

**IHO HYDROGRAPHIC COMMITTEE ON ANTARCTICA (HCA)
4th Meeting, Kythnos, Greece, 6 – 8 September 2004**

MINUTES

- Notes:*
- 1) *A list of acronyms used in these Minutes is at Annex G.*
 - 2) *A list of all actions agreed at HCA/3 is at Annex A*
 - 3) *Names of persons are written in full the first time they appear in the Minutes. Afterwards, only the surname is shown.*

1. OPENING

*Ref: HCA4-1A rev.11 List of Documents [also Annex C]
HCA4-1B rev.4 List of Participants [also Annex B]*

The 4th Meeting of the IHO Hydrographic Committee on Antarctica (HCA) took place in the Greek island of Kythnos, Cyclades, on 6-8 September 2004.

The HCA Chairman, Capt. Hugo GORZIGLIA, IHB Director, welcomed all attendees (see list in Annex B) and thanked the meeting hosts, i.e. Ambassador Frangiskos VERROS for the Greek Ministry for Foreign Affairs, and Cdr. Dimitris EVANGELIDIS for the Hellenic Navy Hydrographic Service (HNHS), for the wonderful venue and the hard work in organizing this meeting.

In his introductory remarks, he reminded that HCA was one of the IHO subsidiary bodies, dedicated to addressing hydrographic issues relating to Antarctic waters. He mentioned the IMO's interest in improving the safety of navigation in remote areas such as Antarctica and said he was most pleased to see representatives of observer organizations, i.e. IMO, SCAR, IOC, COMNAP and IAATO. He stated that HCA had a coordinating role to promote safety of navigation in Antarctica through improvement of hydrographic surveying and nautical cartography. He concluded in suggesting that HCA should take the opportunity of the "International Polar Year" (IPY, 2007-2008) to undertake special tasks.

2. HCA MEMBERSHIP STATUS

*Ref: HCA4-2A rev.1 HCA Membership and Observers List
HCA4-INF2 rev.1 HCA Statutes*

The Chair mentioned that, as of the beginning of the meeting, the following fourteen (14) IHO Member States had signed the HCA Statutes: Argentina, Australia, Chile, France, Germany, Greece, India, Italy, New Zealand, Norway, Russian Federation, South Africa, Spain and United Kingdom. He further noted that signature pages were available for those who wished to sign during the meeting.

Outcome:

- IHB to continue monitoring signatures of HCA Statutes (10 HCA Member States have not yet signed).

3. APPROVAL OF THE AGENDA

*Ref: HCA4-3A rev.1 Agenda [also Annex D]
HCA4-3B Annotated Agenda
HCA4-3C rev.1 Time Table*

The Agenda was approved without amendment.

4. ELECTION OF VICE-CHAIRMAN

The Chair explained that Capt. Fernando MINGRAM (Chile) was elected Vice-Chairman of HCA at the 3rd meeting (Monaco, 2003). When he retired in early 2004, his successor at SHOA, Capt. Roberto GARNHAM, kindly accepted to assume HCA Vice-Chairmanship till HCA/4, i.e. this meeting.

Lt. Enrique SILVA (Chile) indicated that Capt. GARNHAM would be willing to continue acting as Vice-Chairman. The motion was seconded by UK, Argentina, China and Germany. There was unanimous support for the proposal and Capt. GARNHAM was elected Vice- Chairman of HCA.

Also, Capt. Michael K. BARRITT (IHB/S-55) thanked Chile for their work on S-55.

Outcome:

- Capt. Roberto GARNHAM (Chile) is elected Vice-Chairman of HCA.

5. STATUS OF LIST OF ACTIONS RESULTING FROM THE 3RD HCA MEETING

Ref: HCA4-5A rev.2 Status of Actions List from HCA/3

- Aids to Navigation (Item 2) – COMNAP (Radm. Manuel CATALÁN) mentioned that contribution from COMNAP on this matter was included in their report to HCA/4 (*ref: HCA4-6.1B rev.1*) and that this was supported by SCAR. He warned that the proposals included in the COMNAP report often reflected individual opinions and may be controversial in some cases. He added that more proposals from COMNAP can be expected in future.

