JUNE 2015

SAVANNAH RIVER NUCLEAR SOLUTIONS

SRNS Today

D Area Ash Basin

SRNS begins extensive environmental cleanup of coal-fired ash

Also this month

Energy Secretary visit • Virtual reality training • Spent Fuel Project improvements • Red Cross Hero

Carol Johnson
SRNS President and CEO

Welcome
to the June 2015 edition of
SRNS Today

Video: SRNL

To see the Savannah River National Laboratory segment of our video series "Why SRS Matters," please click here or visit http://www.srs.gov/general/news/video.htm

"We make the world safer."
The proof is on every page of this edition of "SRNS Today."

Let's start with the work we've begun in the D Area ash basins, which were created in the 1950s and cover about 100 acres at the Savannah River Site. We've already started moving more than 80,000 cubic yards of coal ash and dirt, and by the project's end, enough ash, clay and dirt will be moved to fill about 17,000 average-sized dump trucks. The end result will be two large, highly-engineered grassy mounds, which will eliminate a potential risk to the Savannah River. That's making the world safer.

In June, we were honored to host Energy Secretary Ernest Moniz and the Secretary of Energy Advisory Board. During their visit to the Savannah River National Laboratory, the board and Secretary Moniz met with SRNL research staff on technical innovations such as spent fuel research, next generation solvent development, radiation resistant polymers, tritium processing, advanced tagging and tracking technologies, and the lab's latest work in national security. Our national leaders have once again seen how we make the world safer.

Training is a huge undertaking at SRS, and is often difficult to devise, given the radiological complexities of many of our facilities. SRNL is taking training to a new level with three dimensional virtual reality, which will allow workers to "experience" hazardous duties in a completely risk-free training environment. That's making the world safer for our employees.

This month, our Spent Fuel Project employees implemented suggestions that make their work safer and more efficient. Our firefighters and radiological protection inspectors sharpened their skills in the annual "live burn" training exercise. And our employee volunteers continued their long tradition of fundraising through charity races and tournaments. They've all worked continuously and thoughtfully to make the world safer.

Making the world safer for our employees, our environment, our nation and our global community. It's how we think. It's how we work. And it's what we do every day.

I hope you enjoy this edition of "SRNS Today." As always, thank you for your interest in Savannah River Nuclear Solutions.

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Savannah River Nuclear Solutions, LLC, is a Fluor-led company whose members are Fluor Federal Services, Newport News Nuclear and Honeywell. Since August 2008, SRNS has been the management and operating contractor for the Savannah River Site, a Department of Energy-owned site near Aiken, South Carolina, including the Savannah River National Laboratory. The SRNS corporate and community offices are located in the renovated 1912 "Old Post Office" building in Aiken, S.C. The primary initiatives of SRNS are national security, clean energy and environmental stewardship. SRNS Today is published monthly by SRNS Corporate Communications to inform our stakeholders of the company's operational and community-related activities. If you have questions or comments, please contact us at 803.952.9584 or visit our website.

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Work begins at the
D Area Ash Basin

SRNS environmental engineers Ron Socha (left) and Frank Sappington, along with SRNS subcontract technical representative Terry Schallick, observe work at the D Area Ash Basin.

SRNS begins extensive environmental cleanup of four coal-fired ash basins

The heavy equipment is rolling in D Area, as SRNS begins the excavation and removal of a thick layer of coal ash covering approximately 100 acres at SRS.

Approximately 1.3 million cubic yards of coal ash is located in four nearly side by side, pond-like basins. This coal ash is being safely and efficiently consolidated into two large mounds. Each mound will be capped with a thick earthen cover consisting of fill dirt, a synthetic material and clay to prevent rainwater from reaching the ash beneath.

This CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) project is a result of a closure plan developed and approved by a core team consisting of members of DOE-Savannah River and state and federal environmental regulatory agencies. This closure plan uses proven technology and methods successfully implemented in the past to close contaminated, water-filled basins at SRS.

Cleanup of these large basins will eliminate a potential risk to the Savannah River. This is particularly true given their age, having been created in the 1950s.

The initial work will involve moving more than 80,000 cubic yards of ash and dirt excavated from one basin and placed on an adjacent, existing ash landfill.

"To date, the management of this project has been right on schedule with the site prep work successfully achieved and the relocation of ash in progress," said Chris Bergren, Director, SRNS Environmental Compliance and Area Completion. "We expect the high level of productivity and dedication to safety to continue all the way through the completion of this project, about three years from now."

The protective cap for the first mound alone is expected to require nearly 87,000 cubic yards of new, clean soil. In all, enough ash, clay and dirt will be moved to fill about 17,000 average-sized dump trucks. When complete, the top of this mound will be large. The overall length will be equivalent to 17 football fields, if placed end to end.

