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Savannah River Nuclear Solutions 2014 Annual Report



Savannah River
NUCLEAR SOLUTIONSSM

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Carol Johnson
President and CEO



[Click here to see a video message from Carol Johnson](#)

“We make the world safer.”
At Savannah River Nuclear Solutions,
it’s not just a slogan.
We make it happen every day.

The world we live in is changing at a rate faster than at any time in history. Many of these changes are for the better. New technologies emerge each day to make our lives, work and communications easier and faster. Science makes amazing strides for the good of all.

However, our world is often transformed negatively. With new technologies come environmental and security challenges for our nation and the global community.

SRNS is on the front line of answering those challenges with our expertise in environmental stewardship, nuclear materials handling, defense and nonproliferation programs, and technological innovations. In 2014, SRNS and the Savannah River National Laboratory made great strides in these areas. We work in close partnership with our U.S. Department of Energy and National Nuclear Security Administration customers, and with other DOE sites and national laboratories to ensure our nation’s environmental remediation and defense goals are met or exceeded.

As a former Savannah River Site employee, I’m proud and excited to return to SRS, and deeply honored to serve as the president and CEO of Savannah River Nuclear Solutions. I place top importance on the safety of our personnel and the security of our nation’s assets. I value our employees and admire their amazing expertise, their deep commitment to our missions and their constant willingness to give back to the community.

In this 2014 SRNS Annual Report, I hope you’ll see our commitment to our neighbors, our state, our nation and our world in each operational accomplishment and community activity. Please know that each major milestone and initiative is the culmination of thousands of smaller projects and tasks, all completed with attention to detail and a focus on the greater goal.

In 2015, we will not only continue our ongoing work in our major mission areas, we’ll increase our emphasis on employee involvement. This year, we surveyed our workforce to gain insights on their perceptions of their worklife at SRNS. Using the results of that survey, we’ll take actions to ensure that our employees feel engaged and valued in a compelling and desirable workplace. We’ll also increase our recruitment of the “best and brightest” prospective hires and interns at regional and national colleges and universities.

On behalf of our employees and neighbors, I’m dedicated to working each day to enhance or develop approaches to ensure the sustainability of SRS. Our missions are national in scope and global in impact. And, because of SRNS, our homes, our state, our nation and our world are safer.

To find out more about Savannah River Nuclear Solutions, Savannah River National Laboratory and the Savannah River Site, please visit our websites listed on the back cover of this report. Or consider taking one of the many public tours of SRS offered each year.

I hope you find our 2014 SRNS Annual Report informative and intriguing. As always, thank you for your interest in Savannah River Nuclear Solutions and Savannah River National Laboratory.

Carol



em

environmental management



Click here to see videos of our EM missions

SRNS' Environmental Management (EM) Operations continued to leverage its unique capabilities and benchmark nuclear facilities to provide the safe and secure receipt, disposition, packaging and storage of nuclear materials at SRS. In FY 2014, EM Operations supported the DOE program to disposition nuclear materials through the completion of the Sodium Reactor Experiment used nuclear fuel campaign and the subsequent startup of the Material Test Reactor campaign. EM Operations also assisted NNSA nonproliferation goals with the startup of a campaign to produce mixed oxide from plutonium. Progress was made on the Waste Minimization Plan with the Acid Recovery Unit reboiler replacement. The K Area vault expanded storage area construction project was completed at approximately \$1 million under budget. Also during 2014, the last low level and mixed low level legacy waste at SRS were dispositioned and preparations were completed for shipping the last transuranic legacy waste at the Site. EM Operations completed all these missions while upholding the highest standards of the SRS safety culture.

summing it up

147

Total Sodium Reactor Experiment used fuel bundles dissolved, completing campaign

70

Material Test Reactor used fuel bundles shipped to H Canyon

4,500

cubic meters of low level waste dispositioned



Ground-level release modifications to H Canyon

SRNS completed 16 significant ground-level release modifications to H Canyon in a record five months. Construction sealed abandoned piping, upgraded filters in the central exhaust system and replaced exhaust building doors. Safety analyses, reference documents and procedures were revised and employees trained. These efforts allowed for the disposition of used nuclear materials in H Canyon.

