



Savannah River  
Nuclear Solutions, LLC  
A Fluor Daniel Partnership

Transforming  
expectations  
into reality

2009

Savannah River Nuclear Solutions, LLC, Annual Report





*Gary Felton*

SRNS completed our first year of operations at the Savannah River Site. That, in itself, was no small challenge. We learned a great deal more about what the Site's capabilities are, the quality of the people, and the direction to take to strengthen the Site's future. We're investing a lot of effort in transforming the business systems of the Site; we're not done yet, but we have a good understanding of how to get to where we want to go.

## For Savannah River Nuclear Solutions, the year 2009 has been anything but ordinary.

In 2009, we began a project that is affecting the Site like nothing we have seen in many years. The American Reinvestment and Recovery Act (ARRA) represents a \$1.6 billion investment in SRS. It has certainly been a challenge to get that project up and running, but by year's end, we put over 1,500 new workers on the job, and retained over 800 jobs, thanks to ARRA funding. Much of that has been done through small business, and we're pleased with the impacts we've seen and how we've helped some good people get back to work. This project will occupy much of our attention through fiscal year 2011.



Photos: (from left) ARRA funding made front page headlines in the local media; safety remains the top priority for SRNS; grouting in R Area; and public tours resumed at SRS in 2009.

The day-to-day operating missions of SRNS are in solid shape. Facilities such as H Canyon, the Tritium facilities and the K Area complex make SRS unique. Whatever the task, our people demonstrate that SRNS can accomplish some of the greatest challenges the DOE complex presents. That applies to the Savannah River National Laboratory as well—SRNL is staffed by people performing world-class science. We must continue to give them the tools they need to serve important national priorities.

We've opened our gates to the public for the first time since September 2001, hosting 14 public tours and nearly 700 guests during the year. Our employees have also continued their generous support of local communities through their contributions to United Way, the Golden Harvest Food Bank and Toys for Tots, among other programs.

None of our accomplishments matter if we can't perform our work safely. We recognize that we're the latest stewards of a site safety culture that began nearly two generation ago. If anything, we're spending even more time working to assure that everyone understands our commitment to safe operation. We owe that to our workers and to our communities.

In this report, you'll get a glimpse of some of the work that we accomplished in 2009. We're excited to be here, and to have the opportunity to help DOE achieve its goals.





SRNS continued to build upon a first-class safety culture that was first established at SRS in the early 50s. We maintained this safety legacy by subscribing to a “back to basics” safety approach, holding high safety expectations, and ensuring that employees leave work in the same condition as they arrived. SRNS employees are the company’s single greatest assets, and the company has an obligation—an imperative—to provide them with a safe workplace. Simply put, if work can not be done safely, it will not be done.

SRNS safety trends were exceptional for the first three quarters of 2009, with 73 million safe hours worked. The construction forces reached 23 million hours (11 consecutive years) without a lost time case. For the fifth straight year, SRNL remains the safest of DOE’s 12 multi-program national laboratories. However, in the fourth quarter, several incidents occurred that injured employees, sending them to off-site medical facilities for treatment. One incident prompted a DOE Type B investigation. SRNS took prompt and assertive action to reverse the trend. New safety measures were put in place to refocus the workforce on the high level of safety expected by our customer, our stakeholders and our employees.

