

SURVEY OF THE NORTH SEA

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Norges sjøkartverk (The Hydrographic Office of Norway) in 1962 raised the question of what could be done about a new survey of the North Sea. Simultaneously it had been stated by the North Sea Hydrographic Commission (an union of the hydrographers from the countries bordering the North Sea) that no nation had ever made a systematic survey of these waters. The depths shown on the existing charts were presumably gathered from various sources, men-of-war, merchantmen and fishermen.

In order to determine the reliability of the few scattered depths already shown on the charts *Sjøkartverket* presumed that Norwegian shipowners whose ships ply between Norway and English and continental ports could also help in providing depths to the existing charts. We got into touch with the shipowners Fred. Olsen & Co., Oslo, Det Bergenske Dampskibsselskab, Bergen, and Det Nordenfjeldske Dampskibsselskab, Trondheim, who were all willing to co-operate with the ships and means they had at their disposal in surveying the tracks of their liners crossing the North Sea.

The plan of this survey, outlined by the Norwegian Hydrographic Office, was that the liners in question should continuously register the depths by means of echo-sounders along their respective tracks on 3 to 4 rhumb-lines interspaced 2 to 3 nautical miles apart. The positions were to be fixed by the Decca Navigational system which — as is well known — covers almost all the North Sea area with a most accurate positioning system. On the first crossing by each ship a surveyor from the Hydrographic Office of Norway would be aboard the ship in order to instruct the ship's officers in practical surveying work.

The realisation of this plan would give us continuous profiles along a considerable number of tracks crossing the North Sea.

As most of the ships in question are more or less passenger ships, the shipowners made the reservation that the work should be done "off season" (not during the tourist season). As we also wanted the Decca observations to be as free as possible from statics and night effects it was decided that the work should preferably take place during the months of spring and fall.

As only a few of the ships in question have Decca-receivers, Decca Radar and Navigator A/S, Bergen, was willing to install a set of portable Decca-receivers by turns in those ships which were not fitted with permanent Decca receivers.

We started the work early in the Spring of 1963 as we then had the opportunity to send representatives on board the T/S *Leda* on a round trip Bergen - Stavanger - Newcastle - Bergen.

The echo-sounder was started off Feisten light about 10 nautical miles SW of Stavanger and kept going to Newcastle on a rhumb-line situated about 3 nautical miles south of the ship's ordinary track. Decca-positions were taken and plotted every ten minutes. As there is very poor coverage of the Decca-system off the W and SW coast of Norway, and the night effect also prevailed, the consistency of the positions was rather erratic in the beginning. Later, observations improved. From Newcastle the ship returned on a rhumb-line situated about 3 nautical miles to the north of the ship's ordinary track to Bergen.

This first trial turned out to be very successful, chiefly thanks to the great interest in the work shown by the captain of the *Leda*, as well as by the ship's deck officers.

