EUGENE C. SIMS

510 Village Pines Circle
Coos Bay, OR 97420
(541) 888-9976

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Robert M. Browning
Historian, U.S. Coast Guard
2100 2nd St. SW Rm B717
Washington DC 20593

Dear Dr Browning,

Ref. my letter July 30, 01
regards LORAN-A

At long last the story of the Coast Guard building of the LORAN-A station at Kwajalein in 1944 is finished and enclosed. Thank you for your help in this effort.

Their just wasn't much authoritative written data available about LORAN back in 1944 but with the help of a couple of CG veterans from that period I was able to get the story written. The small island of Kwadack in the Kwajalein Lagoon is once again completely overgrown and shows no evidence of the original station built in 1944.

I have ask the Army for copies of aerial shots of the island but since Kwadack is in a classified area across from Meck where the ICBM intercept missiles are launched it may be difficult to get any photos. I tried to find some actual construction photos of LORAN-A on Kwadack but this also came up blank. Does your office have any photos?

I sent the story off to the Army "Hourglass" newspaper on Kwajalein, but they may not wish to print same. The Coast Guard is welcome to use the story in any form if they wish.

Thank you again for your interest and help in this effort.

Sincerely,

Eugene C. Sims

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Authors Note

For those of you who have flown by airplane or by helicopter from Kwajalein to Roi-Namur, the scenery of the east reef islands is never a boring site particularly in the early morning hours with one of those sensational sun rises.

During the many flights I made over twelve years on Kwajalein I never failed to notice certain peculiarities of each island as we flew to Roi. Beach formations on the lagoon or maybe outcropping of coral on the ocean side of each island was always interesting. One island in particular was always a puzzlement. Many of the coconut-palm trees seemed to be lined up in a row much like stalks of corn in a field back in Nebraska or Kansas. I often wondered how the trees could have aligned themselves in such perfect order. I decided I would find out someday.

Some time later I was on an inspection trip to Meck and Eniwetak prior to the start of construction of the present island facilities. I can't remember the reason, but someone suggested we also have a look on the island across the channel from Meck. The island was called Kwadack and it was the island with the rows of palm trees I had noticed several times from the air.

While the inspection was made primarily to consider construction of a camera or tracking site, my interest was also to see the rows of palm trees. Covered with an almost impenetrable cover of heavy foliage, our inspection was largely confined to the beach areas. I noted several graded paths leading into the jungle and also what might have been a roadway. It was difficult to see many of the palm trees from the beach. To my knowledge no range facility was ever built on Kwadack.

I continued to wonder about the trees and began to ask some of my Marshallese friends what they knew of Kwadack island. The only information I was able to get was something about the use of the island during WW-2 for a very secret operation. One of my Ebeye friends told me his father had been prohibited from fishing in the area around Kwadack in 1945.

Several years later in a chance meeting at a reunion of WW-2 veterans, the subject about the use of Loran-A was the topic of discussion by some of the Kwajalein Army Air Corp veterans. I learned Loran-A had done much to save the lives of many Allied pilots. I told the group, yes, the Coast Guard still operated the Loran station on Ebeye. One veteran pilot was quick to inform me the Loran station during WW-2 was not on Ebeye but on an island further up the east reef. This new information started my quest for the story about Loran-A and how it all got stated in the Kwajalein area during WW-2. This story is the result of that quest.

In 1944 the Allied forces in the South Pacific were faced with the problem of finding a way to guide their aircraft to remote long range targets and to insure a system capable of providing a navigational highway back to the aircraft's home base. The great over ocean areas the aircraft had to fly did not have any landmarks to help the pilots find their way to the target or get them back to friendly airfields. Celestial navigation over the Pacific Ocean was not dependable owing to the sometimes extensive cloud cover. While compass or dead reckoning navigation could be used over land areas the margin of error was too great over the ocean areas owing to the high winds aloft.

In Europe and the eastern United States the military used the British a radio beam navigation system called GEE. While the GEE was very dependable, the limited range of the radio signals would not be adequate over the vast South Pacific ocean and the earth's curvature.

A new variation of the GEE system was developed at Massachusetts Institute of Technology in 1942-3. The new top secret system, call LORAN-A or Long Range Navigation, provided a pulsed triangulation transmission of radio signals up to a distance of 1000 miles. Tested and proven on the East Coast in 1942 for aircraft used in anti-submarine warfare, Loran-A transmitting stations were first built in the Hawaiian Islands and Alaska in early 1943.

With the rapid advancement of Allied Forces from New Guinea north toward the Philippines, Allied bombers began to find targets as far north as Saipan, Guam and Okinawa. With maximum fuel loads needed to cover the long distance flights, bomb loads had to be kept at a minimum. Navigation error to and from targets sometimes resulted in lost aircraft that had run out of fuel. Loran A was urgently needed.

To get the Loran signals the furthest west and north of the equator it was determined at least one of the transmitter stations would have to be be built in the northern Marshall Islands.

After the successful invasion and capture by the US military in late 1943 of Makin Atoll, and the later invasion of the Kwajalein and Majuro Atolls the problem of finding islands where a Loran A transmitter station could be built was solved.

