

DECCA NAVIGATOR COVERAGE FOR THE PERSIAN GULF

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The Persian Gulf, an area of navigational hazards and one of the world's most frequented and concentrated shipping lanes, has recently been provided with an overall navigational aid by the construction of two chains of transmitting stations of the Decca Navigator system. The careful siting of these chains has enabled the whole Gulf and its immediate approaches to be covered by patterns of hyperbolic position lines with a large angle of cut between them, thus providing the navigator with position-fixing accuracies of a high order.

The northern chain (fig. 1) consists of a master and two slaves with the master near Bandar Dilam and the slaves at Khasrowabad and near Bushire. The southern chain master station has been built on the island of Das, with slaves on Shaikh Shu'aib, at Doha and Abu Dhabi, a model configuration with water-path base lines made possible by the conveniently central location of the island. Using frequencies similar to those of the English and South-West British chains, the system operates on a 24-hour basis in accordance with standard Decca practice in Europe and Canada.

The problems of navigation in the waters of the Persian Gulf are considerable, with shoaling, small islets, rocks and low-lying foreshores. Furthermore, the seasonal period of poor visibility during the summer often makes terrestrial or accurate astronomical navigation by conventional means very difficult and at times impossible. Although many marks such as lighthouses, lightships and buoys have been sited over the years to provide definite points of reference along the principal tracks, the coast-lines generally are not of a character that lend themselves to clear recognition by reference to a chart. The arrival of an all-weather aid to navigation therefore meets a definite requirement for the general shipping, which is often called upon to make for the many small oil terminals that are difficult to approach and that require deviation from the well-tried tracks through to the north.

Over five hundred tankers are fitting Decca receivers, to date, in addition to local vessels and oil exploration craft. With regard to the latter