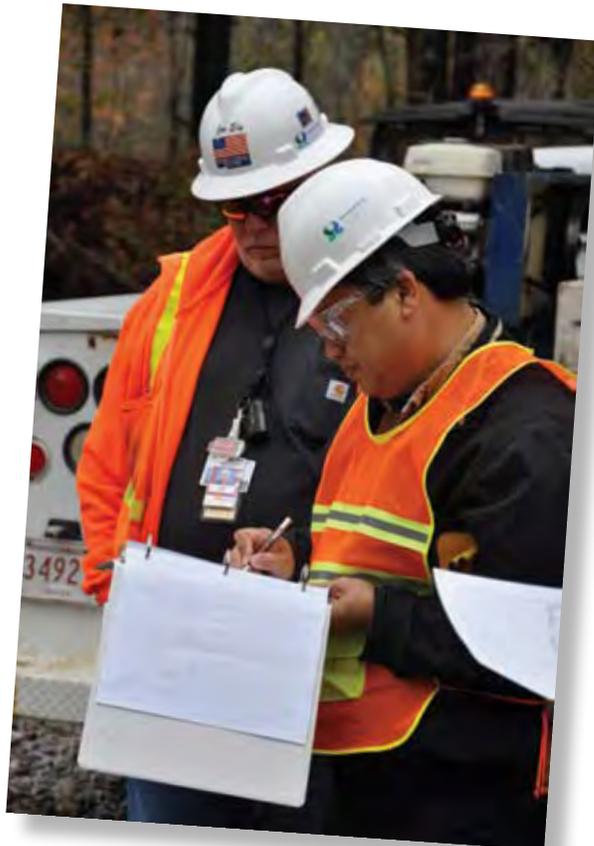
# Safety

going back to the basics

SRNS engaged a team from DuPont Safety Resources to provide an independent look at our safety culture and to consult on industrial safety program improvements. DuPont’s assessment process included a safety perception survey that looked at our safety values, the state of our safety management and the quality of our key safety practices. More than 5,300 SRNS employees (83 percent) participated in the survey.

All SRNS employees were required to participate in a mandatory Hazardous Awareness Timeout. The two-hour SICAM (Safety Improvement Compensatory Actions and Measures) class concentrated on identifying hazards and using the Human Performance Improvement program to prevent them. Management involvement in the SICAM process increased with more than 1,200 observations recorded. Work packages were reviewed and personnel renewed their commitment to safety in addition to participating in rolling timeouts throughout the Site.

SRNS was externally recognized by the National Safety Council and the South Carolina Manufacturers Alliance for excellent injury rate performance, recognizing that the operations rate for lost and restricted workday cases was far less than the industry average. Moreover, DOE Voluntary Protection Program (VPP) recognition for SRS has occurred numerous times. During August 2009, SRNS was awarded the DOE VPP Star of Excellence for exceptional safety performance in 2008. This is the eighth Star of Excellence award and the seventh consecutive year for this recognition at SRS. Currently, SRS has earned two Legacy of Stars awards by achieving Star of Excellence for three consecutive years. This is the highest VPP honor awarded by DOE.



Photos: (from top) Workers wearing personal protective equipment as they sort transuranic waste; working safely in FB Line; employees documenting work at the R Reactor Ash Basin; and VPP Star of Excellence award.

# On the Road to Recovery

## ARRA puts Americans to work at SRS



Though still early in the multi-year effort to accelerate cleanup activities throughout the DOE Complex, the American Reinvestment and Recovery Act (ARRA) Project at SRS has already met several key goals and milestones. These accomplishments follow the initial successful hiring of more than 2,500 ARRA employees and awarding more than \$200 million dollars in contracts to purchase ARRA materials and services—much for our local communities.

Some of the SRNS Recovery Act cleanup achievements to date include:

- More than 13,500 South Carolina and Georgia residents participated in a series of job fairs hosted by SRNS.
- A "Road to Recovery" van with graphics, which attracted over 1,400 residents to attend four stops, has successfully completed its mission. Over the course of 37 stops at locations throughout rural South Carolina and Georgia, the "SRS Road to Recovery Tour" provided information on job training, employment assistance programs and information on remaining Recovery Act jobs at the Site.
- Bringing new opportunities for local small businesses at SRS was the focus of a Small Business Forum held on Nov. 2 in Augusta. The event was a proactive effort to assure small businesses have the opportunity to secure contracts related to supporting Recovery Act projects at the Site.
- SRS employees recently celebrated the shipment of more than 200,000 pounds of hazardous lead to an off-site processing facility in Oak Ridge, Tenn., for nuclear lead recycling. These shipments exemplify SRNS's commitment to provide environmentally protective waste reduction initiatives.
- The last shipments of legacy PUREX waste left SRS on Sept. 10. PUREX solvent, which stands for Plutonium Uranium Extraction solvent, was used to separate uranium and plutonium from fission products during the operation of the Site's canyons.
- The 1,000th shipment of transuranic (TRU) waste was made to the Waste Isolation Pilot Plant (WIPP) located near Carlsbad, NM, this past summer. SRS made its first shipment of TRU waste to WIPP on May 8, 2001. Site personnel have safely shipped more than 28,200 55-gallon drums of TRU waste for disposal at the WIPP geologic repository since that time.
- Area Completion Projects (ACP) achieved 347 Federal Facility Agreement (FFA) milestones during FY 09. Of those 347, 82 were Performance Based Initiative milestones. Since the inception of regulatory milestone tracking in October 1993, ACP has achieved all 2,482 FFA milestones on or ahead of schedule.

