



SITELINES

SiteLines Looks at NNSS Successes in 2011

It was a big year at the Nevada National Security Site (NNSS) for the Nevada Site Office and its contractors. From returning to nuclear operations at the Joint Actinide Shock Physics Experimental Research (JASPER) facility to the formation of the National Center for Nuclear Security to the implementation of Governance Reform, the NNSS had one of its most successful years in FY2011.

Now, with its sights set on 2012, *SiteLines* takes a closer look at the accomplishments that have redefined the mission of the NNSS and set a course for a bright future in missions ranging from Defense Experimentation and Stockpile Stewardship to Homeland Security. Paramount among the achievements was the successful creation of a collaboration called the Nevada Enterprise (NvE), or the compilation of federal and contractor companies that make up the backbone of the NNSS.

Together the NvE will continue to help ensure that our nation remains safe and ready for any challenges the future might hold. This issue of *Sitelines* examines the Top 10 NvE successes for 2011.



NvE Receives High Marks for Successful 2011

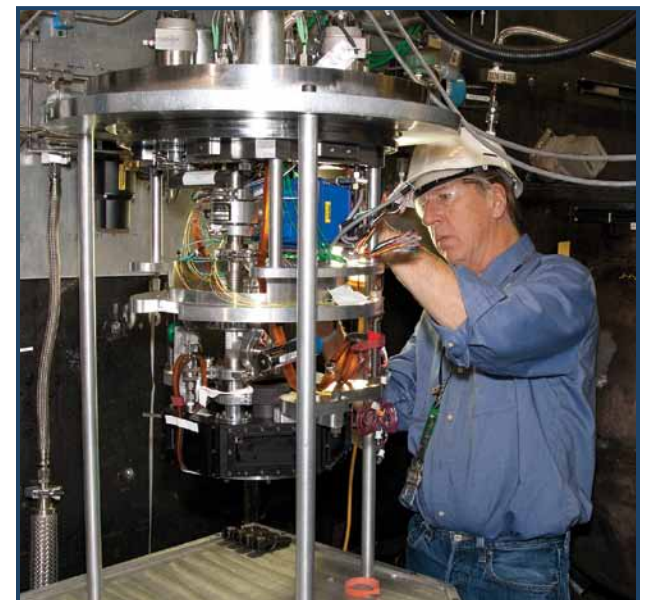
New Year Promises Even Bigger Challenges

The Nevada Site Office and its contractors at the Nevada National Security Site (NNSS) wrapped up 2011 as one of the most successful years ever for what is now known as the Nevada Enterprise (NvE), the partnership formed by the collection of NSO, National Security Technologies (NSTec), Navarro-Intera, WSI-Nevada, and the Joint Nevada Program Office. Together, the NvE carries out the missions of Stockpile Stewardship, the National Center for Nuclear Security and Homeland Security at the Site.

Major accomplishments in 2011 included the return to nuclear operations at the Joint Actinide Shock Physics Experimental Research (JASPER) facility, successful startup of the National Center for Nuclear Security (NCNS) and the National Criticality Experiments Research Center (NCERC), construction of

an Area 5 Low-Level Mixed Waste Disposal Unit, and numerous American Recovery and Reinvestment Act projects, such as demolition of the Pluto Disassembly and Reactor Maintenance, Assembly and Disassembly (R-MAD) facility buildings at the NNSS.

According to NSO Deputy Manager Steve Lawrence, the Site's successes this year – while remarkable – will pave the way for an even bigger 2012. He's called on all Site employees to set an example by continuing the high quality of work that the NNSS is known for. "The NvE is the Complex leader," Lawrence said, during a recent program retreat. "We're pushing a culture of collaborative partnerships that we can be proud of."



A worker prepares an apparatus as part of the Barolo experiment at U1a.



The NNSS used American Recovery and Reinvestment Act (ARRA) monies to clean up several outdated facilities at NNSS, among them the Reactor Maintenance, Assembly and Disassembly (R-MAD) facility.



U.S. Marines participate in radiological training at the T-1 facility at NNSS.



The Remote Sensing Laboratory had a busy year in 2011, providing radiological detection for the Nuclear Power Plant incident in Japan as well as radiological mapping for various cities, such as Seattle, Washington.

