

## **K-25's submarine**

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My friend Joe Lenhard suggested another unusual historical artifact that is sitting in plain sight, out in the open and likely forgotten by most all who were involved in the work. The “work” being what might well be the first large “work for others” project undertaken by the folks at K-25 in the early to mid 1970's.

So, as you might guess, I jumped at the chance to learn more about the artifact. Joe took me to see it and I photographed it. It is obviously a modified flatbed railroad car that has fixtures on it designed to hold some long likely round object. Joe said it was designed to transport a submarine!

How about that? The Oak Ridge K-25 Gaseous Diffusion Plant built a submarine sometime in the early 1970's! Is this for real? Why would such a thing be done? Why did K-25 get chosen for such an unusual job?

Joe suggested that I call Ken Sommerfeld, which I did. Ken well remembered the “K-25 submarine.” He said it was built at the request of the United States Navy as what might well have been the first large scale work for others project ever at the K-25 site.

Ken placed the time early in the 1970's and the location of the place where the model submarine was built as a corner of the huge maintenance shop located in Building K-1401 at the K-25 site. Building K-1401 was a 500,000 square foot Manhattan Project structure that has been demolished.

The reason this work went to K-25 was likely because of the experience the management and workers there had working with large scale objects such as the gaseous diffusion equipment with its large convertors.

Even at a substantially reduced size, fabricating a submarine would still require handling large circumference metal shapes. The K-25 maintenance shops were expert at doing this. So, it just made sense to use them for the special Navy work.

The scaled down submarine was fabricated in sections and made out of steel with a variety of special materials adhered to the outside and inside surfaces. It was airtight so it could simulate a real submarine and be submerged for testing. After all, K-25 workers understood “air tight” as the gaseous diffusion equipment had to be leak free!

The basic reason for the project was to test materials for sound proofing as the Navy desired to be able to reduce the sound signature of their submarines. They also wanted to see if it was possible to reduce the reflective signature to sonar. Essentially, they were attempting to reduce all sound related characteristics of the submarine to reach as close as possible to silent running.

This was a huge deal in the Cold War and the Navy was attempting to make their submarines carrying nuclear weapons as invisible as could be done. Y-12 was selected to machine the propulsor with this same thought in mind – keep the submarine as silent as possible.

The length of the submarine was exactly equal to the length of the railroad car. Maybe this was the limiting factor as it must be able to be transported from K-25 to the test site. Ken thought the test site was a deep lake in Washington. He could not be sure of this, but he thought a lake in Nevada and one in Washington were considered with the Washington lake being the chosen site.

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I later learned that the actual site was in Lake Pend Oreille in Bayview, Idaho. However, Ken hastened to add that K-25 had nothing to do with the test and never knew what happened to their model submarine.

The railroad car did get returned to K-25, where it sits to this day. But the reduced scale submarine was kept by the Navy as the tests they were doing were not something they wanted publicized at the time. In fact, Ken said he recalled that the K-25 managers and workers who had been involved in the project wanted to have their photograph made standing in front of "their" submarine, but were limited in what they could include in the photograph.

The Navy did not think such a photograph of the submarine was a good idea and agreed for a photograph to be made if the submarine was covered with tarps. So, that is what Ken recalls, a photograph of the K-25 workers standing in front of the railroad car with the submarine covered up to where the surface coatings were not visible.

Ken had arrived at K-25 in 1968 and was assigned as the Operations Superintendent. By the time this model reduced scale submarine work for others project arrived at K-25 he was the Assistant Plant Manager for Maintenance and Operations. So, this project would have fallen under his management responsibility. Bob Winkel was the K-25 Plant Manager at the time.

Bill Wilcox recalled the project and suggested the reason for K-25 being chosen was the experience they had working with such large pipes and tanks as the gaseous diffusion convertors. An example replica of one of the mid-size convertors is located at the K-25 Visitor Overlook. A smaller scale replica model is located outside the American Museum of Science and Energy.

The Department of Energy, Oak Ridge Environmental Management Memorandum of Agreement on Interpretation of the East Tennessee Technology Park that is near completion will include the preservation of actual convertors and other gaseous diffusion equipment. The Manhattan Project National Historical Park, if created, will use this equipment and other elements of the MOA such as a K-25 History Center and an "Equipment Building" to display these historic artifacts.

The presence of this railroad car seems to exemplify other aspects of K-25's history that will also need to be preserved or interpreted. While this first effort at creating a national park focuses on the Manhattan Project, the DOE OREM MOA also includes recognition of the Cold War and the technological advances that resulted from the world changing event of the Manhattan Project, stated by historians as being the most significant scientific achievement in the history of the world.

So, what may seem to some as an old relic of a railroad car proves to be the sole remaining artifact of likely the first large scale work for others project ever produced by the K-25 Gaseous Diffusion Plant that is now known as East Tennessee Technology Park. Thank you Joe! This one-of-a-kind special modified railroad car is an authentic historical artifact.

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Joe Lenhard beside the special railroad car showing the fixtures used to secure the reduced scale submarine built by K-25 maintenance workers for the U.S. Navy



The flat bed railroad car modified to transport the Navy's submarine to the test site