THIS CIRCULAR LETTER REQUIRES YOU TO VOTE

IHB File N° S3/1401

CIRCULAR LETTER 19/2000
8 May 2000

IHO TIDAL CONSTITUENT DATA BANK

Dear Sir,

In accordance with Decision No. 14 of the XIth (1977) International Hydrographic Conference, in 1977 the Canadian Hydrographic Service (CHS) started to set up a centralized world data bank for the storage and retrieval of tidal constituent data. The Data Bank was called the IHO Tidal Constituent Data Bank and was declared open in 1978.

Initially, use of the data was primarily made by IHO Member States, generally for scientific studies, with third party use being extremely limited. No strict conditions were associated with the release of the data.

Since the mid-80´s requests for commercial use have steadily increased. Most Member States objected to their data being freely released for commercial purposes and thus restrictions had to be imposed, whereby Member States had to agree explicitly to the release of their data in every case. Applying these restrictions rendered the release process very complicated and time-consuming for the CHS, Member States and clients, particularly when Member States had to insist on cost recovery. This happened at a time when the CHS had to downsize and it became very difficult for the CHS staff to devote sufficient time to the Data Bank´s management.

A detailed description of the development of the Data Bank and of issues related to its management and the release of data can be found at Annex D, where the report presented by Canada at the XIVth International Hydrographic Conference has been reproduced.

Taking into consideration the complicated release procedure, the management problems which the CHS is now facing and the development of communication technology during recent years, it seems that the centralized management and release of data by the CHS has become an unnecessary step in the process of serving clients. Consequently, the Data Bank has outlived much of its original purpose, i.e. to serve IHO Member States. A letter outlining Canada´s position can be found at Annex E.

It is therefore proposed to terminate the operation of the centralized IHO Tidal Constituent Data Bank and to replace it by a system of national databases. Member States should publish constituent data, which they want to make freely available, via their WEB site (see also CL 43/1999) or other suitable means,

as e.g. national tide tables. Basic information on data which are subject to release restrictions (e.g. station lists, procedures to be followed, prices) should be published in the same way.

Adoption of this proposal would entail the following :

- Cancellation of the IHO Special Publication No. 50 "IHO Tidal Constituent Bank – Station Catalogue"
- Adoption of modified Resolutions A 6.7 and A 6.8
- Cancellation of paragraphs 3 and 4 of Resolution K 1.7

It should be noted that the free exchange of tidal information and predictions between IHO Member States (cf. Resolutions A 6.1 and A 6.2; see Annex C) is not affected by this proposal.

Member States are kindly requested to fill in the attached voting form and return it to the Bureau **no later than 1 September 2000.** A simple majority of Member States [cf. Convention on the IHO, Article VI (5) and (6)], is required for this proposal to be adopted, i.e. 32 Member States voting in favour.

On behalf of the Directing Committee
Yours sincerely,

Rear Admiral Giuseppe ANGRISANO
President

Annex A: Voting Form
Annex B: Modified text of Resolutions A 6.7 and A 6.8
Annex C: Resolutions A 6.1 and 6.2
Annex D: Report by Canada
Annex E: Letter from Canada

VOTING FORM
(to be returned to the IHB, duly completed by 1 September 2000)

The Directing Committee
International Hydrographic Bureau
B.P. 445
MC 98011 Monaco CEDEX
Principality of Monaco
Telefax: +377 93 10 81 40
E-mail: info@ihb.mc

Country: _____

Date of reply: _____

IHO TIDAL CONSTITUENT DATA BANK

We agree that the IHO Tidal Constituent Data Bank should cease to operate and that the modified text of Resolutions A 6.7 and A 6.8 in Annex B of this CL should be adopted.

YES ☐

NO ☐

Comments: .....

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Signature : .....

Proposed modified Resolutions A 6.7 and A 6.8

A 6.7 **COLLECTION AND PUBLICATION OF TIDAL DATA**

1. It is recommended that Member States gather tidal data from as many locations as feasible and maintain sets of harmonic constants in National Tidal Constituent Data Banks.

2. It is recommended that Member States make public, using their WEB site or other suitable means, a list of locations included in their own Tidal Constituent Data Banks.

