

## I.H.B. Special Publication No. 24 : GEOGRAPHICAL POSITIONS

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### I. — *Background*

The 1926 International Hydrographic Conference directed that the International Hydrographic Bureau should compile a catalogue of coastal geographical positions, as provided by the Statutes, for the benefit of hydrography and navigation.

States-Members were accordingly requested to supply the I.H.B. with the necessary data, and to limit such information to the principal points of interest for hydrographic charts, whose astronomical or geodetic positions had already been established, in order to show the positions used as bases for the construction of original charts.

As the information was received, the I.H.B. published as a Special Publication :

S. P. 24	.....	Fascicule I Part I	Mars 1929 April 1930	in French in English
S. P. 24 a	.....	Fascicule II Part II	February 1931	Bilingual

The information from each country, as published in these volumes, appears in the shape of two separate tables. The first contains the country's Astronomical Positions as observed, and the second the Geodetic Positions as adopted by the country sending them to the Bureau for publication.

The aim of the Special Publication is clearly set forth in the Prefaces to both the French edition (March 1929) and English edition (April 1930) of Part I.

During the Third International Hydrographic Conference (1932), the Committee on the Work of the Bureau expressed the opinion that Publication No. 24 should be suspended as being too costly as well as of questionable value; the President, however, pointed out in plenary session that the Statutes provided for the compilation of such a list, and the Committee's proposal was rejected.

The Fourth International Hydrographic Conference (1937), following a proposal by Great Britain, directed that the Publication should be continued, and recommended that the Bureau communicate with the International Union for Geodesy and the International Association of Astronomy to ensure that the positions of points of observation should always be connected with some conspicuous landmark indicated on the charts, in order that *cartographers* might make use of these geographical positions.

The Bureau consequently published :

S. P. 24 b	.....	Fascicule III Part III	July 1938	Bilingual
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During the Fifth International Hydrographic Conference (1947), it was directed that the Publication should be brought up to date, and the attention of each country was drawn to « the necessity of supplying such data as fundamental positions (e. g. of origin of trigonometrical net) on which positions depend, including the source of information in the spheroid used »

Making use of this new information, the I.H.B. in January 1951 published: S. P. 24 c. — Part IV (bilingual), combining all addenda prior to 1947 and containing all new geographical positions received up to and including 1950 ;

— Recapitulatory List of Errata to Part I (English and French editions), Parts II and III, (which replaces and cancels all previous Supplements and Errata);

— Recapitulative Table of Contents for Parts I, II, III and IV, considerably facilitating reference to the Publication.

At the present time, all the information received by the Bureau up to the end of 1951 has been published. No information has been received by the Bureau since that date.

## II. — *Analysis of Publication*

### (A) *Value of Contents*

In order that an accurate opinion might be formed as to the present value of Special Publication No. 24, and as to its possible improvement and maintenance up to date, a group of 270 large-scale charts in the Bureau's files were examined.

As a first step, a check was made to determine whether the geographical positions mentioned in the titles of the charts actually agreed with those listed in the Publication, and as this was found to be so in the majority of cases, a direct comparison could be made. Whenever geographical positions mentioned in the titles do not appear on the list, they usually consist of observed astronomical positions referring to insets showing detailed plans or anchorages in countries where hydrographic surveying is still in the undeveloped stage. In this connection, the Publication as it now stands could be supplemented by all the astronomical positions that have not yet been communicated to the Bureau by the countries concerned. However, this matter seems more closely related to improvements in the accuracy of the positions of islands and oceanic dangers, which is dealt with by the Bureau in another connection.

An attempt was then made to ascertain, whenever geographical positions were not expressly mentioned in the titles (such as in the case of certain recent editions of original charts), whether geographical positions listed in the Publication could be found on the charts, and whether the listed values could be compared with values obtained from the charts.

It was ascertained that in the case of a country with a network of geodetic co-ordinates, one or more geographical positions appearing in the list could almost always be found on the charts, and that according to the scale of the charts and date of publication, an idea could immediately be had as to the geographical positions used and an approximate check made (graphically) as to whether or not they corresponded to those listed. In such cases, availability of the original chart and the listed geographical positions enable any country to compile a chart with the most adequate geographical positions (provided the Publication is correct as of the latest information), which is the main goal of the Publication.

