

FIFTY YEARS AGO ...

Volume XXIII of the IH Review (published in 1946), reported on page 9, about a new navigational equipment which would be revolutionary for worldwide navigation. The description of this equipment was given as follows:

"LORAN - THE NEW RADIO NAVIGATOR

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U.S.H.O. "Pilot Chart" No. 1400, April 1946).

What Loran is and what it does - Loran is a system of position finding on the sea or in the air, by reception of radio signals from transmitting stations of known position. The name is a term derived by combining the first two letters of LOnge, the first two letters of RAnge and the first letter of Navigation. It was developed by the Radiation Laboratory of the Massachusetts Institute of Technology, the U.S. Coast Guard, and the U.S. Navy as a wartime radio aid to navigation. It is now no longer confidential and is available for the use of the maritime world. As its name implies, the system aims to furnish reliable positions to navigators at greater distances from the transmitting stations than is possible by other methods of radio navigation. Unlike radar, which uses very high frequencies of hundreds of millions of cycles, Loran operates on a frequency of about 2000 kilocycles. This is the region of the radio spectrum just above the commercial broadcast band. The extremely short waves of radar travel along nearly equivalent optical paths and are therefore limited in their range by the curvature of the earth. The longer waves of Loran, on the other hand, travel not only over the surface of the earth, but travel skyward and encounter the electrically ionized region of the upper atmosphere, which is called the ionosphere, and may be reflected back hundreds of miles from the sending antenna. This is what makes the long range of Loran possible. With present techniques, the limit of distance is about 1,400 nautical miles by night and about half of this by day."

The article was completed with a colourful report on tests of Loran carried out in the Southwest Pacific. Paragraphs of this report are reproduced below:

"Navigators' comments - A report from a Loran-equipped ship, a Coast Guard cutter is as follows:

The Loran equipment has been used regularly for the past 3 years and the results were most successful. On a trip from Adak to Dutch Harbor (14 Nov.-16 Nov.) the Loran fixes agreed almost exactly with DR positions and soundings. On the return trip to Adak (20-23 Nov.) the Loran fixes and DR were again extremely close with the exception of while this unit was in the area just west of Bogoslof Island and in the immediate vicinity of the base line extension. During each trip a sun or star sight was impossible.

On Saturday, 27 November, this unit departed Dutch Harbor for Attu. Loran positions were extremely accurate leaving Unalaska Island but poor visibility made it impossible to get accurate bearings from the islands. Throughout the morning the Loran observations were within 2 miles of our DR.

At 1141 the Loran position was 5 miles south of DR 8 miles south at 1202 and 10 miles south at 1238. A slight hunting had been noticed in the ship's gyro but comparison with the magnetic had not shown any serious error. An azimuth was not possible because of the typical Aleutian weather. At 1510 contact was made with the convoy and comparison with their position showed the Loran to be correct. It was the first indication of what later proved to be a serious gyro error, and the Loran equipment showed it immediately.

Loran positions showed that we were not making as much good as expected, a fact later confirmed. Upon crossing Bowers Bank the Loran fixes were within 1 mile and at 1827 the Loran fix of 53°52'N., 170°44'E. checked exactly with the estimated position obtained from a run of soundings while crossing Bowers Bank.

This unit is very satisfied because it has been most reliable. It was quick to show the error in the gyro; even quicker than by comparison with the magnetic compass.

Bad weather has made it impossible, except on rare occasions, to obtain sun sights so that an accurate comparison cannot be made. From experience, however, Loran is considered by this unit to be the outstanding single piece of equipment yet installed."