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THE CASE FOR AN INTERNATIONAL LARGE- AND MEDIUM-SCALE NAUTICAL CHART SERIES IN EAST ASIA

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SUMMARY

One of the most significant decisions resulting from the XIIth International Hydrographic Conference, held in Monaco in April, 1982, was the adoption of the Chart Specifications of the International Hydrographic Organization (IHO). The Specifications are important in that they provide the foundation for the IHO series of International Charts (INT Charts) to progress beyond the INT Charts at small scale (1:3 1/2 million to 1:10 million), to large- and medium-scale INT Charts that cover major ports, approaches and coastal routes.

The paramount features that make the concept of INT Charts attractive may be summarized as : (1) users can benefit by possessing charts sooner for any region with standardized symbols, sheet format, and bilingual terminology; and (2) hydrographic agencies can reproduce charts more quickly and with more up-to-date information instead of consuming considerable time and funds in recompiling charts to fit older national standards. For the East Asian Basin, the implementation of an international series of large- and medium-scale nautical charts is particularly important in view of the growing importance of export trade on which much of the region's economic vitality depends. From Indonesia in the south to Korea, Japan, and the Union of Soviet Socialist Republics in the north, the list of ports that are used by ships of many nations is impressive. These ports should be targeted for INT charting while the coastal series schemes are being developed and coordinated. The

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participation of each Member State of the East Asian Hydrographic Commission (EAHC) as well as other national hydrographic offices in the region is highly desirable in order to develop optimum chart schemes.

Considering the history of energetically-pursued cooperative projects by the hydrographic offices of East Asia in surveying, charting and safety of navigation measures, the prospects appear favorable for the national hydrographic offices of the region to undertake the development of an International Large- and Medium-Scale Chart Series for the East Asian Basin in the near future.

INTRODUCTION

One of the most significant decisions resulting from the XIIth International Hydrographic Conference, held in Monaco in April, 1982, was the adoption of the Chart Specifications of the International Hydrographic Organization (IHO)[1]. Also reaffirmed was IHO Technical Resolution K2.11 which addresses the need to adapt and extend the International (INT) Chart Specifications to cover all navigational charts in the interests of standardization. The Specifications are the product of ten years of coordinated effort among twenty of the fifty IHO Member States to establish standards for the compilation of large- and medium-scale nautical charts[2]. The Specifications are important in that they provide the foundation for the IHO series of International Charts (INT Charts) to progress beyond the small scale (1:3 1/2 million to 1:10 million) INT Charts, specifications for which were completed in the 1970's. The ultimate result will be large- and medium-scale charts that cover major ports, approaches, and coastal routes and that reflect standardized symbols and format and bilingual terms. Such specifications are timely, especially in light of the trend in international shipping toward "tramp trade", with increasing numbers of ships with variable operating schedules and with greater potential for encountering problems in the acquisition and correction of large- and medium-scale charts.

BACKGROUND

Implementation of the specifications has already begun in the national chart programs of Denmark, France, Netherlands, Sweden, and the United Kingdom[3].

(1) Decision No. 23 of the XIIth International Hydrographic Conference, "Adoption of the Chart Specifications of the IHO".

(2) The Chart Specifications of the IHO comprise six sections of comprehensive standards for the compilation of large- and medium-scale nautical charts. The sections are as follows: Section 100, General Information; Section 200, Format, Positions, Compasses; Section 300, Topographic Symbology; Section 400, Hydrographic and Navigational Aids Symbology; Section 500, Names, Lettering, Numerals; and Section 600, Latticed Versions. The IHO Regulations for International (INT) Charts provide guidelines for the production, maintenance and copying of INT Charts. The Specifications and Regulations form the basic reference documents for international large- and medium-scale charting.

(3) Report on the Work of the Chart Specifications Committee. D. W. Newson, XIIth International Hydrographic Conference (CONF. XII/DOC 19/1982).

