U.S Army Corps of Engineers is managing construction, and B&W Pantex and CH2MHill are leading the design effort and providing project management support.



Steve Erhart
 Manager
 NNSA Production Office

SECURING AMERICA



John Woolery
 President and General Manager
 B&W Pantex

MESSAGE FROM THE MANAGERS

As the National Nuclear Security Administration's (NNSA) primary nuclear weapons production facility, the Pantex mission invites creativity and continuous innovation to meet the demands of an ever-changing national security posture.

This continuous improvement is reflected in the construction of the new HEPF hitting the 50 percent completion milestone. HEPF is a critical component of the Pantex mission as the DOE's High Explosives Center of Excellence for Manufacturing. Once HEPF becomes fully operational in 2016, it will enable Pantex to fully support concurrent Life Extension Programs.

The Joint Test Assemblies (JTA) program is another important Pantex mission that ensures the viability and effectiveness of the nation's nuclear arsenal. JTAs provide weapon designers, engineers and Department of Defense personnel the ability to test programmatic nuclear explosive-like assemblies in environments simulating the stockpile-to-target sequence of each program without the need to actually perform nuclear tests. The JTA program provides confidence to the Department of Defense and President that the weapons' systems continue to function within their design specifications.

In addition to the production missions, Pantex also plays an import role in the annual certification of the nuclear stockpile through its Core Surveillance mission. It is in this area that Pantex creativity comes into play. In the past year, in response to the discontinuation of traditional photography film, Pantex scientists working with the Cordin Company of Utah, developed a digital high-speed streak imaging camera using advanced technology that was not commercially available. High-speed

imaging is critical in testing the performance of high explosives that comprise the primary assembly in nuclear weapon systems. This new product was demonstrated for all three Design Agencies with the result of adoption of the camera by the Design Agencies and approval for implementation on explosives surveillance activities. The development of the digital high-speed streak imaging camera is only one of nine other products developed exclusively at Pantex.

Speaking about technology, innovation and continuous improvement are easy, but the most important assets to the Pantex missions are the people. Pantex women engineers are actively working with the Girl Scouts of America to encourage girls throughout the Amarillo area to consider careers in science, technology and engineering. This effort is important in developing diversity in these technical fields with the benefit of creating new perspectives and innovations.

We invite you to read about our pursuit of excellence in a number of other areas in this edition of the *Pantexan*, which highlights not only accomplishments in innovation and creativity, but the unique skills and capabilities our employees bring to Pantex Plant and to the Nuclear Security Enterprise as a whole.

We are proud of our Pantexans, current and past. Our skills, commitment and unwavering patriotism ensure the safety and security of the Pantex Plant and the nation through the production of the highest quality products; products made possible through process and product innovations, creativity, dedication and commitment of Pantexans.

MOCK WEAPONS BUILT AT PANTEX TEST DETERRENT CAPABILITIES

Joint Test Assemblies heighten confidence in nuclear stockpile

A mock nuclear weapon leaves California aboard a Minuteman III intercontinental ballistic missile. Radars in the United States and across the globe pick up its movement. Minutes later, the mock W87 plummets to earth over Kwajalein Island. Though it carries no special nuclear materials and, as such, is not capable of a nuclear yield, the value of this JTA is beyond measure.

Information gathered from the weapon's sensors and instrumentation allows scientists and engineers from national laboratories to assess its performance to ensure that the weapon functions as designed. This vital program enables the laboratories to annually validate the effectiveness of the nuclear stockpile to the President of the United States.

The Joint Surveillance Flight Test Program, under which JTAs are administered, is a collaboration between the NNSA and the Department of Defense. Testing has been ongoing for the life of the stockpile, and there are currently JTAs for all weapons except the W84, for which testing was discontinued several years ago.

"The labs design the JTAs, and we build and ship them to the military for test flights," said Curtis Chamberlain, Pantex Production manager. "We also do post mortem or disassembly of the JTA after the flight on the B61, B83 and W80." Others, such as the high-fidelity JTA, which use main charge high explosives, are destroyed on impact, though data gathered during the JTA's flight is transmitted to naval ships or to ground stations.