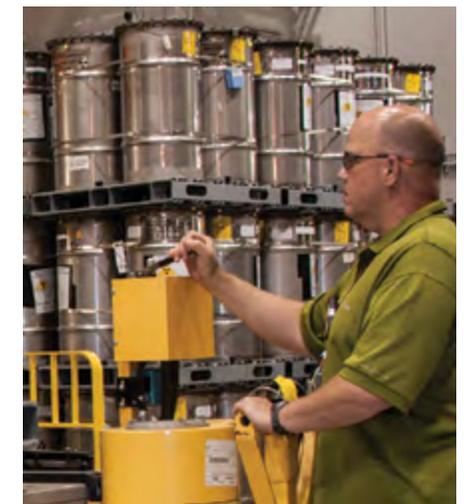


Acid Recovery Unit reboiler installation

SRNS recently completed repairs and installation of the H Canyon Acid Recovery Unit's (ARU) reboiler, saving taxpayer dollars and supporting the waste minimization program at the Site. The ARU recycles nitric acid vapors released during canyon processes for reuse.

Sodium Reactor Experiment fuel dissolution

The dissolution of 147 bundles of Sodium Reactor Experiment used nuclear fuel was completed. DOE evaluated the fuel stored in the L Area Disassembly Basin and authorized the processing. The used nuclear fuel was dissolved in H Canyon (control room pictured at left) with other high aluminum fuel from L Area. The resulting solution will be transferred to the SRS Defense Waste Processing Facility for disposition through vitrification.



Expansion of K Area storage vault

K Area completed construction of the Final Storage Vault, significantly expanding storage capacity of special nuclear materials and completing the project at approximately \$1 million under budget.

nnsa

national nuclear security administration



Click here to see videos of our NNSA missions

SRNS maintains a proud tradition of support for our nation's security. Working on behalf of the National Nuclear Security Administration, SRNS produces the nation's tritium, a key component in modern weapons, and provides related products and services to ensure the reliability of the nation's stockpile. SRNS Savannah River Tritium Enterprise (SRTE) completed on schedule all of its FY 2014 mission deliverables supporting the nation's nuclear defense. SRTE fulfilled its vital missions while achieving significant cost and productivity savings, continuously increasing product quality, and maintaining an excellent safety record. SRNS' NNSA Operations and Programs also supports NNSA's nonproliferation work, with responsibilities including the conversion of an inventory of plutonium, known as Alternate Feedstock-2 (AFS-2), into oxide in preparation for disposition, as well as constructing the Waste Solidification Building to deal with waste from the future mixed oxide, or MOX, facility.



summing it up

\$2.37 million

in Tritium productivity savings

100 percent

Tritium deliverables completed on schedule

59

Waste Solidification Building system turnovers accepted



NNSA Administrator visits SRS twice during 2014

DOE Under Secretary for Nuclear Security and NNSA Administrator Frank G. Klotz visited SRS with Secretary of Energy Ernest Moniz, returning for a separate visit several weeks later to spend more time observing SRNS' work for NNSA and interacting with employees.



WSB achieves mechanical completion

The schedule performance for the Waste Solidification Building project was significantly improved, and subcontractor mechanical completion was achieved, with 59 system turnovers accepted.



Gas Transfer System function testing

Production and function testing of an early prototype Gas Transfer System (designed by Los Alamos National Laboratory) was completed two years ahead of the original schedule in support of NNSA's B61-12 Life Extension Program.



Response to ice storm damage

Following the 2014 ice storm, a loss of steam resulted in infrastructure damage in the Tritium facilities. SRNS implemented a plan that allowed necessary operations to continue safely while repairs were made.

Plutonium oxide production

Difficult challenges were overcome, resulting in production of the first can of analyzed plutonium oxide from AFS-2 feed material, a necessary first step in the disposition of this material.

