


**Oak Ridge Reservation
Local Oversight Committee**

May 29, 2002

Honors & Awards
American Nuclear Society
555 North Kensington Avenue
LaGrange Park, IL 60526

Subject: Nomination of Building 9204-3 (Beta 3) for Nuclear Historic Landmark Award

Dear Madam or Sir:

I am nominating Building 9204-3, also known as Beta 3, and its associated calutrons, control room, and artifacts, for American Nuclear Society's Nuclear Historic Landmark Award. Enclosed is the completed nomination form. An explanation of its place in nuclear history is given below and supplemental information is enclosed.

Building 9204-3, also known as Beta 3, is an original Manhattan Project Beta production building located at the Y-12 National Security Complex (former Y-12 Plant) on the U.S. Department of Energy Oak Ridge Reservation in Tennessee. During World War II the Beta 3 calutron "racetrack" was used to enrich uranium for the atomic bomb, the development and use of which is one of the most historically significant events of the 20th century. DOE has identified Beta 3 as one of eight Manhattan Project "Signature Facilities."

The Beta 3 racetrack is the only surviving electromagnetic separation device at Y-12 out of nine Alpha and three Beta production facilities. Originally constructed in 1943 for separating U-235 from U-238, electromagnetic separation proved less efficient than gaseous diffusion, and all except the Beta 3 racetrack were dismantled after the war.

The Beta 3 calutrons, complete with the original 1940s control-room technology, continued to be used until 1999 to produce over 50 stable nuclear isotopes for medical and industrial uses. This is the only facility outside of Russia capable of producing certain isotopes and is able to be restarted if maintained in its current condition. Spare parts, in their original crates marked "Clinton Engineer Works," remain in the basement of this remarkable facility.

More information on the architecture and history of Building 9204-3 is found in the enclosed excerpt from *Architectural/Historic Evaluation of the Y-12 Plant* (Y/TS-1414).

This nomination is also supported by the Oak Ridge Heritage and Preservation Association.

Sincerely,



Susan L. Gawarecki, Ph.D.
Executive Director

Enclosures

Anderson • Meigs • Rhea • Roane • City of Oak Ridge • Knox • Loudon • Morgan

American Nuclear Society

05/29/02

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NOMINATION FORM – Nuclear Historic Landmark Award

The Nuclear Historic Landmark Award was established in 1985 to identify and memorialize sites or facilities where outstanding physical accomplishments took place which were instrumental in the advancement and implementation of nuclear technology and the peaceful uses of nuclear energy. Sites or facilities must have been placed in service at least 20 years prior to nomination

NOMINEE:

Name of Landmark: Building 9204-3 or Beta 3

Address: Y-12 National Security Complex

Site Contact: Jennifer Webb, Y-12 Cultural Resources Coordinator

Telephone: (865) 576-5715 Fax: (865) 574-9041 Email: webbjl@y12.doe.gov

SUGGESTED CITATION: (25 words or less:)

Building 9204-3, or Beta 3, electromagnetically enriched uranium during the Manhattan Project, and until 1999 its calutron "racetrack" produced stable isotopes for medical purposes.

NOMINATOR:

Name: Susan L. Gawarecki

Company or Institutional Affiliation: Oak Ridge Reservation Local Oversight Committee, Inc.

Title or Position: Executive Director

Address: 102 Robertsville Road, Suite B, Oak Ridge, TN 37830

Telephone: 865-483-1333 Fax: 865-482-6572 Email: loc@icx.net

May 29, 2002
(date)


(signature of nominator)

Nominations should contain a clear identification of the project and/or facility by its correct name, and an appropriate short statement of the project and/or facility, accompanied by a lengthy explanation of its place in nuclear history.

Send Eight sets of the nomination form and supporting documents by June 1 to:

Honors & Awards
American Nuclear Society
555 North Kensington Avenue
LaGrange Park, IL 60526

BUILDING 9204-3

ARCHITECTURAL DESCRIPTION:

One of the original Beta Production buildings, this large, two-story facility is constructed of masonry bearing walls, with a wood frame flat roof. The mostly rectangular building has varying roof heights, with the linear middle section, going east to west, being the highest and features 20-pane fixed aluminum sash along the uppermost north and south facades. One-story wings are located on all facades. The building's west facade has frame, louvered walls in some areas. A steel platform supported by steel posts and bearing a variety of mechanical equipment is located above a louvered addition on the west facade. Windows on the west facade are comprised of 18-light and 12-light fixed or hinged aluminum sash. Pedestrian doors are comprised of solid, hollow core metal. The building's north facade features 6-light fixed or hinged sash and a variety of piping systems attached directly to the building's face. The building's east facade features flat roof additions, 10-light fixed or hinged aluminum sash, and solid, hollow core, metal pedestrian doors. Frame louvers are located in the lower facade of the southern most addition. The south facade contains recessed storage space on the lower facade and houses mechanical equipment. A metal, overhead track door is located on the south facade as are solid, hollow core, metal pedestrian doors. An assortment of vents and electrical systems are attached directly to the building's face.

Documentary photographs were taken during the building's construction phase and clearly show the steel structural system beneath the masonry exterior. The first photograph, taken in June of 1943, reveals extensive steel columns and beams that comprise the structure of the building. Two other photographs taken later in the year show the building near completion with most walls enclosed with masonry, although the west wall has been completed. A photograph of the south facade shows the original window fenestration and the location of cooling towers along the building. Some of the windows are intact, others have been enclosed with masonry, but the cooling towers have been removed. Modern photographs reveal that the building's overall form has been altered very little with much original fenestration intact. Significant portions of the structure's interior retain original 1945 building fabric.