A 6.8 **NATIONAL TIDAL CONSTITUENT BANKS**

It is resolved that the National Tidal Constituent Banks should store the following information for each location:

- *i) Location identification by number, name, country, body of water, and geographic coordinates;*
- *ii) Source, date, time zone, and duration of data used in analysis;*
- *iii) Identification of geodetic levelling datum, and date of reference to this datum, elevation of mean sea level and, where applicable, the connection to and identification of the appropriate bench mark(s);*
- *iv) Listing of values for tidal constituents giving amplitudes in metres and Greenwich phaselags in degrees and designation of organization responsible for analysis.*

See also A 6.1, A 6.2

A 6.1 **EXCHANGE OF TIDAL INFORMATION**

1.- It is resolved that published tidal information shall be freely exchanged.

a) The exchange of tide and tidal current observations and predictions shall be made as far as possible in a form directly usable in electronic computers.

A 6.2 **ADVANCE SUPPLY OF TIDAL PREDICTIONS**

1.- It is resolved that advance copies of tidal predictions shall be supplied on request to those Member States who require them for inclusion in their own published tables.

2. It is strongly recommended that these advance copies be supplied in sufficient time to be in the hands of the publishing authority not later than twelve months before 1 January of the year of predictions.

3.- It is recommended that when tidal constituents or values of harmonic constants are changed from those used for tidal predictions for the previous year, an explanation of this change be also mentioned.

4.- It is recommended that tidal predictions supplied to other countries be in the form of the times and heights of high and low waters, unless these values are not normally predicted or are requested in another form.

CONF.14/O/06

REPORT ON THE IHO TIDAL CONSTITUENT DATA BASE
by Canada

1. BACKGROUND

1.1 Prior to 1978, the IHO stored and managed international tidal data on data sheets and the distribution of this information was carried out through IHO Special Publication No. 26. In the early 1970's, the IHO identified the need to have the storage and retrieval of these tidal harmonic constant values automated to facilitate the manipulation of the data.

1.2 In October 1974, through CL 27/1974, following discussions and enquiries by the Directing Committee, three agencies were approached and asked if they would be prepared to extend their existing tidal harmonic constants index to provide a world-wide service to the Member States of the IHO and other users. At that time, the Bureau felt that :"the offer made by Canada best meets the immediate requirement - a basic requirement of these arrangements is that the programs for storage and retrieval currently used by Canada would be retained and extended to cover the system".

1.3 Decision No. 14 of the XIth International Hydrographic Conference in 1977 on the collection and publication of the tidal data noted "that in compliance with Technical Resolution K 1.7 the IHB has concluded provisional arrangements with the Canadian Hydrographic Service for the establishment of a data bank for the storage and retrieval of tidal harmonic constant values on a world basis".

1.4 The initial computerized IHO data bank contained tidal harmonic constituent amplitudes and phaselags for more than 3500 stations and replaced the IHO Special Publication No. 26. The constituents sets that formed the basis of the bank came from the replaced SP-26, from IAPSO Publication Scientifique No. 30 and from a number of new sets of constants that had been received. Prior to commencing operation of the bank, all data entered were first verified by the Member States having data in the system. This was accomplished in 1977 and the IHO Tidal Constituent Data Bank was officially declared open in 1978. The bank continued to grow and, in January 1981, contained a total of 4191 stations. After this point, however, growth slowed significantly and, as of 1992, the number of stations had increased only to 4200.

1.5 In April 1979, a Station Catalogue of the Bank holdings was published. This Catalogue outlined procedures for the submission of new data for updates to the Bank as well as those for requesting station information from the Bank and the different media in which data could be forwarded to requestors. A total of 3 updates to this 1979 Catalogue have been published, with the current one appearing in November 1990. Appendix A illustrates a typical page of station information contained within the Catalogue and Appendix B is a copy of the request form which is used to request data from the Bank. Many Member States have recently taken the initiative to review the status of the tidal constituents maintained in the Bank and provided updates to this information. A new Station Catalogue is expected to be submitted to the IHO for publication in 1992, based on these updates.