Additional tritium added to stockpile

New tritium was added to the nation's supply by extracting tritium from the Cycle 11A Tritium Producing Burnable Absorber Rods (TPBARS), demonstrating the capability to process 300 TPBARS in a single basket for the first time.



srnl

savannah river national laboratory



Click here to see videos of our SRNL missions

Savannah River National Laboratory's influence continues to extend far beyond the SRS boundaries. In FY 2014, SRNL took leading roles in scientific and technical efforts throughout the DOE complex and on the world stage. SRNL is leveraging its traditional strength in nuclear chemical engineering into areas as diverse as natural gas and intelligence community support, leading Energy Secretary Ernest Moniz to call SRNL "a laboratory that I rely on very heavily." In 2014, the lab opened the Energy Materials Research Laboratory, its newest suite of state-of-the-art research facilities. Six new labs funded by SRNS were added to support research on advanced materials in solar energy, nuclear energy, wind and marine energy systems, energy storage materials and carbon dioxide capture. In FY 2014, SRNL marked its 10-year anniversary as a national laboratory and more than 60 years of service to the nation. As in past years, SRNL executed its work with a focus on safety—the cornerstone of its world-class performance.



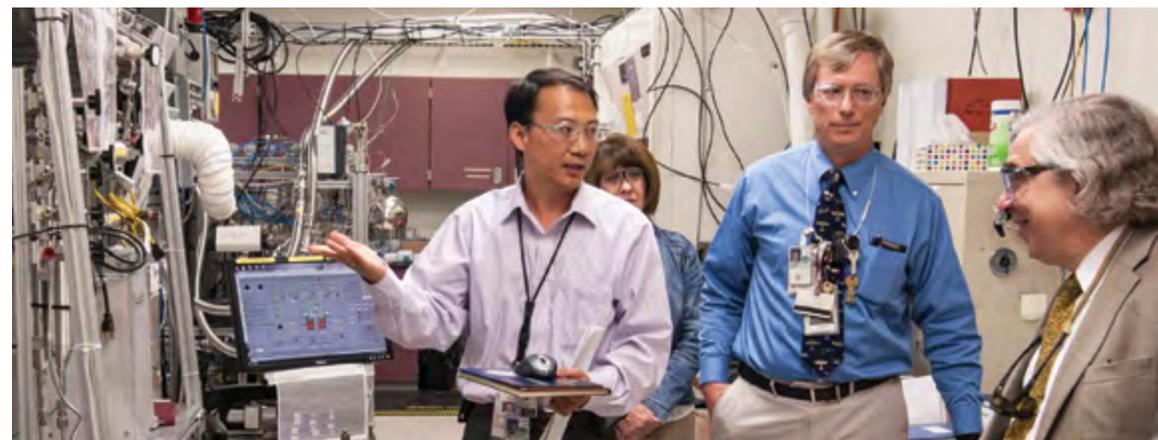
Leadership role on WIPP, Hanford teams

In 2014, SRNL was selected to lead two teams focused on issues at DOE complex sites. SRNL is chairing the Waste Isolation Pilot Plant Technical Assistance Team, following the accident at the New Mexico site. SRNL also led a team of independent experts in reviewing chemical vapor issues at the Hanford Tank Farm (pictured above) at the request of Washington River Protection Solutions. The review was issued on Oct. 30, 2014, and is posted on the SRNL website at doe.srnl.gov.



Partnership with Clemson on Wind Turbine Facility

SRNL partnered with Clemson University in developing the new Wind Turbine Drivetrain Testing Facility and Electrical Grid Laboratory in Charleston, S.C. This collaboration in electrical energy research and testing is capable of full-scale, accelerated testing of next-generation wind turbine technology and smart grid devices.



Energy Secretary tours SRNL laboratory

During his visit to SRS in 2014, U.S. Secretary of Energy Ernest Moniz (right) visited the SRNL Hydrogen Technology Research Laboratory. SRNL's Steve Xiao (from left), Sharon Redd and Tommy Sessions explained SRNL's improved Thermal Cycling Absorption Process, which enriches tritium gas in a smaller space and in a more cost-effective process.

summing it up

20

U.S. federal agency and office clients

\$5 billion

savings over 5 years to DOE-EM complex through SRNL innovation

50

foreign countries where SRNL works

Mobile Plutonium Facility

The SRNL-developed Mobile Plutonium Facility (MPF) (photo, facing page) is a prime example of SRNL innovation working for national security. The MPF conducted an extensive cold weather exercise in Alaska, refining the facility's operations in a range of environments.

