

WE'VE TURNED 60!

A brief history

On Feb. 18, the Y-12 National Security Complex will celebrate its 60th anniversary of protecting America's freedom. This was the date that ground was broken for 9201-1, the first Alpha building at Y-12.

Sixty years of history—a history shaped by momentous events. Y-12's history is interwoven with the fabric of events that changed the world forever.

What now is the National Nuclear Security Administration's Y-12 National Security Complex was created during World War II and produced material for one of the weapons that helped end that war.

After World War II, Y-12 took on a different mission and played a key role in winning the Cold War during the next 40 years. When the Cold War ended, Y-12's mission changed yet again—this time to being a major player in maintaining the nation's nuclear deterrent.

(Photo courtesy of James E. Westcott)

Y-12 is celebrating its 60th anniversary in 2003 and will continue to observe special events throughout the year. This edition of *BWX TYmes* is a tribute to the proud history of Y-12, focusing on the major role it played in bringing an end to World War II and the site's contributions to national security.

Several special events are planned beginning Feb. 18 (see page 8). Up-to-the-minute information about anniversary activities will be available on the Y-12 Community Web page at www-internal1.y12.doe.gov/scripts/ysource/home.htm.

We hope you enjoy this issue as much as we have enjoyed putting it together. We have such a rich and wonderful legacy here at Y-12 and an even brighter future.

Editorial Staff



March 6, 1943—Having decided after Pearl Harbor to attempt to develop an atomic bomb, the Japanese Navy holds a key committee meeting to review the findings of the many (about 10) scientific conferences that they have held since 1941 on this subject. The committee agrees that an atomic bomb could be built, but concludes that neither Germany nor the United

States could do so in time for use in the current war. Captain Ito of the Japanese Navy says, "The best minds of Japan . . . came to a conclusion that can only be regarded as correct." The Japanese Navy's committee for the study of nuclear research is dissolved.

Jubilant Oak Ridgers celebrate V-J Day, August 14, 1945, as they hear that World War II has ended. Although at first stunned to learn of their role in the secret Manhattan Project, they realized their efforts had saved thousands of American lives.



1943—a year in history

Feb. 18—Stone & Webster breaks ground for the first alpha building, 9201-1, which will contain two groups of 96 calutrons (electromagnetic apparatuses for separating isotopes according to their masses) arranged in an oval, much like a racetrack. Each alpha “track” will be 122 feet long, 77 feet wide and 15 feet high.

March—The first building shell at Y-12 to be finished is Building 9731 (also known as XAX/XBX), the “pilot plant” building to be used for training operations supervisors. It later will contain two of the alpha and two of the beta calutrons. *The number used to designate this first building (9731) is chosen to be meaningless and confusing—its concrete floor pad is 731 feet above sea level!*

General Leslie Groves, who heads up the Manhattan Project, authorizes the first Beta tracks. They are to have calutrons half the size of the Alpha tanks and only 36 Beta calutrons/track. The Manhattan Engineering District borrows tons of silver from the U.S. Treasury for use in winding the huge electromagnets and forming the busbars needed for the calutron process. The total amount of silver borrowed from the West Point depository was 13,540 tons, which is worth more than \$300 million dollars.

Sept. 10—Construction begins at K-25 on the main U-shaped gaseous diffusion building (K-25) by J.A. Johnson Construction Company of Charlotte, N.C.

October—Stone & Webster finishes first alpha track.

November—Building 9202 becomes operational. This bulk treatment facility is designed to handle the conversion of Mallinckrodt Chemical-refined uranium trioxide to uranium dioxide, then to uranium pentachloride, finally to become uranium tetrachloride—the feed material required for the alpha calutron sources.

December—Major design and operation problems are encountered in starting up the alpha calutrons in the first track. Contamination in the cooling oil causes frequent electrical short-circuits. All magnets have to be stripped out and sent back to Allis-Chalmers in Milwaukee for rebuilding on a top-priority basis.

*Source: An Overview of the History of Y-12, 1942–1992
By William J. Wilcox, Jr.*



June 1, 1945—The reading needs of all ages were served by the Oak Ridge Public Library truck.