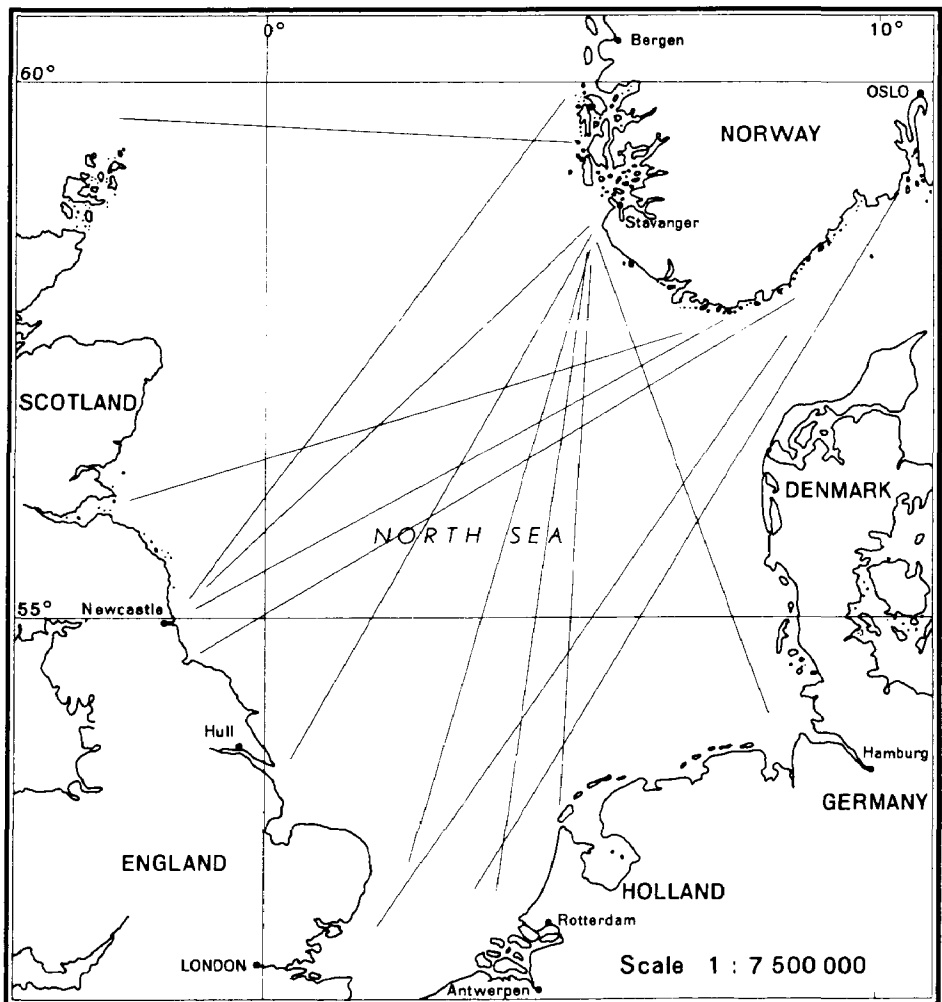


FIG. 1. — Sketch showing the tracks to be sounded by Norwegian liners.

