Nautilus reunion visit to Y-12 and ORNL

On Friday, October 1, 2010, a special group of approximately 25 men and many of their wives paid a visit to the Y-12 National Security Complex and the Oak Ridge National Laboratory. They were crew members of the world's first nuclear submarine, the Nautilus. On this day they were coming to see where their previous commander, Admiral Hyman C. Rickover, first learned about nuclear reactors.

Then a Captain, Rickover attended the first Reactor Training School held at the Clinton Laboratories in 1946. Eugene Wigner was the director of the fledgling laboratory. Many people were working to get the world's first industrial size nuclear reactor, The Graphite Reactor, transitioned into a much more prestigious "National" laboratory. This reactor training school was the brainchild of Wigner and attracted a lot of attention.

Rickover saw right away that a nuclear reactor using highly enriched uranium could be made small enough to fit in a submarine. He made copious notes and took his detailed preliminary design ideas to Congress, where he ultimately prevailed in getting the funding to develop what came to be known as simply "the Nuclear Navy."

Not long after getting started, it became apparent that there was a need to clad the nuclear fuel with zirconium, and it needed to be pure zirconium with the hafnium impurity removed. Y-12 was selected to do that separation, and it was done in Building 9211, which is now in the process of being demolished.

Finis Patton, retired head of Engineering, was involved with the zirconium work early in his career. When he came to Y-12 recently for an oral history interview, he wanted to see Building 9211. That is when he told me the history of the zirconium effort at Y-12. So, I passed that history on to the Nautilus alumni who seemed to appreciate seeing Building 9211, where that important work was done in 1950.

I was pleased that they got to see the building before it was torn down. These folks appreciate the history of how the nuclear navy started and had come a long way to see the place where it all began. They had lots of questions.

They also toured Building 9731 and were impressed by the size of the Alpha calutron magnets. Again, they had many questions. Remember, these are people who worked for years, literally, right next to an active nuclear reactor in a confined space, a submarine! So, they wondered how a calutron worked. When I explained it to them, they realized the operation was far different from a nuclear reactor.

When they reached the overlook at the water tanks on Chestnut Ridge, the wind was blowing such that we were not able to stay out there for long. Remember, these folks are in their late 70's and early 80's. What a joy it was to see them view Y-12 and comment on the importance of the role that we had played in the winning of the Cold War. They told me about it rather than me giving them the details.

After leaving Y-12 by way of Bear Creek Road and seeing the Highly Enriched Uranium Materials Facility and the Jack Case Center, we were off to the Oak Ridge National Laboratory. The ride over the ridge and down Bethel Valley was filled with shared stories.

Did you know that all of the Nautilus crew members that were on the submarine when it travelled beneath the North Pole were Tennessee citizens? Now, you think I have lost my mind, right? Well, they told me that when the trip was completed that Tennessee Governor Frank Clement made all the crew members honorary citizens of Tennessee.

The connection to Tennessee was through the Commander of the Nautilus at the time of the record-setting voyage beneath the North Pole. He was William Robert Anderson, a Tennessee native who was the commanding officer of the Nautilus from 1957 to 1959. In addition to commanding the first transpolar voyage under ice, Anderson served as assistant to Vice Admiral H. G. Rickover, consultant to President Kennedy for the National Service Corps in 1963, and served three terms as a U.S. Congressman from Tennessee.

His widow, Pat Anderson, was among the tour participants.

The Nautilus, named for the submarine in Jules Verne's *Twenty Thousand Leagues Under the Sea,* was launched in 1954. It was capable of staying submerged far longer than any other submarine and set many records. These crew members proudly told me of their exploits.

At the Oak Ridge National Laboratory the Nautilus alumni saw the world's most powerful computers and were impressed by the huge display called "Everest" that fills a complete wall and has extremely high resolution. They enjoyed lunch at the ORNL cafeteria and then toured the High Flux Isotope Reactor.

What a treat that was for them. Again, they asked many pertinent questions and noticed many things in common with their own small reactor on the submarine. The reactor operations people who participated in the tour were obviously glad to have these honored guests on the tour.

Finally, we toured the Graphite Reactor. Here again they appreciated the history and were happy to learn about the workhorse of the early efforts to develop our medical isotope program.

What a delightful day. These heroes of the Nuclear Navy who spent time on the world's first nuclear submarine were a delightful bunch and seemed to enjoy their day in Oak Ridge.