(Photo courtesy of James E. Westcott)



The City Market meat counter in Oak Ridge is active with shoppers in June 1945, as the lines form for a dwindling supply of meat. It was difficult to deliver food and supplies to a city that could not be found on any map.

(Photo courtesy of James E. Westcott)

Quick facts on the Manhattan Project

- Originally known as Clinton Engineer Works, named Oak Ridge after World War II
- Became the fifth largest city in Tennessee growing to 75,000 workers
- Project consumed one-seventh of the electricity in the United States
- Bus transportation system was fourth largest in the United States
- 300 plus miles of roads built or improved and 55 miles of railroad built
- Project cost \$1.65 billion in 1945

"I remember there was a great public transportation system in Oak Ridge in the early days. My friends and I rode the bus to Jackson Square every Saturday for our favorite activity—a movie. Besides the main feature, we would watch the news,

cartoons and a serial. We stayed for hours. We were allowed to stay through as many showings as we liked. Sometimes I stayed so long my mother would have my name flashed on the screen to tell me to come home."

Anne Brown Voelker

Source: Cooking Behind The Fence, '43 Club



Oak Ridge's Grove Center provided entertainment for Oak Ridgers. This photo was taken in 1947 at the premier of "The Beginning of the End."

(Photo courtesy of James E. Westcott)



General Leslie Groves

Leslie R. Groves was a career officer in the U.S. Army Corps of Engineers, fresh from overseeing hundreds of military construction projects, including the Pentagon, when he was given the job in September 1942 of building the atomic bomb.

Groves wanted his next project to be overseas, but instead, he was assigned to head a top-secret weapons project. He tried to get reassigned, but his attempts were unsuccessful. However, as Groves took his assignment, he was determined to make it work. He renamed the project "The Manhattan District" (later renamed The Manhattan Project). The project was renamed because its original title, "Development of Substitute Materials," gave away too much information. Groves' aggressive management style and determination were key factors to the success of the Manhattan Project.

General Leslie Groves, commander of the U.S. Army Corps of Engineers Manhattan Project, looking at a map of Japan in his Washington, D.C. office on July 18, 1945.

This photo was part of the press release announcement that atomic bombs had been dropped on Hiroshima and Nagasaki, Japan, thus ending World War II. *(Photo courtesy of James E. Westcott)*

The bomb was built in just over a thousand days during which Groves drove manufacturers, construction crews, scientists, industrialists, and military and civilian officials to come up with the money, the materials and the plans to solve thousands of problems.

Groves played a crucial and decisive role in the planning, timing and targeting of the Hiroshima and Nagasaki missions. Groves was a take-charge, can-do figure who succeeded in the face of formidable odds.

Safety Spotlight

Safety has always been a priority at Y-12. Here is a "Safety Spotlight" that ran in the July 1947 issue of the Y-12 Bulletin.
Horseplay threat to victims

Horseplay is one of the most serious offenses to be charged to any employee in an industrial plant. At Y-12, such action can be penalized by dismissal of the offending employee, if conditions warrant.

As an example—it actually happened at Y-12 some time back—a hefty employee in a playful mood slipped up behind a small fellow worker, swung an arm around the smaller man's waist, squeezed and lifted him.

The victim passed out—literally. Rushed to the Dispensary, he was found to have suffered a bad hernia. His tormentor also passed out—through the portals, permanently.

The jokester who likes to pull chairs from under unsuspecting sitters also is liable to cause serious injuries to his victims; ranging not only to the embarrassment of the victim but also to possible broken bones or severe bruises and sprains.

So to persons who are humorously inclined, let it be suggested that they confine their activities to non-violent, non-practical jokes. They will have just as much fun, and their fellow employees will be much safer.

Women and the war

Melissa Leinart

American women played important roles during World War II, both at home and in uniform. Not only did they give their sons, husbands, fathers and brothers to the war effort, they also gave their time, energy and sometimes their lives.