Building the JTAs is a more detailed process than building a full-up nuclear weapon, according to Chamberlain, because of the telemetry or

"brains" that measure performance. Unlike protocol for production technicians elsewhere onsite, those working on JTAs can work alone and call on others for assistance when needed. "These guys are meticulous," said Chamberlain.

"The most challenging part of these builds is the uniqueness of each build within the same program. With those challenges comes the most rewarding part of building these units — we confront and address each challenge and get the job done," said Trey Gillman, Production section manager. "The production techs I have worked with and now supervise are some of the best on Plant site, and I consider that one of the biggest rewards also."

JTAs are built using parent-unit parts to test their in-flight capabilities along with off-the-shelf and vendor-supplied components, explained Ronnie Navarrette, Production Tooling department manager and former Production manager over the JTA program.

Technicians see the process from beginning to end — times four. Parts from recovered JTAs may be used as many as three times if the mock weapon is dropped using a parachute. At their fourth use, the parts are used on JTAs that are sent into free fall.

"JTAs are one of our end products, and I like the fact that they are actually used by our military," said Navarrette. "I like the deterrence value that they provide, playing an important role in the security of our nation. And, they leave some fascinating contrails behind."

by Mig Owens

About the photos:

1. Daniel Marez (left) and David Grant perform quality control checks on a B83 JTA weapon at Pantex.

2. An F16 drops a B61 JTA for its test flight during which data is transmitted about its performance.

3. Launched out of California, a Minuteman III intercontinental ballistic missile with a W78 or W87 JTA on board heads for Kwajalein Island, a U.S. Army base in the Pacific.

4. The lagoon off of Kwajalein Island is the final destination for some JTA flights. Such operations test the base's radars and ballistic missile interceptor capabilities. (Photo courtesy of the *Kwajalein Hourglass*)

1

2 3 4



ULTRA-HIGH-SPEED CAMERA DEVELOPED

Digital technology captures explosives performance testing

Capturing an explosion one nanosecond at a time is difficult, but important to our nation's nuclear deterrent. Thanks in large part to Bobby Raef, Pantex Plant and other NNSA sites have maintained this significant capability.

A 30-year-old custom-made camera and the discontinuation of needed film jeopardized high explosives testing at Pantex, the NNSA's High Explosives Center of Excellence for Manufacturing. Raef, a scientist who analyzes the photos for the Explosives Technology Division, was asked to begin the search for a new digital camera.

"The direct result of Bobby's work is a tool that satisfies multiple Nuclear Security Enterprise technical requirements and yet provides an affordable, and now commercial, solution to the discontinuation of high-speed camera film."

Monty Cates, Explosives Technology Division manager

"We searched the Internet looking for possibilities, but we knew almost from the beginning that a custom camera would be needed," Raef said. "It was natural for us to go back to the company that made our current film camera because of the quality."

Working closely with Cordin Company of Utah, Raef and Jeff Handy, a former Pantex employee, were able to develop an ultra-high-speed camera needed for performance testing of high explosives produced at Pantex. The Digital Rotating Mirror Camera captures light emitted by the high explosives sample during every phase of the explosion to ensure it is performing

as planned. The rotating mirror spins at 5,000 revolutions per second.

Moving from film to digital images has many benefits, Raef said. "Before, we didn't know if the test was successful until the film was developed. Digital provides immediate results."

Digital also means Pantex no longer needs to stock film or chemicals for developing – a cost savings. Also, the negatives no longer have to be scanned to create an electronic record of the test – a time savings. "The whole process is much more efficient. That's a big advantage," Raef added.