Support to TEPCO

SRNL continues to perform work around the world, including ongoing consulting to the Tokyo Electric Power Company on water management and other technical issues at the Fukushima Daiichi nuclear plant.

Our commitment to a thriving culture of safety and security is the steady foundation for all SRNS missions. In 2014, our company continued as one of the safest DOE sites, earning our 13th consecutive DOE Voluntary Protection Program (VPP) Star of Excellence award and our fourth Legacy of Stars award. As we enhance our safety and security performance, we also focus on improving our business systems. SRNS Continuous Improvement (CI) success was honored in 2014 as the SRNS IDEAS program received four international awards at the IdeasAmerica Annual Summit. Finally, our dedication to conducting operations in an environmentally-responsible manner was confirmed in the SRS Environmental Report for 2013, which is available online at <http://www.srs.gov/general/pubs/ERsum/index.html>.



SRNS Continuous Improvement

Through the SRNS CI Program, employees are encouraged to find ways to work more efficiently and effectively in order to achieve both immediate and future savings or cost avoidance as well as process improvements.

200
Continuous Improvement initiatives implemented

\$44 million
saved through CI initiatives in costs, avoidances, productivity and efficiencies

1,400
IDEAS submitted by SRNS employees in 2014

Click here to see videos of these programs



Environmental Compliance and Area Completion Projects

In FY 2014, Environmental Compliance and Area Completion Projects (EC&ACP) continued its long history of reducing risks to human health and the environment at SRS. Work continued in the deactivation and decommissioning of Site facilities, as well as providing environmental support to SRS operations. During FY 2014, EC&ACP completed 105 Federal Facility Agreement or Resource Conservation and Recovery Act commitments on or ahead of schedule; operated 39 remediation systems; completed sampling and analysis on more than 2,000 groundwater monitoring wells; and collected over 10,000 samples in support of EC&ACP projects.

our business essentials

safety and security • continuous improvement • environment

Enriching our culture of safe, secure operations

Continuing the momentum of the SRNS slogan, "Safety and Security Begin with Me," SRNS employees worked 24.8 million hours without a lost time injury through March 2014, earning the company the National Safety Council's (NSC) 20 Million Safe Hours award. Employee-driven Local Safety Improvement Teams underpin SRNS' world-class safety culture, and each year they help to stage the SRS Safety and Security Expo, where Site employees can enhance their safety and security knowledge. In FY 2014, SRNS also completed implementation of H Area security enhancements, as well as coordinating and participating in the annual SRS emergency preparedness drill.

2014 safety awards

NSC 20 Million Safe Hours (Operations)

Rising Stars of Safety (Rachel Kumar, Industrial Hygiene)

NSC's Occupational Excellence Achievement (Operations and Construction)

NSC's Industry Leader (Operations)

13th consecutive VPP Star of Excellence

Fourth DOE VPP Legacy of Stars

NSC CEOs Who Get It (Dwayne Wilson, past SRNS President and CEO)

S.C. Chamber of Commerce Commendation of Excellence

S.C. Manufacturers Alliance Plant Safety

S.C. Department of Labor Safety Achievement



For SRNS to conduct its essential national missions, it takes a community of employees, leaders, partners and neighbors. Working together, this community enables SRNS to succeed, and in turn, SRNS gives back to this community of partners. Our recruiting and hiring efforts have placed over 400 new hires in jobs within our company, and our young people and military veterans are given special consideration in our intern programs. SRNS is proud to have brought the story of SRS to the citizens of South Carolina through the SRS Information Pods, and through our philanthropic giving, we've invested hundreds of thousands of dollars into local education, charities and other organizations. Education remains a focus, with 25,000 students served regionally. We're all in this together, and being a valued neighbor is our goal.

commitment

to our employees and our neighbors



Click here to see videos of our workforce and community initiatives

Recruiting, retaining and developing our employees

Highly trained and with vast experience and knowledge, SRNS employees are our company's most valuable asset.

To bolster our workforce, SRNS hired a total of 718 employees in 2014, including 474 full service employees. The first group of SRS EM nuclear workers in 15 years was hired, with 17 of the trainees graduating from two local college programs created to support the regional need for nuclear production expertise. Also, 125 interns gained valuable work experience through our internship program.