Approximately 70 percent of ARRA employees hired by SRNS are from communities located in South Carolina and Georgia. To date, \$206 million in contracts have been awarded by SRNS, with 70 percent of these going to local small businesses.



Photos: (from top) the Road to Recovery van makes a stop in Allendale, S.C.; accelerated clean-up included shipping the final PUREX legacy waste off site; and workers cut through a door in P Reactor.

# Operations

meeting milestones  
and making progress

In 2009, SRNS Operations continued its tradition of excellence. H Canyon reached new levels of efficiency in liquid waste reduction and a 27 percent improvement in Conduct of Operations rates. L Area Complex marked 17 years without a lost workday case. K Area saw storage expansion. Tritium extended its 51-year perfect delivery record, and the plutonium disposition program progressed with groundbreaking for the new Waste Solidification Building.

## Nuclear Materials Disposition and Storage Facilities

Nuclear Materials Disposition and Storage Facilities, which include H Canyon, HB Line, the L Area Complex and the K Area Complex, made major progress in 2009, stabilizing and receiving materials received not only from around the complex, but also from around the world.

### H Canyon and HB Line

H Canyon and HB Line saw major milestones in 2009 charging 100 percent of Lawrence Livermore National Laboratory (LLNL) and Y-12 uranium materials and all plutonium materials planned for the year. Notably, during a period of high production rates, H Canyon and HB Line also experienced improved Conduct of Operations performance. H Canyon has seen a 33 percent reduction in ORPS (Occurrence Reporting and Processing System) reportable events this year compared with 2008, which had been a 78 percent reduction from previous years. HB Line only experienced two ORPS reportable events in FY2009, the best HB Line performance in recent history.

H Canyon reduced liquid waste generation by 80 percent, a \$37 million life cycle savings, and submitted the Documented Safety Analysis 3009 upgrade. Five Integrated Facility Aging Management assessments were also completed in H Canyon. These accomplishments were completed as the conduct of operations event rate continued to improve by 27 percent from FY08 to FY09. H Canyon also hired the first new operators since 2001.

Highly enriched uranium (HEU) is recovered in H Canyon, then blended with natural uranium to form low enriched uranium (LEU). A modified Interagency Agreement for this blend-down material was approved by DOE and the Tennessee Valley Authority and 11 LEU trailers were shipped to Tennessee during the year.



## Analytical Laboratories

Analytical Laboratories provided timely, accurate sample analyses to customers on-site while obtaining additional off-site business to reduce Site overhead costs. In addition, the Analytical Laboratories project assumed ownership of F Area Operations resulting in savings of \$1.6 million to date.

## L Area Complex

The L Area Complex continued its safe, successful performance reaching 17 years without a lost workday case. L Area workers received and unloaded 23 spent nuclear fuel casks, storing 359 fuel assemblies from a variety of domestic and foreign research reactors, including a shipment of four casks from the Australian Nuclear Science and Technology Organization.