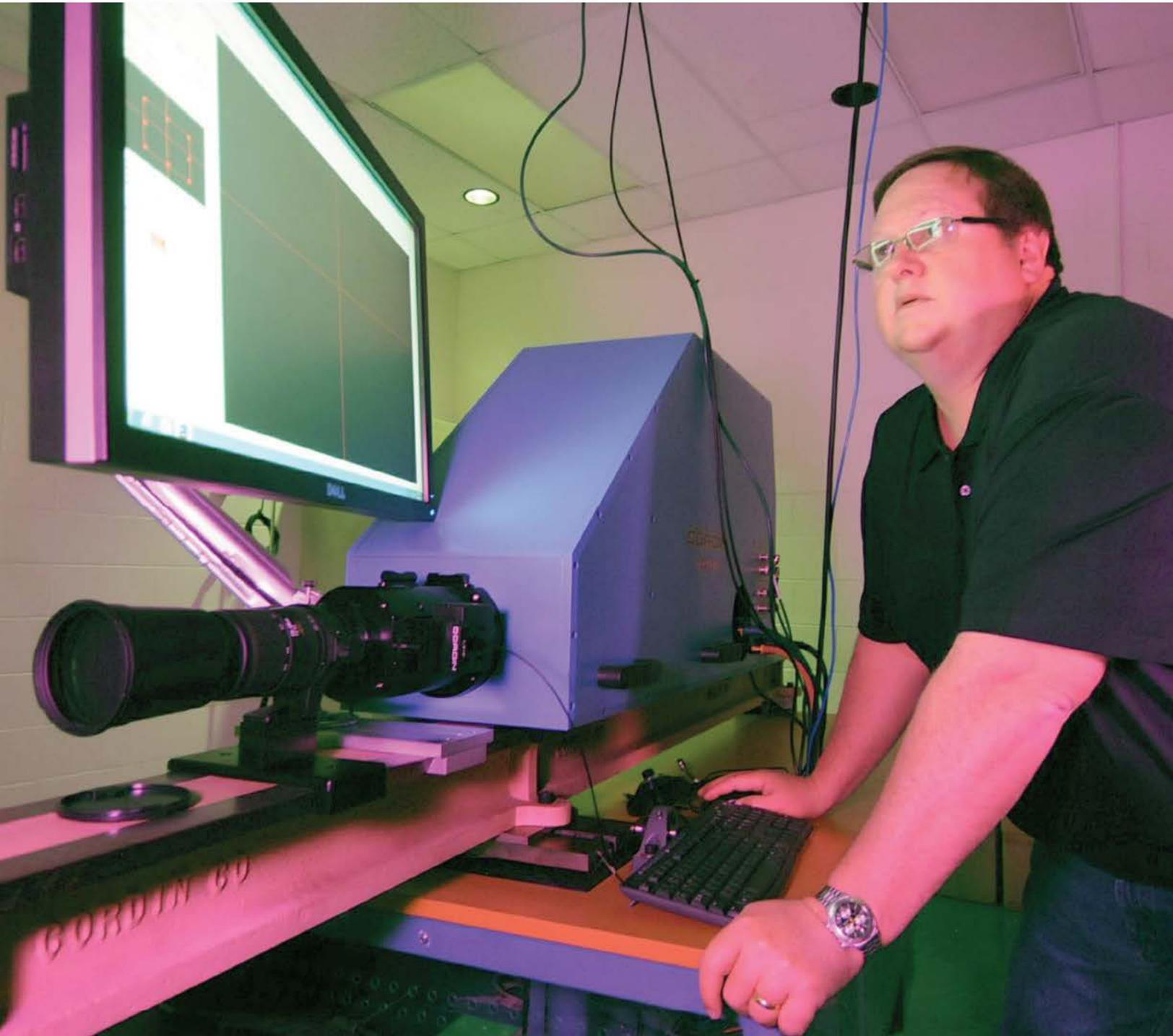
A Cordin representative stated in a letter to B&W Pantex that Raef's knowledge of the intricacies of the timing and optical interactions were indispensable to the camera's development. Raef received the Pantex Scientific Achievement Award in recognition of his meritorious scientific achievement that demonstrated ingenuity and unusual creativity. His achievement was a huge benefit to Pantex operations.

Raef's award was one of 205 earned by Pantex employees this year as part of the Employee Recognition and Awards Program. In addition to honoring employees who demonstrate innovations in scientific and/or engineering fields, the program recognizes accomplishments in the areas of business, communications, community service, management and leadership, and initiative.

Monty Cates, Explosives Technology Division manager, said, "The direct result of Bobby's work is a tool that satisfies multiple Nuclear Security Enterprise technical requirements and yet provides an affordable, and now commercial, solution to the discontinuation of high-speed camera film."

Even though the camera is in the acceptance phase, Pantex has already purchased a second camera. Lawrence Livermore and Los Alamos National Laboratories are now interested in the Pantex/Cordin co-developed camera.

by Laura Bailey



Scientist Bobby Raef operates the ultra-high-speed camera he helped develop to test the performance of high explosives produced at Pantex.