It was possible to check, for instance, that in the case of :

England, South coast .....	} At least one, and usually not more than one, point appears on each original large-scale chart of the coast involved, whose geographical position is listed in the Publication.
Netherlands coast .....	
U.S.A., coast of Maine ....	
Portugal .....	} In the Publication an unnecessarily large number of positions appears for each original large-scale chart.
Italy .....	
Uruguay .....	
Brazil .....	} The original charts consulted invariably showed geographical positions appearing in the Publication.
Argentina .....	
Chile .....	} Original charts rarely showed geographical positions appearing in the Publication. This is due to the fact that the original charts of these countries antedate the establishment of the present geodetic net, whose geographical positions have been forwarded to the Bureau. It is believed, however, that charts issued in the future by these countries will be based on the positions supplied.

Although this examination is incomplete, since it only involves a few scattered coastal areas, it may be concluded that Special Publication No. 24 at present retains considerable value.

It appears that countries forwarding geographical positions to the Bureau have usually supplied *at least one* geographical position used as a basis in constructing each chart, or that might be used as a basis in the compilation of charts by other countries, and that the values of such geographical positions were the most adequate and up to date available at the time their charts were being constructed. However, in a number of instances they are incomplete as regards the data specified in the Bureau's circular-letter of 1948 on the subject, as several countries did not render their geographical positions in the recommended form; moreover, particulars recommended for inclusion by the 1947 Conference are not listed with various positions transmitted previously.

Certain countries also appear to have lost sight of the aim of the Publication insofar as « the principal points of interest for hydrographic charts » are concerned. The ideal method would have been for each country to give :

(a) the astronomical positions used in obtaining the origins of the geodetic nets appearing on its charts;

(b) a number of coastal geodetic positions connected with the position of a conspicuous landmark, such that at least one appears on each largest-scale chart making up the chart coverage of a coast.

This method had been closely adhered to by a few Hydrographic Offices.

Other countries, however, were not in a position when providing the required data to achieve a similar degree of coherence, as they were then using several geodetic nets with varying origins, with no overall adjustment due to the fact that their hydrography was long-established. In the case of largely unexplored territories and colonial possessions, on the other hand, few coherent geodetic nets

exist. And such nets are even less apt to be connected with those of neighbouring countries.

### (B). — *Arrangement of Contents*

It must be admitted that in so far as the arrangement and distribution of material is concerned, the most rational and practical order has not been followed. This is due to the fact that since the required information was received from various countries over a considerable period, the Bureau was compelled to publish it in several volumes at varying dates. Information regarding a single country, therefore, does not appear in any one volume, but is scattered throughout several.

Under these conditions, reference must be made to two, three, or even four volumes in order to find the geographical positions of any one country, resulting in considerable delay; moreover, some position or group of positions may escape attention. In an attempt to meet this situation, a Recapitulatory Table of Contents was published in 1951. The remedy, however, is only a partial one.

### III. — *Conclusions.*

Conditions as described above may briefly be outlined as follows:

— Special Publication No. 24 contains information of unequal value, depending on whether the data forwarded to the Bureau do or do not agree with the standard form transmitted to the various States Members after 1947. This consideration takes on added significance at the present time, when various Offices may be required to compile radio-navigational charts based on several different original surveys, as knowledge of the factors used in computing geodetic positions may enable the compiler of the chart to evaluate the errors that will affect the chart under construction.

— The arrangement and distribution of data in the different volumes do not follow the most rational or practical pattern.

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Owing to the fact that the Sixth International Hydrographic Conference recommended that the Publication should be continued and completed, the following steps should be taken by the States Members and the I.H.B. when it is decided to revise the publication:

#### (1) *By the States Members:*

(a) Countries having geographical positions that do not appear in the Publication, either because they have recently been determined or have been omitted for some reason, should forward them to the Bureau. It should be pointed out in this connection that certain countries who have determined geographical positions which do not belong to any single adjusted net may hesitate to communicate them to the Bureau in the hope that they may be able to supply more adequate positions at some future time. In line with this particular attitude is the fact that co-ordination of certain world networks has now been or is being achieved, or is planned. Attention should be drawn to the fact that a great many years may elapse before a country

— may avail itself of coastal geographical positions belonging to an overall adjustment of nets;

— will have used new positions for its chart requirements.