NvE Top Ten of 2011

JASPER Returns to Nuclear Operations with RTP Project

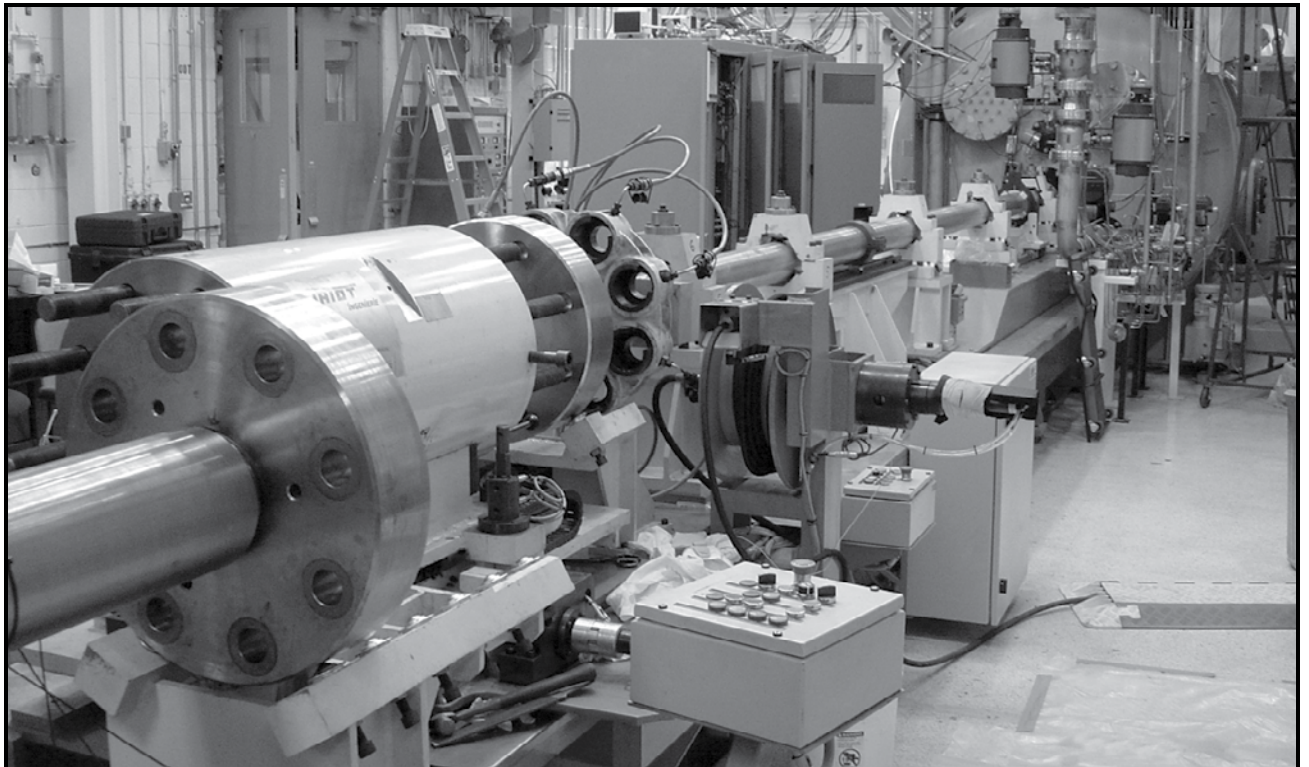
In 2011, the Joint Actinide Shock Physics Experimental Research (JASPER) facility received approval for nuclear operations. The JASPER experimental platform is a two-stage gas gun designed for researching the effects of high-velocity projectiles on targets comprised of plutonium surrogate materials and other Actinides. This allows for completion of the suite of data on behavior of plutonium under high-pressure shocked conditions similar to nuclear weapon explosions.

The goal of the JASPER Return to Program (RTP) Project was to achieve re-certification of the facility for nuclear operations under Hazards Category 3 and to restart as quickly as feasible high-precision, Equation of State measurements for Lawrence Livermore National Laboratory (LLNL)'s Primary Assessment Technologies and Dynamic Materials Properties Programs.

The JASPER RTP project activities were an integrated, complex, scientific and technical effort that included LLNL target development; LLNL, Los Alamos National Laboratory (LANL), and NSTec diagnostics; and NSTec maintenance and operation of the JASPER facility and the Device Assembly Facility (DAF) Glove Box. The following sampling of key milestones were planned and completed by the JASPER RTP Project in FY2011:



Workers prepare for an experiment at JASPER.



The JASPER facility received approval for nuclear operations and the two-stage gas gun was used to successfully execute a plutonium "hot shot" in FY2011.

- Conducted a successful 7-pin experiment during startup testing as part of gas gun performance and facility characterization
- Received National Nuclear Security Administration (NNSA)/NSO authorization for DAF glove box operations to receive JASPER target material and to prepare JASPER target assemblies
- Executed successful additional surrogate experiments in preparation for plutonium "hot shot" operations
- Executed a successful plutonium experiment prior to the end of FY2011.

The total FY2011 project baseline was about \$19 million, comprised of funding sources from several NNSA Science Campaign sub-programs.

The project completed its scope according to an aggressive, high-risk, but well-planned, managed, and reported schedule. The project

completed its close-out phase with a completion report and documentation of lessons learned, and transferred the project file to a follow-on project that extends the experiment program into more-sophisticated regimes of diagnostics and materials physical environments.

