

## Building an Intercept Station During World War II

Joseph Horn

From the late fall of 1942 to the summer of 1943, eleven sailors and I were shipped from Noroton Heights Radio School, Connecticut, to German Morse school at Cheltenham, Maryland, then, to Opperlachia Airfield in Florida and on to Bahia, Brazil. Among the twelve of us shipped to Bahia were [redacted] and Gene Sheck, who are still employed by NSA. How we were selected is still a mystery because at that time the selection system for assigning personnel leaving Noroton Heights Radio School was not very scientific. Typically, it was: those A-F, standby for submarine duty, all those G-K, standby for cruiser duty, all those L-S, standby for destroyer duty, all those T-Z, standby for amphibious duty. With that kind of selection process, I have to wonder, still, how they arrived at calling "[redacted], Sheck, [redacted]" to be assigned to USN Station at Cheltenham, Maryland. At that time I was very disappointed about the assignment because 1) I didn't know what was entailed, and 2) I had joined the Navy to go to sea and fight. Whether or not the assignment was proper, I have lived to tell about it.

We were sent to Brazil to build an intercept and DF station at Salinas de Margarita—literally, to cut it out of the jungle. Salinas was to be the southern leg of a three-station, intercept-and-HFDF net with control at Recife, Brazil, and the northern station at Belem on the Amazon River. Salinas, about 25 miles by water from the city of Bahia, was located on a peninsula covered with such dense jungle that it was usually considered an island.

Our targets were German submarines operating in the mid- and southern Atlantic, Allied ships and aircraft in distress, and Argentine Navy and enemy covert activities in South America and Africa. The covert communications were intercepted by a Coast Guard unit which was stationed at Recife with our Navy. I never did find out what happened after we were able to locate a covert transmitter but did observe that they were not heard shortly thereafter. The German submarines were not

difficult to identify since they usually sent a message called a "B-barred," which began with "dahh dit dit dahhh." This sound made the cold chills run—I can still hear it occasionally. The DF equipment (DAB) was a far cry from that of today. It was about 15 feet long, mounted on a pivot with antennas at each end. The operator manually twisted the machine back and forth as many times as he could during the 20 or so seconds that a suspected enemy submarine transmitted, getting as many crosses as he could on the scope in order to estimate the direction. One had to be in fairly good physical condition to be able to twist the equipment back and forth rapidly enough to get a bearing. The DAB at Bahia had a practice of twisting off at the bottom of the pedestal, which was another reason one had to be in fairly good physical condition.

Communications were not very rapid in those days. Our only electrical communications were by manual Morse. We communicated by Morse within the DF net for tip-off and reporting. Recife communicated with Washington for administrative and operational traffic and acted as relay point between Washington and Ascension Island. Once when I was operating the Recife-Washington circuit and could not raise Washington to receive high precedence traffic, Navy control at Guam came up on my frequency, received my messages and relayed them to Washington. (I do not think HF wave propagation predictions would have come up with that one.) Operating communications circuits was less demanding than operating an intercept position—you could always ask for a repeat if something were missed when communicating. Also, when communicating, you could ask the operator at the other end to slow down, to improve sending or, in a dire situation, to put another operator on the set.

In contrast to today's highly formatted procedures for intercepting manual Morse—with [redacted]

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[redacted] our main objective was to copy every dit and dah that the target sent. The format was incidental. In fact, we objected even when told that the date should be typed on the upper right hand corner of the page. A lot more is expected of today's intercept operators: now the operator is expected to copy the target, do running traffic analysis and then tag everything for computer processing.

The receivers we used were rather simple in design. One did not have to turn the BFO to change the pitch of a signal; you could just put your hand on the chassis. If someone walked too close to your receiver, the pitch changed. Simplicity in the design of the receivers was a blessing in disguise because of the severe lack of spare parts. An essential part of maintenance training was learning how to repair a burned-out tube with a shot of high voltage. It worked, sometimes.

For DF tip-off and reporting we used a tracking code, for administrative and operational traffic, one-time pads. Pencils with erasers were an important part of the inventory: we used them to push the paper strips back and forth on the board when enciphering traffic. This slow, tedious method of encipherment had its drawbacks but, in retrospect, it served as a great managerial tool in keeping electrical communications to a minimum. One cannot but wonder what the reduction in our current electrical communications would be if the only available encipherment systems used manually manipulated paper key strips.

The German Navy operators sounded like machines. Towards the end of the war, however, there was a noticeable deterioration in the quality of their communications. On the other end of the spectrum, the Italians and Argentinians competed for qualifying as the poorest communicators.

There were five of us that first went to Salinas de Margarita to build the station, with others arriving later to make a total crew of 21 Americans: 1 Officer in Charge, 2 machinist mates, 1 medic, 2 cooks, 1 Chief, 2 First Class, and 12 Radiomen. It seems that the Officer in Charge was selected because he could speak Portuguese rather than for his managerial abilities. We hired laborers and skilled craftsmen from the local population of about 700 people. Until the barracks, power station and galley had been built, we lived on a small cabin cruiser that had brought us from Bahia. Captain Harper, USN, was the Captain of our boat for a while.

The villagers had no electricity and no method of refrigeration. The natives were quite interested in our electric lights but did not like the sensation of cold

produced by ice cubes. In this area the temperature, even in the wintertime, never went below 55-60 degrees and since these people had never experienced the feeling of cold, handling an ice cube, even briefly, caused them acute pain. Our buildings at Salinas had no provision for heat and the only hot water was in the galley.

The people of Salinas appeared to be gentle and to be happy with their lot. Their main occupations were fishing, pearl diving and working on salt beds. The religion was a mixture of Voodooism and Catholicism. It was customary to see a person in pagan dress on a Catholic holy day. There were no native doctors or dentists on Salinas. We did have a medic on the station but some natives refused treatment through fear. Malaria was as common as a cold in America. Some of the natives were very skilled craftsmen in woodworking although their tools were quite primitive.

Logistics was a major problem at Salinas. I can recall that the only meat we had for three weeks was turkey. Even the ingenuity of an excellent Italian-American cook cannot make turkey tolerable three times a day for three weeks. *Broadway Rhythm* with Lena Horne was our only movie for a seven-week period. You would be amazed at the improvisations that take place under these conditions. Did you ever see an entire movie backwards? By the end of the seven weeks, all the parts had been memorized by the sailors, including Lena Horne's, and one innovation was to turn the volume down and have the sailors take the speaking and singing parts.

Because of the lack of spare parts, the three vehicles (a weapons carrier, a jeep and a motor scooter), were often inoperative. Partly due to inoperative vehicles and partly due to the lack of recreation, horses became a part of the station complement. Most of the sailors, at one time or another, owned a horse, except for a seaman guard who had a donkey. I bought a beautiful quarter horse and a very ornate saddle for the total price of \$75.00. Horse racing and rides through the jungle became enjoyable pastimes. When I had to go to the transmitter shack to change frequencies, it was usually by horseback. If the fuel shortage continues, this kind of experience in travelling may prove useful.

[redacted] was sent to Bahia in 1948 to help the Brazilian Navy take over the station. The transfer to the Brazilians was accomplished in 1949 and the entire net turned over to them by 1950.

Mr. Horn retired recently from NSA after spending most of his career in collection activities.