Reluctant to enter the war when it erupted in 1939, the United States quickly committed itself to total war after the Japanese attack on Pearl Harbor. That commitment included using all of America's assets—women included. The Axis powers, however, were slow to employ women in their war industries.

When the war began, quickie marriages became the norm, as teenagers married their sweethearts before the men went overseas. As the men fought abroad, women on the home front worked in defense plants, war-related organizations and factories, in addition to managing their households.

While returning to work and earning more money, Americans on the home front also had to ration their food, recycle their scrap, plant "Victory Gardens" and cut back on travel.

And the battle on the home front changed America in vital ways as the work force expanded to include women and minorities. After the war, the men returned, having seen the rest of the world. The GI Bill allowed more men than ever before to obtain a college education. Many women had to give up their jobs to the returning men, but they had tasted independence.

Jane Haywood was a "cubical operator" at Y-12 in 1944. "How boring," she confided. "I had no idea what was going on."

(Source: *Cooking Behind The Fence, '43 Club*)

When Janet Googin worked at Y-12, a wide yellow line on the floor marked the entrance to the "Race Track" magnetic field. Only certain workers were permitted to cross the line. One day, a janitor, curious about the line, decided to step across it with his mop and metal mop bucket. After only a few steps on the other side of the line, his bucket and mop went flying through the air. The janitor took off in the other direction and was never seen at the plant again.

Janet Googin (Source: *Cooking Behind the Fence, '43 Club*)

Women serving as nurses, office workers, cafeteria workers and machine operators depart the plant during shift change in the 1940s. The women's work force was recruited for factories and plants on the home front, just as the men and women were serving in World War II battlefronts.

(Photo courtesy of James E. Westcott)



A major improvement in operation efficiency was made in 1944 when testing proved that high-school girls, following set rules for operating the calutron controls for source heating, ionization and accelerating-slit voltages, got higher production than the physicists who were always "optimizing" parameters. The area where track electronics were centralized was called "The Cubicle."

(Photo courtesy of James E. Westcott)

Preserving unique skills

The Y-12 National Security Complex is the home of a unique body of knowledge found nowhere else in the world. Across the globe, people have relied on Y-12 employees to help monitor, categorize and contain nuclear materials. The can-do attitude and expertise of our manufacturing and special materials experts are at the center of Y-12's incredible heritage.

Fifty percent of the work force will be eligible for retirement in the next five years. To preserve essential knowledge, Y-12 has forecasted its workloads for the next 25 years and identified particular areas of need, or critical skills, that require special attention. Y-12 has continued to revitalize its college recruiting programs by hiring new college graduates, cooperative education students and summer interns.

Modernizing the work force does not stop with preserving critical skills, but extends to every aspect of our business systems. By bringing private industry standards to our accounting and record-keeping systems, we are able to manage our resources more carefully.

Medic Blood Drive at Y-12

Feb. 17, 18, 19 and 20 – Mobile Unit – 8 a.m.–4 p.m.
Feb. 19 and 20 – 9723-24 Ballroom – 8 a.m.–4 p.m.

For more information, contact Mary Bates (hmb; 574-0896).



Oak Ridge, the city “that did not exist” on any map, was surrounded by a fence in the 1940s. Security was extremely tight. All vehicles entering the city were searched. Residents were issued passes that they were required to carry at all times. Because vehicles were entering a military area at the gates of the city, a large sign was posted at the entrance explaining that weapons, ammunition, explosives, cameras, field glasses, liquors, telescopes and radio transmitters were prohibited. In the photo at left, guards inspect a vehicle before allowing entrance to Oak Ridge.

(Photo courtesy of James E. Westcott)

A variety of housing was assigned for residents of Oak Ridge during the 1940s, including (clockwise from top left) the dormitories, cemestros, flattops and hutments. The rental rates varied depending on the structure.

(Photos courtesy of James E. Westcott)

What does Y-12 really do?

Bill Wilburn

While it is often described as a weapons plant, the Y-12 National Security Complex does not produce weapons. Y-12 is a part of the National Nuclear Security Administration’s Nuclear Weapons Complex as one of the primary manufacturing plants for maintaining the nation’s nuclear weapons stockpile.