IHB/S-55 (BARRITT) suggested this issue could be pursued in the frame of the Hydrographic Survey Programme for Antarctica (see agenda item 7.4). Australia (KAFER) supported this view and noted that this issue needed to be continued in some way in appropriate forums. After discussion, it was agreed that the IHB would follow -up this issue.

Outcome:

- IHB to follow-up the Aids to Navigation issue, i.e. identification of type and location of AtN required in Antarctica (including DGPS coverage), in liaison with COMNAP and IAATO.

- List of Publications (Item 3) – The Secretary, Michel HUET (IHB), presented the list of HO's publications relating to Antarctica currently available on the IHO website, noting that only France and UK had supplied such lists so far. Australia (KAFER) suggested to keep this item ongoing, i.e. as a Standing Agenda item, which was agreed.

Outcome:

- IHB to continue maintaining a list of HO's nautical publications related to Antarctica, including a brief résumé of their content, on the IHO website. IHB to also include this item in agendas of future HCA meetings.

- Tidal information needed by SCAR (Item 5) – The Secretary reported that the IHB had contacted SCAR, asking for confirmation of the SCAR's need for tidal data and details on the requested data. Germany (Dr. Hans Werner SCHENKE, AWI) offered to follow-up this issue, which was gratefully accepted by the meeting.

Outcome:

- IHB to provide Dr. SCHENKE (AWI, Germany) with a copy of IHO Tidal Committee's correspondence with SCAR, relating to SCAR requirements of tidal data in Antarctica. Dr. SCHENKE to then follow-up this issue.

- IAATO concern (Item 6) – The Secretary recalled that IAATO had expressed concern over the entry of new ship operators into Antarctica, with no experience of navigational conditions, and sometimes with inadequate equipment. It was agreed that HCA members' report on the matter would be postponed to the next HCA meeting, with a view to encouraging best practice.
- HCA Statutes (Item 7) – It was agreed that this issue would form a standing agenda item for future HCA meetings (see also Section 2).
- IAATO ships of opportunity – The Secretary reported that the IHB had submitted to the IAATO Secretariat a draft standard protocol which was designed so that IAATO would inform the IHO of ships' availability. HOs would then request transport on IAATO ships. IAATO (Ms. Denise LANDAU) expressed preference for the opposite way, i.e. a form intended for HOs to express their needs. This would be sent to IAATO Secretariat, for them to identify relevant ships. The latter procedure was agreed.

Outcome:

- IHB to develop a Standard Protocol form to be used by HOs to formulate their needs regarding transport of Hydrographic survey specialists on IAATO ships of opportunity for onboard collection of hydrographic data. It is intended that these forms will be sent to IAATO Secretariat, to identify appropriate ships.

- IHO Tidal Committee (Item 12) – The Secretary reported that the IHO Tidal Committee had been invited to consider ways of improving collection and promulgation of tidal information in Antarctica and that the matter would be on the agenda of the next Tidal Committee meeting (Lisbon, October 2004). A report will be provided to the next HCA meeting accordingly. Australia (KAFER) suggested to also convey to this committee the Australian report to HCA/4, as it included considerations on tidal measurements in Antarctica. This was agreed.

Outcome:

- IHB to provide the IHO Tidal Committee with information on Australia's tidal activities in Antarctica, as contained in Doc. HCA4-7.4Ah. IHB to report on the outcome of the Oct. 2004 TC meeting in Lisbon, regarding ways of improving collection and promulgation of tidal information in Antarctica.

- IAATO commenting on INT Chart Scheme (Item 15) – It was reported that changes to the INT chart scheme for Region 'M' had been suggested by Capt. Leif SKOG, Lindblad Expeditions (IAATO member), as described in HCA Letter 5/2004 (see also Section 7.1).

6. RELEVANT INTERNATIONAL ORGANIZATIONS' REPORTS

6.1 Antarctic Treaty Consultative Meeting (ATCM)

Ref: HCA4-INF4 IHO Report to ATCM/XXVII

No report was received from ATCM. The Chair informed that the ATCM Secretariat was being established in Buenos Aires, Argentina, as well as the first Executive Secretary.

