

Meet Kenneth D. Nichols, the Father of Oak Ridge: The Manhattan Project, Early Steps

(As published in The Oak Ridger's Historically Speaking column the week of October 28, 2024)

Barbara Scollin, great niece of Major General Kenneth D. Nichols continues her series on his life.

Ample reasons, most notably leadership skills, personality traits and qualifications, led to choosing General (then Colonel) Kenneth D. Nichols as Deputy District Engineer and subsequently as District Engineer of the Manhattan Engineer District (MED). In this capacity he had supervision of the research and development connected with, and the design, construction and operation of all plants required to produce plutonium-239 and uranium-235, including the construction of the towns of Oak Ridge, Tennessee, and Richland, Washington.

The responsibility of his position was massive as he oversaw a workforce of both military and civilian personnel of approximately 125,000; his Oak Ridge office became the center of the wartime atomic energy's activities. He also was responsible for internal security operations in the production facilities that helped keep the development of the atomic bomb secret.

In this sixth installment of several articles covering the life and accomplishments of Kenneth D. Nichols, we learn of his early work with the Manhattan Project including procurement of silver from the U.S. Treasury.

By the end of June 1940 Nazi Germany had conquered Europe from Norway to Sicily by invading Poland then Denmark, Norway, Holland, Belgium and France. Britain was the last free country acting as a buffer between Hitler and the United States. By December 1941, Japan had bombed Pearl Harbor and America was fully engaged in war against Germany, Japan and Italy. The threat of Germany developing a nuclear bomb before America weighed heavily on Colonel Kenneth D. Nichols and everyone else involved in the Manhattan Project.

In June 1942, as Deputy District Engineer of the Manhattan Engineer District (MED), Lt Colonel Kenneth D. Nichols stepped on to the stage of history at age 34. He was 5'11", a trim 160 pounds with clear blue eyes and blondish-brown hair. Trained in the West Point tradition "DUTY, HONOR, COUNTRY," he stood very straight, was confident, but not arrogant.

Off or on duty, his clothes were always pressed and neat. His childhood hobby of card playing, and West Point sports activities carried over to his adult life; he was fun to be around and made a wonderful dinner conversationalist. He was known for his warmth, consideration of others and intelligence. With an intense ability to listen, he could communicate with anyone regardless of their education, rank or situation, quickly earning respect from everyone he met. He lived his entire adult life by the West Point Honor Code – "A cadet will not lie, cheat, steal, or tolerate those who do."

Although well qualified for his MED responsibilities, Nichols showed humility and wisdom with areas unfamiliar to him such as physics. Nick recalled very early in his first year as Deputy District Engineer, "During my first meeting with Dr. Compton I told him, 'If you expect me to do my end of the job, you have to start educating me.' So..., whenever we had time, Dr. Enrico Fermi or other scientists [including Dr. Compton, Dr. Ernest O. Lawrence, and Dr. Robert J. Oppenheimer] would give me an informal lesson. They all recognized my desire to learn and were eager to teach me what I needed to know. I received a superb indoctrination in the subject from renowned leaders in the field."

Early in August, Nichols tackled the problem of a huge copper deficiency. Copper was required by Dr. Ernest Lawrence's electromagnetic separation process. 120 tons was needed for the Berkeley campus laboratory and another 5,000 tons for the Oak Ridge site now called Clinton Engineer Works (CEW).

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Copper was needed for other war industries, but thankfully it was quickly determined that silver could be substituted for the Manhattan Project's needs at a ratio of 11:10. Nichols recalls on August 3, 1942, he "visited with Assistant Secretary of the Treasury Daniel Bell. He... asked 'How much [silver] do you need?' I replied 'Six thousand tons'. 'How many troy ounces is that?' he asked. In fact, I did not know how to convert tons to troy ounces, and neither did he. A little impatient, I responded, 'I don't know how many troy ounces we need, but I know I need six thousand tons – that is a definite quantity. What difference does it make how we express the quantity?' He replied rather indignantly, 'Young man, you may think of silver in tons, but the Treasury will always think of silver in troy ounces.'

"With our contrasting perspectives expressed, we then settled on a form of agreement that was ultimately used to transfer some 14,700 tons of silver from its storage place at West Point [Depository] to New Jersey, where it was melted down and cast into large ingots for shipment to Allis-Chalmers in Milwaukee for further processing.

"Each month during the war, I signed an inventory for the Treasury stating that we had in our possession over four hundred million troy ounces of silver (expressed to hundredths of an ounce). We established very strict procedures to avoid loss, and when the silver was returned to the Treasury after the war 'less than one thirty-six-thousandths of 1 percent of the more than 14,700 tons of silver was missing.'"

At today's spot price of roughly \$40/troy ounce, the 400,000,000 troy ounces Nichols vouched for each month would be worth approximately \$16B in 2024. The silver procurement was just one of thousands of issues to be addressed by Nichols for the MED in the upcoming months.

The total cost of the Manhattan Project was about \$2.2B, or about \$45B in 2024 (not including the silver used and returned to the U.S. Treasury). As set forth by the S-1 Committee early in June 1942, four methods to obtain enriched uranium appeared feasible, but which method was superior was unknown.

Nichols explains further, "Redundancy was at the heart of the Manhattan Project. Each of the uranium processes we built at the CEW served as a backup for the others. In fact, all the CEW U-235 enrichment plants were backups for the plutonium effort at Hanford or vice versa. Redundancy unquestionably increased the cost of the Manhattan Project, but we did not feel we dared take a chance concentrating on only one production plant, or even one type of bomb.

"Well, you take Oak Ridge. It was the biggest construction project, bigger than Panama Canal, the biggest construction project in the history of the world at the time it was built.