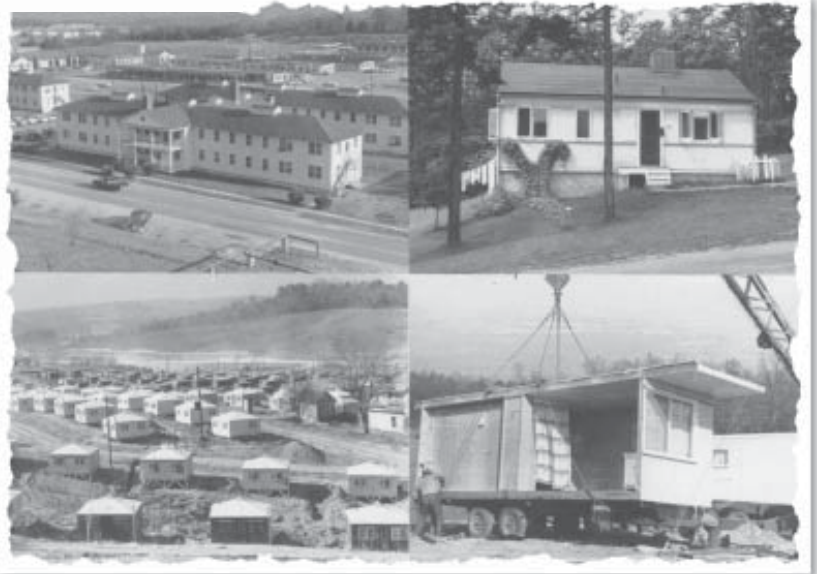
Y-12 produces components for weapons—thermonuclear weapons to be exact. In fact, every weapon in the current national nuclear arsenal contains components manufactured at Y-12.

Y-12 is responsible for producing and maintaining the “secondary” component for a nuclear weapon. The secondary is a complex, precisely manufactured, nuclear device with a composite of materials that, when triggered by the “primary,” generates the high-energy yield of a thermonuclear weapon.

Y-12 is the only facility capable of manufacturing and remanufacturing the components necessary for assembling secondaries. The Complex also plays a critical role in the dismantlement of weapons as they are retired from the national stockpile and in dealing with the nuclear materials removed from the weapons.

Y-12 also is the nation’s storehouse for special nuclear material—often referenced as the “Fort Knox” of highly enriched uranium. Associated with the safe, secure storage of material is properly packaging the material for storage or transportation and the physical protection of the material.

Y-12 also plays a role in preventing the spread of nuclear weapons. The Oak Ridge Center for International Threat Reduction, which Y-12 created



in partnership with Oak Ridge National Laboratory, develops, coordinates and assists in implementing domestic and international programs aimed at reducing threats—internal and external—to the United States from weapons of mass destruction.

In addition, Y-12 performs work for other government agencies, such as the U.S. Department of Defense and the U.S. Department of Justice, under what is called Work for Others. Work in these areas includes information management and processing, materials science, precision machining and hardware prototyping.

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Given the severe weather predictions for the upcoming days, could you please publish the hotline number that employees should call for plant status information?

Employees can get the latest schedule information either by using the Employee Information Line (241-1212) or by checking the Y-12 Complex Status at www1.y12.doe.gov/scripts/y12/Y12Status.cfm, a link on the external home page, which is accessible from any Web-enabled computer.

Service Anniversaries

February

35 years

Facilities, Infrastructure and Services: Gary L. Bowling
Engineering and Technology: Douglas E. Bailes, James F. Felte

30 years

Engineering and Technology: Danny W. Crisp, William S. Mayfield

25 years

Business and Information Systems: Roger D. Carrington, Keith E. Cofer, Douglas H. Woods

Facilities, Infrastructure and Services: Jimmie E. Choate, Gary A. Couk, Raymond P. Ervin, James W. Haney, Carroll S. Huffstetler, James R. Hunley, Jr., Milton L. McClanahan, Glenn H. Monger, James R. Robbins, Johnny R. Shrap, Donald A. Taylor

