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## **Satellite Tracking Near Japan 50 Years Ago**

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**Abstract.** *Starting in 1960, Jerry Wiant was a work/study student with the Physical Science Laboratory (PSL) at New Mexico State University, Las Cruces, New Mexico. PSL held a Navy contract to operate and maintain satellite tracking stations around the world and used slave (student) labor to fulfill the contract. In 1961 and 1962 Jerry tracked satellites in Anchorage, Alaska. In 1963 Jerry tracked satellites from Eniwetok Island, Canton Island, Marcus Island, and Iwo Jima Island.*

### **Marcus Island, Japan**

Marcus Island, a triangle one mile on each side, is 1000 miles south east of Tokyo, Japan.

### **Introduction**

In 1935, the Imperial Japanese Navy established the Japanese Meteorological Agency (JMA) weather station on Marcus Island. In the early 1960's, Japan and the United States agreed that, with the installation of a U. S. Coast Guard Loran-C station on that island, all JMA personnel would leave the island and the U. S. Weather Bureau would report weather. During the time that the satellite tracking crew was on Marcus Island, the crew watched as all of the JMA people left the island permanently. Soon afterwards, all of the structures in the JMA village were destroyed and removed; work buildings, shops, houses, and bath houses.

### **Our Effort**

The equipment van that was used was moved from island to island by people whom we never knew or saw. One of the support requirements for getting data at a particular site was that food and housing had to be available. By coincidence, the U. S. Coast Guard was building a new Loran-C station on Marcus Island. Therefore food and housing were available from the construction contractor.

The contractor had hired 150 prisoners from Japan and shipped them to Marcus Island to do the manual labor. The prisoners were as free as we were: Where would they go? There was no fresh water, not even to drink. Jerry maintained hydration by eating lots of tomatoes. The only way to experience a fresh-water shower was to stand outside in the rain. Naked. (There were no women on the island!) Unfortunately for Jerry, it only rained once. After soaping-up the rain stopped. After standing outside for 20 minutes waiting for more rain, Jerry gave up and rinsed in a salt-water shower. The rest of the crew had a good laugh!

## **Satellite Tracking**

The first geodetic satellite was ANNA-1B. Satellite tracking was accomplished by using tracking filters to "listen" to transmitters onboard the satellite. 300 MHz & 150 MHz and 400 MHz & 200 MHz were typical frequencies. Paired frequencies were used to deal with refraction. The moment of "closest approach" was determined by observing the "knee" of the Doppler shifted signal. Data consisted of the Doppler shifted signal and its time of day. Data was punched live as holes in paper tape. Then a teletype (TTY) machine would read the paper tape and transmit it via various links to Maryland, USA.

## **Iwo Jima Island, Japan**

Iwo Jima Island is 750 miles south of Tokyo, Japan. In 1963 it was a peaceful volcanic island belying the horrors that occurred during World War II. The black-cinder beaches were easy on the eyes, but blazing hot on the feet. Housing was in normal structures and if we drove to the U. S. Coast Guard facility we could swim in a fresh water swimming pool. We were able to investigate many of the tunnels. Artifacts were discovered every week

Jerry's full collection of notated photos while on Marcus and Iwo Jima Islands can be viewed and downloaded from:

<http://nexus.as.utexas.edu/laser>