2. DATABASE STRUCTURE

2.1 As for 1 April 1992, the archive consists of tidal constituents for over 4200 locations around the world maintained in an Indexed Sequential file, of approximately 7.5 megabytes in size, on a VAX-6320 computer. This information is maintained in a continuously updated mode upon the submission of new or updated tidal constituents from the IHO Member States. Specialized software to update and generate products was developed to operate this database. Capabilities to search the database by Station Identification, Country Code (CC) or Sea Code (SC) (see Appendix A) are available, as well as capabilities to generate constituent information in hardcopy, magnetic tape, diskette and other media. Recently, a provision to set an availability code to each station has been included to reflect the Member Country's preference whether to restrict or not the distribution of the constituent data.

3. SIGNIFICANT ISSUES RELATED TO USE OF DATABASE

3.1 Two significant issues have emerged with regard to the use of this database and involve:

(a) commercial exploitation of the data i.e. private entrepreneurs developing tidal and navigation packages for resale (3.1.1).

(b) static nature of the Bank with respect to new/revised data input.

3.1.1 Commercial Exploitation

i) Initially, use of the tidal constituent data bank was primarily made by IHO Member States. Third party use, i.e. non-Member States or private individuals, was very limited and frequently involved only a few stations. The data for third party requests was generally used for purposes related to engineering projects, research and exploration activities. In 1985 however, a request was submitted for tidal data where the data was eventually to be used for commercial resale. This caused two main concerns amongst IHO Member States:

(a) Tide Table sales might ultimately be affected if private publishers were making alternative sets of predictions available.

(b) The Mariner's safety could be jeopardized since no effective control could be exercised over the methods by which these individuals chose to derive the predictions being sold.

ii) To control the use of the Tidal Data Bank, two actions were agreed upon:

(a) requests would continue to be passed via the Bureau to ensure that adequate control was maintained over proprietary rights.

(b) the following note would be included on all distributed data prohibiting commercial exploitation:

"The Tidal Constants contained on this sheet (on this mag tape, etc.) constitute the original data of a Member State of the IHO. Reproduction of these data in whole or in part for commercial release, or for the use of these data to produce tidal predictions for commercial sale is strictly prohibited. Reproduction of these data for non-commercial use is authorized only by permission obtained in writing from the IHB".

iii) IHO Information Paper No. 4 published in February, 1986, also made clear to those submitting a request for data that limitation existed:

*"The contents of the Bank **remain the property of the Donating Authorities** and may be subject to certain limitations imposed by them upon its unlimited supply to third parties (i.e. non-Member States), in particular where the intended recipient proposes to use the data for commercial purposes such as the sale of tidal predictions based on the data. Requests should therefore state clearly the intended use of the data and **may be referred to the owning authority to obtain permission for its release**".*

This message, which constituted the 7th paragraph of IHO Information Paper No. 4 of February 1986, is clearly displayed in the IHO Tidal Constituent Bank Station Catalogue.

iv) By 1988 it had become evident, however, that further measures were necessary to control the commercial exploitation of the IHO tidal data. Three trends had been developing with regard to "third party requests":

(a) There was a dramatic increase in the number of individuals who were developing PC-based tidal prediction packages for sale to the public and requesting data from the Bank for use in their software packages.

(b) Requests for data which were originally submitted under the guise of "scientific pursuits" had often ultimately turned out to have some commercial aspect element to them.

(c) Cost-recovery had become a keynote to the operation of many of the Hydrographic Offices of Member States. The Member States wanted to be in a position to sell their product/data or to obtain royalties from commercial utilization of this data if they judged a third-party project to be sound.

v) Member States felt that they should have a greater degree of control in dealing with these third party requests. Prior to giving permission, each Member State wanted to establish that a so-called scientific pursuit was indeed that and was not a guise designed to obtain data that could end up being a commercial product. They wanted to be assured that any prediction package containing their constituents was reliable and factual. Many wanted financial compensation for the constituents themselves and for any potential royalties. As a result of these concerns, the IHO, through CL 49/1989, proposed a series of amendments to the policy of managing the Tidal Data Bank.

vi) The <u>latest amendments to the data bank</u> were detailed in CL 56/1989 and are as follows:-