At the end of fourth quarter FY2011, the JASPER RTP Project attained its challenging goal of being certified as a Hazard Category-3 Non-reactor Nuclear Facility and executed a continuation of key plutonium Equation-of-State experiments as a result of extraordinary engineering accomplishments; a high degree of attention to operational detail; assembly of a collaborative, integrated project team,; and focus on a common vision. Not only did the project complete all of its key deliverables for FY2011, but the successful execution of the plutonium "hot shot" during mid-September, three months ahead of the conservative Performance Measurement Baseline schedule, was recognized as a significant achievement by senior management of NSTec, LLNL, NSO, and NNSA Headquarters (HQ).

According to the Laboratory, the completion of the DOE Operational Readiness Review with only one minor maintenance pre-start finding was "remarkable" and a "huge success for the JASPER team."

"JASPER is a key experimental facility within the Nevada Enterprise (NvE) providing critical data on material performance to the Stockpile Stewardship Program," said Laura Tomlinson, assistant manager for National Security for the NSO. "The success of the Return to Operations project was due to the close working relationship between LLNL, JNPO, and NSTec. Without this partnership JASPER would not have commenced hot operations three months ahead of schedule, once again providing vital information to ensure the safety and reliability of the nuclear stockpile without underground testing."

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NvE Top Ten of 2011

NCERC – Operational Capability on Criticality Experiments Machines

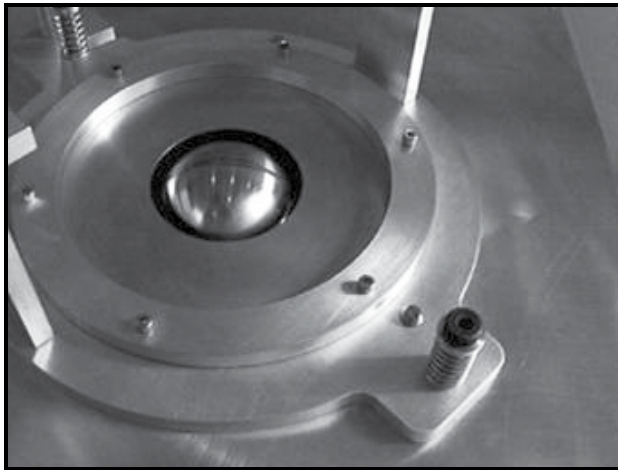
Formerly the Criticality Experiments Facility, the Nuclear Criticality Experiments Research Center (NCERC) achieved operability on its machines and initiated two different experiments this summer.

The Operational Readiness Review and Verification/Validation was completed in April, and in May and June the National Laboratories conducted experiments on both the Planet and Comet machines at NCERC.

“The NCERC is a key component of the National Criticality Safety Program (NCSP),” said Laura Tomlinson, assistant manager for National Security for the NSO. “This facility will provide important nuclear data, training and education in support of the NNSA’s nuclear missions.”

“This facility will also help maintain the Agency’s core competency in this important research field,” Tomlinson said.

NCERC maintains a fundamental capability for the Department of Energy (DOE) NCSP to be able to perform critical, subcritical, and fundamental



The NCERC achieved operability on its Planet (pictured here) and Comet machines, which provides important information regarding the behavior of nuclear material assemblies.

physics measurements, within the limits of its resources, to address specific-site needs on a prioritized basis. This program element also supports maintaining a fundamental nuclear materials handling capability which enables

hands-on nuclear criticality safety training programs and various other programs for the DOE NCSP and other government agencies.

Experiments with machines such as Planet and Comet are designed to provide important information regarding the behavior of nuclear material assemblies. This data is used to validate computer models in support of new reactor designs and nuclear criticality safety.

NCERC also conducted an important criticality training class in September, another in a long list of accomplishments.

The criticality training class conducted in September was a pilot course that set the foundation for a training program to provide workers in the nuclear industry essential hands-on training. In addition, this training will provide first-responders with unique hands-on training with special nuclear materials not available anywhere else, Tomlinson said.

Executing Stockpile Stewardship Experiments with Expanded Use of Sound Project Management Principles

Another highlight for NvE during 2011 was the successful execution of Stockpile Stewardship experiments and other project initiatives. The NNSS was responsible for completing 38 national-level milestones across the NNSA complex, among them high-visibility, complex experiments at the U1a facility, JASPER, the Big Explosives Experimental Facility (BEEF), the National Ignition Facility, and the Z-machines.

Each project is managed under strict project management principles, with every project manager reporting monthly on the projects’ issues, cost and schedule performance, key accomplishments, staffing, risk, and change controls. In addition, NSTec has worked with headquarters and laboratory partners to define timelines for major out-year activities in the experimental program, with the creation of the FY 2012-2017 NNSS Planning Basis Document.

