

LORAN BEING USED EXTENSIVELY IN SURVEY OF GULF STREAM.

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PREFACE

by : The Directing Committee of the I. H. B.

6th NOVEMBER, 1950 : The following article received from the Sperry Gyroscope Company, a Division of the Sperry Corporation, Great Neck, New York, U. S. A., is published as it is of undoubted interest to Oceanographers and Mariners the World over.

During the summer of 1949, six United States and Canadian research vessels, manned by more than 350 men, including 50 civilian scientists, engaged in "Operation Cabot", a survey of the Gulf Stream. Vessels engaged were the U. S. S. *San Pablo* and U. S. S. *Rehoboth*, former U. S. Navy seaplane tenders, now employed by the Hydrographic Office; the H. M. C. S. *New Liskeard*, operated by the Canadian Naval Research Establishment; the *Atlantis* and the *Caryn*, research vessels of the Woods Hole Oceanographic Institute; and the *Albatross III*, research vessel of the Fish and Wildlife Service of the Department of the Interior.

At such time as the data obtained has been evaluated it is hoped that further detailed information of the results obtained will be published in the *International Hydrographic Review*.

(Illustrate with Special Chart 28° - 33° cut off at 76° and blown up to maximum size for reproduction).

Chance observations made in the Gulf Stream more than a year ago by W. R. Griswold, captain of Sperry Gyroscope's laboratory vessel, M/V *Wanderer*, have led to a comprehensive survey of the Stream's characteristics. Sperry, in a recent report, reveals that seven companies operating tankers equipped with Loran are participating in a survey sponsored by the Hydrographic Office and Coast Geodetic Survey. It is expected that the survey will produce knowledge of the Stream heretofore impossible to obtain.

Sperry's initial interest in the use of Loran to study the Gulf Stream's current began aboard the *Wanderer* in April of 1949. Rounding the tip of Florida and heading North from a Gulf of Mexico demonstration cruise, Capt. Griswold used Loran to take frequent fixes and thereby sail in and out of the narrow stream of maximum current of the Stream and take note of its effect upon the vessel's speed.

This electronic navigation device, enabling frequent accurate fixes day-or-night within a matter of minutes, made it possible for the *Wanderer* to effect a saving of eight hours, time in a three-day run from Florida to a point off Cape Henry, Virginia. Not only did Capt. Griswold believe that this use of Loran as a time-saving tool in the Gulf Stream was unique in the annals of navigation; he also recognized that his data pertained to one voyage only, and therefore could not be conclusive.

However, his log did show that in certain areas where the *Wanderer* had been kept in the charted axis of the ocean current, the vessel's speed had increased from a normal cruising speed of 9.8 knots to 13.6. Officials at Sperry decided that further investigation of the possibility of a narrow high-velocity current was called for. Therefore, with the cooperation of the Esso Shipping Company, a Sperry Loran was installed aboard the tanker S. S. *Esso Concord* which regularly sails the Gulf Stream route. Following installation, Capt. Griswold made the first voyage with test results that bore out what had been observed previously on the *Wanderer*.

During the autumn of 1949 the U. S. Navy Hydrographic Office and the U. S. Coast and Geodetic Survey were informed of the observations being made. A plan was formulated by these agencies whereby data from Loran-equipped tankers sailing the coast is collected and sent to the agencies for evaluation. This "Tanker Survey of the Gulf Stream" is currently in progress. Sperry reports that in addition to Esso Shipping Company, the following tanker fleets have installed one or two Loran receivers for survey and evaluation purposes: The Texas Company, Sun Oil Company, Trinidad Corporation, Mathiasen's

Tanker Industries Inc., Atlantic Refining Company and Keystone Shipping Company.

At the end of each voyage every tanker in the survey turns in a log of Loran or other fixes, engine rpm, weather, state of sea, sea temperature, barometric pressure and standard dead-reckoning speed. All vessels participating use a specially prepared Coast and Geodetic chart 1002 and Hydrographic Office chart number 0943. These have overprinted sailing tracks, five northbound and three southbound. The tracks taken in rotation by any one vessel, range from one on the charted axis to others at selected distances on either side. The southbound tracks are for a study of countercurrents.

Aided by the frequent fixes obtainable with Loran, the survey is expected to reveal a wealth of data regarding the nature of the Gulf Stream, its variations and the strength of its current. Sperry is in hopes that predictions can be made as to where the greatest effect may be found by seasons. Officials believe that such information might easily save Loran-equipped vessels enough time to enable them to make at least one additional trip per year.

Capt. Griswold points out that the tanker survey will be concerned generally with the stream south of Cape Hatteras. To the east of Cape Hatteras considerable work with Loran in the Stream has been conducted by the Woods Hole Oceanographic Institute. Technicians at the Institute, by drifting and continuously recording Loran fixes, have detected currents up to 5 knots in strength and 3 to 5 miles in width. Logs indicate that there is a considerable shift of the axis in this area. Commercial operators would therefore have difficulty in establishing a route where they would benefit from a maximum current. However, they could easily determine when they were stemming such a current and quickly get out of it.

In any event, the surveys currently being employed in the Gulf Stream will undoubtedly be of interest to oceanographers and mariners the world over. They will certainly serve to resolve the many differences of opinion which have existed regarding the nature and effects of this warm ocean river.



Descriptive note for :
Chart - H. O. Misc 15209 A

Courtesy : U. S. A. Hydrographic Office.

This special chart prepared by the Hydrographic Office for the tanker survey of the Gulf Stream contains : five northbound and three southbound tracks for tankers to follow and log pertinent navigation data.

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