(b) Each State Member (or country) should check its geographical positions as they appear in the Publication if it has not already done so, and should complete, if possible, the information so far supplied in accordance with the standard form transmitted by the Bureau. Particular mention should be made of the ellipsoid used, dates of observation, sources of information, description of points, etc. A check should of course be made as to whether the astronomical or geodetic positions are connected with points on land shown on the nautical charts.

(c) All countries should re-examine their lists and delete such astronomical or geodetic positions considered by them to be in excess of requirements.

Since the aim, as mentioned previously, is limitation of the Publication to geographical positions affecting nautical charts, astronomical positions should be restricted for the purposes of the list either to the *principal points* used as origins of geodetic nets, or, in the case of areas whose hydrography is as yet undeveloped, to those used for chart construction, in the absence of geodetic positions. All others should be eliminated, since they are of no use to cartographers in the Hydrographic Offices and merely complicate and increase the volume of the Publication.

Similarly, with regard to geodetic positions, it is neither necessary nor expedient that they exceed requirements. Only those positions used by each country as a basis for plotting its own chart should be listed, with the possible addition of a few others. For it may naturally be assumed by each country that positions serving no object in its own chart construction will hardly be utilized for a like purpose by other nations.

(2) *By the I.H.B. :*

The I.H.B. shall determine the most rational and practical form of presentation of Special Publication No. 24.

The method followed so far, consisting in the publication of the material as received in a series of volumes, was in the past the most feasible and no doubt the cheapest and simplest. It should however now be abandoned, as an increase in the number of volumes means a corresponding increase in the disadvantages already involved.

Moreover, it cannot be questioned that geographical positions will be affected by addenda and amendments for some years to come, even in the case of countries with complete and modern geodetic networks, if only in view of the progressive co-ordination of geodetic networks, which in Europe has already advanced considerably.

A method should therefore be used which would enable Special Publication No. 24 to :

— show the data for each country in a single list and according to a well-defined pattern ;

— be at the same time, however, sufficiently flexible so as to permit the inclusion of addenda and amendments, with no necessity for the printing of a new large volume, each time a country forwards new information.

One method that meets the above-mentioned requirements consists in publishing the list of geographical positions supplied by each country in a separate

volume. An exception to this rule might be made in the case of the smaller countries, and lists for two, three, or four of them combined in a single volume.

Additions, changes and corrections could then be made by means of separate Supplements, each of which would include amendments to a single volume, and would invariably recapitulate the previous Supplement.

All the data regarding the geographical positions supplied by a country would therefore be available upon referring to the volume bearing the name of the country and its final supplement, if any.

Whenever additions or changes to a country's list (especially in the case of countries at present largely unsurveyed) become large in number, or a country changes its data completely (as in the case of co-ordination of networks), a new edition of the appropriate volume could be made. Since this new edition would be limited to one volume containing the data forwarded by a single country, the expense would be a minor one and therefore fully justified.

Through the adoption of this method, the publishing of each new volume would involve the cancelling of the positions of the country concerned appearing in the present volumes. Upon the deletion of all the positions contained in any one volume, the latter would be cancelled. A period of a few years would therefore suffice for the elimination and replacement of the present volumes by new ones that could be kept up to date in a more flexible and logical manner.

Another possible system might consist in the publication of a loose-leaf volume, of the type used by many organizations in the U.S.A. Before such a system is adopted, however, it appears advisable to wait until the publication has achieved a marked degree of stability (until, for instance, the adoption by a large number of countries of the co-ordinates resulting from the co-ordination of networks covering large areas); the method would prove more convenient in the case of a small number of corrections, seldom causing any change in the number of pages in the publication, while various drawbacks would occur in the opposite case.

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