The National Ocean Survey and the Defense Mapping Agency of the United States will incorporate, as feasible, these specifications when INT Charts in the large- and medium-scale range are produced or reproduced. The paramount features that make the concept of INT Charts attractive may be summarized as : (1) users can benefit by possessing charts sooner for any region with standard symbols, sheet format, and bilingual terminology; and (2) hydrographic agencies can reproduce charts more quickly and with more up-to-date information instead of consuming considerable time and funds in recompiling charts that conform to older national standards.

In a related decision, the XIIth International Hydrographic Conference resolved that the development of large- and medium-scale international chart schemes should be the responsibility of regional commissions or geographic groups, whose members would be most knowledgeable of the charting requirements for the area[4]. At the present time, there are five regional hydrographic commissions[5] which function under the guidelines of the IHO Technical Resolution T1.2[6]. The East Asia Hydrographic Commission (EAHC) is charged with the responsibility for coordinating the activities of common interest to member hydrographic offices in one of the most expansive and heavily-trafficked ocean regions of the world.

The small-scale series of INT Charts for the East Asian Basin is nearly completed[7]. The series, produced by Japan at scales of 1:3,500,000 (six charts completed) and 1:10,000,000 (one chart completed), has been well received by other hydrographic offices that have reproduced these charts[8]. Yet, the most challenging and potentially profitable stage of international charting remains to be accomplished; namely, the production of medium- and large-scale international charts. For these charts, the participation of each Member State of the EAHC, as well as other national hydrographic offices in the region, is highly desirable in order to develop optimum chart schemes. The production of an international large- and medium-scale series would, in contrast to the small-scale series, more directly benefit the regionally-oriented or smaller hydrographic offices in East Asia. For instance, the responsibility for the production of nautical charts covering ports, approaches, and coastal and offshore routes that are located beyond the national waters of a

(4) Decision No. 26 of the XIIth International Hydrographic Conference : "Regional Chart Commissions".

(5) Regional hydrographic commissions functioning under the auspices of the IHO include the *Northern Hydrographic Group* (Denmark, Finland, Iceland, Norway, and Sweden); *North Sea Hydrographic Commission* (Denmark, France, Federal Republic of Germany, Netherlands, Norway, Sweden, and United Kingdom); *Mediterranean and Black Seas Hydrographic Commission* (Egypt, France, Greece, Italy, Monaco, Spain, Syria, Turkey, U.S.S.R. and Yugoslavia); *United States-Canada Hydrographic Commission*; and *East Asia Hydrographic Commission* (Indonesia, Japan, Korea, Malaysia, Philippines, and Thailand).

(6) IHO Technical Resolution T1.2, "Establishment of Regional Hydrographic Commissions", provides guidelines for the establishment and function of regional hydrographic commissions.

(7) In the small-scale series of INT Charts covering the East Asian Basin, only INT 52, North Pacific Ocean, Southwestern Part (1:10 million) and INT 507, North Pacific Ocean, South Philippine Sea and Borneo to the Caroline Islands (1:3 1/2 million) remain unpublished.

(8) India and the United Kingdom are responsible for the production of small-scale INT Charts of the Indian Ocean Basin which overlap into the western portions of the East Asian Basin.

hydrographic office can, in effect, be shared through the cooperative exchange of chart reproduction material (repromat). Also, agreements can be fashioned where the production of charts covering a Member State's own waters is shared by participating states in the region, as in the case of Japan's contributions to the hydrographic survey of the waters of Indonesia, Malaysia, and Singapore during the early 1970's.

THE ADVANTAGES OF REGIONAL COOPERATION IN CHARTING

The Hydrographic Offices of Indonesia and Japan, by contributing to the work of the IHO Chart Specifications Committee – now the Chart Standardization Committee – are aware of the advantages to be gained by cooperation in large- and medium-scale charting [9]. In fact, at the first meeting of the Chart Standardization Committee (CSC) in April 1979, a recommendation was adopted stating that "the International Hydrographic Bureau (IHB) encourage the Member States to form regional charting groups to devise schemes of international medium- and large-scale charts". At the same meeting a report was tabled on the production of Common Datum Charts of the Straits of Malacca and Singapore. The report reviewed the progress made by a joint team from the Hydrographic Offices of Indonesia, Japan, Malaysia, and Singapore in compiling three charts, based on the World Geodetic System 1972 (WGS 72), which would be used as master sheets in the production of each office's nautical charts of the area. In this way, past discrepancies in position-fixing attributable to the different geodetic datums covering opposite sides of the straits could be eliminated. This effort, undertaken by Malacca and Singapore Strait nations with Japan's assistance, reveals, in the best sense, what is to be gained from regional cooperation in the production of large- and medium-scale charts.