Using these project management standards and NSTec’s earned value management system, the following projects and Research and Development

(R&D) activities were planned and successfully executed in order to meet Stockpile Stewardship Science and Directed Stockpile Work R&D program implementation plans:

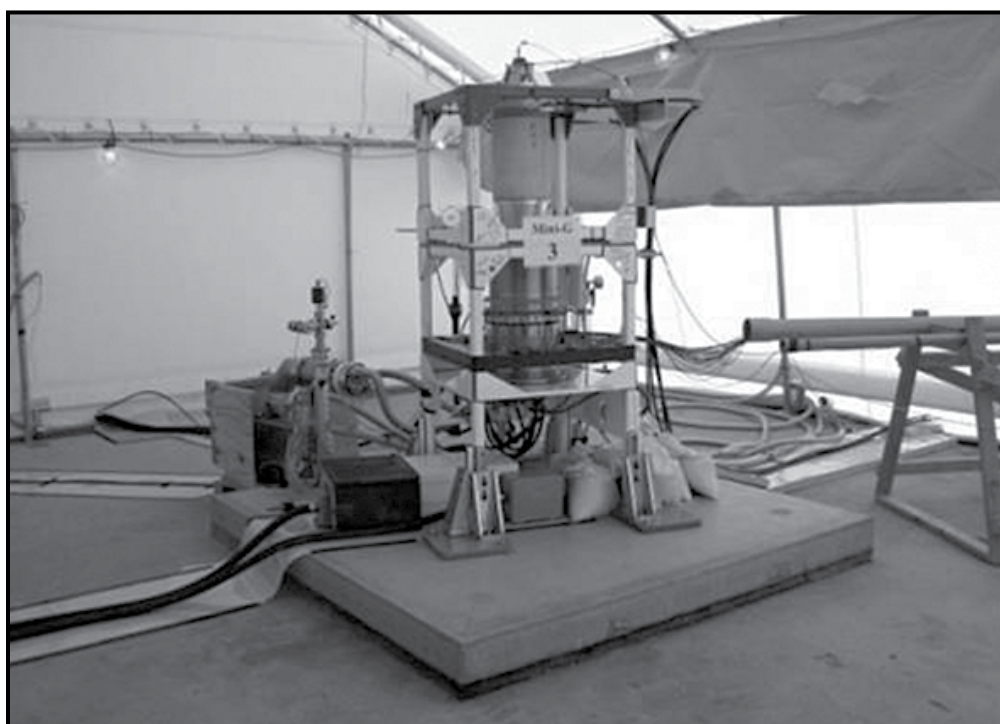
- Shock wave related diagnostics
- Radiographic and neutron source development

- High energy density physics diagnostics
- Detectors and instrumentation development
- Nuclear event analysis
- Stockpile Stewardship data analysis.

“These projects not only ensure that key data required by the Stockpile Stewardship Program

are captured in every experiment, but are also developing the next generation of diagnostics to support future experimental requirements,” said Laura Tomlinson, assistant manager for National Security for NSO, which oversees the Stockpile Stewardship Program.

“Effective project management is vital to accomplishing the work in a timely manner and within budget. The successful execution of these varied experiments both at the NNSS and the Laboratories clearly demonstrates the broad technical competency of the NvE to support the Stockpile Stewardship Program,” Tomlinson said.



The NvE successfully executed numerous Stockpile Stewardship experiments in FY2011. Each project was managed under strict project management principles and will assist in developing the next generation of diagnostics to support future experimental requirements.

NvE Top Ten of 2011

American Recovery and Reinvestment Act Projects

In 2009, Congress passed the American Recovery and Reinvestment Act to create jobs – and \$6 billion was awarded to the U.S. Department of Energy (DOE) Office of Environmental Management to clean up nuclear production facilities across the country.

At the NNSS, that has translated into \$54 million in accelerated environmental restoration activities that included:

- Demolition of the Pluto Disassembly and Reactor Maintenance, Assembly and Disassembly (R-MAD) facility buildings;
- Demolition of Test Cell C nuclear furnace piping and shed;
- Completion of four major soil sampling projects;
- Drilling of two 3,400-foot groundwater wells;
- Additional funding for the Radioactive Waste Management Site (RWMS).

Activities funded under ARRA at the NNSS have been completed. In addition, because of efficiencies, additional scope was funded and was completed by the end of December 2011. This additional work includes taking the four soil sampling projects plus a fifth through to closure, construction of roads and pads for three additional groundwater wells, and completing portions of

closure work at multiple other corrective action sites.

All totaled, the NNSS will have performed more than \$60 million in work for about \$54 million – something Rob Boehlecke, deputy federal project director for NSO Environmental Restoration says will go a long way to eliminating historically contaminated sites in accordance with an agreement with the State of Nevada.

“Satisfying regulatory commitments with the State has been a priority for the NSO, and safely completing this work benefits all Nevadans,” Boehlecke said. “ARRA funding has allowed us to retain experienced and knowledgeable staff while accomplishing the work.”

Looking ahead to future projects in 2012,



More than \$54 million in accelerated environmental restoration activities have been completed at the NNSS, among them demolition and removal of debris from the Pluto Disassembly and Reactor Maintenance, Assembly and Disassembly (R-MAD) facility.

