
Part IV:

The Manhattan Engineer District in Operation

The Manhattan Project

In many ways the Manhattan Engineer District operated like any other large construction company. It purchased and prepared sites, let contracts, hired personnel and subcontractors, built and maintained housing and service facilities, placed orders for materials, developed administrative and accounting procedures, and established communications networks. By the end of the war Groves and his staff had spent approximately \$2.2 billion on production facilities and towns built in the states of Tennessee, Washington, and New Mexico, as well as on research in university laboratories from Columbia to Berkeley. What made the Manhattan Project unlike other companies performing similar functions was that, because of the necessity of moving quickly, it invested hundreds of millions of dollars in unproven and hitherto unknown processes and did so entirely in secret. Speed and secrecy were the watchwords of the Manhattan Project.

Secrecy proved to be a blessing in disguise. Although it dictated remote site locations, required subterfuge in obtaining labor and supplies, and served as a constant irritant to the academic scientists on the project, it had one overwhelming advantage: Secrecy made it possible to make decisions with little regard for normal peacetime political considerations. Groves knew that as long as he had the backing of the White House money would be available and he could devote his considerable energies entirely to

running the bomb project. Secrecy in the Manhattan Project was so complete that many people working for the organization did not know what they were working on until they heard about the bombing of Hiroshima on the radio. The need for haste clarified priorities and shaped decision making. Unfinished research on three separate, unproven processes had to be used to freeze design plans for production facilities, even though it was recognized that later findings inevitably would dictate changes. The pilot plant stage was eliminated entirely, violating all manufacturing practices and leading to intermittent shutdowns and endless troubleshooting during trial runs in production facilities. The inherent problems of collapsing the stages between the laboratory and full production created an emotionally charged atmosphere with optimism and despair alternating with confusing frequency.

Despite Bush's assertion that a bomb could probably be produced by 1945, he and the other principals associated with the project recognized the magnitude of the task before them. For any large organization to take laboratory research into design, construction, operation, and product delivery in two-and-a-half years (from early 1943 to Hiroshima) would be a major industrial achievement. Whether the Manhattan Project would be able to produce bombs in time to affect the current conflict was an open question as 1943 began. (Obvious though it seems in retrospect, it must be remembered that no one at the time knew that the war would end in 1945 or who the remaining contestants would be if and when the atomic bomb was ready for use).

Clinton Engineer Works (Oak Ridge)

By the time President Roosevelt authorized the Manhattan Project on December 28, 1942, work on the east Tennessee site where the first production facilities were to be built was already underway. The final quarter of 1942 saw the acquisition of the roughly ninety-square-mile parcel (59,000 acres) in the ridges just west of Knoxville, the removal of the relatively few families on the marginal farmland, and extensive site preparation to provide the transportation, communications, and utility needs of the town and production plants that would occupy the previously underdeveloped area. Original plans called for the Clinton Engineer Works, as the military reservation was named, to house approximately 13,000 people in prefabricated housing, trailers, and wood dormitories. By the time the Manhattan Engineer District headquarters were