The Chair reported that he attended ATCM/XXVII, 24 May–04 June, Cape Town, South Africa, and presented an IHO Report at the plenary, i.e. with large audience (see HCA4-INF4). All IHO proposals in the report were approved. On request from Australia, it was clarified by Greece that ATCM reports to the U.N. Assembly and ATCM member countries are bounded by ATCM resolutions. The next ATCM meeting will be held in Sweden in June 2005.

6.2 Council Of Managers of National Antarctic Programmes (COMNAP)

Ref: HCA4-6.1B rev.1 COMNAP Report to HCA/4

COMNAP (CATALÁN) reported on their activities in relation to HCA (see HCA4-6.1B). COMNAP was established in 1988; its mission relates to logistic and operative support of Antarctic science. COMNAP also provides technical advices to ATCM.

He mentioned that COMNAP report includes several proposals to establish aids to navigation in Antarctica, where there exists potential risks for navigation, with contribution from AWI and BAS. DGPS stations could be set up in the Antarctic Peninsula and three stations would probably provide reasonable coverage. However, any terrestrial Aids to Navigation would need to satisfy the environmental conditions imposed by ATCM. In addition, it would be very difficult to maintain Aids to navigation like lighthouse, beacons, etc. due to the hostile environment.

He stressed the need to improve the quality of nautical charts, i.e. to be based on modern surveys, so that accuracy of GPS positions would be consistent with that of charts.

Greece (Col. Georgios MAKRIDIS) expressed support for setting up DGPS Stations in Antarctic Peninsula. Germany (SCHENKE) suggested that three DGPS stations located at scientific bases Jubany-Dallmann (Germany), Palmer (USA) and Rothera (UK) could cover the entire region. IHB/S-55 (BARRITT) reminded that COMNAP proposals would be supported in the frame of the Hydrographic Survey Programme for Antarctica and that the IHB would follow-up this issue, as stated in the above paragraph 5, 1st bullet.

6.3 International Maritime Organization (IMO)

Ref: HCA4-6.1C IMO Report to HCA/4

The IMO representative (Capt. Gurpreet SINGHOTA) reported on IMO activities in relation to HCA (see HCA4-6.1C). He referred to the on-going work on Large Passenger Ship Safety and the IHO report to NAV on the quality and availability of hydrographic information for operation in remote areas (see HCA4-INF3). Further plan was to develop relevant guidelines / requirements by 2006, to ensure the safety of navigation in remote areas. This work will involve a review of availability of international aids to navigation for vessels operating in remote areas.

He suggested that the Hydrographic Survey Programme for Antarctica, when ready, be provided to IMO.

Outcome:

- IHB to provide IMO and COMNAP with the HCA Hydrographic Survey Program when approved by HCA Members. The program to also be provided to SCAR, for consideration and promotion by the IPY Organizing Committee.

6.4 International Association of Antarctic Tour Operators (IAATO)

Ref: HCA4-6.1D *Information Paper on Tourism Activities in Antarctica*
 HCA4-INF7 *IAATO Annual Report 2003-2004*
 HCA4-INF8 *IAATO Overview of Antarctic Tourism 2003-2004*

IAATO (LANDAU) reported on Antarctic Tourism activities, which mainly concerned the Antarctic Peninsula (see HCA4-6.1D and HCA4-INF8). She also referred to the IAATO annual report 2003-2004 (see HCA4-INF7). Approximately 20,000 passengers visited the area during the 2003-2004 season, representing an increase of 46% from the previous season. On average, visits ashore lasted 3 hours, with a maximum of 100 tourists at any time. She reported concerns by Captains about the need for up-to-date and modern charts.

The next IAATO meeting will be held in Hamburg in May 2005.

She mentioned that an IAATO "Standard for ad hoc reports from tour vessels" already exists. Australia (KAFFER) suggested that IAATO provides the IHB with their reporting guide. IHB/S-55 (BARRITT) further suggested that guidance on the collection of hydrographic information in Antarctica by Masters of ships should be drafted by the Hydrographic Survey Programme WG, to then be passed on to IAATO. This was agreed.