Nevada Site Office Assistant Manager for Environmental Management Scott Wade said the work at NNSS will continue to ensure the Site brings the most experienced personnel together to enhance its vital national security mission. “ARRA success at the NNSS is a reflection of the dedicated resolve and synergy of the contractor and federal staff,” Wade said.

Area 5 MWDU – RCRA Cell Construction Completed

The NNSS played an important role in our nation's historic development and testing of nuclear weapons. Today, the U.S. DOE Environmental Management Program is aggressively cleaning up remnants of these activities. During cleanup activities, mixed low-level waste may be encountered and must be safely and properly disposed.



The U.S. DOE Environmental Management Program operates a RCRA-permitted Mixed Waste Disposal Unit at the Area 5 Radioactive Waste Management Site at the NNSS.

Mixed low-level waste is a “mix” of both low-level radioactive waste and hazardous waste.

These wastes are considered hazardous because they are toxic, corrosive, reactive, ignitable, or specifically identified by the U.S. Environmental Protection Agency (EPA) as “hazardous.” The low-level portion of mixed waste contains small amounts of radioactive material and can generally be handled with minimal personal protective equipment. Mixed low-level waste is managed

separately from low-level waste because of the hazardous waste component.

The EPA regulates generation, treatment, storage, and disposal of hazardous waste as directed in the Resource Conservation and Recovery Act (RCRA). In Nevada, the EPA delegated regulatory authority of RCRA to the State of Nevada.

The DOE NNSA NSO operates a RCRA-permitted Mixed Waste Disposal Unit at the Area 5

Radioactive Waste Management Site located in the southeastern portion of the Site. This

disposal facility features a multi-layer liner and collection system that drains any potential moisture away from the buried waste containers. This technologically advanced cell became operational in December 2010 and replaced the previous unlined mixed low-level waste disposal cell which was required by the State of Nevada to be closed by November 30, 2010.

The new Mixed Waste Disposal Unit was permitted, designed and completed two months early and \$3 million under budget.

Because continued mixed waste disposal at the NNSS is critical to both cleanup and operational DOE sites through the nation, it was important to avoid the complex-wide implication that might have occurred had the construction, startup and operation of this new Mixed Waste Disposal Unit been delayed. Through effective planning and execution, no disposal delays were realized to either the NNSS or the rest of the DOE complex, said Scott Wade, Nevada Site Office assistant manager for Environmental Management.

“With a hard, fast regulatory deadline looming, the waste management staff of both the contractor and the NSO worked diligently to ensure completion of this national asset. Together, they brought this project in ahead of schedule and under budget,” Wade said.

NvE Top Ten of 2011

Treaty Verification/Nonproliferation/Counterterrorism

The NNSS continues to sponsor aggressive training and testing of nuclear and radiological detection systems and personnel. FY2011 was a busy year for nonproliferation and counterterrorism programs, which serve as the backbone of the Homeland Security and Defense Applications mission.

One of the higher profile accomplishments was the NNSS Remote Sensing Laboratory providing response and support to the Japan Fukushima Daiichi Nuclear Power Plant crisis. RSL personnel also supported sessions of the International Atomic Energy Agency General Conference in Vienna.

United States role in the control and reduction of nuclear weapons. We are primed to implement the NCNS portfolio as part of the 'One NNSA' strategic goal," said Laura Tomlinson, NSO assistant manager for National Security.

NCNS experiments have direct application to potential future arms control-related monitoring and verification. Upcoming experiments include:

- **Source Physics Experiments** – With SPE-1 and SPE-2 completed, the third underground explosive shot is currently being planned. The objective of the test series is to develop new geologic material models that use a physics-



The BEEF facility successfully executed the Pele 1 and 2 experiments in FY2011, providing data to develop technologies that discriminate signatures of weaponization activities.



Workers prepare for Source Physics Experiments that will be used to develop models used for treaty verification.

The National Center for Nuclear Security (NCNS) at the NNSS was extremely successful in initiating, planning, and conducting its first set of experiments that support both treaty verification and nonproliferation research and development. What began as a \$10 million Federal commitment to developing technologies that can help ensure other nations are complying with treaty obligations has now grown into a \$60 million endeavor that supports a variety of high-level experiments. These include treaty verification and nonproliferation technologies that are developed, tested, and evaluated through field tests and exercises at the NNSS. These experiments will enhance U.S. verification and detection capabilities.

"The NNSS is poised with a talented, skilled workforce and diverse facilities to sustain the

based approach to model damage in hard, fractured rock; develop 3-D modeling tools to address the effect of faults and fractures on explosive energy coupling and shear wave generation; evaluate how source asymmetry and surface and subsurface scattering affect shear wave generation; and evaluate implications for Comprehensive Nuclear Test Ban Treaty (CTBT) monitoring efforts. The first experiment was conducted in May 2011 and the second in October 2011. Both tests returned excellent data sets.