(a) CHS will manage an IHO Tidal Constituent Data Base on behalf of all Member States. The data will be identified, with reference to each station, by the Donating Authority as:

either:

(i) data which may be released, free of charge for all purposes, whether hydrographic, scientific or commercial, **without reference to the Donating Authority**:

or:

(ii) Data which may be released freely to Member States' Hydrographic Offices but for which applications for use by all others, either for scientific or commercial purposes, **must be referred to the Donating Authority**. In this case, the Donating Authority will decide whether or not to release the data and may either authorize CHS to issue the data and under what terms or conditions they may release the data themselves. **Financial terms may only**

be established by the Donating Authority, which will organize the terms themselves, directly with the requesting organization.

(b) Data for commercial purposes either in Category (i) or (ii) above, in addition to whatever terms may be established by the Hydrographic Office and/or Donating Authority, will only be distributed on certain specified conditions that the applicant agrees in writing to observe the following:

(i) The product must clearly state that the information being presented is not meant to replace authorized navigation but rather as a supplement. The product should not be similar or identical to any product already produced by the Donating Authority.

(ii) The IHO and individual IHO Member States, including the donating agency, are in no way liable in the event of accidents resulting from the product. This must be clearly identified on the product.

(iii) The source of the data, i.e. the Donating Authority, must be clearly identified on the product.

(iv) The original data, in the form of constituents, cannot be altered without express permission of the Donating Authority.

(v) A sample of the product must be provided to the CHS and/or to the IHB and to the Donating Authority prior to being offered for sale, to ensure the imposed conditions are honoured.

These conditions are included in IHO Information Paper No. 4 - October 1990.

In order to examine the problem stated in 3.1.1 (b) a Working Group was established in 1990 and has subsequently developed a number of specific recommendations for the release of tidal data to commercial organizations. The findings of the Working Group will be presented at the XIVth I.H. Conference (see CONF.14/O/04).

3.1.2 **Problems Arising from this latest Agreement:**

(1) Referrals-Volume

All third party requests, whether for scientific purposes or otherwise, are to be directed to Member States responsible for collecting the original data. Such a procedure is reasonable for requests wherein a minimal number of "Donating Authorities" are involved, i.e. 4 or 5. Frequently, however, requests are received where the user wants significantly large quantities of data involving many countries; **often the entire data bank is requested**. Referring the original request to a number of Member States is very time consuming and constitutes an administrative task which the CHS and/or IHO is finding almost impossible to perform.
Proposed Solution:

The IHO Tidal Constituent Bank - Station Catalogue is due to be updated this year (1992) and the CHS would include, as an appendix, a list of all addresses of Member State Hydrographic Offices. Third Party users could then contact each Member State directly, thereby eliminating time consuming referrals from IHO/CHS.

(2) Restrictive Nature of Present Configuration:

The present configuration prohibits the distribution of data to any third party user without the consent of the Donating Authority. This is restrictive in view of the fact that many countries freely publish limited sets of constituents in their Tide Tables. This policy almost defeats the purpose of the Bank other than the fact that it serves Member States. Australia has recently indicated that they wish to submit to the Bank a limited set of constituents for all of their stations contained in the Bank. While these sets are limited they are to be given out freely to anyone requesting the data. Such limited sets would probably satisfy many users, and if CHS could provide such data freely, it would save the third-party users the "run-around" of referrals.

Proposed Solution:

CHS would create a two-tier data bank where the first layer would hold the limited sets that could be freely distributed and the second layer would contain the restricted constituents. This would render the database far more accessible to those requiring only limited information, while at the same allowing Member States to control the ultimate distribution of their restricted data.

3.1.2 **Static Nature of the Bank**

Updates to the Bank have become a critical issue. While the bank grew at a steady rate in the early stages, input from the Member States declined dramatically towards 1990. It is recognized that the success of the Bank in meeting the needs of users depends upon keeping its holdings accurate and up-to-date, a process requiring the cooperation of tidal agencies and investigators around the world. A recent solicitation on the part of IHO resulted in substantial input from the various Member States. These solicitations must continue on a regular basis if the Bank is to provide timely and factual data.

