K-25 SITE DOCUMENT RESPONSE CENTER

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December 6, 1991

Harry Groh

K-25 is named for the Kellex Corporation, the designer's of the plant. The 25 is from the code name for U-235. As far as I can find out at this time, the X-10 and Y-12 sites were named arbitrarily and as code names. I am attaching a sheet of highlights from each plant for your information. Please let me know if I can be of any further assistance.

Barbara

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APPROVAL FOR RELEASE

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Irvin D Faust 1/5/93
K-25 Classification & Information Control Officer Date

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MILESTONES IN GASEOUS DIFFUSION

1939—U. S. Vanadium developed a process for preparing uranium concentrate as a by-product from their vanadium operations. Union Carbide's Linde Research Laboratory developed a process for preparation of pure sodium diuranate from the concentrate.

1940—Scientists at Columbia University became interested in the large-scale separation of uranium isotopes. This work was sponsored by Naval Research Laboratory, and later by the Office of Scientific Research and Development (OSRD).

July 1, 1941—An OSRD contract was signed with Columbia University which specifically called for diffusion research. The contract was followed by others with OSRD, and later with the Manhattan District, and led to the organization of the SAM (Substitute Alloy Materials) Laboratories at Columbia. This organization had the primary responsibility for gaseous diffusion research and development.

Oct. 31, 1941—Dr. Leo Szilard requested 8 lb. of uranium oxide from Union Carbide for analysis by the National Bureau of Standards.

Aug. 1, 1942—Union Carbide received an order for 2,000 lb. of uranium oxide for experimental purposes. It was shipped from stock the next day.

Oct. 20, 1942—The U. S. Engineers Office ordered 80,000 lb. of uranium oxide, the first order under Contract W-7401 eng-15.

Dec. 14, 1942—The Manhattan District signed a contract with the Kellex Corporation, a subsidiary of M. W. Kellogg Co., to serve as architect-engineers for construction of a gaseous diffusion plant.

Jan. 18, 1943—J. A. Rafferty, president of Carbide & Carbon Chemicals Co., accepted a letter contract to operate a gaseous diffusion plant, and to perform certain research and development and consulting services on the project. Lt. Col. K. D. Nichols signed for Manhattan Engineering District.

May 18, 1943—J. A. Jones Construction Company signed contracts to build the K-25 powerhouse, cascade buildings, and administration area at Clinton Engineer Works.

June 1943—Ground was broken for the powerhouse at the gaseous diffusion plant.

July 9, 1943—A contract was signed by Ford, Bacon and Davis, Inc. for construction of the conditioning area.

Sept. 1943—Ground was broken for the K-25 building.

April 1944—Carbide assumed overall management of the gaseous diffusion barrier development and production program. Dr. George T. Felbeck had primary responsibility for this program.

Jan. 1945—The first cascade equipment was operated with uranium hexafluoride.

Feb. 1, 1945—Carbide took over responsibility for management of SAM Laboratories from Columbia.

Mar. 19, 1945—The first enriched uranium was shipped from K-25 to Y-12.

Aug. 15, 1945—The K-25 cascade was in full operation.

Dec. 1945—The K-27 building was in full operation.

Dec. 1946—The electromagnetic separation facility at Y-12 was shut down.

Dec. 1947—Barrier plant and uranium hexafluoride feed plant started operation in Oak Ridge.

Aug. 1949-Jan. 1951—Construction of K-29 plant at Oak Ridge.

Nov. 1949-Dec. 1951—Construction of K-31 plant at Oak Ridge.

Dec. 1950—Construction started on Paducah Gaseous Diffusion Plant.

Apr. 1, 1951—The first Carbide payroll at the Paducah site was established.

July 10, 1952—Plans were announced for expansion of Oak Ridge and Paducah plants, and for construction of a new gaseous diffusion plant at Portsmouth, Ohio.

Sept. 18, 1952—Goodyear Atomic Corporation, a subsidiary of Goodyear Tire and Rubber Co., was announced as operating contractor for Portsmouth Gaseous Diffusion Plant. Many key personnel for this plant were trained at Oak Ridge and Paducah.