NNSA Deputy Administrator for Defense Nuclear Nonproliferation, Anne Harrington, said: "These seismic Source Physics Experiments are significant achievements in the United States' efforts to develop, validate and improve on emerging technology that will be used to assure compliance with the Comprehensive Nuclear Test Ban Treaty. The work conducted at the NNSS and by the NNSA's Defense Nuclear Nonproliferation programs serves to advance the implementation of President Obama's nuclear nonproliferation agenda."

- **Warhead Monitoring** – scheduled for third quarter FY 2012. Research and development will confirm the authenticity of items declared to be nuclear warheads and maintain continuity of knowledge of treaty-accountable

items throughout their lifecycle, providing the government with technological options for verification of existing and future arms control agreements.

- **Explosives Performance** – Successful proliferation detection experiments, Pele-1 and Pele-2 were conducted at the Big Explosives Experimental Facility (BEEF). These two fully diagnosed, high-explosive events were conducted in the span of four days, setting a new record for BEEF operations. Based on the success of Peles, three additional experiments have been scheduled in FY2012: two in first quarter and one in third quarter. The purpose of these experiments is to determine the ability of current technologies to discriminate signatures of weaponization activities that violate treaty provisions from legitimate nuclear power generation activities. In addition, data will enhance the ability to better characterize the phenomenology associated with high explosive detonations with focus upon unique seismic, infrasound, radio frequency, and particle/material signatures.

- **Nuclear Forensics** – The National Center for Nuclear Security collaborated with the University of Nevada Las Vegas (UNLV) in nuclear forensics R&D. A research area, lead by Professor Ken Czerwinski, helped study suitable procedures to produce asphalt, soda-lime glass, and concrete matrices for use in preparation of urban matrices for forensics analysis. Suitability of the procedure was based on its relative ease, the quality of the melt produced, and the homogeneity of the sample. In all three cases a candidate melt procedure was found, yielding samples that can be suitably treated with actinides for urban matrix development. Interactions with NSTec on potential future irradiations were initiated. Validation and testing of detection and localization technologies against various radio-nucleotide presentations. Field work at the NNSS includes working with the 20th Command in the study of field collection of past nuclear debris such as trinitite from the Schooner nuclear event site.



Angle drilling.

NvE Top Ten of 2011

NNSS Successfully Completes Major Subcritical Experiments

Subcritical experiments use chemical high explosives to generate high pressures that are applied to special nuclear materials. The configuration and quantities of explosives and special nuclear materials are such that a self-sustaining nuclear chain reaction, or criticality, cannot occur. Because there is no criticality, the subcritical experiments are consistent with the U.S. nuclear testing moratorium. Scientific data are obtained on the behavior of nuclear weapon materials by the use of complex, high-speed diagnostic instruments.

NSTec successfully executed the Barolo series of subcritical experiments (Barolo-A, Barolo-B) FY2011 with all channels returning data. In fact, according to Michael Prime of Los Alamos National Laboratory, "Barolo was the most precise and well diagnosed subcritical ever fielded." The Barolo experiments were conducted at the U1a underground facility at the NNSS, where subcritical experiments are held.

Schedules and plans for the next project – Gemini – are underway. Procurements for complex components have been initiated, mining

proficiencies for future subcritical experiments at U1a have started, and the refurbishment of the Cygnus machines has been completed. The Gemini series will be executed during FY 2012.



Two workers maintain the inside of the Cygnus machines at U1a.

Another key goal for 2011 was preparing for subcritical experiments demonstrating a graded approach for a safety basis. This means that future experiments will benefit from effective safety analysis commensurate with appropriate risk considerations, resulting in an overall cost savings for the execution of subcritical experiments.

For instance, for the JASPER Return to Program

project, this approach was used to provide a necessary and sufficient control set to preclude the addition of unnecessary or burdensome controls while maintaining a safe defense in depth control strategy using passive controls. This contributed to timely approval of JASPER safety basis changes and the ultimate success of the JASPER RTP project, another FY 2011 Top Ten initiative.

"These experiments are intended to develop improved scientific understanding of plutonium behavior, provide data to evaluate integrated models, and challenge the design and production capabilities of the Nuclear Security Enterprise," said Laura Tomlinson, assistant manager for National Security for the NSO. The National Weapons Laboratories are the design authorities for the experiments

and provide project requirements to NSTec in the areas of physics, materials, diagnostics and experiment configuration. The subcritical experiments are vital to the Stockpile Stewardship Program in order to maintain the safety and reliability of the stockpile without underground nuclear testing and their successful execution requires the teamwork of the NvE."

Effectiveness Initiatives - Back Office Consolidation

In 2010, the NNSS began instituting a new program called Governance, in which the contractors who manage and operate the Site could work together in a more unified manner to achieve the mission. The contractors now form the Nevada Enterprise (NvE), and work more autonomously to deliver their products to their federal NNSA/NSO customer.