PANTEX BEHIND THE SCENES: ON THE SHOP FLOOR

Fabrication capabilities and skillset unique to Enterprise

In a little-known world deep within Pantex, parts and tools are machined to perfection – in one instance to within 39 millionths of an inch – to ensure the absence of variation. Perfection is sought because these aren't just any parts and tools. They are fabricated, modified and repaired for work on nuclear weapons.

"Everything we do is related to a weapons process or supports it in some form or fashion," said Danny Brito, Production Tooling section manager. "Some of the tooling we fabricate is classified and must be made on Plant site. Onsite facilities allow for availability of resources and quick turnarounds."

Tools and packaging created at Pantex to service and protect our nation's nuclear deterrent at times require the use of unique processes and materials made exclusively at Pantex.

One such process used specifically by Pantex in the Machine Shop is called Lumiclading. It coats



Jeff McClendon of the Machine Shop fabricates and repairs cutters and endmills on an ANCA grinder.

and protects aluminum alloys, is electrically conductive and provides a smooth and durable finish suited for use in tooling and tester parts for nuclear weapons. New within the last five years, the Lumiclad black oxide process is in demand both by national laboratories and the United Kingdom.

Working hand-in-hand with the Machine Shop is the Pantex Plastics Shop. Molds for parts are at times created in the Machine Shop, and then sent to the Plastics Shop for use. Other times, the Plastics Shop forms PVC using a vacuum process, then sends it to the Machine Shop to be cut to specification.

"The two craft shops openly discuss any issues and share their vast knowledge to ensure we all are successful as a team," said Jody Elliott, Production Tooling craft supervisor in the Plastics Shop.

Adiprene, the material used most often in the Plastics Shop, was created at the Plant nearly 40 years ago and is specially designed to protect nuclear weapons. With its various colors denoting hardness, or durometer, Adiprene is used to make seals, packaging and tools. Most recognizable of the products may be the red W76 nose cone.

When asked the "coolest" thing made out of Adiprene, Elliott said, "Believe it or not, spatulas to support operations where working with high explosives is a concern."

It's the people behind the products that make the difference, explained John Herrera, Production Tooling craft supervisor in the Machine Shop. "Excellent math skills, blueprint reading skills and computer programming knowledge enable our craftsmen and women to do this kind of work," he said.

The Machine and Plastics Shops have built a solid reputation at Pantex and elsewhere for quality, Brito said, adding that the traits shared by these unsung heroes that set them apart are their attention to detail, dedication to their work and holding themselves accountable to produce a high-quality product.

by Mig Owens



Faron Thurber of the Machine Shop mills a part on a Fryer Mill.



Juanita Chavez of the Plastics Shop works on straps for tools created from Adiprene.



NEW FACES OF ENGINEERING

Girl Scouts prove to be Smart Cookies

A group of young women engineers at Pantex are working hard to develop a Girl Scout cookie of a different sort: a Smart Cookie.

Over the past six months, the engineers have developed a program – known as Smart Cookies – that they hope will foster a love of science and math in the next generation of engineers and overcome a stereotype about the kinds of people who go into the field.

“There is no doubt that engineering has traditionally been viewed as a man’s career field, but that is changing,” said Savannah Gates, a process engineer at Pantex. “We want to continue that transformation by encouraging these young women to join us in the engineering field.”

The Smart Cookies program started last year after a chance meeting between Gates and Girl Scout leaders who were trying to develop programs for a Science, Technology, Engineering and Math (STEM) camp. That first camp grew into the first Smart Cookies workshop in January, where Gates was joined by a half dozen of her fellow engineers for an event that allowed Girl Scouts to apply engineering principles to a variety of projects.

Several dozen Girl Scouts attended the workshop, where they built cars that used the energy stored in mousetraps for propulsion and engaged in problem-solving drills that encouraged teamwork.

The event proved so popular that a sequel was planned for March, where the girls learned about structural engineering, constructing buildings out of a variety of materials. The engineers also demonstrated a concept called nucleation, when they dropped hard candies into soda bottles with explosive results.

“The girls had a lot of fun at the workshops, and so did all the volunteers,” said Jessie Phifer, a Pantex systems engineer who participated in Smart Cookies. “More importantly, the girls learned a lot about a great career they might want to pursue someday.”