Nov. 7, 1952—Interplant operations were started between Oak Ridge and Paducah diffusion plants.

Feb. 1953—The C-31 plant at Paducah was on stream.

July 1951-Oct. 1953—Construction of C-33 plant at Paducah.

Aug. 1952-Nov. 1954—Construction of K-33 plant at Oak Ridge.

Aug. 1952—Apr. 1954—Construction of C-35 plant at Paducah.

Sept. 1952-Dec. 1954—Construction of C-37 plant at Paducah.

July 1953—UF_6 feed plant at Paducah in operation.

Aug. 1955—An improvement program started in Oak Ridge and Paducah plants.

Aug. 1956—Feed plant expansion at Paducah in operation.

Sept. 17, 1956—First shipment of enriched uranium hexafluoride made under AEC's Civilian Applications Program.

Dec. 1956—Initial operation of the uranium metals plant at Paducah.

Nov. 1960—Electronic Data Processing building, housing the IBM 7090 computer, was completed. Construction started in Oct. 1959.

Dec. 1961—The new Development Laboratory for Chemistry and Physics departments of Technical Division was completed. Construction started Nov. 1960.

Feb. 1962—Gaseous diffusion plants ship their millionth pound of uranium hexafluoride for use in the Civilian Applications Program.

Y-12 PLANT MILESTONES

1941-1942—Scientists at University of California Radiation Laboratory, Berkeley, began development of a magnetic separator which would function on the principle of the mass spectrograph, and would separate U-235 from natural uranium in appreciable quantities.
By autumn 1942, the rate at which U-235 was separated at UCRL justified authorization of construction of the Electromagnetic Separation Plant at Y-12.

1943-1946—Ground was broken for the first building in the Y-12 area on Feb. 1, 1943. Chemical operations for magnetic separator charge preparation began October 1943, and the first magnetic separator was started up in November 1943.
The first production building went into operation Jan. 27, 1944, and conversion of highly-enriched uranium-235 to UF_6 began in November. Ultimately, Y-12 employed 22,000 operating personnel and was the first plant to produce large quantities of enriched U-235. Uranium recovery began in January 1945. On September 22, 1945, all electromagnetic separators used to produce low-level enriched U-235 were shut down, since the K-25 gaseous diffusion plant was supplying a sufficient amount of partially-enriched feed for the product-level electromagnetic separators.

1946—All magnetic separators were discontinued December 23 as production units.

1947—Carbide replaced Tennessee Eastman Corporation as operating contractor of Y-12 on May 4, 1947.
Enriched uranium-235 produced by the gaseous diffusion process was reduced to metal and fabricated at Y-12 in accordance with AEC requirements.

1948—Machining of enriched uranium on a small scale was started early in the year.

1950—Hafnium-free zirconium production was started in January for use in the Naval Reactor program. The casting and machining of uranium-aluminum alloy and the first large-scale precision machining of beryllium began.

1953—Additional uranium casting facilities and another uranium machining shop were installed and completed by fall. A hydraulic pressing facility was installed in October.

1954—An expansion of the enhanced uranium salvage facility was completed early in the year. Installation of equipment for a new method of UF_6 reduction was completed during the second quarter.

1955—Installation of additional uranium casting facilities was completed early in the year.

1956—An accelerated program of providing technical information and assistance to industry interested in uranium salvage and recovery operations began.

1957—Installation of a Primary Rolling Mill and further pressing facilities for fabricating uranium were completed during the third quarter.

1958—Installation of a heavy machine shop for uranium fabrication was completed in the first quarter. A second rolling mill for uranium processing was installed late in the year.

1959—Development and special fabrication service in pressing and machining of tungsten was provided for the benefit of the missile program. Commission announced public sale of highly-enriched lithium-7.

1960-1962—Specialized development and preproduction fuel element fabrication for the nuclear-powered rocket (Rover) program was started in August 1960. AEC authorized Y-12 to provide specialized fabrication service for a missile nose cone in February 1962. During this period, there was continued operation of a plant developed at Y-12 for large-scale separation of lithium isotopes.