International chart schemes make a significant impact by reducing the total number of charts issued by various hydrographic offices which, when added together, are normally far more than are required to cover a specific ocean region. The exchange of repromat permits the facsimile reproduction of one nation's domestic chart series and eliminates the need for any other cooperating nation to compile separate and usually differently schemed charts for the same waters. It should be noted that without International Charts or bilateral agreements, IHO Member States cannot reproduce each other's charts, partly because of copyright laws. The other alternative is to recompile the charts for issue. It has been the latter process which has maintained different formats and symbols and, in general, retarded "internationalizing" charts.

The basic purpose of international charts is to serve as a tool in promoting the safety of navigation for international shipping. Inasmuch as this type of shipping is

(9) Decision No. 24 of the XIIth International Hydrographic Conference approved the renaming of the Chart Specifications Committee as the Chart Standardization Committee in order to more adequately reflect the advisory role the committee will have in updating chart specifications, coordinating the work of regional chart commissions, and guiding the Subcommittee on Chart Design.

confined to well-established routes leading to ports with extensive international traffic, there is less need to chart foreign waters as intensively as do the indigenous national hydrographic offices, notwithstanding the requirement for foreign coverage equivalent to their own national charts that some authorities insist upon to prevent pollution spills and other accidents.

The experience of the first IHO international chart specifications committee in the early 1970's, the North Sea International Chart Commission (NSICC)[10], in scheming charts for the coasts of the North Sea Basin, was that the best coastal series for use in a scheme of INT Charts was, generally, the second largest scale continuous national series. In the case of the north side of the English Channel, a new INT Chart series at a scale of 1:150,000 was agreed upon in place of the British 1:75,000 sheets because the 1:150,000 scale was considered to be adequate and would, moreover, match the French and German coastal coverage on that side of the Channel. The decision contributed to a significant reduction in the number of charts schemed. In the most recent review by the Defense Mapping Agency of its coverage, it was determined that within the East Asian Basin the number of published coastal charts could be reduced by nearly 30 percent (from 365 charts to 265 charts).

The availability of INT Charts, compiled to conform with internationally accepted symbols and abbreviations and issued under agreed-upon INT Chart distribution and sales rules, promotes wider circulation and quicker access to the best available charts. Based on the producer nation's efforts, other printer nations do not have to be concerned about interpreting complex navigational aid symbols and characteristics or special navigational conditions provided in notes. Facsimile reproductions, modified as little as possible, provide the most accurate charts; furthermore, they are readily corrected by Notice to Mariners patches issued by the producer and easily reproduced.

Printer (copying) nations have the flexibility of modifying the original producer nation's charts to suit the style or language of the printer nation. Addition of chart numbers and alteration of titles to conform with national requirements is often done by printer nations who issue small-scale INT Charts. INT Chart numbers, however, are also retained on these charts in accordance with a worldwide numbering system for the two series. Similarly, medium- and large-scale charts will reflect both international numbers and numbers determined by issuing authorities.

Substantial savings should be realized in the shared production of charts covering foreign waters. The printer nation, in accordance with the IHO Regulations for INT Charts, incurs no greater than one-third of the producer's compilation and printing cost, plus the cost of repromat and shipping. Each nation, whether producer or printer, accepts responsibility for issuing Notice to Mariners corrections to maintain up-to-date international charts in its national series. The described method of funding chart production may result eventually in major budget

(10) The North Sea International Chart Commission (NSICC) was a special commission, constituted in 1972 under the auspices of the IHO, to consider the production and use of INT Charts covering the North Sea and its contiguous waters. Its work completed, the Commission was dissolved and replaced by the Chart Specifications Committee in 1977.

allocation changes as more chart repromat is procured from producer nations and fewer charts are compiled conventionally by printer nations.