Outcome:

- IAATO Secretariat to provide the IHB with the IAATO post visit site report form and a summary of sites visited.
- IHO Hydrographic Survey Programme WG to develop guidelines for the collection of hydrographic information by tour vessels, to subsequently be provided to IAATO for incorporation in the IAATO reporting procedures. The guidelines to also be provided to COMNAP.

6.5 Scientific Committee on Antarctic Research (SCAR)

Ref: HCA4-INF5 *SCAR Report on Marine Acoustic Technology and the Antarctic Environment*
 HCA4-INF9 *SCAR Report to SCOR*

No report was received. SCAR (SCHENKE) referred to the SCAR Report to the Scientific Committee on Oceanic Research (SCOR) (see HCA4-INF9), which would be presented to a SCOR meeting in Venice in September 2004. He mentioned the SCAR composite gazetteer on Antarctic place names, which includes Antarctic features of the IHO-IOC GEBSCO gazetteer of undersea feature names. He further referred to the SCAR Study on MBES impact on marine mammals which was presented to ATCM/XXVII (see HCA4-INF5) and stressed that this report concluded that:

"none of the scientific systems likely to be used in Antarctic waters had a higher risk of causing serious impacts on individual animals or populations than did Antarctic shipping operations. Both the chemical explosives and military sonar had higher risks of causing serious impacts than might be caused by shipping or scientific instruments"

He noted however that the German administration requires that any planned survey involving MBES should be submitted two years in advance for approval.

Noting that there is a standing SCAR recommendation to collect hydrographic data in Antarctica, he suggested that an HCA proposal on hydrographic surveying needs in Antarctica be drafted and sent to

SCAR for channeling to the IPY Planning Committee which was to meet in Paris on 13-14 September 2004. This was agreed.

Post Meeting Note: A letter on the matter by the HCA Chair was sent to the SCAR Executive Director, Dr Colin P. SUMMERHAYES, immediately after the meeting. See copy in Annex E.

7. HCA ACTIVITIES IN THE LIGHT OF THE IHO WORK PROGRAM

7.1 INT Chart Scheme: progress made since last meeting; actual charting status (S-55); ENC production status; new requirements and modifications proposed to the scheme (M-11)

Ref: HCA47.1A rev.3 *INT Chart Scheme and Production Status for Region 'M'*
 HCA47.1B *ENC Production Status in Antarctica*

Referring to the INT chart scheme and production status for Region 'M' (see HCA4-7.1A rev.2), the Secretary reported that, out of the 91 INT charts in the scheme, 40 charts had been published as of August 2004, with further four charts planned for publication before the end of the year. He noted that three INT charts of the scheme have "US" as producer nation, i.e. INT 909, 9062 and 9105, and wondered whether these charts would actually be produced now that NGA have stated their intention to cease any paper chart production by 2007. IHB was asked to check with NGA and NOAA their plans regarding these three INT charts.

The Secretary also referred to a proposal by Capt. Leif SKOG [Vice President of Marine Operations, Lindblad Expeditions (IAATO member), Seattle, Wa, USA] to include 11 new INT charts in the scheme on the Antarctic Peninsula, as reported in HCA Letter 5/2004. IHB was asked to refine and complete the proposal (chart limits, titles, etc.), for submission to HCA members, and to thank Capt. Skog for his valuable contribution to improving the scheme.

South Africa (Capt. Abri KAMPFER) mentioned that they plan to produce INT 9056 in 2005, based on South African chart SAN 2004. The latter chart is at scale 1:300 000 to provide a better coverage of the approaches to Dronning Maud Land and the South African Research Stations SANAE III and IV. This change to a scale of 1:300 000, as opposed to 1:200 000 as originally planned, was supported. Since the adjacent and overlapping chart INT 9057, to be produced by Germany, is planned at 1:200 000, he asked if the change of scale to INT 9056 did not cause problems to Germany? Germany (SCHENKE) suggested, and this was agreed, that the matter be clarified directly between the two HOs.