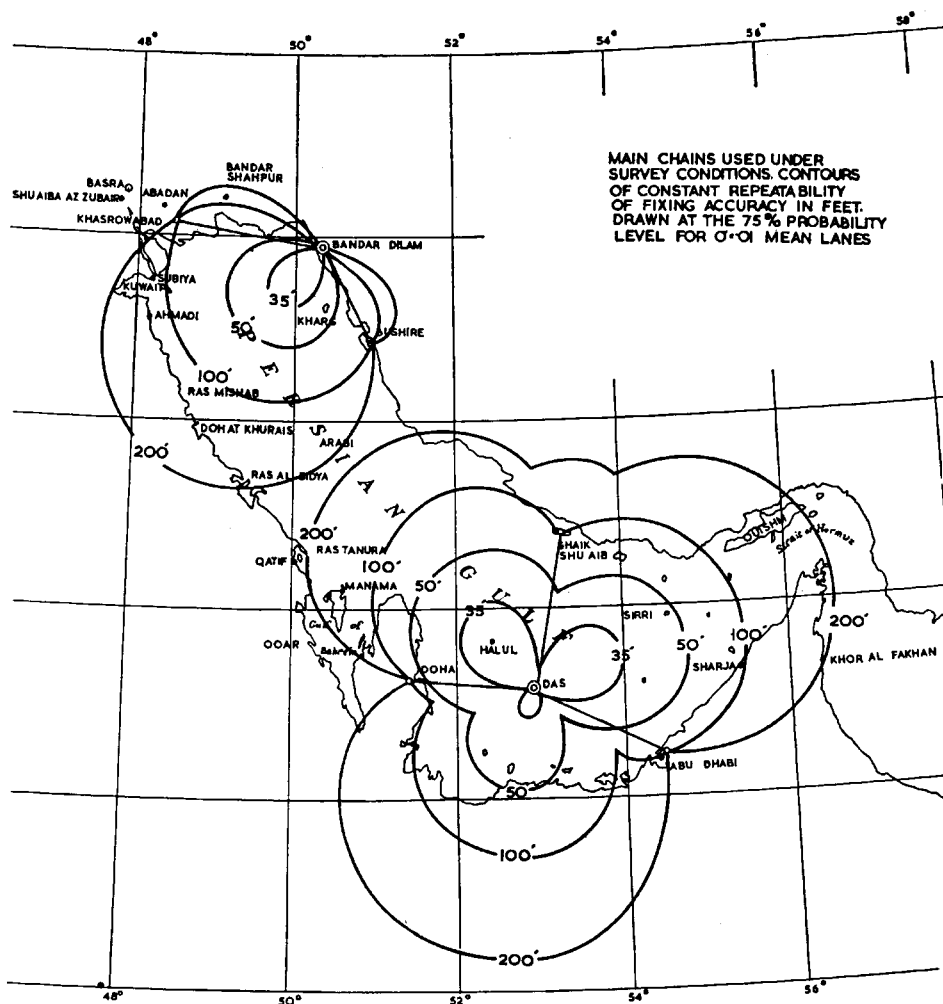


FIG. 1. — Decca Navigator coverage in the Persian Gulf showing daytime accuracy contours.

the new chains provide a continuous facility for their survey work, as opposed to the smaller portable survey chains which have been used intermittently for this type of work in the area for many years: the establishment of a permanent reference system, common to all users, represents an important advance in this field.

The surveying-in of the various remotely sited stations proved to be a task of considerable magnitude as the local surveys were not all on a common reference. In the case of the southern chain green slave station at Shaikh Shu'aib island, the local survey connected the Decca mast with a tower and tree which were later, after some difficulty in identifying the original tree, tied-in geographically by a survey carried out by H.M.S. *Dalrymple*. The ship used two-range Decca survey equipment with slaves at Doha and Zarqa. As soon as the station positions were accurately known, the Hydrographer of the Navy commenced a programme to publish latticed editions of charts within the area of coverage. This was rapidly fulfilled,

thus enabling shipping to take full advantage of the navigational facility offered.

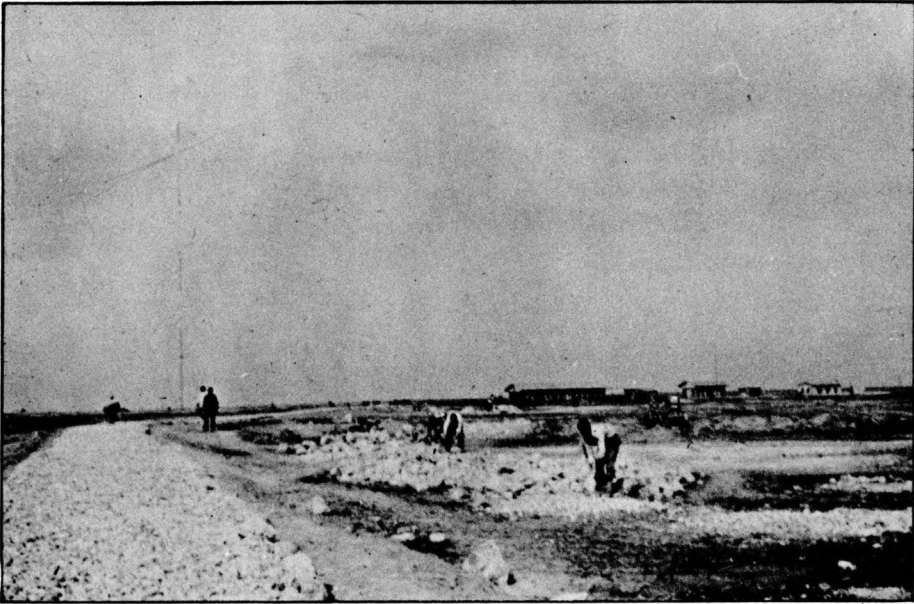


FIGURE 2

A typical station (fig. 2) consists of the transmitter housing, living accommodation, diesel generating building and, of course, the 300-foot lattice mast; the erection of the latter, with the necessary foundations and earthing mat, requires a high degree of skill. The actual construction of the seven stations under local conditions was a commendable achievement by the teams concerned, the very basic transportation and communication facilities presenting almost insoluble problems — aggravated by the trying climate, with temperatures up to 140° F intermingled with the seasonal torrential rains which in a few hours transformed the sun-baked sands into vehicle-holding mud. To minimise the site work the station buildings and equipment were carefully prefabricated to as great an extent as possible and this proved a well founded plan.

The chains have been installed by the Decca Navigator Company Limited on behalf of the Persian Gulf Lighting Service, as a service for all the main interests in the Gulf. With this development the most modern electronic techniques have been brought to bear upon the solution of navigational problems in this important area.