OAK RIDGE NATIONAL LABORATORY MILESTONES

Feb. 1, 1943—Construction of a plutonium production pilot plant started near Knoxville under the code name of Clinton Laboratories; to be operated by the University of Chicago as part of the Metallurgical Project.

Nov. 4, 1943—Graphite Reactor operated successfully. This was the world's first reactor to produce plutonium.

Dec. 1943—Chemical processing operations started to separate plutonium from uranium.

Dec. 30, 1943—First milligram quantities of purified plutonium shipped from Clinton Laboratories to University of Chicago for research.

Aug. 1944—Pilot plant demonstration of plutonium production processes completed and final process design report for Hanford issued.

Jan. 1945—Emphasis of work at Clinton Laboratories shifted from pilot plant operation to research on other problems connected with development of nuclear energy.

June 1945—All original objectives of Clinton Laboratories successfully accomplished.

July 1, 1946—Monsanto Chemical Company became operating contractor for Clinton Laboratories.

Aug. 2, 1946—First radioisotope shipment made.

Jan. 1, 1947—AEC took over operations from Manhattan District.

Mar. 1948—Carbide accepted operating contract, and name was changed to Oak Ridge National Laboratory.

1948—Construction started on permanent research facilities. $2 million radioisotope production facilities completed.

1949—Homogeneous reactor development reactivated. Aircraft reactor development work initiated. A new pool-type research reactor was developed, constructed and placed in operation as the second reactor on the site. This was the first of the "swimming pool" type of research reactors now in wide use.

1950—Research divisions and some physical facilities of Y-12 became part of ORNL. Oak Ridge School of Reactor Technology opened. Metal Recovery Plant built for processing irradiated reactor fuel.

1951—Full-scale model of the Materials Testing Reactor (MTR) converted to a third operating reactor, the Low Intensity Testing Reactor (LITR).

1952—MTR, largely designed by ORNL, placed in operation at Arco, Idaho.

1953—Homogeneous Reactor Experiment (HRE) became the second reactor to produce electricity. High Voltage Laboratory constructed for physics research with Van de Graaff accelerators.

1954—Aircraft Reactor Experiment operated successfully with all components at bright red heat. HRE dismantled and construction of HRE-2 started. Tower Shielding Reactor built for aircraft shielding research.

1955—An operating swimming pool reactor and building were designed and constructed in five months, and exhibited at the Atoms for Peace Conference in Geneva, Switzerland.

1956—Thermonuclear fusion research expanded to develop a promising new approach to achieving a controlled reaction by injection of high energy ions into a plasma—the Direct Current Experiment, referred to as DCX.

1957—From an ORNL concept, an Army Package Power Reactor was designed and constructed at Ft. Belvoir, Va.

1958—A new 30 megawatt research reactor (ORR) was completed. The Fission Products Development Laboratory was constructed. ORNL coordinated the fusion exhibit at the Second Conference on Peaceful Uses of Atomic Energy, and the Laboratory exhibited a working model of the DCX.

1959—Major construction program initiated to provide new research facilities, including the Central Research Laboratory additions, the Metals and Ceramics Laboratory, the High Radiation Level Examination Laboratory, and major renovations to facilities used by ORNL in Y-12.

1960—Construction begun on a new cyclotron of advanced design, the Oak Ridge Relativistic Isochronous Cyclotron (ORIC) and on a 10-Mev Van de Graaff charged particle accelerator for physics research.

1961—ORNL established as AEC center for production of transuranium elements not existing in nature. Construction of a High Flux Isotope Reactor and transuranium elements processing laboratory planned. Construction also begun on a special unshielded reactor for bio-physics research on radiation effects, and on a Molten Salt Reactor Experiment to test non-aqueous fluid fuel systems for producing electricity.

1962—Additions completed to the Central Research Laboratory, and a new Metals and Ceramics Laboratory constructed. AEC established ORNL as the Isotopes Development Center. The Bare Reactor Experiment, Nevada (BREN) was conducted by ORNL, using the unshielded health physics reactor mounted atop a 1500-foot tower to simulate nuclear weapons explosions in the air.

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