Outcome:

- IHB to check with US/NGA and US/NOAA their intention regarding the production of INT Charts 909, 9062 and 9105 which have US as producer nation in the INT chart scheme, having noted NGA's statement to cease any paper chart production from 2007.
- IHB to circulate to HCA Members details on Capt. Leif Skog's (IAATO member Lindblad Expeditions) proposed 11 new INT Charts (further to HCA Letter 5/2004), e.g. chart limits, title etc., for consideration and comments. IHB to send a letter of thanks to Capt. Skog, on behalf of HCA.
- Germany to clarify with South Africa any issues related to INT Charts 9056 / 9057.

The Secretary reported on the status of ENC Production in Antarctic waters (see HCA4-7.1B). Only Chile has so far produced five ENCs, all located in the Antarctic Peninsula. However, they are not yet available to general shipping. UK (Mr Andrew WILLETT) mentioned that they have five ENCs in production, also in the Antarctic Peninsula.

The Secretary then presented a draft ENC Status for Region 'M', derived from the INT Chart Scheme and which had been prepared at the IHB. A sample page is reproduced at Annex F. The principle of a status report on ENC production at every HCA meeting, based on this draft, was agreed. IHB was asked to circulate the draft to HCA members for comments. Australia (KAFER) suggested that this concept be extended to all INT chart regions.

Outcome:

- IHB to circulate to HCA Members, for consideration, comments, and completion, the draft table on ENC production status for Region 'M', derived from the INT Chart Scheme.

Regarding the input to S-55 on charting status, IHB/S-55 (BARRITT) reported that entries for the Antarctic Peninsula and for the remainder of Antarctica have not been populated because responses have still not been received from a number of Member States.

7.2 Bilateral and regional cooperation agreements, projects and capacity building initiatives in progress

UK (WILLETT) mentioned that several courses on hydrography and nautical cartography are held in UK under UKHO auspices. The Chair reported briefly on the activities of the West African Action Team (WAAT), established by the East Atlantic Hydrographic Commission. IHB/S-55 (BARRITT) referred to a paper on Capacity Building Strategy which is on the IHO Website.

Australia (KAFER) asked how many HOs have shown interest in hydrographic surveying in Antarctica (the answer was 16) and suggested that non-involved HOs may wish to cooperate on surveying issues.

7.3 Interaction with IOC

Ref: HCA4.7.3A GEBCO Report to HCA/4
HCA4.7.3B Undersea Feature Naming Status for Region 'M'
HCA4.7.3C IBCSO Report to HCA/4

- The IOC/IHO GEBCO Project

GEBCO (SCHENKE) reported that a new edition of the GEBCO Digital Atlas had been issued at the occasion of the GEBCO Centenary Conference in April 2003. This GDA centennial edition is known as GEBCO-CE. It includes a 1' gridded bathymetry data set. He mentioned that GEBCO has two sub-committees, respectively dealing with digital bathymetry (SCDB) and undersea feature names (SCUFN), and that the GEBCO website is operated by the US NGDC/DCDB. He reported that the Nippon Foundation has offered 3 million USD to set up a high level training programme on ocean mapping (post doctoral diploma), to take place at the University of Durham, NH, USA. Seven students have been selected to attend the 1st course from September 2004, of whom several come from hydrographic offices. There will be 21 students in total over the next three years.

He mentioned the possibility to have analog plotting sheets on Antarctic waters digitized in the frame of this programme, as "Work Packages". Any HO interested in such projects is invited to contact Mr. David MONAHAN (MonahanD@dfo-mpo.gc.ca), manager of the "Nippon Foundation/GEBCO Training Project". Following his above nomination as project manager, Mr. MONAHAN has indicated that he would step down from chairman of GEBCO, while staying in the GEBCO Guiding Committee. As a result, it is planned to elect a new chairman of GEBCO at the next GEBCO GC meeting in 2005.

GEBCO (Schenke) referred to the POBACE proposal (Polar Ocean Bathymetry Co-ordination Effort), the SSPARR project (Seafloor Sounding in Polar And Remote Regions) to deploy floating bathymetric buoys, funded by NSF. He mentioned that the WVS was being improved to a scale of 1:50 000. See HCA4-7.3A for more details.

IOC (Dr. Dmitriy TRAVIN) mentioned the planned re-structuration of GEBCO and IBC projects, as reported in IHO Circular Letter xx/2004. He invited comments from HCA members.