Proposal Solution:

Canada in co-operation with IHO, will undertake to solicit new/revised data from each Member State on an annual basis thereby ensuring the latest data are available for use.

4. CONCLUSION

Canada will undertake to meet the needs of as many IHO Tidal Database users as possible, to the greatest extent possible. This will not only include providing accurate, up to date information to clients through a streamlined service system, but also cooperating with Member States to ensure that the most satisfactory approach is taken with regard to management and distribution of their data. Flexibility will be a keynote to the successful future operation of this database - flexibility to deal with Member States which are in the initial stages of software development or the ability to deal with those at the other end of the spectrum who would prefer, for example, a networking arrangement.

March 1, 2000

CHS/6150-3/00

Rear Admiral Giuseppe Angrisano
President of the Directing Committee
International Hydrographic Bureau
4, Quai Antoine 1er
B.P. 445
MC 98011 MONACO CEDEX

RE: IHO Tidal Constituent Data Bank

Dear Admiral Angrisano:

The Canadian Hydrographic Service (CHS) offers the following position as it relates to the IHO Tidal Constituent Bank.

Background

In 1977, the IHB concluded provisional arrangements with the Canadian Hydrographic Service for the establishment of a centralized world data bank for the storage and retrieval of tidal harmonic constant values. The Bureau felt, at that time, that Canada had the best data management system with which to accomplish this project. In 1978, after all data was entered by CHS and subsequently verified by IHO Member States, the IHO Tidal Constituent Data Bank was officially declared open. Initially, use of the tidal constituent data was primarily made by IHO Member States, generally for scientific studies, with third party use being extremely limited. There were no strict conditions associated with the release of the data and requests were filled in a routine manner. Updates to the bank were continually being made during the bank's early years. Since the mid-1980's however, various issues have emerged relative to the operation of the bank and these issues have significantly put into question the benefits of the bank and of CHS continuing its management role. Some of these issues include:

a) Restrictions on the Release of Data

Since approximately 1985, requests for the commercial use of IHO tidal constituents have steadily increased in number. Most of these commercially oriented requests involved the use of IHO constituents in prediction software packages, for ultimate sale to the public. Understandably, most Member States objected to their data being freely released and distributed worldwide and subsequently, restrictions were imposed. CHS could not release any data for commercial purposes until first getting the authorization of respective Member States. Frequently, these requests involved many countries and the whole process became very time consuming and complicated for CHS, for the clients and for Member States. Some countries insisted on cost recovery, which added an additional element of complexity.

The requirement for increased resources to deal with these restrictions came at a time when the CHS was in a downsizing exercise. It therefore became difficult for CHS staff to devote sufficient time to the bank's management.

b) Updates to the IHO Tidal Constituent Data Bank

Updates to the bank have been steadily declining, especially during the 1990's and this has been a great concern for CHS. In many cases, clients have essentially been provided with out-of-date information. Much of the data that is held in the bank has been superseded by newer versions, which have not been passed on to CHS. This hesitancy may be related to the Member States' desires to exert absolute control over the distribution of the data as well as to diminishing resources in handling information transactions.

c) Technological Developments

Technological developments have enabled an overwhelming increase in the speed and efficiency of communication. The advent of the Internet, in particular, allows the rapid transfer of data worldwide. Where requests for IHO Tidal Constituents were once filled using a complicated retrieval system and magnetic tapes, data files can now be transferred quickly, efficiently and cheaply over the Internet.

CHS Recommendation

It is clearly evident and understandable that IHO Member States want to maintain a firm control over the commercial use of their constituent data. All commercially oriented requests are now referred to them. They possess the most up-to-date data available and are in a position, using new technology, to provide fast and efficient service to the client, at a very economical price. It would seem that CHS has become an unnecessary step in the process of serving clients and that the IHO Tidal Constituent Data Bank has essentially outlived much of its original purpose. We would suggest therefore that the IHO examine this primary question before simply focusing on reviewing data revision issues. "Do IHO Member States feel that the benefits of the Tidal Constituent Data Bank are sufficient to continue its operation?" The position of the CHS is that they are not.

We look forward to learning the views of other Member States.

Yours sincerely,

A.D. O'Connor
Dominion Hydrographer
Canadian Hydrographic Service