Employee development provides our workforce leaders with the skills and tools to succeed. SRNS Talent Management continued its Leadership 101 training in 2014, and added two more management courses: DRiVE (Develop, Retain, Invest, Engage) and Welcome to Management for peers transitioning to managers.

SRNS is committed to workforce diversity and inclusion. The S.C. Chamber of Commerce named SRNS as a finalist for the 2013 Excellence in Workplace Diversity award. SRNS also received the SRS GLOBE (Gay, Lesbian or Bisexual Employees and Allies Association) award for promoting diversity.



SRNS instructor Skip Johnson explains how a portable air monitoring unit functions to SRNS Operator trainee Dennis Huff.



An attendee at the Aiken SRS Information Pods is interviewed at the event.

In the community

The SRS Information Pods, a new DOE initiative developed and managed by SRNS, brought the story of SRS missions to Aiken, Barnwell and Beaufort, S.C., during 2014. Attendees signed up to hear speakers on environmental stewardship, nuclear materials, SRNL and waste management.

SRNS continued giving to local colleges and schools, charitable organizations and other groups. SRNS invested \$950,000 in local communities in 2014, bringing the total to \$6.75 million since 2008. SRNS and its parent companies Fluor, Honeywell and Newport News Nuclear, committed \$150,000 to Aiken Technical College's Center for Energy and Advanced Manufacturing. Other contributions included:

- Over \$1 million raised in the 2014 employee United Way campaign
- \$50,000 to the Aiken Together Campaign
- \$15,000 each to the Child Advocacy Center of Aiken and the Augusta Red Cross
- \$10,000 each to the CSRA Heart Walk and S.C. NAACP

SRNS continued to manage the SRS Tours Program, conducting 255 tours for 3,060 visitors in 2014. In addition to public tours for the community, SRNS also managed tours for visitors including U.S. Department of Energy Secretary Ernest J. Moniz; DOE Under Secretary for Nuclear Security and NNSA Administrator Frank G. Klotz; S.C. Governor Nikki Haley; U.S. Senator Lindsey Graham; U.S. Senator Tim Scott; and Congressman Joe Wilson.

SRNS Education Outreach

10 scholastic programs + special events

25,000 students served in 8 counties

College Night

150 colleges and universities

7,000 students and parents participating

Mini Grants Program

\$75 thousand awarded in Innovative Teaching Mini Grants to

159 area elementary and middle school teachers

Future City Competition

34 teams of middle schoolers competing



Nicole Valle (left) and Jasmine Brown, both from Williston-Elko (S.C.) Middle School, participated in the annual Introduce a Girl to Engineering event.

EM NNSA SRNL

In an ever-changing and always-challenging world, SRNS looks toward 2015 with anticipation.

We'll continue to develop our world-class safety and security culture, so that each employee arrives, works and goes home safely, and our nation's valuable nuclear materials resources are protected.

Our employees will be at the heart of a successful 2015. Engaging our employees in developmental opportunities and increasing our recruitment will ensure a diverse workforce with priceless expertise and enthusiasm.

EM Operations will embark on the remediation of the 90-acre D Area coal ash basin and the cleanup of transuranic waste Pad 16. Safe and secure activities in plutonium blend-down, production of AFS-2 plutonium oxide and used nuclear fuel dissolution will also remain a focus.

SRNS' NNSA Operations and Programs will continue to provide excellent support for Defense Programs, including tritium supply, nuclear stockpile stewardship, helium-3 recovery, and the Waste Solidification Building completion.

Savannah River National Laboratory will build upon its substantial reputation for innovation, with ongoing technical assistance to our country's national laboratories and agencies, as well as international entities and initiatives. Process intensification will be at the center of SRNL's 2015 Laboratory Directed Research and Development program.

As always, SRNS will strive to earn the community's support, trust and respect, with reliable stewardship of the environment and the nation's assets.

We make the world **safer.**

SRNS





Savannah River Nuclear Solutions is the management and operations contractor for the U.S. Department of Energy's Savannah River Site, located in Aiken, S.C.

Please visit our websites and follow us on Facebook, Twitter, YouTube and Flickr.



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