This year, a program was commissioned to "coordinate with other Nevada Enterprise (NvE) contractors" and collaborate on the following task: Identify a subset of business functions, and assess their ability to promote efficiency, generate value, realize cost savings, and improve service to the customers—all with the ultimate goal of helping fortify the foundation of a One NvE.

To that end, the primary management and operating contractor of the NNSS – National Security Technologies (NSTec), formed Tiger Teams with WSI and Navarro-Intera, LLC (N-I), in three main functions: Administration, Information Technology, and Training. All the contractors were engaged and working together to ensure back office consolidation as a continuing success.

The contractors targeted six functional categories that contained 48 task areas, 27 that were identified as immediate possible candidates. These were new opportunities to be explored. While the other 63 percent appeared to have been rejected, only a few were rejected for proprietary reasons, but future negotiations remain open in many of those areas, and some other aspect of the

task area is being considered for consolidation.

Here is a list of some of those successes:

- Collaborated with NNSA/NSO and developed milestones for a FY 2012 pilot plan to transition NNSA/NSO Technical Qualifications into the NSTec Plateau Learning Management System for tracking and reporting.
- Achieved concurrence for an IT pilot to provide email services across multiple contractors. Implementation is scheduled for the second quarter of FY 2012.
- Negotiated Service-Level Agreements on the Exchange email that ensures customer focus and service consistency.
- Received concurrence to improve the network transparency, and collaborate across NNSA/NSO and NSTec by providing an integrated solution that will transition NNSA/NSO off the U.S. Department of Energy network and place NSTec as the provider of IT for NNSA/NSO.
- Eliminated redundancies in training courses between NSTec, WSI, Navarro, and NNSA/NSO; identified additional courses, such as CPR/First Aid and the Hazwoper 8-hour refresher, that NSTec can deliver to other companies.
- Added WSI and N-I to the NSTec Training Advisory Group (TAG) to identify new training requirements to eliminate future training redundancies and share process information, policy, and activities. TAG meetings for the

duration of FY 2011 have all contractors invited and representatives in attendance.

- Developed an action plan to provide a consistent internal messaging and communications protocol that will be used across all three contractors. This eliminates redundant messaging for NNSA/NSO and streamlines messaging for all contractors.
- NSTec Procurement worked with N-I to leverage use of NSTec volume pricing. Modifications were made to subcontracts to allow N-I to place orders authorizing shipping to additional locations, as N-I has two warehouses of their own at Building B-4 at the NLV facility and one at the NNSS.
- Created the NvE Diversity Council with representatives from N-I, WSI, NNSA/NSO, PAI, and Epsilon, who are now attending meetings and participating in the council events.
- Consolidated radio, spectrum, fire alarms, and microwave support activities within ISD. This completed Phase I of the IT Shadow Consolidation.

All of these accomplishments will do much to improve the overall efficiency of the NNSS and enhance the future missions, said Jack Stumpf, chief financial officer of NSTec. "This was a collaborative effort between NSO and NNSS contractors to look beyond the boundaries of our contracts and provide holistic solutions to improve back office efficiencies," he said.

NvE Top Ten of 2011

Formality of Operations Improvement Project Milestones

The Formality of Operations Improvement Project (FOIP) was initiated in April 2010 to establish a comprehensive long-term strategy and commensurate actions to keep Nuclear Safety and Operations at the NNSS at full compliance with federal requirements and DOE directives. A broad range of FOIP activities to ensure that work is done to project priorities within the standards of the Program Authority and to establish the rigor necessary for effective nuclear facility management and operations were conducted and completed in FY2011.

The project has been led by Jim Dionizio, program manager who is responsible for overall FOIP success and Tom Andrews, project manager who is responsible for management of project and project integration across the mission and functional areas of NSTec. The top-level measures for success and performance documented in the FOIP Project Execution Plan, Rev. 2 were completed in FY2011. The FOIP effectiveness indicators documented in the Handshake Agreement between NSO and NSTec were also achieved in overall mission performance, financial performance and personnel resource application effectiveness. In FY2012 remaining FOIP activities to be completed include Validation and Continuous Improvement and Monitoring.



The Formality of Operations Improvement Project (FOIP) was initiated in April 2010 to establish a long-term strategy to keep Nuclear Safety and Operations at the NNSS at full compliance with federal requirements.

The primary objectives and improvements accomplished by the FOIP in FY2011 are described below by the topical focus areas established to manage the project:

- **Safety Management Program (SMP) improvements** to ensure that ownership, accountability and authority is clearly understood, that owners take responsibility for the development and flow-down of requirements into program/procedures and assume accountability for implementation of those processes, and that SMP owners are responsible for the performance of deployed functional resources.
- **Organizational improvements** involving completing the transition of the nuclear facilities to achieve and then sustain excellence in nuclear safety and operations; acquiring

the necessary experienced nuclear safety and operations personnel to fully staff both the SMP and the nuclear safety and operations organizations; performing organizational realignments as required to enhance Nuclear Operations ability to successfully perform its mission; establishing an effective organizational counterweight to provide the necessary balance where both Line and Functional organizations foster, instill, and value the contributions made by each other; and realizing the importance of strong project delivery systems that are executed on time, and within budget while being performed in compliance with approved processes/procedures.

