

# SRS HERITAGE FOUNDATION NEWSLETTER

April, 2017



## Museum Opens to the Public



### At last!

We are able to schedule public openings of the SRS Museum. The first phase of Museum construction is complete and scheduled public openings are set for the spring of 2017. The spring schedule calls for the Museum to be open from 12:00 noon to 4:00pm on the first and third Fridays and the following Saturdays from April 21 through May and June.

These will be the first regularly-scheduled opportunities for the public to visit the new Museum; the openings are a major milestone in the evolution of the facility and the culmination of 14 years of planning and work. Although work remains to be done on the building and further exhibits will be created, we expect to be able to continue scheduled public access for the next several months.

Plan to join us at the SRS Museum as we describe the history and accomplishments of the Savannah River Site, showcase what we have accomplished with the facility and explain our plans for the future.

#### **Public Openings from 12:00 noon to 4:00pm:**

Friday, April 21  
Friday, May 5  
Friday, May 19  
Friday, June 2  
Friday, June 16

Saturday, April 22  
Saturday, May 6  
Saturday, May 20  
Saturday, June 3  
Saturday, June 17

**Attendance at these openings and the construction schedule will help determine the summer schedule.**

## NNSA Administrator Visits Museum

Lieutenant General Frank Klotz visited the SRS Museum March 30<sup>th</sup>. General Klotz serves as Under Secretary of Energy for Nuclear Security and Administrator for the National Nuclear Security Administration of the US Department of Energy. He is a graduate of the US Air Force Academy and a Rhodes Scholar with a Doctorate from Oxford University in England. He retired from the US Air Force in 2011, assumed the Under Secretary assignment in 2014 and was reconfirmed by President Trump this year.

General Klotz is very interested in history and museums and specifically requested a tour of the SRS Museum during a visit to the Site. He enjoyed his tour and congratulated the Foundation for establishing the Museum.



*left to right: Wallace Spangler, Senior Vice President NNSA Operations and Programs, General Klotz, Walt Joseph, Executive Director SRS Heritage Foundation, Joe Ortaldo, Chairman of the Board of the SRS Heritage Foundation, Doug Dearolph, NNSA Savannah River Field Office Manager*

## Capital Campaign Raises \$1.2 Million



The "Aiken Together" campaign held a close-out meeting March 9 and reported raising \$1.2 million in cash, pledges and in-kind commitments for the SRS Museum, the Center for African-American History Art and Culture and the Aiken Visitors Center and Train Museum. More than 86 businesses and individuals contributed to the campaign and several potential commitments are pending.

The SRS Heritage Foundation has received about \$97,000 from the campaign to date; this money and Foundation savings paid for the phase 1 improvements to the SRS Museum building that were completed recently. We expect to receive an additional \$370,000 during the next 5 years as pledges come due. This income will enable the Foundation to build the elevator and stairwell to provide access to the second floor of the Museum building and to begin creating interactive exhibits. A business plan reflecting the projected income is being developed.



## The Middle Years (1964 – 1979)

The initial period of site operation was over. The urgent needs for national defense had been met and production settled down into a more moderate and easily-maintained pace. It was during this period that the Savannah River Site reached maturity. While weapons production continued throughout this period at a reduced pace, there was now allowable time for new missions. The first of these new missions was special irradiations that produced nuclear heat sources. This was soon followed by a series of campaigns to create new man-made transplutonium elements that could only be produced on a large scale using the SRS heavy water reactors.

The Limited Test Ban Treaty signed in 1963 by the USSR, USA and Great Britain not only banned atmospheric nuclear testing but signaled that international détente had been achieved. Nuclear weapons material production was drastically reduced. When President, Lyndon Johnson announced this reduction in weapons grade material production in his 1964 state of the union message, both the USSR and the Allies had large arsenals of nuclear weapons. The effect of Johnson's announcement on SRS was significant; R Reactor, the oldest production reactor, was shut down and never restarted. This was followed by L Reactor in 1968. The remaining three reactors P, K, and C remained in operation during this period, but were used to fulfill missions beyond the production of weapons grade Plutonium.

Some of the first non-weapons isotope products made at Savannah River were heat sources for Arctic stations as well as thermo-electric sources for use in the NASA space program and the race to the moon. Cobalt-60 found applications in cancer treatment and food sterilization as well as thermo-electric power generation. Reactor programs to produce these isotopes continued and expanded during the 60's and on into the 70's. Plutonium -238 proved to be the isotope of choice for thermo-electric power generation using a radioisotope thermoelectric generator (RTG). An RTG is an electrical generator that uses an array of thermocouples to convert the heat released by the decay of a suitable radioactive material into electricity. This generator has no moving parts. RTGs are usually the most desirable power source for unmaintained situations that need a few hundred watts (or less) of power for durations too long for fuel cells, batteries, or generators to provide economically, and in deep space where solar cells are not practical. Safe use of RTGs requires secure containment of the radioisotopes.