Upon completion of the first mound, SRNS will begin to consolidate the ash from the remaining basins, forming a second large capped mound.

"At the conclusion of this project, decades of ash will no longer exist as a potential environmental hazard," said Bergren. "In its place will be two highly engineered grassy hills, which we will continue to carefully monitor."

Construction of the ash basins was required to collect and control the watery ash-ladened solutions produced as a by-product at the large, coal powered D Area powerhouse located a short distance from the basins. Special sluice lines (pipes) carried the environmentally hazardous fluid to the basins.

For decades, a large percentage of the steam and power needed to operate SRS facilities was produced by the D Area powerhouse, which is now closed for eventual demolition.

SRNL hosts meeting with Secretary Moniz, SEAB

Energy Secretary Moniz addresses a community leaders meeting during his visit.

SRNL's Aaron Washington briefs Secretary Moniz on SRNL research that has led to a new radiation resistant polymer coating for containment bags, an innovation that will save money, reduce occupational exposure and reduce waste generated from failed traditional polyethylene bags.

In June, SRNL hosted Secretary of Energy Ernest Moniz for a meeting of his Secretary of Energy Advisory Board (SEAB).

The SEAB is a 19 member panel that provides advice and recommendations to the Secretary on DOE's basic and applied research and development activities, operational issues and other activities of DOE as requested by the Secretary. The SEAB is chaired by Dr. John Deutch, an MIT faculty member and former Director of Central Intelligence, Deputy Director of the Department of Defense and Under Secretary of Energy. Both Dr. Deutch and SEAB Vice Chair Dr. Arun Majumdar attended the meeting, along with other board members.

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Dr. Terry Michalske

While much of the SEAB meeting was closed to visitors, both the board and Secretary Moniz took separate tours in SRNL, meeting with research staff on technical innovation such as spent fuel research, next generation solvent development, radiation resistant polymers, tritium processing and advanced tagging and tracking technologies. The Secretary also received a classified briefing on SRNL's latest work in national security.

SRNL Director Dr. Terry Michalske called the visit "a particularly important opportunity for SRNL, since the SEAB only meets at National Labs twice a year."

"The Secretary made several complimentary and supportive comments about SRNL when he met with SRS leadership and at his meetings at public and community forums. Members of SEAB, including the Chair and Vice Chair, were also quite vocal in their admiration for the quality of science, engineering and mission impact they saw during their visit," said Dr. Michalske.

The SEAB also visited H Canyon facilities and stated that they were taking away an appreciation of the kind of rigor and expertise that is found at SRS.

A high-tech solution to complex and dangerous workforce training – virtual reality – is being used at SRNL. Through the use of three dimensional programs, SRNL is making it easier to understand complex facilities and tasks, reducing the risk of accidental exposure to employees.

Much in the same way that pilots use flight simulators, SRNL is using this technology to help train the nuclear workforce. "The system works basically like a 3D movie," explained SRNL Principal Engineer John Bobbitt. "The difference is that the system can track movements, and the operator can move through a facility and operate tools on the screen, just like you would in the real world."

Similar technology is used in military and recreational applications to train and experience conditions that approximate real situations.

In creating the training system, researchers had to convert two dimensional drawings into a 3D format. "This allows us to design custom tools to use in complex tasks. Also, instead of using scale models of facilities, trainees can practice in a simulated environment that looks just like their workplace," Bobbitt said.

Through virtual reality, SRNL is able to save time and money, while creating a safer work environment. Employees are able to practice complicated procedures before they're needed and can experience "out of normal" events to prepare for emergency response.

Facilities at SRS are so complex that physical tours are difficult. Other facilities are hazardous and do not provide a suitable environment for training. The 3D training allows facilities to be viewed by workers without personal protective equipment.

Dr. Tom Warren lauded for 45-year career in tritium technology

When Dr. Tom Warren began work at SRNL as a research engineer, it was 1970. Richard Nixon was president, Apollo 13 splashed into the Pacific, and American Top 40 with Casey Kasem premiered. At SRS, work was under way on advances in tritium reservoir technology, and Dr. Warren supported that mission, eventually shaping his career and the lab into a nationally-recognized leader in tritium reservoir materials and production processing.

Dr. Warren has been the SRNL/SRS technical expert for the Terrazzo reservoir gas transfer system since its initial design in 1982. This system is used in the Trident-II Fleet Ballistic Missile. He has been the task leader through eight different supporting Life Extension programs at SRS, and was involved in the design and installation of a succession of loading lines and various function test methods.

SRNS President and CEO Carol Johnson thanked Dr. Warren for his years of service. "Forty-five years is an incredible achievement and an incredible career. We celebrate people like you, people with the expertise and years of knowledge. We wouldn't have the solid reputation for innovation that we have today without you," she said.