- **Corrective Action Process improvements** involving development and implementation of a robust corrective action process modeled after other successful DOE nuclear organizations which include an executive review. This element also includes implementing the actions necessary to ensure that the corrective action process is performed by personnel knowledgeable of the requirements and standards, and effective corrective action is taken when those standards are not met.
- **Management Attention improvements** to maintain a consistent and high degree of management attention and formality when conducting high-hazard operations, including nuclear operations, at the NNSS. This includes executive management review and interrogation mechanisms for identifying and removing causes when requirements are not met.
- **Nuclear Principle improvements** to complete the transition of the nuclear facilities to achieve, and then sustain, excellence in nuclear safety and operations; instilling a nuclear safety and formality of operations culture in the management team and driving the same culture down to the work force; and restoring the necessary balance and accountability for nuclear operational safety by ensuring work is performed to the standards established by the documented Program Authority.
- **Training** to support the major objectives of the FOIP and tie directly to the topical focus areas: Safety Management Programs, Organization, Corrective Action Process, Management Attention, and Nuclear Principles.
- **Requirements Management improvements** to conduct a company-wide requirements flow-down analysis, performed as a fully integrated and simultaneous effort, utilizing one process across the enterprise. The requirements management scope included specific focus on DOE directives of interest to the Defense Nuclear Facilities Safety Board (DNFSB), directives identified in Approved List B of the NSTec Contract, and Contract clauses. The results of the integrated requirements analysis process were populated in the DOORS database.

Demonstrated NvE Commitment to Governance Reform

Accomplishments were made in areas that were visible to the rank and file employees and as well behind the scenes. In a sense, NvE became the complex leader in Governance Reform; something the enterprise is committed to continuing into the new year.

For the workers on the floor, turning the wrenches, there was more collaboration and cooperation between the NvE Organizations. The biggest example of this lies in the work done both at JASPER and underground at U1a. Rick Higgs, JNPO Director said: "When we do work underground it is hard to tell who works for the lab, NSTec or any other entity. Everyone pulls together to accomplish the national security mission and help the National Laboratories get the data they need."

Other visible changes can be seen in the processes for work control, the NSO federal assessment process and the combined use of dashboards and metric between NSTec and the federal employees.

In the area of security, employees have noticed changes that have allowed for the use of personal cell phones both in North Las Vegas and the NNSS. The North Las Vegas campus also has been opened up making it easier for employees to move around the facilities. And, hard dollar savings have been realized in moving away from locks and keys to electronic lock systems.

There have also been areas of governance improvements transparent to the workforce. NvE has been a strong leader in supporting DOE and NNSA in moving through the management of directives and the review of those documents to assure they are straight forward in directing the work. On the security front NvE is working with the Department of Defense, the Nuclear Regulatory Commission and the United Kingdom's Atomic Weapons Establishment on a "harmonization" effort on how to protect nuclear materials. Finding the best practices of each of those organizations and bringing them into the workplace could lead to financial savings government wide.

According to Steve Lawrence, NSO Deputy Manager, "The NvE has set a goal to be recognized as a leader in Governance reform and initiatives in 2012. I think we are not only leading the charge in the complex, but are already recognized as one of the best in class within NNSA."

"The highly successful work in FY11 on the FOIP marked the completion of an 18-month effort to improve the Formality of Operations culture at NNSS and establish the basis for increasing work scope and customer satisfaction that will be critical in the future," Dionizio said.



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NvE Top Ten for 2012

1. Complete the planned FY 2012 U1a experimental program including execution of confirmatory experiments for the Gemini subcritical series.
2. Develop a methodology and demonstrate implementation for the effective and efficient execution of nuclear experiments at the NNSA.
3. Execute JASPER FY 2012 experimental program including the addition of new diagnostics and demonstrate improved efficiency.
4. Start up and sustain all National Criticality Experiments Research Center (NCERC) machines to support national security missions.
5. Improve DAF availability, capabilities, and infrastructure through development and implementation of a plan that effectively supports critical national security missions.
6. Become a recognized leader in embracing the concept of OneNNSA through NvE Governance reform and initiatives.
7. Complete planned Treaty Verification/ Nonproliferation/ Counterterrorism/ Consequence Management activities in support of national security objectives.
8. Enhance communication and collaboration with NNSA customers, including the three NNSA National Laboratories, to improve NvE user and facility integration for the DAF, U1a, JASPER and BEEF.
9. Support DOE Complex-wide deinventory and disposition initiatives for nuclear materials, components, and sites.
10. Support NIF/NIC experimental campaign to conduct weapons-related experiments and support achieving ignition.

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