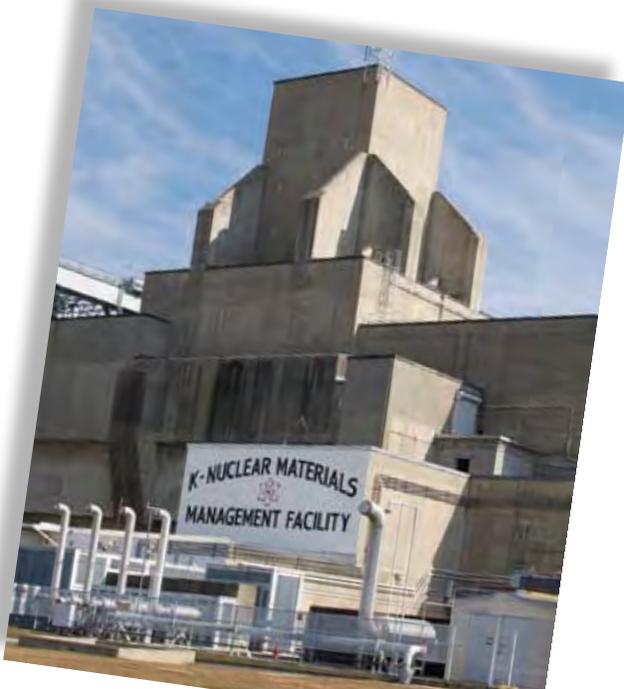
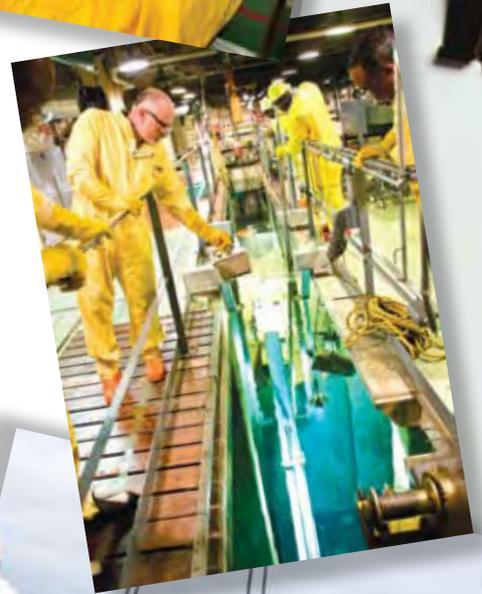
## K Area

K Area Materials Storage expanded its storage capacity by 5,300 positions to support LLNL and Los Alamos National Laboratory accelerated deinventory plans and completed receipts of over 1,100 containers to deinventory Hanford and LLNL of surplus EM, non-pit plutonium including 3013/9975s and Fast Flux Test Facility fuel in HUPF casks. More than 95 percent of the plutonium identified for complex-wide deinventory now resides at SRS.

And, the K Area Interim Surveillance (KIS) process continued successful operations completing 45 Non Destructive Examinations and 19 Destructive Examinations to provide valuable data on the long term storage capabilities of 3013 containers.

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Photos, clockwise from top: Analytical Laboratories, L Area Complex; depleted uranium shipment; K Area Materials Storage; H Canyon; and a low-enriched uranium shipment leaves SRS.



# Operations

meeting milestones  
and making progress *(continued)*

## Tritium Programs

Tritium Programs delivered the mission in a responsive manner with outstanding safety and security performance, excellent environmental stewardship and with a six percent productivity improvement. Tritium Programs delivered the mission with 10 percent fewer operations personnel and seven percent fewer maintenance personnel than in FY08 and extended its 51-year perfect record of meeting all Limited Life Component product delivery for reservoir loading, finishing, packaging and shipping.

The Tritium Extraction Facility (TEF) successfully completed the extraction of Cycle 8 tritium-producing burnable absorber rods (TPBARs) ahead of schedule while operating TEF in the initial “responsive operations” mode with significantly reduced staff.

## Nuclear Nonproliferation

In the crucial field of nuclear nonproliferation, SRNS’s contributions helped to advance all three of the planned SRS plutonium disposition facilities – Pit Disassembly and Conversion, the Waste Solidification Building and the Mixed Oxide (MOX) Fuel Fabrication Facility.