"When it comes to tritium, when Tom Warren talks, we in the lab and the folks in Tritium listen," said SRNL Defense Programs Technology Manager Dr. Robert Addis. "He is a mainstay of SRNL's Weapons Technology support to the NNSA Defense Programs mission. This is about a lifetime of technological excellence in the world of tritium."

The HIC/OSSC platform before (left) and after improvements.

Spent Fuel Project employees' suggestions lead to improved process efficiency and reduced hazards

A new platform designed and in use by SRNS Spent Fuel Project personnel increases efficiency and reduces hazards to employees while removing expended ion exchanging resin material in L Area at SRS.

The resin is used to maintain the proper chemistry in the 3.4 million gallon L Basin, an underwater storage facility for spent nuclear fuel. The resin attracts radioactive ions in solution, removing them from the basin water in order to keep conductivity as low as possible and minimize corrosion of stored materials. Over time, the resin is expended and is required to be changed every six to nine months. The expended resin is removed from the system by pumping it into a High Integrity Container (HIC), a steel container housed inside a concrete On-Site Storage Container (OSSC) that provides radiation shielding for employees conducting this process.

In the past, tall ladders were used to connect hoses from the deionization system to the top of the HIC/OSSC, which is 12-13 feet tall, in order to remove the resin. Improvements were implemented and a platform was created for easier and safer access. Over time, operators recognized that the platform required additional improvement. Some of the issues included the platform being cumbersome to use and time consuming to install, tripping hazards created by routing hoses and cables on top of the platform, and overhead hazards by the use of a crane to suspend the camera system used to monitor the HIC contents.

"Every time we did a post-job review after removing resin from the system, operators would make suggestions for improvement," said Don Joyner, Day Shift Operations Manager in L Area. "We took these suggestions to Engineering, who came up with a new design that not only makes the work easier to do, but also eliminates many of the safety hazards involved. We believe that the best way to handle a hazard is to eliminate it. SRS fosters a safety-conscience work environment, and this is evidence that suggestions for improvement are respected and appreciated."

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>
> **Don Joyner**

The new HIC/OSSC platform was designed to incorporate more shielding to protect workers from radiation. It allows for easier installation, eliminates a safety hazard by routing the hoses underneath the platform, and mounts the camera system in a way that eliminates the use of a crane. It also allows for the elimination of some personal protective equipment, which helps reduce the risk of heat stress in the summer months.

The Spent Fuel Project in L Area reduces global nuclear threats and environmental hazards by safely receiving, processing and storing spent nuclear fuel. In 1996, L Basin equipment was reconfigured to safely handle and store spent nuclear fuel from off-site (foreign and domestic) research reactors. Since that time, L Area has received about 10,500 spent nuclear fuel assemblies from off-site sources.

Live Burn

Firefighters, radiological inspectors complete annual training exercises

SRNS employees conduct year-round training to stay at peak performance. In April and May 2015, SRS radiological protection and fire department came together for annual "Live Burn" training exercises that simulate fires in facilities with chemical and radiological contamination.

The Live Burn exercise took place at the Martinez-Columbia County Fire Rescue Training Facility in Martinez, Ga., over four days (with three different scenarios per day), giving each shift the opportunity to participate.

"We had facilities from across the Site participate. This allows radiological protection inspectors, first line managers and operators to receive the same training and learn the same techniques," said Cristie Shuford, Manager, SRNS Site Radiological Training.

Each day began with a safety briefing, followed by sessions for the radiological protection team to practice essential steps in the decontamination process, such as replacing a firefighter's potentially contaminated respirator gear with a new, "clean" breathing cartridge.

After the practice session, each Live Burn exercise started with a fire in the training facility. In full bunker gear, firefighters faced many variables as they battled the fire and rescued "victims" (training dummies). Scenarios, for example, could involve a fire in a facility with radioactive materials, as well as toxic chemicals.

Training exercises, such as Live Burn drills, are conducted to ensure the safe operations of the facilities located within the 310 square miles of the Site. Local communities also benefit from these extensive preparedness efforts, as SRNS has mutual aid agreements with adjacent counties, offering them emergency assistance from the SRS fire department and radiological protection when requested.

Alan Wise (right) of SRNS Site Training gives instruction to radiological protection inspector Matt Hubbard (middle) on changing a supplied breathing air to an air purifying cartridge.