Financial Management: Stephen L. Wallace

Manufacturing: David W. Duncan, Peggy A. Kelly, Gary W. McNeely, John R. Renfro, James L. Voyles

Oak Ridge Center for Manufacturing and Materials Science: Deborah H. Sumner

Quality Assurance: Harold G. Kitts, Jr., Ralph M. Mack, Linda S. Sanders, Jeffery W. Wade

Waste Operations: Terry L. Jones

20 years

Engineering and Technology: Jackie R. Dixon, Rosanne A. Smith

Facilities, Infrastructure and Services: Ronald C. Meredith

Financial Management: Linda G. Smith-Bledsoe

Manufacturing: Robert W. Minge

Performance Assurance: Woodrow E. Davis, Jr.



With 53 years and counting,

Ted Robinson of Quality Assurance takes the record for most years of company service.

Anecdote from the Y-12 annals

When Jack Case, later to become Y-12's longest tenured plant manager, first came to work at Y-12 as a machinist in 1944, the calutrons were still in operation and intensive experimental work was being carried out to learn how various components could be made to last a little bit longer.

Jack's first assignment was to attempt to machine a few ion-accelerating slits out of tungsten. Now, this is one miserable material to machine—very hard, very brittle. The foreman told Jack they had to make five experimental slits, but to just go ahead and try to cut one slit in one of the few tungsten sheets on hand because it would be a very difficult, most likely unsuccessful job.

Jack agreed, but then surprisingly said, "I need to use the telephone first." Because it was wartime, telephones were few and far between. Jack got the approval to use the phone but was told to make it quick. The foreman out in the shop occasionally glanced at Jack through the glass office window and saw him writing furiously and nodding.

When Jack completed his phone call, he disappeared out in the shop and the foreman forgot about him. The next day Jack came into the office and handed the foreman all five sheets, each with perfect long and narrow slits. The foreman couldn't believe his eyes—this was the first try by a brand-new employee when even some of his experienced machinists had "killed" several tungsten pieces trying to make just one cut. He asked Jack, "How in hell did you do that?" But then quickly added, "No, I don't think I want to know."

The phone call the day before had been to an old buddy of Jack's who knew how to work with tungsten. The answer was not to machine it at all, but to heat up the tungsten sheet and punch out the needed slit.

Show me the money!

In the days when Oak Ridge was known as Clinton Engineering Works and Kingston Demolition Range, for security reasons, all the families were forced to move off the reservation. Some of the people were hired back in the area to work in the plants. One fellow, after working several months, told his supervisor that he was quitting. When the concerned boss asked, "Why?" the fellow replied, "Because you haven't paid me." The boss asked him, "But didn't you receive a paycheck each week?" The worker answered, "Yes, but that wasn't money."

George Eckerd (Source: Cooking Behind the Fence, '43 Club)

"Security clearance"

was a new phrase of the times. Each person who worked in Oak Ridge had to be granted a clearance. People throughout the country, and many in Knoxville, were contacted by investigators busy gathering information on the new applicants, exploring their backgrounds and their character. Many of those questioned wondered if the person being checked had done something wrong and were hesitant to answer.

Excerpt from These Are Our Voices: The Story of Oak Ridge 1942-1970

Four communities: Sacrifices for the war effort

Melissa Leinart

After being displaced by government activities, settlers moved to what is now Oak Ridge and created the Elza, Robertsville, Wheat and Scarborough, now spelled Scarboro, communities. Residents of these communities were once again displaced in September 1942 when the U.S. government acquisitioned 59,000 acres for the Manhattan Project.

Elza, named after a construction engineer in charge of building a railroad bridge, was once the home of John Hendrix, the “prophet” who around 1900 predicted that Bear Creek Valley (where Y-12 is situated) “someday will be filled with great buildings and factories, and they will help toward winning the greatest war that ever will be.”

Robertsville was settled in 1804 by Collins Roberts, who had received a 4,000-acre land grant in what is now Oak Ridge. Robertsville High School was built there around 1915.

