

# SRS Heritage Foundation

## NEWSLETTER

June, 2012

### Road Scholars Invited to Aiken

By Jim Jordy

In early 2011, the SRS Heritage Foundation proposed to develop a program to encourage people who do not live in this area to visit Aiken and tour the SRS facility. Public tours have been sponsored by DOE over the past several years but it was suggested the Site would be of interest to more citizens who do not live in the general area. This led to suggesting that Elderhostel, an organization headquartered in Boston, be contacted to see if they would be interested in having one of their programs in Aiken. After some preliminary communications, the University of South Carolina Aiken agreed to be the hosting organization for such a program and a planning committee was formed. Through the efforts of Dr. Deidre Martin, Vice Chancellor for Advancement at USCA, along with Walt Joseph, Chairman of the SRS Heritage Foundation, and Jim Jordy, member of the Foundation Steering Committee, and their wives, a program proposal was drafted and sent off to Boston. The Road Scholar (the *new* name for Elderhostel) program committee liked our proposal very much and decided to sponsor it in 2012.

*"Historic Aiken: From 19<sup>th</sup> Century Notables to 21<sup>st</sup> Century Nuclear Science"* will be conducted during the week of October 7-12. In addition to highlighting the history, the development, and the future of the Site, including a tour, the program will involve presentations related to The Winter Colony, the sporting history of Aiken – horses, polo, and golf, and the formation of the modern study of ecology. A number of distinguished and knowledgeable speakers will inform and entertain the attendees over the six-day period of the program. The history of the area will also be presented via showing two specific movies: "Edgewood", which shows the history of the Eulalie Salley house, now on the USCA campus, and "Displaced", which chronicles the removal of Ellenton and other small communities from the land taken by the Site.

The program will be implemented if an adequate number of visitors sign-up for it. We will let you know as the planned date approaches.

### Historic INL Reactor is National Historic Landmark

By Mimi Jones

The Experimental Breeder Reactor No. 1 (EBR-I) at the Idaho National Laboratory (INL) is designated a national historic landmark. The EBR-I Atomic Museum is located on U.S. Highway 20/26 between Idaho Falls and Arco. The National Historic Landmark honors the plant where usable electricity was first generated from nuclear energy on December 20, 1951. It is open free to the public from Memorial Day weekend through Labor Day weekend. It's the only place in America you can see four nuclear reactors—including two aircraft nuclear propulsion prototypes, a reactor control room, remote handling devices for radioactive materials, radiation detection equipment, and much more. New in 2011 are

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# SRS at Sixty

By Art Osborne

In June, 1952 work at the Savannah River Plant was proceeding at maximum speed. DuPont had accepted the contract and identified numerous major subcontractors to assist with the undertaking. World events had unfolded and the United States was in a "Cold War".

The scale of the construction undertaken is hard to grasp. DuPont and their subcontractors had to design and build everything from the most delicate instrument to massive concrete and steel reactors and chemical separations canyons. The evolving technology and ever changing needs to deal with the hazards of radiation and the hydrogen sulfide gas used in the manufacture of Heavy Water were paramount in the design and construction to ensure the safety of the operations and personnel.

The technology for the nuclear weapons program was new and constantly changing. This was accounted for by using special design and construction techniques that were organized to accommodate changes as far as possible into the design, construction and operating processes. Three classes of buildings were identified as necessary for the construction. Class I: massive reinforced concrete structures, designed to withstand direct nuclear blasts; Class II: structural steel and/or reinforced concrete frame with expendable walls made of materials such as Transite, an asbestos based corrugated material that reduced the load bearing factor required by 83%; and Class III that was considered normal construction.