IHB/S-55 (BARRITT) reiterated the need to draft guidelines for the collection of bathymetric data by commercial and survey vessels (see also section 6.3).

The Secretary presented an extract of the IHO-IOC GEBCO gazetteer of undersea feature names for the Southern Ocean (see HCA4-7.3B). HCA members were invited to review this document and provide comments to the IHB.

Outcome:

- HCA Members to consider submitting work packages in the frame of the Nippon Foundation / GEBCO training project, e.g. for digitizing analog sheets covering Antarctic waters, to be collected by the IHB to prepare a final submission, in liaison with Dr. SCHENKE.
- HCA Members to review the list of IHO-IOC GEBCO undersea feature names, as in the SCUFN Gazetteer (Doc. HCA4-7.3B), and provide comments to the IHB as appropriate.

- The IBCSO Project, an IOC/IHO/SCAR Project

IBCSO (SCHENKE) reported that the International Bathymetric Chart of the Southern Ocean (IBCSO) project was approved by the IOC Executive Council in June 2004 and that a “kick off” meeting of IBCSO was held on 31 July 2004 in Bremen, Germany, in conjunction with a SCAR/COMNAP congress. The intention is to build a 2.5 km grid bathymetric database for the Southern Ocean, i.e. south of 60°S. Input to the database is expected from the above mentioned SSPARR project. IOC (TRAVIN) noted that the success of IBCSO will largely depend on the support provided by HCA members, who were invited to nominate representatives in this new project.

IBCSO (SCHENKE) said that bathymetric data collected by IAATO ships of opportunity would be most useful to the IBCSO project. He further suggested that students could embark on those ships.

The Chair suggested that the next IBCSO meeting could be held in conjunction with an HCA meeting.

Outcome:

- HCA Members to consider nominating suitable candidates to participate in the work of IBCSO Editorial Board; names to be provided to the IHB.

7.4 Hydrographic surveying, nautical charting, nautical publications and information status

Ref:	<i>HCA4 7.4Aa rev.1</i>	<i>UKHO Report</i>
	<i>HCA4 7.4Ab</i>	<i>Norway Report</i>
	<i>HCA4 7.4Ac</i>	<i>France Report</i>

<i>HCA47.4Ad</i>	<i>Argentine Report</i>
<i>HCA47.4Ae</i>	<i>Germany Report</i>
<i>HCA47.4Af</i>	<i>Italy Report</i>
<i>HCA47.4Ag</i>	<i>New Zealand Report</i>
<i>HCA47.4Ah</i>	<i>Australia Report</i>
<i>HCA47.4Ai</i>	<i>Chile Report</i>
<i>HCA47.4Aj</i>	<i>China Report</i>
<i>HCA47.4Ak</i>	<i>South Africa Report</i>
<i>HCA47.4Al</i>	<i>Russian Federation Report</i>
<i>HCA47.4B</i>	<i>S-55 Progress Report</i>

- Presentation of National Reports. Experiences with new techniques and equipment. Project proposals to speed-up compilation and production.

Consideration was given to national reports. Attending HCA representatives provided additional comments, as follows. See national reports for more details.