"Ultimately, over 90 percent of the cost of the Manhattan Project went into building the plants and producing the fissionable materials [industry], and less than 10 percent was applied to the development and production of the weapon [scientists]."

Nichols signed contracts and ensured they were audited and administered properly for Los Alamos, NM and the other Manhattan Project sites including Oak Ridge TN and Hanford WA. (Thanks to Colonel Marshall's early organization of the MED, the district set up its own finance officers and internal audit staff.)

What would it have felt like to be Nichols signing a contract on behalf of THE UNITED STATES OF AMERICA? One such example is a contract for \$30,000,000 (\$545B in 2024) with Carbide and Carbon Chemicals Corporation dated January 18, 1943; it is included in William Wilcox Jr.'s informative book on the history of the K-25 plant (and a portion of the contract is included with this column as a photograph).

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In May 1945 President Truman authorized a small select group of congressmen to visit Oak Ridge. Nichols personally toured Congressman Albert J. Engel around the Clinton Engineer Works since Engle had "objected vigorously" to more expenditures when requested by the War Department earlier that year. Nichols was well prepared for Engel's visit with detailed unit costs and other reports. Engels was impressed. The congressional committee's hearing at Oak Ridge ended well.

Nichols recalls, "The hearing at Oak Ridge ended very pleasantly when Congressman Cannon, chairman of the committee, asked Congressman Taber whether he had any more questions to ask. (A month or so earlier, Taber and Cannon had come close to blows in a hall in Congress over expenditures.) Taber said he wanted to ask [Maj] General Groves and Colonel Nichols one more question: 'Are you sure you're asking for enough money?' Cannon commented, 'Well, I never expected to hear that from you, John. Meeting adjourned.'"

At the end of the war, Nichols recalls, "My administrative people involved with the expenditures were very pleased when the Comptroller General reported to the Senate Special Committee on Atomic Energy in April 1946, 'We have audited or are auditing, every single penny expended on this project. We audited on the spot and kept it current, and I might say it has been a remarkably clean expenditure... The very fact that our men were there where the agents of the Government could consult with them time after time assured, in my opinion, a proper accountability...'

"I believe this achievement occurred because of the way in which Colonel Marshall started the project and organized the administrative aspects of the district. His determination to do things in an orderly manner also was reflected in the way he chose our original headquarters and then went about selecting the site for the production plants..."

Remarkable.

Next up: The Manhattan Project, Underway, Part 1.

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I hope you are enjoying this series written by Barbara Rogers Scollin, grandniece of General Kenneth D. Nichols. She has done tremendous research and is quoting primary sources throughout. I believe she is doing a great service to her uncle and that we are benefiting from her work to show accurately the details of the man who was so effective in his job during the Manhattan Project from right here in Oak Ridge! We can take much pride in that...

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Lieutenant Colonel Kenneth D. Nichols Deputy District Engineer, Manhattan Engineer District (Photo by Ed Westcott)



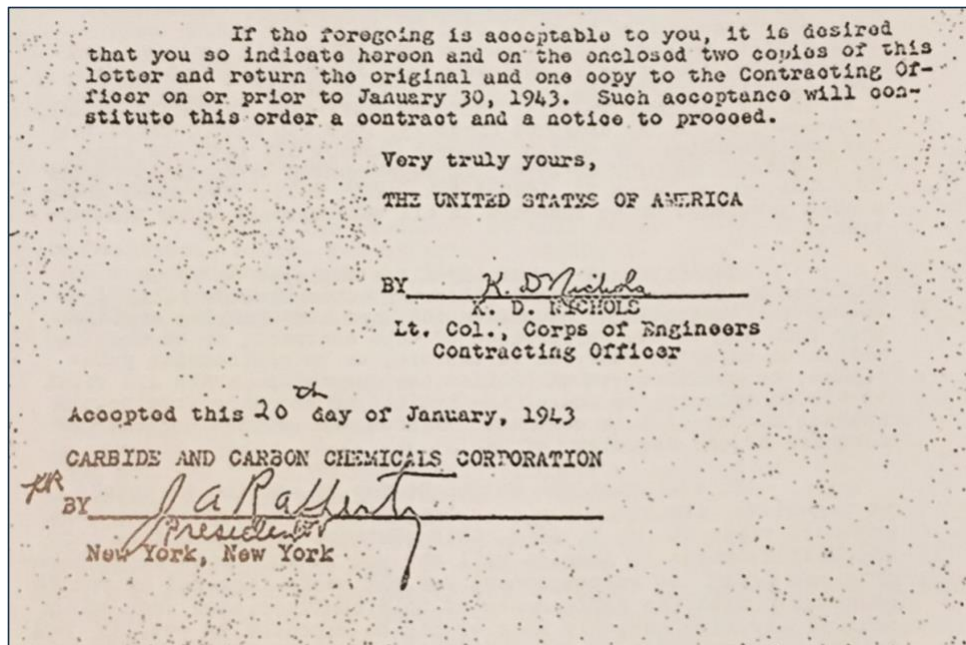
The Cadet Honor Code Monument located at the U.S. Military Academy at West Point. USMA Class of 1957 Honor Plaza at the east end of Eisenhower Barracks, West Point, NY - photo taken in December 2008 (courtesy of Wikipedia public domain photo)

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Silver-wound Magnet Coils for the Electromagnetic Process (Photo by Ed Westcott)



Redacted signature page of 1943 contract between The United States of America and Carbide and Carbon Chemicals Corporation Signed by Lt Colonel K.D. Nichols, Corps of Engineers Contracting Officer, and J. A. Rafferty, President of Carbide & Carbon Chemicals Corporation (Courtesy of William J. Wilcox, Jr., K-25, A Brief History of The Manhattan Project's "Biggest" Secret - Oak Ridge TN, January 1, 2017 - ISBN OCLC104123336)