A \$345 million project, the Waste Solidification Building will process liquid waste from the MOX facility. After material is processed at the Waste Solidification Building, transuranic waste will be packaged and sent to the Waste Isolation Pilot Plant in New Mexico, and low-level waste will be packaged and sent to on-site or commercial off-site low-level waste disposal facilities.



# Business Services

SRNS recognized that replacing outdated business systems which support procurement, finance, inventory and project controls was essential to business transformation. Based on insights gained during the initial six months as M&O contractor, SRNS initiated a Transformation Project in January 2009 to implement fundamental business and operational process improvements. The project focused primarily on a series of short duration, foundational activities that would demonstrate meaningful improvement in FY09 and accomplished 270 of the 278 milestones or 97 percent of scheduled activities by year end.

# Engineering Excellence

SRNS Engineering provides the foundation for the startup and completion of every major project at SRS. SRNS was charged with establishing a single organization chartered with the responsibility, ownership and accountability for nuclear and criticality safety for all M&O nuclear facilities and stood up the organization by late fall.



Engineering is also responsible for the Integrated Facility Aging Management Program (IFAM), which ensures facilities, structures, systems and components associated with the disposition of nuclear material can be operated safely and reliably through 2019. IFAM is a SRNS-developed process tailored to meet SRS mission needs for rapid results and cost effectiveness.

# Infrastructure

The Infrastructure organization is charged with sustaining SRS’s vast, aging infrastructure for all tenants so that the Site can continue to operate safely and uninterrupted, and to reduce overall energy usage by 30 percent by the year 2015. Both are significant challenges, and both are being met. In 2009 alone, SRNS documented a 3.68 percent reduction from 2008 levels in energy intensity. This continues a 24-year downward trend that can be attributed to a continuous effort to find new ways to save energy. A major initiative is the SRS commitment to biomass fuel, which is already in use in A Area and which will soon replace the D Area power house as well.

Photos, from top: Engineering is an integral part of major projects at SRNS; and the biomass fuel facility in A Area.

SRNL puts science to work to support the nation in environmental management, national and homeland security, and energy security. As the DOE Office of Environmental Management's own National Laboratory, SRNL applies its capabilities to help achieve EM's goals at SRS and throughout EM.



# Savannah River National Laboratory

## a leader in applied science and technology

At SRS, the Laboratory provides technology solutions for virtually all EM programs on Site. Among other projects, SRNL developed methods to increase waste loading and throughput for the Defense Waste Processing Facility, saving millions in life cycle costs. The Laboratory also completed a T Area groundwater treatability study that allowed shutdown of an air stripper and annual cost savings of \$1 million; supported deactivation and decommissioning with development of novel grout formulations for entombing P and R reactors and demonstration of new decontamination technologies that enhance safety; and provided H Area with processing flowsheets for the safe and efficient disposition of a diverse suite of plutonium and uranium materials.

### Environmental Management Complex-wide

SRNL's EM support falls into three categories: technical integration; strategic and program planning; and technical development, assessment and deployment.

- Operated EM's Center for Sustainable Soil and Groundwater Solutions providing technical assistance across the DOE Complex
- Provided leadership for EM's cementitious barriers partnership, identifying tools for understanding long-term performance of cement as a waste form or in disposal facilities
- Organized and hosted DOE-EM technology exchanges, bringing together experts to share their knowledge on waste treatment and disposal, performance assessments and waste tank heel retrieval
- Developed and enhanced in-tank pretreatment solutions, like the rotary microfilter (pictured at right), to remove residual radioactive solids prior to treatment of liquids in SRS ARP/MCU, salt facilities, and Hanford
- Led the DOE Complex initiative on in-situ decommissioning (entombment): decommissioning without total dismantlement