1. **Argentina** (Cdr. Jorge Cesar LAPENTA). Chart INT 9120 has been produced in 2004. Two more charts are planned for 2005.
2. **Australia** (KAFFER). There will be no survey team in Antarctica for the coming season (2004-2005). All nine INT charts in the scheme, with Australia as producer nation, have been published. Two will soon be edited. He provided information on tidal activities in Antarctica, stressing the difficulties to mount tide gauges in this hostile environment.
3. **Chile** (SILVA). Charts INT 9155 and 9102, and their corresponding ENC's, have been published since the previous meeting. Also, surveys have been conducted in the South Shetland Islands and the northern part of the Antarctic Peninsula.
4. **Greece** (MAKRIDIS) is in the process of deciding which organization, i.e. HNHS or the Greek Geographic Service of the Army, will represent Greece to HCA. They will also clarify their contribution to HCA work, e.g. regarding INT charting. Accordingly, Greece will inform the HCA Chair of their willingness to contribute and of the skills available, for subsequent information of HCA members.
5. **China** (Mr. XU Binsheng). Two topologic maps and one bathymetric map in the area of Pridz Bay have been produced. Plan to carry out surveys and to produce two charts and ENC's on same area.
6. **Germany** (SCHENKE). Two INT charts, i.e. INT 9055 and 9057, are under preparation. Collection of data is being made by AWI and production of the charts (INT and ENC) will be ensured by BSH. Publication of these charts is planned for 2006. Germany considers that aerial photographs showing land topography are useful. They are willing to provide data to South Africa for the compilation of INT 9056.
7. **Poland** (Capt. Czeslaw DYRCZ). No hydrographic activities have been conducted in Antarctica since the previous meeting. Poland's area of interest is King George Island.
8. **Russia** (Radm Boris S. FRIDMAN). Ten INT chart under responsibility of Russia have already been published. Charts INT 902, 903, 9011, 9040 and 9060 are planned for publication in 2005-2006. An atlas on Antarctica is under preparation and will be published in 2005.
9. **South Africa** (KAMPFER). South Africa's area of interest is Dronning Maud Land. Chart INT 9056 is planned for publication in 2005 (see also section 7.1).

10. **United Kingdom (WILLETT)**. Seven INT charts of the scheme under UK responsibility have already been published, plus three INT charts at scale 1:10 million. Six additional INT charts, i.e. INT 906, 9061, 9141, 9159, 9160 and 9163, are planned for publication in 2004-2006. A number of surveys are scheduled for future seasons, all in the Antarctic Peninsula area.

The Chair emphasized that the main target for HCA is the production of INT charts. Therefore, the rate of production of INT charts and target dates for publication are essential factors.

- Hydrographic Survey status (S-55)

IHB/S-55 (BARRITT) gave a presentation on the status of S-55. Edition 3 is available on the IHO website. He noted key deficiencies in surveys, charting and maritime safety information (MSI) and opined that there is potential for cooperative projects. He mentioned the need for analysis of navigational activities and for multibeam surveys. He informed that a GIS database on S-55 has been developed, with division between Antarctic Peninsula and the remaining of Antarctica. He suggested that NAVAREA coordinators be involved in the HCA work

He reminded that S-55 information is to be supplied to Chile (SHOA) for analysis. Preliminary results were demonstrated by Chile (Silva).

It was agreed that guidance on the collection of bathymetric data by ships of opportunity, based on S-44, would be developed by the HCA Survey Programme WG (see also section 6.3).

- Development of an HCA Hydrographic Survey Plan. Priorities, Coordination and Program.

The Chair stressed that there was a need to develop a hydrographic survey plan for Antarctic waters, taking into consideration the requirements to complete the INT chart scheme. He suggested that an ad hoc WG be established to fulfill this task, which was unanimously supported by the meeting. Australia (KAUFER), Chile (SILVA), Germany (SCHENKE), Greece (MAKRIDIS), South Africa (KAMPFER), UK (WILLETT), IHB/S-55 (BARRITT), IAATO (LANDAU, observer), and COMNAP (CATALÁN, observer) volunteered to take part in this WG. UK (WILLETT) offered to chair this WG, which was gratefully accepted.

The newly formed WG was tasked by the Chair to prepare draft TORs for the WG, which were then reviewed, refined and approved by the meeting. The resulting TOR are in the **Appendix of Annex A**.

7.5 Nautical Publications and Information. IHO/HCA web page

The Secretary presented the list of nautical publications relating to Antarctica which appears on the IHO website. He noted that, so far, only UK and France have provided information. HCA Members were invited to supply their information to the IHB (see also section 5). Australia suggested a regional presentation of this information, e.g. Antarctic Peninsula on one hand and remaining of Antarctica on the other hand.

8. ANY OTHER BUSINESS

There were no comments under this item.

9. TIME AND PLACE OF NEXT MEETING

Two offers were expressed to host the 5th HCA meeting in 2005, i.e. from Chile and New Zealand (via Australia). After discussion, it was agreed to accept New Zealand invitation. Suggested date was November 2005, with preference for the first week of November. This would be finalized by the IHB in liaison with New Zealand.

Outcome:

- IHB to thank the New Zealand HO (LINZ), on behalf of HCA, for their offer to host the 5th HCA Meeting and liaise with them to organize it.