The construction schedule was rigorous. The construction of areas was staged in order to meet national defense production goals. The G Area facilities, namely roads, bridges and railroads, were built first in preparation for the construction of the production and supporting areas. The next construction priority was the Heavy Water production facilities or the 400-D Area. Construction began in D-Area on April 2, 1951 barely 6 months from the date of the first announcement of the SRP in November, 1950. Reactor Areas R and P were the next priorities. Construction began on R-Area on June 1, 1951, and construction of P-Area followed one month later. While construction began on the A/M areas in May, 1951, the administrative and fuel and target fabrication areas were given a lower priority. Construction was ongoing but not as pressing. The chemical separation plant was next in priority after P-Area. F-Area construction was started June 8, 1951. The construction timing and schedule after the initial work were L-Area, K-Area, C-Area, and then the final chemical separation area, H-Area. DuPont's engineers then assigned priorities to the major process facilities within each of these priority areas. Notably construction of the reactor or 105 buildings accounted for 75% of the work in each of the reactor areas. When construction was fully underway late in 1951 no fewer than eleven major industrial areas were being constructed simultaneously.

Five reactor areas were situated in an arc layout within a 35 square mile zone in the center of the 300 square mile reservation. They were built in a staged fashion that allowed one to go into operation while others were being completed. This method allowed lessons learned in one to be applied in the next. It also allowed for incorporating changes that were being learned about ways to increase reactor power levels and thereby increase production.

How do you turn a South Carolina cornfield into an operating nuclear reactor? The site was located, cleared and the soil tested to ensure it met load bearing and permeability specifications. Giant excavations deep and large enough to house a modern stadium were then completed. This was followed by reactor building construction and reactor placement. Each of the reactor areas also contained about 40 support buildings: offices, medical facilities, security locations, power generation factories and so forth. The elapsed time from start to final acceptance and full operation was about three or four years.

New York Shipbuilding Corporation was the subcontractor responsible for the construction of the major reactor components. The first shipment for R-Area arrived at the Savannah River dock at 1:30 PM on August 2, 1952. This important dock was built specifically to allow shipments by barge. It was located



near the experimental area of TNX/CMX. From this dock specially built equipment for all the production areas was received and shipped across the site on specially purchased lowboy tractor trailers.

Reactor Vessel coming up Savannah River



Examples of learning through the staging of construction were numerous. The R-Area reactor was made of all class I structures while subsequent reactor areas used a combination of Class I and Class II structures. Many changes were also made in auxiliary facilities like cooling water and charge/discharge facilities. The table below shows how the excavations, concrete and steel amounts placed varied.

AREA	EXCAVATION CUBIC YARDS	CONCRETE CUBIC YARDS	REINFORCING STEEL TONS
100-R	2,300,000	235,500	19,300
100-P	2,325,000	200,600	18,175
100-L	2,051,000	165,700	14,100
100-K	2,145,000	166,750	14,300
100-C	1,470,000	155,000	13,900

Note the substantial savings in construction costs between the first R-Area and the final reactor in C-Area. The savings were possible while at the same time increasing the power levels for each subsequent reactor and making other improvements in safety and operation.

R-Area reactor building takes form at the base of the excavation



*In future newsletter SRS at Sixty will take more in-depth looks at what the made up each area on the SRS and how each area contributed to the site's success.*



# Neutrino is BACK!!



**NEUTRINO MARKER RESTORED**—The historical marker celebrating the neutrino has been replaced and reinstalled in front of the Foundation office on Richland Avenue in Aiken. The original marker was dedicated in August 2010 and was smashed by an errant motorist in January 2012. Fortunately, the driver had insurance and the marker has been duplicated and emplaced in its original location.

## Waste Tank Grouting Begins

Savannah River Remediation employees began the final steps in closure of two hazardous waste tanks at SRS on April 2<sup>nd</sup> when specially-formulated grout began flowing into Tank 19. The start of grouting will result in closure of Tanks 19 and 18 this summer. These 1.3 million gallon tanks were constructed in 1958 and will be the first tanks closed since Tanks 17 and 20 were closed in 1997. The grouting process includes six cement trucks per hour operating eight hours a day, five days a week to deliver grout to the tanks. Plans call for closure of Tanks 5 and 6 by June 2014 and Tanks 12 and 16 in 2015 with a total of eight tanks by 2017.