SOME FACTORS FOR CONSIDERATION

For the East Asian Basin, the implementation of an international series of large- and medium-scale nautical charts is particularly important in view of the growing importance of export trade on which much of the region's economic vitality depends. From Indonesia in the south to Korea, Japan, and the Union of Soviet Socialist Republics in the north, the list of ports that are used by ships of many nations is impressive. These ports should be targeted for INT charting while the coastal series schemes are being developed and coordinated. The INT port chart limits and scales are generally the same or similar to national chart limits. This was the approach taken by the NSICC.

A brief examination of the significant international shipping ports in the East Asian Basin reveals a wide diversity in the size of ports. Included among the ports are some of the largest in the world in terms of tonnage handled, as well as many smaller but busy centers which are dispersed throughout the region. Among the Member States of the IHO, major ports which should be considered for large-scale coverage when devising an INT Chart scheme include :

China

Guangzhou	Fuzhou	Hangzhou	Luda
Qingdao	Tanggu	Xiamen	Zhanjiang
Shanghai			

Indonesia

Dumai	Semarang	Surabaya	
Jakarta	Ujungpandang		

Japan

Kawasaki	Kobe	Moji	Nagasaki
Nagoya	Naha	Osaka	Shimizu
Shimonoseki	Tokyo	Yokkaichi	Yokohama

Korea

Ulsan	Incheon	Busan	

Malaysia

Pelabuhan/Kelang		George Town/Perai	

Republic of the Philippines

Davao	Zamboanga	Cagayan de Oro	Cebu
Iloilo	Legazpi	Manila	

Singapore

Singapore

Thailand

Krung Thep (Bangkok)

Union of Soviet Socialist Republics

Nakhodka

United Kingdom

Hong Kong

Many additional ports exist which also warrant consideration in a scheme to chart East Asia at large and medium scales. The identification of the ports for such coverage is a task that depends on the availability of up-to-date hydrographic surveys and navigational aids; also, it is done best by the nations of East Asia who have an active awareness of the needs of national and foreign shipping within their region.

At present, each IHO Member State in the region provides complete medium- and large-scale coverage of its national waters[11]. Japan and Korea, in addition, produce charts outside their national waters, primarily at small and medium scales, while the USSR issues charts for the entire region at various scales. The United Kingdom, United States, and France also issue extensive coverage for the East Asia waters.

CONCLUSION

Considering the history of energetically pursued cooperative projects by the hydrographic offices of East Asia in surveying, charting and safety of navigation measures and noting, in particular, the activities of the EAHC in coordinating the common interests of its six member nations, the prospects appear favorable for the national hydrographic offices of the region to undertake the development of an International Large- and Medium-Scale Chart Series for the East Asian Basin in the near future. As the XIIth International Hydrographic Conference recognized, this work is best accomplished by a regional commission or geographic group (such as the EAHC) whose members are most knowledgeable about the quality of available data and ship traffic patterns. Other hydrographic agencies, however, with worldwide distribution networks and broad chart series planning experience, can provide valuable assistance.

It remains, however, the responsibility of the hydrographic offices of East Asia to evaluate the advantages of scheming INT Charts at large and medium scales and to instigate any regional action toward that end. The success and rapid acceptance of the small-scale INT Chart series, the procedures established by the NSICC and other commissions in scheming large and medium scale INT Charts on a regional basis, and the recent adoption of the IHO Chart Specifications should serve to encourage and guide members of the East Asia hydrographic community in the development of large- and medium-scale chart schemes using the concepts of International Charting.

(11) Singapore publishes only large-scale charts because of the limited extent of its national waters. All of the IHO Member States in the region use the metric system for depicting depth and elevation data on nautical charts.

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