Red Cross honors Weathers with Community Hero award

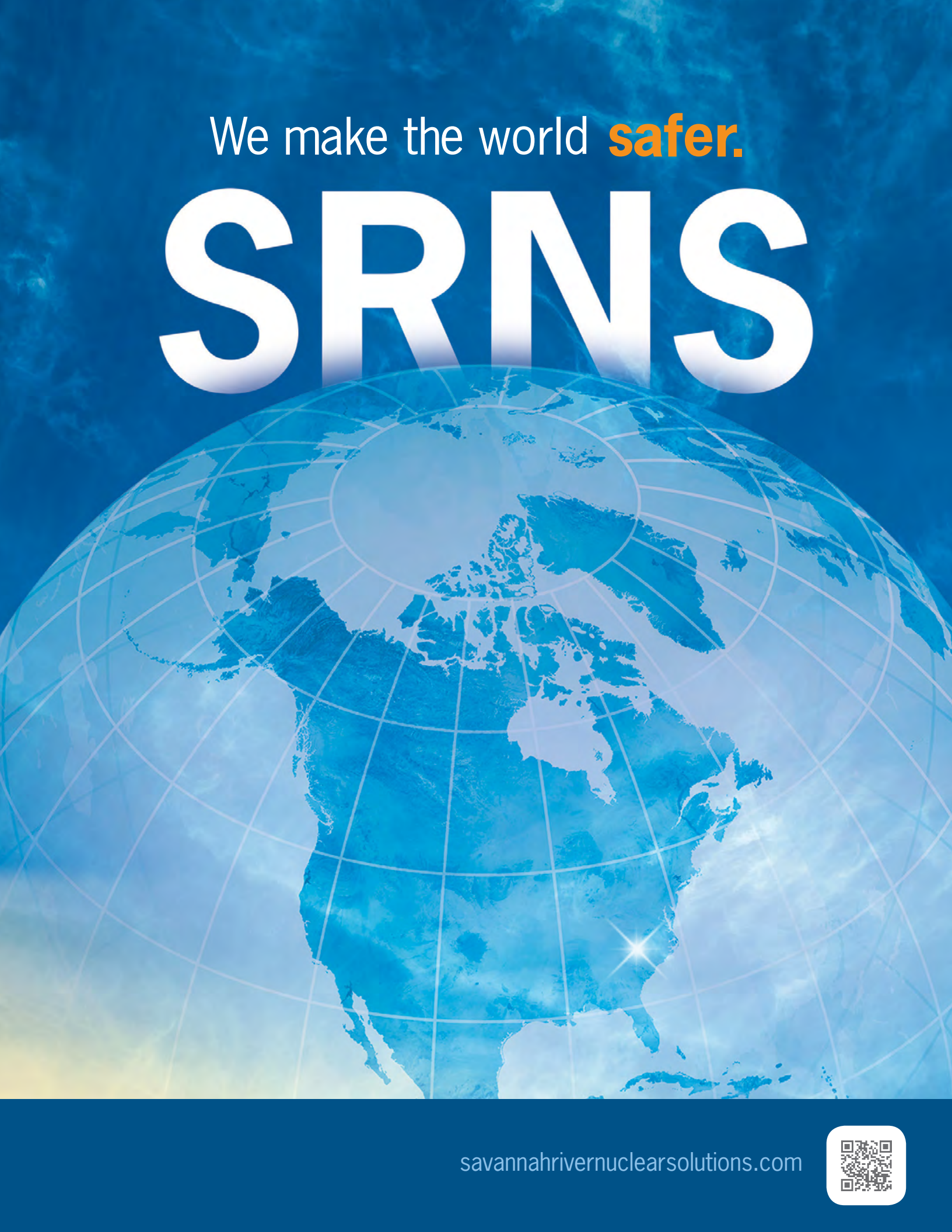
Running in a competitive 5K road race can be daunting enough, but SRNS firefighters took it to another level by setting the pace in full bunker gear and encouraging others to do so.

Phillip Weathers, an SRNS firefighter, learned the rate of developing cancer is nearly three times the national average for firefighters. Weathers sought to provide support for firefighters affected by cancer by founding the "FireK FiveK," an annual charity event where firefighters run a 5K while wearing more than 60 pounds of protective bunker gear.

"We started dressing out in bunker gear while running in races on our own, in solidarity for our friends affected by cancer. That's how I got the idea to plan a separate race solely to raise awareness of the prevalence of cancer among firefighters and to benefit the families and firefighters who have received a cancer diagnosis," said Weathers.

In 2014, Weathers invited local firefighters to participate in the inaugural FireK FiveK race, and 16 firefighters from SRS, Richmond County and Charleston ran side by side. During this year's race, more than 100 firefighters from Georgia and South Carolina participated in the run and raised over $3,300 to benefit local firefighters with cancer.

"Phillip demonstrates the qualities of a compassionate, caring individual by taking it upon himself to reach out to others to improve their lives. Phillip's idea has improved people's lives through spreading an image of family and teamwork to those whose lives are affected by cancer," said Fred Dohse, SRNS Executive Vice President and Chief Operations Officer. "Because he saw a need, he acted, and that action will affect the lives of many firefighters and their families as they battle a cancer diagnosis."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