HISTORY:

Completed in July of 1945, this building houses a Beta-3 Isotope Separation and research/production facility. Located on the Y-12 Plant, this large 240,400 square foot building was constructed by Stone & Webster Engineering Corporation.

SIGNIFICANCE:

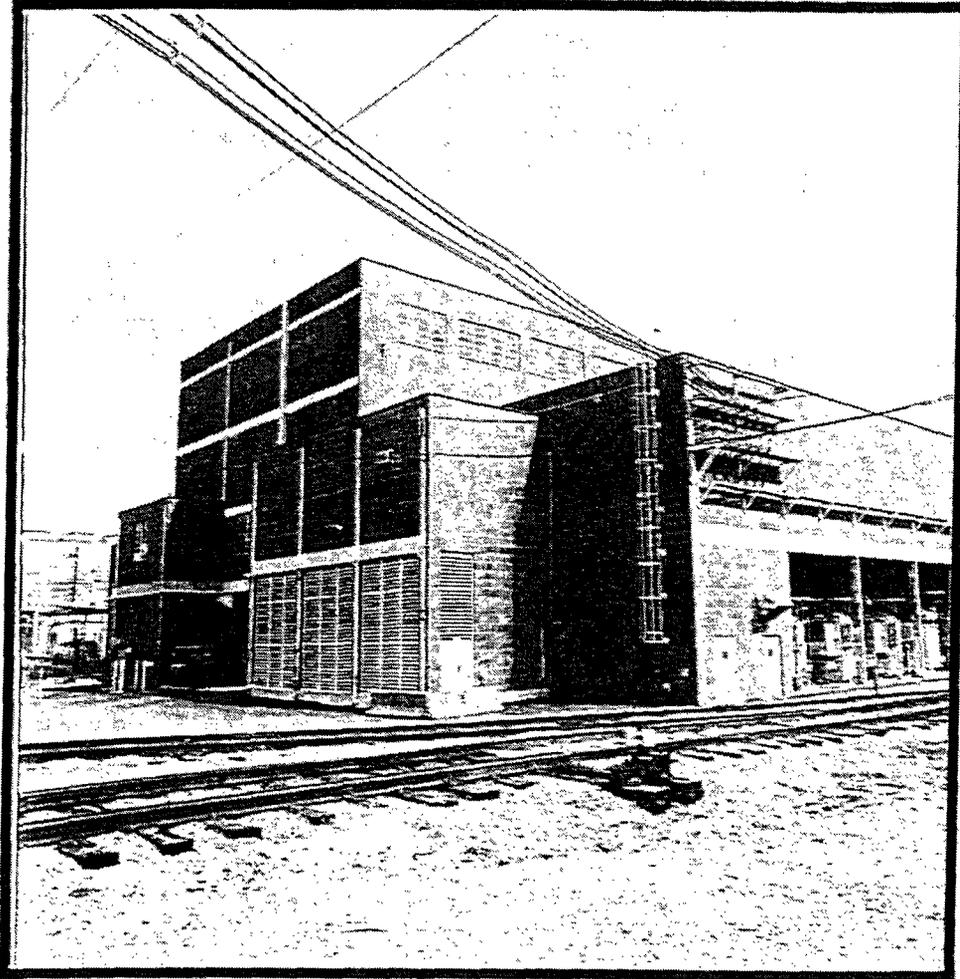
The building is associated with the Y-12 Plant located on the Oak Ridge Reservation, an installation which was originally developed during World War II. Building 9204-3 (Beta-3) functioned as a uranium enrichment facility during World War II and furthered the plant's mission of producing enriched uranium for the atomic bomb.

As a Beta processing facility associated with the Manhattan Project, Building 9204-3 aided in the development of wholly new technology and substantially advanced the field of nuclear science. In terms of facility planning, project engineers originally designed all Alpha and Beta buildings with "zero tolerance" for building movement or settling as the successful operation of the Y-12 Plant's calutrons depended on absolute structural stability.

Beginning in 1951, Building 9204-3 was occupied by various ORNL divisions, and Beta-3 became home for the Electro-Nuclear division, the Thermo-Nuclear Division, and the Isotope Enrichment Group. Experiments conducted by these various divisions included testing which proved earth's atmosphere would not incinerate upon detonation of an atomic weapon and design work for the Isosynchronous Cyclotron. Beginning in 1959 one track of Beta-3's racetrack was modified for the production of stable isotopes. In 1962 a second track was modified to allow the separation of plutonium for research purposes. From 1962 through 1972 Beta-3 participated in the Nuclear Safeguards Program - testing which focused on the minimization of radiation proliferation. Closed in 1972, the Nuclear Safeguards Program was restarted in 1979 and continued without interruption until 1980. Since 1959,

Building 9204-3 has continually separated stable isotopes for medical purposes and is the only facility outside Russia which has the ability to separate metallic stabilized isotopes for medical purposes.

In consultation with the TN-SHPO, the HPS determined that Building 9204-3 is eligible for inclusion in the National Register under Criteria A and C and is included in the proposed Y-12 Plant National Register Historic District. Under Criterion A, it is eligible for its historical association with the Manhattan Project, the post-World War II government-sponsored scientific movement, and early nuclear development. It is felt to be eligible under Criterion C for engineering merits and for contributions to science and technology. Given Building 9204-3's pioneering involvement with the production of enriched uranium and stabilized metallic isotopes, it is also recommended that National Historic Landmark status be sought for this facility.



Building 9204-3, Beta-3 facility (1945), Northeast View.