The Smart Cookies program has not only proven popular with Girl Scouts, but with Pantexans,

as well. Gates said the number of engineers participating has grown every time, and people from other fields are getting interested, as well.

Plans are underway to enlist experts from Pantex in areas such as math, science and information technology for future events with the Girl Scouts.

The events will allow Pantexans to continue to be involved in the community while fostering critical skills and interests in the next generation.

“I’m proud of the work these volunteers have done creating Smart Cookies,” said Bobby Russell, Engineering Division manager. “They have done a great job representing Pantex in the community.”

by Greg Cunningham



Girl Scouts participate in Smart Cookie programs hosted by young women engineers at Pantex. The community events are designed to foster a love of science and math in the next generation of engineers.

PANTEX POSTSCRIPTS

Siemens to build Pantex wind farm

Siemens Government Technologies, Inc., was awarded a contract by the NNSA to construct and operate the federal government's largest wind farm. The Pantex wind farm, a first in the NNSA Enterprise, will consist of five 2.3-megawatt turbines located on 1,500 acres of government-owned property east of the Pantex Plant.

The farm will generate approximately 45 million kilowatt-hours of electricity annually – greater than 60 percent of Pantex's annual electricity needs. Energy savings from the wind farm will average \$2.9 million annually over a 20-year contract term, and the project will enable Pantex to meet the President's energy initiatives for green energy.

"Three years of hard work, dedication and determination have paid off," said NNSA Production Office Manager Steve Erhart. "The NNSA's goal was to turn Texas wind into energy, and we have overcome numerous hurdles in implementing the contracting strategy."

Using an Energy Savings Performance Contract, Siemens will provide a turn-key wind farm system for 20 years that includes a five-year service, maintenance and warranty agreement, with operating and maintenance options from years six through ten. Siemens will also provide an annual energy production guarantee.

The government payment to them will come directly from the value of guaranteed energy savings generated from the Pantex wind farm.

Pantex "StormReady" for severe weather

On the plains of the Texas Panhandle, it pays to be ready for unpredictable and severe weather. The Pantex Plant has risen to that challenge, once again earning recognition from the National Weather Service (NWS) as a StormReady site.

The StormReady program started in 1999 in Oklahoma and has since grown to encompass more than 2,000 sites. Pantex was the first nuclear site to earn the designation and remains one of only a handful that has achieved StormReady status. StormReady status indicates Pantex has the weather sirens, shelters, notification technology and emergency response infrastructure to respond effectively to severe weather.

Pantex has a long history of working with the community, said Alonza Campbell, manager of the Emergency Management Department at Pantex. The Plant maintains contact with the NWS to anticipate storms and other inclement weather conditions. Pantex even uses National Oceanic and Atmospheric Administration weather radios to alert residents living near the Plant of emergency conditions.



Online face of Pantex gets a lift

Pantex recently unveiled its redesigned Internet website at www.pantex.com. The site features updated information, easier navigation and new search tools. An objective of the redesign was to create a site that would provide information to the public and stakeholders in an efficient manner. The site features a new section on doing business with Pantex beneficial to subcontractors and others who work with the site. Plant status and emergency information are also more easily accessed. Visit www.pantex.com often as content is updated and features are added.



In the Community



(photo by Jack Dempsey, DOE, Office of Science)

As part of its educational outreach efforts, B&W Pantex sponsored the Pantex Electric Battery Car Race for area middle school students April 20. Students built model cars from kits provided prior to race day, and on the day of the event, 29 cars competed on a 20-meter track.

"This is always an exciting, enjoyable event for our area middle schools," said race coordinator Debra Halliday. "It's a fun and exciting way for us to encourage a new generation of inventors and engineers."

The car races are sponsored by DOE, with different types of propulsion chosen for the cars each year. In prior years, cars were powered by solar power or hydrogen fuel cells. This year, DOE chose electric battery cars.

Of the record number of middle school teams that gathered to put their engineering and building skills to the test at the Pantex race, Dumas Junior High advanced to take fourth place in the electric battery car race at the National Science Bowl competition in Washington D.C.

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P.O. Box 30020
Amarillo, TX 79120

