

Nelson Rucker: Union Carbide's first ORNL director

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Carolyn Krause brings us the history of the early decisions on leaders in a changing environment immediately after World War II when all the sites in Oak Ridge were going through substantial changes in leadership.

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In late 1947, the new United States Atomic Energy Commission replaced Monsanto with Union Carbide Corporation's Carbide & Carbon Chemical Company as the operating contractor for what became known as Oak Ridge National Laboratory. The contractor's name was changed to Union Carbide Corporation Nuclear Division, and Clark Center was selected as UCCND manager.

According to the ORNL Review (Vol. 25, Nos. 3 & 4, 1992), the lab's research magazine, UCCND "enjoyed two advantages that would serve both the company and the Laboratory well.

"First, the company's expertise in chemical engineering fit the tasks it would be asked to accomplish. Second, Union Carbide was no stranger to Oak Ridge. Since 1943, it had managed a large staff that operated the K-25 Plant. In 1947, the government extended Union Carbide's responsibilities to the Y-12 Plant's production facilities. Thus, when the AEC called on Union Carbide to oversee Laboratory research activities in December 1947, it placed all Oak Ridge operations under unified management."

Carbide established ORNL work rules and pay scales, essentially putting all lab staff on its payroll. Less than two percent of ORNL's annual budget was allocated to the fixed fee Carbide received from the AEC for its services.

Nelson Rucker was appointed acting director and executive director of ORNL by Carbide until a permanent director could be found. He served in this position from 1948 to 1950.

A graduate of Virginia Military Institute, Rucker joined Union Carbide in 1933 to manage a Carbide plant in West Virginia. He moved to Oak Ridge with Carbide in the early 1940s and remained there throughout the war. At the time he was appointed executive director of ORNL, he was serving as manager of the Y-12 Plant.

According to the Review, "Rucker was responsible for overseeing the laboratory's daily activities. Playing a role comparable to that of a city manager, he saw that the institution functioned efficiently on a day-to-day basis, but he did not set its technical agenda.

"Union Carbide had as much difficulty filling the position of director in the late 1940s as the University of Chicago had had a few years earlier. Several prominent scientists, including John Dunning, rejected the position. In December 1948, Carbide asked Alvin Weinberg to become director. He also declined, citing his youth and lack of experience, but agreed to become the associate director for research and development" – essentially the job that Eugene Wigner had held for a year.

Weinberg was the director of the Physics Division at the time. He had found that job plenty challenging. As he had told Wigner, "I feel like a trick horseback rider at a circus. The idea seems to be to ride standing on three or four spirited horses, all of which are interested in going in different directions."

Rucker, Weinberg and other lab managers faced the problems of limited workspace and overcrowding. The AEC suspended new construction and often deferred maintenance on existing structures while waiting for the government's decision on ORNL's future. Yet in the late 1940s the ORNL administration added new divisions, hired more personnel, and installed new equipment.

"This wait-and-see attitude, which made sense given the uncertainties in Washington, continued while wartime frame structures swiftly deteriorated," according to the Review. "The only new facilities erected at the Laboratory between 1946 and 1948 were surplus Army quonset huts to relieve overcrowding, plus an electric substation and steam power plant constructed in futile anticipation that the proposed Materials Testing Reactor would be built in Oak Ridge."

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In 1948 overcrowding became a problem as the ORNL administration added new divisions, hired more personnel and installed new equipment. The AEC had refrained from funding new buildings because the lab's future was still uncertain. Staff members feared they would be laid off.

In 1949, after the lab staff had moved ahead to design the Materials Testing Reactor and construct a mockup of the reactor that was built in the early 1950s in Idaho, ORNL's future had stabilized. The AEC budgeted \$20 million for new construction, and Union Carbide initiated its "Program H" to replace wooden wartime structures with more permanent brick and mortar.

Streets were paved, grounds were landscaped, old structures were renovated and about 250,000 square feet of new office and laboratory space was being constructed. In the early 1950s, after Rucker left, Building 4500, ORNL's Laboratory's principal research building and administrative headquarters opened up. Also, a radioisotope complex consisting of 10 buildings was ready for staff trained to process, package and ship the lab's most valuable material exports because they were used in medicine, agriculture, industry and research.

Other research involving nuclear engineers, nuclear physicists, separations chemists and radiation biologists included improving nuclear fuel reprocessing measuring neutron cross sections of elements and their isotopes and studying the radioactivity of new isotopes, the solubility of uranium compounds at high temperatures, the mechanism of radiation decomposition of water and the effects of radiation on bacteria.

In the late 1940s ORNL's expertise on nuclear reactors was first called upon to aid the Navy in the successful development of nuclear-powered submarines and ships that extended into the 1950s. It began to be applied in 1949 to the Air Force's nuclear-powered aircraft project, which was canceled in 1961.

So, even though Rucker held what Carbide regarded as a temporary position, ORNL contributed so much between 1948 and 1950 to advance the government's postwar mission that it won approval as one of AEC's permanent national labs.

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Thank you Carolyn! What a tremendous time it was when in 1948 ORNL became a national laboratory in spite of the political pressure against it. Dr. William Pollard and his effort to make the Graphite Reactor available to universities to do research was a key part of making the national lab a reality. Also his efforts led to the formation of Oak Ridge Institute for Nuclear Studies which evolved by 1966 into Oak Ridge Associated Universities we know today.

The results of such leaders as Rucker and Pollard remain today in these two fine organizations still contributing scientific research and technical achievements. I dare say they have each one exceeded even Pollard's hopes and dreams.

This reputation makes the term "Oak Ridge Corridor," as suggested by Senator Lamar Alexander, a phrase that conveys to the world the tremendous potential that exists in East Tennessee today.

The rich mixture of the natural environment of the Great Smoky Mountains National Park, the electrical power supplied by the Tennessee Valley Authority, and the scientific strength of Oak Ridge make this East Tennessee region among the top locations competing for the high tech industries of tomorrow. Don't you know both Rucker and Pollard would be happy with the outcome of their initiatives!

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Nelson Rucker, early ORNL leader



Dr. William Pollard (photo from ORAU web site)