## Fight Radiation with Pill or Beer



Foundation member, Joe Brooks sent this yellowed clipping found in a 1944 book he bought recently. The undated clipping suggests that a pill (presumably potassium iodide) can protect against radiation damage from a nuclear attack but that getting blind drunk might be equally effective. We're not sure that this suggestion stood the test of time.

### Take Pills to Fight Radiation Or Else Get Bleary Drunk

BURLINGTON, Vt. (AP)—A new pill that costs 15 cents looks like your best bet to protect against atomic bomb radiation, top nuclear scientists said Tuesday.

You could store it in your medicine cabinet just like aspirin. One pill equals three aspirins.

If you had 15 minutes warning of an atomic or H-bomb attack, you could gobble one of the pills with these prospects:

Whatever radiation you received, the pill would reduce its effects by one half.

Scientists told about it at the first international congress on radiation research being held on the campus of the University of Vermont.

Researchers of the Atomic Energy Commission's Oak Ridge

National Laboratory said the material is called "Aet" for

At the same session, other researchers said that getting bleary-eyed drunk might protect you from radiation.

A-bomb or H-bomb attack. Removal of oxygen from tissues makes the tissue more sensitive to radiation.

When a person is drugged heavily, the alcohol reduces oxygen in the tissues.

Thus, big league boozing appears to be a potential radiation protective.



# Manhattan Project National Historical Park Proposed



Establishment of a Manhattan Project National Historical Park has been proposed in “discussion drafts” of legislation in US House and Senate committees. The drafts were sponsored by Representative Doc Hastings of Washington and Senator Jeff Bingaman of New Mexico. The bills propose creation of a Manhattan Project National Historical Park with units in Hanford, Washington; Los Alamos, New Mexico and Oak Ridge, Tennessee. The proposed Park would include Department of Energy properties including the B Production Reactor at Hanford and the X-10 Graphite Reactor at Oak Ridge as well as properties in the nearby communities.

Establishment of the Park is expected to significantly boost tourism at the selected sites; investment of \$1 in the Park is estimated to increase local revenues by \$4. Additionally, the Park will be an important educational asset for the communities.

Information for this article was abstracted from the April Update of the Atomic Heritage Foundation.

Tour Guide at X-10 Graphite Reactor



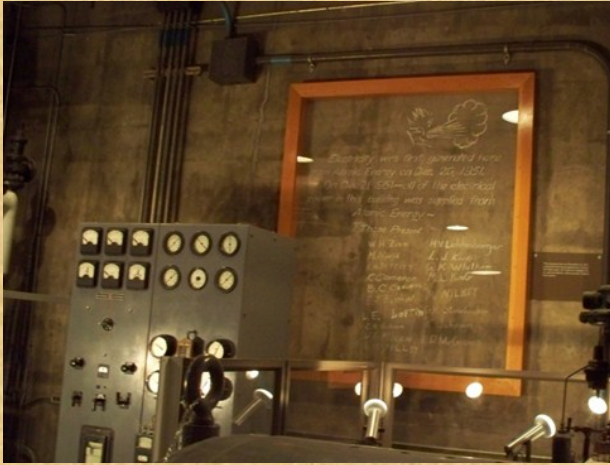


colorful, interactive displays that tell the story of EBR-I's sibling, Experimental Breeder Reactor No. 2 (EBR-II), the reactor that once powered much of the site. You can walk through the museum using the self-guided instructions or take guided tour with one of the summer season tour guides.



#### EBR-I Fast Facts:

- ◆ On December 20, 1951, EBR-I became the first power plant to produce electricity using atomic energy
- ◆ EBR-I was the first reactor built in Idaho at the National Reactor Testing Station (forerunner to today's INL)
- ◆ In 1953, testing at EBR-I confirmed that a reactor could create (or breed) more fuel than it consumes.
- ◆ This pioneering reactor operated for 12 years before being shut down for the last time in December 1963.
- ◆ President Lyndon Johnson dedicated EBR-I as a National Historic Landmark in 1966.



Blackboard where those present documented their achievement.



