

WITHOUT SPARE PARTS

[The following is from hand written project notes kept by my father John C. Hansen. From 1940 to 1968 John C. Hansen was a Radar Research Engineer working at Evans Signal Lab. Belmar, N.J. Prior to that he was an Electrical Engineer working for General Electric and then RCA Victor. He held a number of patents in his occupational field. - Jack Hansen]

The train was crowded. Many of the passengers were in uniform, as was 1st Lt. John Hansen. He was traveling under 'Sealed Orders' from Camp Evans Signal Laboratory Belmar, New Jersey to Washington D.C. The date was May 20, 1942.

His orders were to obtain spare parts for the SCR-268, SCR-270 and SCR-271 radars. These radars were new and top secret. The prototypes were developed at Fort Hancock, part of Fort Monmouth which was the U. S. Army Signal Corps Research Headquarters. Fort Hancock was located on Sandy Hook, New Jersey, (a few miles north of Fort Monmouth). Fear of German Submarines (Fort Hancock was located on a sandy peninsula between the Atlantic Ocean and New York bay) prompted the Army to move the research to land West of Belmar, N.J. which became Camp Evans Signal Labs, a more secure area. The first pre-production radars were assembled and upgraded at Fort Hancock prior to 1941, and in a short period of time, industry had taken over production.

Incidentally, an SCR-270 installed on the Hawaiian Island of Oahu proved itself a very effective radar when it detected the approaching Japanese Bombers on that fateful day, December 7, 1941. Too bad an the warning went unheeded as it would have given about 45 minuets to prepare for the attack.

By early 1942 these radars were now being placed around the world. Prior to the Pearl Harbor attack the Panama Canal Zone was one of the first places to have United States radar protection. Unlike the Pearl Harbor attack where the radar warning was ignored, any detection would be heeded in the future.

Ordinance, that part of the U.S. Army responsible for the supply of military items, woke to the fact that there were no spare parts for the existing or those radars rolling off the production line.

Lt. Hansen, an Electrical Engineer, was no stranger to the new radars as he had developed and would received a patent for the Modulation Circuit used. He would meet other Engineers and Ordinance Personnel and they would decide on the purchasing procedure. This detachment was under the command of Major Paul Watson who also was responsible, in part, for the development of the new radar systems. Watson Labs, part of Ft. Monmouth, New Jersey would later be named after him.

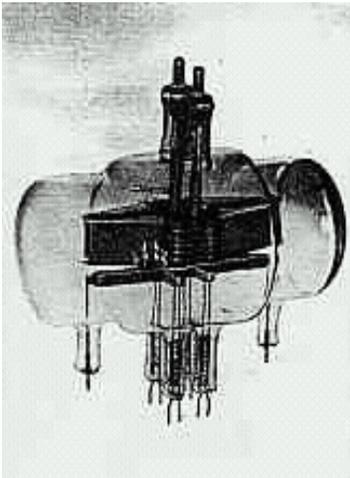
Lt. Hansen's job was to determine the probability of failure of each part in the different circuits and determine how many parts were to be purchased. In 1942, electronic equipment depended upon vacuum tubes and other components that were definitely not as dependable as solid-state circuits are today. The estimated budget for the project initially was about one million dollars. Because of the rapidly changing conditions caused by the war, the budget was increased to two million dollars. A little later ordinance realized that auxiliary motor generators needed to be purchased to supply electrical power in the field, again the budget was increased.

One major problem of the German War Effort was the amount of military equipment that was not in operating condition because of the lack of spare parts. The United States produced large quantities of electronic parts. After WWII, an area in New York City, World Trade Center location, referred to as "Radio Row" had store after store that featured barrels and boxes of surplus electronic parts for pennies on the dollar.

Three purchasing teams that included Engineers and Ordinance personnel were created with an Ordinance man in charge of each team. After the schematics were studied and the parts lists were published, each team was sent to different cities to gather parts. The plan was to work from the East Coast Cities West until purchasing was completed. As the items were purchased the tally changed at headquarters. Lt. Hansen would revise the list each day. The teams phoned in their progress and Lt. Hansen issued new orders almost daily.

