

A brief overview of some historical details of Oak Ridge, part 3

Continuing the brief look at Oak Ridge history produced as background material for documentary films being created over the past few weeks.

As soon as World War II ended, the Cold War began. The Soviet Union had the plans for Fat Man given to them by Klaus Fuchs before the bomb was even used. By August 29, 1949, the Soviet Union had exploded its first nuclear weapon, essentially a duplicate of Fat Man. The shock to the nation created an immediate push to build a thermonuclear weapon or “hydrogen bomb” that would be much larger and more destructive than the atomic bomb.

Y-12 was brought into this herculean effort by being asked to use some of the empty buildings left over from the removal of 1080 of the 1152 calutrons to separate the lithium-6 that would be needed for the thermonuclear weapon. Buildings 9201-4 and 9201-5 were used for that purpose from 1955 to 1963.

Building 9201-4 still has the COLEX (column exchange) process equipment in it. Demolition of the building has been postponed for years because it is in the middle of Y-12, but eventually this building – along with others in Bear Creek Valley at Y-12 that are contaminated with mercury – will be demolished at significant expense.

In addition to the lithium-6 separation, Y-12 took on the mission to machine uranium parts for all nuclear weapons and to provide the highly enriched uranium fuel for the Navy’s nuclear reactor powered ships and submarines. Other missions came to the three sites, including a Nuclear Energy Powered Aircraft and the National Aeronautics and Space Administration’s Apollo Lunar Sample Return Container, or “Moon Box.”

The Oak Ridge National Laboratory (ORNL) built 13 nuclear reactors and became the world’s leading authority on nuclear energy, starting the first nuclear reactor training school in 1946.

Y-12 continued its maximized operations throughout the Cold War years and ultimately played a large role in the defeat of the Soviet Union as they attempted to match the output of Y-12 one for one. Meanwhile work for other government agencies continued to grow at Y-12 and ORNL.

By 1983, the K-25 Gaseous Diffusion Plant was approaching the end of its mission. Y-12 was in the height of the Cold War (a reduction in mission would come in the early 1990s), ORNL was struggling to maintain funding for basic research, and the facilities were deteriorating.

Not until the turn of the century would ORNL see a huge upswing in basic research, neutron science, computing, and other programs to become the U.S. Department of Energy’s largest and most complex research facility. Now ORNL is known worldwide as a center for basic materials research, a neutron science giant, and a supercomputer center.

Y-12 went through significant operational issues in the 1990s which led to a shutdown of operations on September 23, 1994. It took Y-12 ten years to return to full operation in some cases.

The K-25 Gaseous Diffusion Plant is now the East Tennessee Technology Park, primarily an industrial park. Substantial environmental remediation has been accomplished in the years following the shutdown of uranium enrichment operations at K-25.

Major demolition has occurred at all three sites. New facilities have been constructed at ORNL using a variety of funding sources, including private financing, state funds, and federal funds. Y-12, patterning after ORNL’s successful efforts, also used private financing for the Jack Case Center and the New Hope Center. These two facilities alone provide \$1M to Oak Ridge’s property taxes annually.

While a lot of work remains, Oak Ridge has seen a lot of significant environmental management projects completed and continues to address legacy contamination and new remediation projects as funding allows. Major hurdles remain, but several major accomplishments have been attained.

Effective Environmental Management is an important element in the overall strategy for the long-term missions of the Oak Ridge Reservation. A lot has been done, but much more remains to be accomplished to remove the environmental legacies.

Even longer range missions for the Y-12 National Security Complex and ORNL will require expanded facilities and likely additional new buildings. The Uranium Processing Facility at Y-12 is the largest construction project in Tennessee since the Manhattan Project.

The various nuclear materials training missions, as well as the nuclear forensics library being developed, along with the enhanced detection methodology using special Y-12 prepared devices to calibrate the detection instruments will be an important part of the Y-12 mission for the foreseeable future.

The Small Modular Reactor being built on the old Clinch River Breeder Reactor Site will ultimately provide the electrical power for all of Oak Ridge and the government facilities as well. The airport coming to the East Tennessee Technology Park and the commercial growth that may accompany the Carbon Fiber Manufacturing Facility are but a few of the signs of potential new technological growth that may bring dramatic change to Oak Ridge's future.

The future for telling the story of the history of Oak Ridge remains bright with the possibility of the Manhattan Project National Historical Park potentially on the horizon. The American Museum of Science and Energy continues to function as a primary venue for all visitors coming to Oak Ridge and begins our story. The museum recently won an award for its online historical photographs of Oak Ridge history made by Ed Westcott.

The Children's Museum of Oak Ridge has excellent displays of our history, including an exceptionally well done exhibit of Ed Westcott photography. The Oak Ridge Heritage and Preservation Association and the Oak Ridge Visitor Center have displays, the Oak Ridge Commemorative Walk, the Oak Ridge Room at the Oak Ridge Public Library, the Center for Oak Ridge Oral History and, of course, the Y-12 History Center and the Oak Ridge Graphite Reactor are all contributors to telling our history. And there are other things, such as the U.S. Department of Energy Site Tours in the summer and the Secret City Festival. All in all, Oak Ridge has a rich history which will be better told when the K-25 History Center is created and the Guest House is renovated.

To wrap up the brief history of Oak Ridge, we will look at the ORNL name and the origin of Oak Ridge Associated Universities.