Control Room



Light bulbs lit by atomic power



Instruments Panel



Two aircraft nuclear propulsion prototypes displayed in parking lot



## THANKS TO OUR SRS HERITAGE FOUNDATION SPONSORS 2011

We are particularly pleased that several organizations have such faith in our future that they have made substantial financial contributions to our programs.

Among these supporters are:

### Corporate Sponsor

Savannah River Nuclear Solutions

### Corporate Member

Savannah River Remediation, LLC

### Business Member

Security Federal Bank

*A special thank you to the individual members for their continued support of the Foundation*

JOIN THE  
SRS HERITAGE  
FOUNDATION  
TODAY!!  
WE NEED  
YOUR SUPPORT!



## HEY EVERYBODY IT'S TIME TO RENEW!

The New Year has arrived and it's time to show your continuing support of the SRS Heritage Foundation by renewing your membership. You are an important part of our base of supporters of the SRS Heritage Foundation. We **need** you and **want** you in order to continue to preserving the history of the Savannah River Site and making it available to all.

Good progress continued in 2011. A major program celebrating the 60<sup>th</sup> anniversary of environmental science at SRS was held in August. A grant to conduct interviews for a new video on the Cold War was obtained and the interviews have begun.

The Foundation will also continue with talks to various groups and exhibits around the area.

Your continuing membership is **very** important to the Foundation. Financial support helps us with projects to preserve Site history. But, **numbers** of members are also important to establish a broad base of support and to show to government entities and other sponsors that the Foundation represents a strong segment of the population.

The SRS Heritage Foundation is a 501(C) 3 non-profit organization open to all individuals, businesses and corporations. Membership dues are tax deductible for federal income tax purposes.

*The membership term is on an annual basis running from January through December of each calendar year. Dues collected from CONTINUING members in December shall be applied to the following membership year. Dues from NEW members who join as late as October shall be applied to the following membership year.*

Please renew your membership and continue your support of the SRS Heritage Foundation. You may complete the membership form and mail it to:

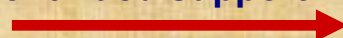
SRS Heritage Foundation  
P. O. Box 2226  
Aiken, SC 29802

The membership list is confidential and is not released or sold.

If you prefer the convenience of renewing electronically, you may do so by going to [tixonline.com](http://tixonline.com). A small charge will be added for this service. Thank you. **Merrilee Anderson, Membership Chair**

Check out our website for an application or see Page 7.

**Thank you for your continued support!!**



**If your information hasn't changed,  
you can just put your check in the mail!!!**



## SRS HERITAGE FOUNDATION MEMBERSHIP APPLICATION

*I would like to become a member of the SRS Heritage Foundation in the following level. (Please Check One)*

<i>Benefactor</i>	<i>\$120.00</i>	<input type="checkbox"/>
<i>Patron</i>	<i>\$ 60.00</i>	<input type="checkbox"/>
<i>Sustaining</i>	<i>\$ 35.00</i>	<input type="checkbox"/>
<i>Student</i>	<i>\$ 15.00</i>	<input type="checkbox"/>
<i>Small Business</i>	<i>\$ 250.00</i>	<input type="checkbox"/>
<i>Corporate Member</i>	<i>\$1,000.00</i>	<input type="checkbox"/>
<i>Corporate Sponsor</i>	<i>\$5,000.00</i>	<input type="checkbox"/>

*I would be willing to help with Publications\_\_\_\_, Membership\_\_\_\_,  
Fundraising\_\_\_\_, Publicity\_\_\_\_, other\_\_\_\_*

**This membership is valid through December** 2012

Name:
Address:
City, Zip Code:
Phone:
Email (s):
Fax #:

*My check, made out to the SRS Heritage Foundation, Inc. is enclosed. Contributions to the Foundation are tax exempt. Federal ID#20-1629370*

***Please mail to:***

***SRS Heritage Foundation, Inc.***

***P.O. Box 2226***

***Aiken, SC 29802***

***Phone: (803) 226-0116 or 648-5634***

***Email: [SRSHeritageFoundation@gmail.com](mailto:SRSHeritageFoundation@gmail.com) or [qualityprt@aol.com](mailto:qualityprt@aol.com)***