Wheat, settled in the middle of the 19th century, was named after the first postmaster, Frank Wheat. It was the home of Roane College, a liberal arts college that was open from 1886 through 1908. The community was dispersed by acquisition of land for the K-25 site (now the East Tennessee Technology Park).

Scarborough was founded in the 1790s and named after three early settlers—Jonathan, David and James Scarborough, brothers from Virginia. The area had been called Pellissippi by the Cherokees.

Residents of all four communities were unhappy about leaving their farms and land. But as one of them said, “What do you do? The government needed your land to win the war. Who would refuse such a request as that?”



A neatly constructed cabin dots the landscape in 1938. The three ears of corn hanging on the porch were typical good luck talismans of the region.

(Photo courtesy of Oak Ridge National Laboratory)

Want more history?

Want to know more about the Manhattan Project, the birth of Oak Ridge and the history of Y-12?

Here are some sources available in the local library or bookstore, as well as some Web sites. The gift shop at the American Museum of Science and Energy also has several of the books.

In Print:

The Manhattan Project: The Untold Story of the Making of the Atomic Bomb by Stephane Groueff, published by Little Brown and Company

Now It Can Be Told. The Story of the Manhattan Project by Gen. Leslie Groves, published by Harper and Row

The New World. A History of the Atomic Energy Commission. Vol. 1, 1939 to 1946 by Richard G. Hewlett and Oscar E. Anderson, published by University of California Press

The Making of the Atomic Bomb by Richard Rhodes, published by Simon and Schuster

Brotherhood of the Bomb. The Tangled Lives and Loyalties of Robert Oppenheimer, Ernest Lawrence and Edward Teller by Greg Herken, published by Henry Hold and Company.

Building the Bombs. A History of the Nuclear Weapons Complex by Charles R. Loeber

City Behind The Fence: Oak Ridge, Tennessee, 1942–1946 by Charles W. Johnson (Contributor), Charles O. Jackson, published by the University of Tennessee Press

Cooking Behind The Fence: Recipes and Recollections from the Oak Ridge '43 Club, published by the Oak Ridge Heritage and Preservation Association

On the Web:

The Early Photography of James E. Westcott – <http://www.sunsite.utk.edu/westcott/>

The Atomic Archive at <http://www.atomicarchive.com>

The Manhattan Project Heritage Preservation Association, Inc. at <http://www.childrenofthemanhattanproject.org/>

The Manhattan Project: Key Figures at <http://www.me.utexas.edu/~uer/manhattan/people.html>

Oak Ridge Convention and Visitors Bureau at <http://www.visit-or.org/>
For those of you with genealogical roots in the Anderson/Roane County area:

Tennessee GenWeb Project at <http://www.tngenweb.org/>

Y-12 60th anniversary events

A proud history . . . a promising future

To celebrate and honor Y-12's 60th anniversary, the following events have been planned. More details on these activities will be provided on YSource.

What	When	Where
60th anniversary photo display	Feb. 3	McGhee Tyson Airport
60th anniversary special insert to the <i>Knoxville News-Sentinel</i>	Feb. 16 edition	Anywhere newspapers are sold
60th anniversary celebration ceremony, complimentary cake and ice cream for all employees	Feb. 18	Y-12 Cafeteria 9113 Canteen
WNOX SportsTalk Live remote broadcast	Feb. 18	American Museum of Science and Energy
Complimentary travel mugs and wall calendars for all employees	Feb. 18	To be distributed through organizations
60th anniversary billboards	month of February	Throughout the Complex & local region
Y-12 historical photo display	unveiled in February	Y-12 Cafeteria
Re-creation of 1940s office		Bldg. 9731



The "Gates of the Secret City" of Oak Ridge were officially opened with an atomic impulse that burned the ribbon at Elza Gate on March 19, 1949. All outer gates were opened simultaneously, and guards took their pistols and left. Strangers to the city no longer would be halted. An estimated 75,000 people were in town after the gates were opened to the public.

(Photo courtesy of James E. Westcott)



Other anniversary-related events are planned throughout the year, so check the *Inside Line* for announcements on future events.

BWX Tymes

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