Old timers on Kwajalein may remember the Loran station operated by the US Coast Guard on Ebeye that remained in operation until the mid 1970s, however few people realize Loran-A was first established in 1944 on Kwadack, the small island across the channel from Meck Island. The Loran-A at Kwadack would play an important part and would contribute significantly to the Allied success during WW-2 in the vast Pacific Ocean areas.

Kwadack, or Augustine Island as it was called in 1944, was used in the copra production by German traders back at the turn of the century. After the end of WW-1 and the Japanese takeover of most German interests, Kwadack reverted back to a typical sleepy little island that supported one or two Marshallese families.

The island, though very small at .038 of an acre, provided the minimal land mass needed to build a Loran transmitter station. Being located only 23 miles north from Kwajalein, Kwadack was chosen as the new Loran-A site. Another site was to be built on the island of Bikati in the Makin Atoll, and a master control station to be constructed on the island of Rogeron in the Majuro atoll. The triangulation and minimal distances between these three stations was ideal to broadcast clear Loran radio signals to most all northwest operations planned in the Allied offensive in the Pacific.

The Loran system was to guarantee a homing device that would get Allied aircraft back to Kwajalein and other military airfields safely. The project time table called for operation of the three Loran sites by mid-1944. While the other two stations started nearly on schedule, the transmitter station operation on Kwadack almost ended in failure!

Coast Guard survey crews started a layout of the first site at Bikati island in the Makin Atoll 20 November, 1943. The successful take over by the Army and Marines in February 1944 of the Majuro and Kwajalein Atolls allowed the Coast Guard to start surveys of Kwadack and Rogeron. Material for the new Loran sites was complete and on dock at Oakland California by April 30, 1944. A Coast Guard Construction Battalion needed to build the Loran sites departed Oakland on a troop ship that arrived in Majuro and Kwajalein by the end of June. The plan, after completing the survey work, was to start clearing of the island sites in anticipation of the construction materials and Loran technical gear that would arrive shortly from Oakland. The Coast Guard crew on Kwajalein waited and waited but the needed material to build the Kwadack site failed to arrive throughout July!

What the crews on Kwajalein didn't know was the Loran material had been shipped on three Navy cargo vessels that also carried much of the ammunition and other military gear needed for the June 15 invasion of Guam and Saipan. Most of the material for the Kwadack station left Oakland in mid June but owing to one of the cargo ship's engines breaking down the vessel had to return to Oakland. Some of the Kwadack material was loaded onto another ship and taken directly to Eniwetok for off-loading along with the high priority munitions cargo slated for the Guam/ Saipan operation. During the off loading at Eniwetok, the Loran gear was lost.

Realizing the urgency to get the Kwadack site built the Army and Navy groups on Kwajalein and Ebeye volunteered equipment and material to the Coast Guard to start building a base on Kwadack. Starting on July 11 nine Coast Guardsmen started clearing part of the island and laying out access roads to the lagoon beach. Having to start from scratch to build a small barracks, a mess hall, a galley, and a place to house the Loran radio gear was difficult. The operation was further hampered by occasional Japanese snipers shooting from nearby islands. On July 13 the Army on Kwajalein sent out 25 troopers to flush out the snipers and the Loran work resumed.

An urgent message was sent to the Naval Headquarters in Honolulu asking for help to locate the missing Loran radio equipment and the construction materials for Kwadack. The Coast Guard crew on Kwadack continued to work with their limited resources and wait.

By late July 1944 the Navy notified Kwajalein that some of the missing Loran gear was found at Eniwetok. Since all cargo ships were being used in support of invasion operations at Saipan and Guam, the Loran gear continued to sit on the dock at Eniwetok, only 340 mile northwest of Kwajalein. Somehow a group of small boats consisting of a lighter, a barge, and one LCT at Eniwetok were loaded with the first Loran materials.

The first boat arrived at Kwajalein August 1 but the cargo only consisted of several drums of gasoline, oil, and kerosene. None of the construction materials for the buildings or antennas were delivered. Again an urgent message went out to the Naval Headquarters, Honolulu asking for help. Another small boat load consisting of generators and parts arrived Kwajalein August 7 followed by one more boat load with the living facilities and Loran technical gear.

The Coast Guard crews went on a round the clock work schedule to erect the several 75 and 100 foot poles for the antennas while other technicians set up the Loran transmitting station. By September 1 the Loran ground systems were ready for test and operation. After tying into the other two transmitter sites at Majuro and Makin, the Kwadack Loran-A system went on line September 30, 1944 to support the much needed navigation systems in the Pacific Ocean area.

Many pilot veterans, Army and Navy, have told me how much they depended on Loran A to get them to the target and home again. These statements are a fitting testimony to honor the many organizations on Kwajalein that helped in the the building of the Kwadack Loran, but it is also a prime tribute to the men of the United States Coast Guard for their total dedication and hard work on this project.

Shortly after WW-2 another more permanent Loran station was built and operated on Ebeye. Loran-A continued to be used by aircraft until the early 1950s but it was eventually replaced by Tacan and later Inertial Guidance navigation systems. The newer Loran-C system, mainly operating for surface vessel navigation, continues to be used throughout the world today.

Kwadack has again reverted to just another sleepy island on the east reef of the Kwajalein Lagoon. I'm told many of the original palm trees have regrown.

References:

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AERIAL VIEW OF A TYPICAL PACIFIC LORAN STATION