### National and Homeland Security

SRNL's National and Homeland Security programs span the Laboratory's traditional support for SRS Tritium programs, as well as work with a number of security and law enforcement agencies. In early 2009, the American Association for Laboratory Accreditation notified SRNL that its Nuclear Forensics Analysis Center had met the requirements of ISO 17025—a recognized quality standard adopted by law enforcement laboratories—in the performance of nuclear forensic analyses. In addition, SRNL established a full-time office at the Port of Charleston (S.C.) SeaHawk interagency operations center, a collaborative initiative led by the U.S. Department of Homeland Security and U.S. Coast Guard. Closer to home, SRNL led an initiative to redesign obsolete equipment, replacing 20-plus-year-old technology, and enabling SRS and other National Nuclear Security Administration facilities to retain an important analytical capability needed to measure gases used in production, surveillance and development activities related to the nation's nuclear defense.



### Energy Security

SRNL continues to apply the Laboratory's strengths to help provide the nation with reliable, clean, affordable energy. In addition to leading DOE's Hydrogen Storage Engineering Center of Excellence, SRNL is making strides in the development of hydrogen storage materials, including the creation of a reversible route to generate aluminum hydride, an achievement that is expected to accelerate the development of a whole class of storage materials. SRNL is also collaborating in new energy security projects, including partnerships under two DOE programs: the Energy Frontier Research Centers (a major effort to accelerate the scientific breakthroughs needed to build a new 21st-century energy economy) and the Nuclear Energy University Program. Other SRNL research and development initiatives are making important advances in advanced battery technologies, materials for solar energy, fusion technology and alternative energy sources from non-food crops, algae, and wind.



Photos, from top: In November, Energy Secretary Chu (pictured with SRNL Director Dr. Sam Battacharyya) announced funding for a wind energy test facility; SRNL will receive about \$2 million to provide a data acquisition system for the project. SRNL developed a new gas analysis device to be used in activities related to the nation's nuclear defense. Biofuels research advances the nation's energy security.



Our employees continue to be a part of a long tradition of service to the communities in which we live. They give of their time, their talents and their money to improve the lives of others and to enhance programs that pave the way to a better future.

# Community Service

from grants to groceries, SRNS gives from the heart



Our service is shown in many ways. Blood drives, which have set Site records in the past year, easily making SRS the largest per capita donor pool in the area. Toys for Tots, which again provided truckloads of gifts for Christmas. Periodic Food Drives, which help to stock the shelves of area food banks. The CSRA Heart Walk, which raised \$115,000 in employee and SRNS corporate contributions. Individually and collectively, our employees continue to show a remarkable record of generosity and service.



The largest expression of employee giving is the annual SRS United Way campaign, one of the largest single-site campaigns in the southeastern United States. This year, the combined SRS campaign raised more than \$2 million, capped off by a \$200,000 SRNS corporate pledge in recognition of our employees' efforts.

SRNS also continues to put a significant emphasis on programs geared toward the educational system of the region, and the workforce of the future. Those efforts continue to include:

- A nationally recognized School-To-Work program, which creates work-based learning opportunities for high school and technical college students.
- A radiological protection internship program, a pathway to prepare Aiken Technical College students for ongoing careers at SRS.
- Sponsorship and staffing of programs such as CSRA College Night, the largest college fair in the region.
- An SRNS "mini grant" program, which funded 88 different science, math or technology projects in elementary and middle schools.

As a company, we recognize that it's a privilege to be entrusted with the operations of SRS. We want to continue to be a good neighbor, and to find ways that our company and our employees can make a positive impact in the lives of others.



Photos: Some of the SRNS community service programs include (from top) CSRA College Night, Toys for Tots, Technology Days, the United Way, and Golden Harvest Food Bank.

## What's ahead in 2010?

We look to 2010 as a year of opportunity.  
Of transforming hopes into reality.

We'll further sharpen our focus on safety.  
We'll build on our operational successes.  
We'll continue our long tradition of service  
to the nation and to the surrounding communities.

Our foundation is solid. Our future is bright.

And our next chapter starts now...



For more information about Savannah River Nuclear Solutions, LLC,  
please visit our web site at [www.savannahrivernuclearsolutions.com](http://www.savannahrivernuclearsolutions.com).