A number of special parts were required, such as

(continued on page 8)



Zahl Tube

I Remember...

(continued from page 7)

the secret Zahl tube which allowed these radar systems to operate up to 200 mc. Purchasing negotiators were operating under strict orders that prevented them from disclosing what the parts were to be used for. This project was classified to the extent that when Lt. Hansen's wife was in the Ft. Monmouth Hospital with a ruptured appendix, Camp Evans and then Washington D. C. was contacted, the hospital was informed that Lt. Hansen was under "Sealed Orders" and no contact would be made. He returned home to find his wife in the hospital recuperating and a neighborhood girl taking care of his two young sons.

Headquarters for purchasing was in a temporary, not air conditioned, building 'A' located at 2nd and T, SW in the Fort McNair area of Washington DC. The teams would work out of this building and Camp Evans from May 20, 1942 to July 19, 1942. Lt. Hansen made 22 trips, all by train, between the two locations during this period of time. He also was 'Temporary Duty' to Norfolk, VA, and Lexington, KY.

The Camp Evans personnel knew the logical location for this project was Camp Evans and by mid July, under the urging of now Lt. Col. Paul Watson, the operation was transferred to Evans where the purchasing continued for an additional month.

Upon completion of the purchasing the teams had spent \$3,000,000, a considerable sum of money for those days and well above initial budget estimates.

According to Lt. Hansen's project notes, Major Watson was promoted to Lt. Col. the first part of June. Lt. Hansen was Capt. Hansen within a few months.

During this period of time the United States military was starting on the offensive with the Moral Building Bombing of Tokyo and the very important Battle of Midway.

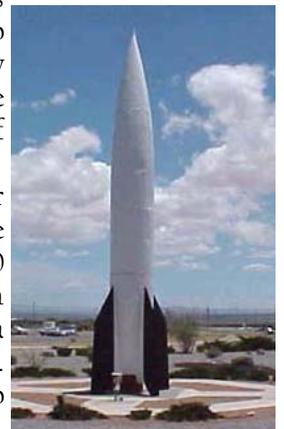
[Dad was separated from active duty in 1946, returned to Camp Evans Signal Lab. The following is from his personal notes:]

"I was assigned to a group designing equipment for the instrumentation of White Sands Proving Ground for tracking of 'V-2' Missiles that had been captured from the Germans.

My first job was to design the modifications to a SCR-584 in the tracking of V-2 Missiles. After spending two or three weeks I determined that there were many questions that could not be answered at the Lab. It was arranged for me to go to White Sands where those answers were. I went by train to El Paso where transportation met me to take me to the Proving grounds. We had to travel across the desert about 50 miles North going on the only road that was available. When we had driven about 25 miles we were stopped by a guard because of practice firing of field artillery by a unit stationed at Fort Bliss. We stayed there for about two hours before we were allowed to proceed on our way. When I arrived I was given space in a building, a desk and other equipment which I could use.

I found that they were firing V-2's from the Proving Ground in a Northerly direction to impact West of the White Sands National Monument, about 40 or 50 miles away. They had a plotting board connected to the radar which plotted both the trajectory and predicted the landing area of the missile, however, the plotting board was not accurate enough. By the time we arrived at an area and started searching for the impact point after a firing took place, it was getting dark. The impact area (when we found it next day) was a crater about 30 feet in diameter and about 8 or 10 feet deep. So my first job was to design a bias of the circuits so that the tracking signal did not over ride it until it was about three quarters of the way to the impact area and then amplify the signal so it would more accurately 'pinpoint' the point of impact.

Plans were being made for extending the range over the mountains northwest about 150 miles and to fire the missiles from the Proving Ground into an area about close to the Four Corners. So the work in the future was to make the tracking equipment capable of doing the job".



V-2 Missile at the White Sands Missile Range Museum

Do you want your story to be told?

If you would like to tell your story in "I Remember...", please submit a write-up via email (radarmus@erols.com) or mail (HEM, PO Box 746, MS 4015, Baltimore, MD 21203). Stories should be electronics history related and no longer than 1000 words. We reserve the right to edit stories.