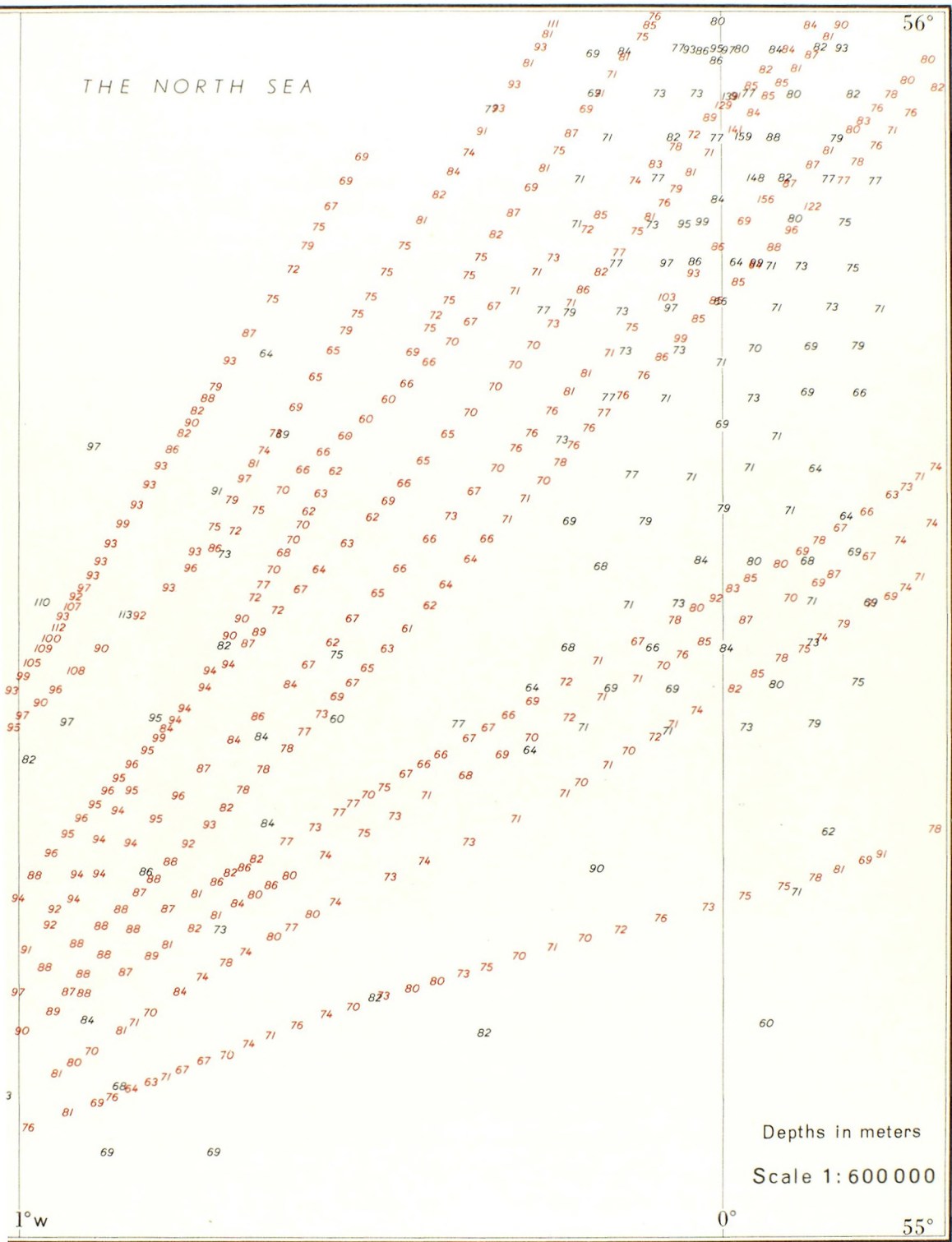


FIG. 2. — Part of the North Sea.
Black numbers indicate the existing soundings in the area,
red numbers soundings taken by the liners *Leda* and *Braemar*.

The ship's officers continued independently the depth recordings and decca observations during two more round-trips, running the ship's ordinary track and another rhumb-line 3 nautical miles removed from the tracks run on the first crossing.

In the autumn the work was continued. Sjøkartverket then got the opportunity to send a surveyor on board the M/S *Braemar* plying between Oslo and Newcastle. The weather was bad on this first trip, but still we obtained fairly good depth recordings. The captain and the deck-officers of the M/S *Braemar* were also most obliging. After the first trip, when the representative from the Hydrographic Office of Norway was on board, the ship's officers continued the observations on their own along 3 more rhumb-lines. When these runs were finished, the track between Kristiansand and Newcastle was covered by 4 lines of soundings about 2 nautical miles apart.

A crossing in the Skagerrak with a Norwegian naval ship also turned out successfully.



FIG. 3. — The Chief Officer of the *Astrea* with the Decca-receivers.

The next work of this character will be made in the months of March-May, 1964. The M/S *Astrea*, of the Bergenske Dampskibsselskab, will then continue the work by sounding lines between Stavanger and Rotterdam. Later on we shall continue with liners which have no permanent Decca-receivers on board. As mentioned earlier, the Hydrographic Office of Norway will install portable Decca-receivers on board these ships.

Up to now the deccometers have been read in intervals from 10 to 30 minutes. The positions are plotted on board on conventional Decca-charts in order to keep a precise dead reckoning on the planned tracks. The exact plottings, however, are made at the office of the Hydrographic Office of Norway on special plotting charts on a scale of 1/600 000. The echo-sounding registrations are corrected by the usual reductions to obtain the true depths below the chart datum.

The tracks we have covered so far show that the night effect can be considerable, especially when the ships are distant from the stations. By reading the deccometers with such short intervals as was done a certain adjustment may still produce profitable results. In any case we are obtaining more exact positions than we may presume were obtained to control the positions of the depths on the existing charts covering the North Sea.

The limited work we have done up to date in resurveying the North Sea is insufficient to make an estimate of the quality of the previous survey work in this area. The sea bottom between Newcastle and the SW coast of Norway, excluding the Norwegian Deep and the characteristic *holes* farther west in the sea, is rather level. There is, however, a good agreement between the existing charts and the new lines of soundings.

The Hydrographic Office of Norway is looking forward to the continuance of this enterprise in close co-operation with the shipowners, masters, and officers of Norwegian merchantmen. We are especially interested to see how it turns out with the liners which will be furnished with portable Decca-receivers.