During the heyday of the NASA space program to put man on the moon and subsequent deep space probes Pu<sub>238</sub> proved to be the most effective source for electrical power. An alpha radiation emitter, it produced virtually no gamma radiation and thus required minimal radiation shielding. With its 88 year half-life it lasted longer than most other isotopic heat sources. It became the standard fuel for RTG's. Production of Pu<sub>238</sub> began in the late 50s and continued until 1986. Plutonium-238 was created by neutron irradiation of Neptunium-237 using increasingly complex and sophisticated reactor assemblies. Most of the exploration of the moon and earth's fellow planets as well as our solar system and beyond has depended on power made with Plutonium-238 made at SRS. The table below lists the space missions supported with SRS Pu<sub>238</sub>.



**Plutonium-238 has provided a source of energy for many uses, from experimental pacemakers to deep space exploration. Courtesy of SRS Archives, negative DPSPF-35055-1.**

## Space Missions That Have Used Plutonium-238 Power Sources

<u>Spacecraft</u>	<u>Mission Type</u>	<u>Launch Date</u>	<u>Status</u>
Transit 4A	Navigational	1961	In orbit
Transit 4B	Navigational	1961	In orbit
Transit 5-BN-1	Navigational	1963	In orbit
Transit 5-BN-2	Navigational	1963	In orbit
Transit 5-BN-3	Navigational	1964	Mission aborted
Nimbus B-1	Meteorological	1968	Mission aborted
Nimbus III	Meteorological	1969	In orbit
Apollo 11	Lunar	1969	Lunar surface
Apollo 12	Lunar	1969	Lunar surface
Apollo 13	Lunar	1970	Mission aborted
Apollo 14	Lunar	1971	Lunarsurface
Apollo 15	Lunar	1971	Lunar surface
Pioneer 10	Planetary	1972	Operated beyond solar system
Apollo 16	Lunar	1972	Lunar surface
Triad-01-1X	Navigational	1972	In orbit
Apollo 17	Lunar	1972	Lunar surface
Pioneer 11	Planetary	1973	Operated beyond solar system
Viking 1	Mars Lander	1975	On Martian surface
Viking 2	Mars Lander	1975	On Martian surface
LES-8 and -9	Communication	1976	In orbit
Voyager 2	Planetary	1977	Operated beyond solar system
Voyager 1	Planetary	1977	Operated beyond solar system
Galileo	Planetary	1989	Orbiting Jupiter
Ulysses	Planetary	1990	In polar orbit around sun
Mars Pathfinder	Mars Lander	1996	Operated on Mars
Cassini	Planetary	1997	Orbiting Saturn
Spirit Rover	Mars Lander	2003	Martian surface
Opportunity Rover	Mars Lander	2003	Martian surface
New Horizons	Planetary	2006	Beyond Pluto



Artist's conception of Galileo with Jupiter in the background and the moon to the foreground. Courtesy of NASA/JPL/Caltech.

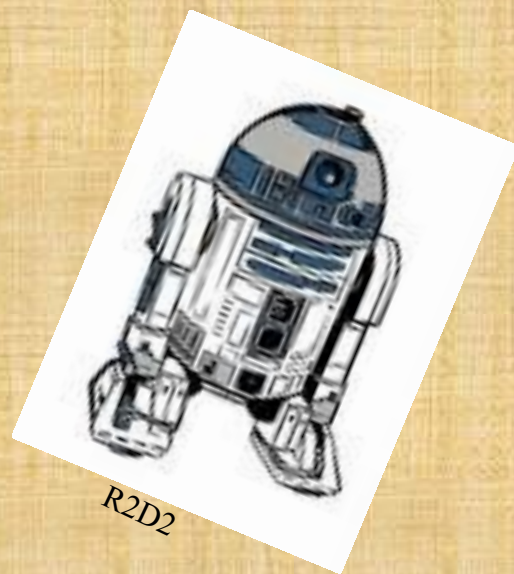


## The Robots are Coming

A major exhibit on robotics is planned for Nuclear Science Week, October 16-20, at the SRS Museum. The exhibit will feature retired robots from the Cold War Collection at the Savannah River Site and demonstrations by student robotics teams from around the area. **Stay tuned for further details.**



*Tim Forehand and David Martin of SRNL measure a doorway at the SRS Museum in preparation for moving the robots from SRS.*



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## SRS Heritage Foundation Annual Renewal Notice

P.O. Box 2226, Aiken, SC 29802  
srsheritagefoundation@gmail.com

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### Membership Levels

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Small Business	\$250	Sustaining	\$35
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PLEASE RETURN THIS ENTIRE FORM along with your check payable to the SRS Heritage Foundation.

Thank you for your membership renewal and continuing support to preserve and interpret the history of the Savannah River Site. Members will receive:

- A quarterly newsletter
- A SRS Heritage membership pin (1st time members only)
- Member-only discounts in the SRS Museum gift shop
- Special invitation to SRS Museum events

**IT'S NOT TOO LATE TO RENEW!**