10. CLOSURE

The meeting reviewed the list of decisions and actions arising from HCA/4. The agreed list is at **Annex A**.

On behalf of the meeting, the Chair warmly thanked the Greek hosts for the outstanding arrangements for HCA/4. He also thanked all participants and observers for their excellent contribution to the meeting. He expressed his belief that the work of HCA will improve hydrographic knowledge and safety of navigation in Antarctica.

The meeting closed at 14:00 on 8 September 2004.

DECISIONS and ACTIONS FROM HCA/4

Decisions:

1. Capt. Roberto GARNHAM Poblete (Chile) is elected as Vice Chairman of HCA.
2. A Working Group is established to develop an Hydrographic Survey Programme for Antarctica. Initial membership includes Australia, Chile, Germany, Greece, South Africa, United Kingdom, IAATO (observer), COMNAP (observer) and S-55. The WG will be chaired by UK (Andy Willett). TORs for the WG are provided in the **Appendix**
3. Following invitation by New Zealand, the 5th Meeting of HCA will take place in New Zealand, in November 2005 (to be confirmed).

Actions:

1. IHB to continue monitoring signatures of HCA Statutes (10 HCA Member States have not yet signed).
2. IHB to follow-up the Aids to Navigation issue, i.e. identification of type and location of AtN required in Antarctica (including DGPS coverage), in liaison with COMNAP and IAATO.
3. IHB to continue maintaining a list of HO's nautical publications related to Antarctica, including a brief résumé of their content, on the IHO website.
4. IHB to provide Dr. Schenke (AWI, Germany) with a copy of IHO Tidal Committee's letter to SCAR, relating to SCAR requirements of tidal data in Antarctica (deadline: Sept. 04). Dr. Schenke to then follow-up this issue.
5. IHB to develop a Standard Protocol form to be used by HOs to formulate their needs regarding transport of Hydrographic survey specialists on IAATO ships of opportunity for onboard collection of hydrographic data. It is intended that these forms will be sent to IAATO Secretariat, to identify appropriate ships.
6. IHB to provide the IHO Tidal Committee with information on Australia's tidal activities in Antarctica, as contained in Doc. HCA4-7.4Ah. IHB to report on the outcome of the Oct. 2004 TC meeting in Lisbon, regarding ways of improving collection and promulgation of tidal information in Antarctica.
7. IHB to provide IMO and COMNAP with the HCA Hydrographic Survey Program when approved by HCA Members. The program to also be provided to SCAR, for consideration and promotion by the IPY Organizing Committee.
8. IAATO Secretariat to provide the IHB with the IAATO post visit site report form and a summary of sites visited. IHO Hydrographic Survey Programme WG to develop guidelines for the collection of hydrographic information by tour vessels, to subsequently be provided to IAATO for incorporation in the IAATO reporting procedures. The guidelines to also be provided to COMNAP.
9. IHB to check with US/NGA and US/NOAA their intention regarding the production of INT Charts 909, 9062 and 9105 which have USA as producer country in the INT chart scheme, having noted NGA's statement to cease any paper chart production from 2007.

10. IHB to circulate to HCA Members details on Capt. Leif Skog's (IAATO member Lindblad Expeditions) proposed 11 new INT Charts (further to HCA Letter 5/2004), e.g. chart limits, title etc., for consideration and comments. IHB to send a letter of thanks to Capt. Skog, on behalf of HCA.
 11. Germany to clarify with South Africa any issues related to INT Charts 9056 / 9057.
 12. IHB to circulate to HCA Members, for consideration, comments, and completion, the draft table on ENC production status for Region 'M', derived from the INT Chart Scheme.
 13. All HCA members who have not yet provided input to the S-55 coordinator (SHOA) to do so.
 14. S-55 Project Coordinator and SHOA to provide input to IHB for the annual report to ATCM (31 March 05).
 15. S-55 Project Coordinator, SHOA and IHB to complete the development of the GIS prototype of a regional database (30 April 05).
 16. HCA Members to consider submitting work packages in the frame of the Nippon Foundation / GEBCO training project, e.g. for digitizing analog sheets covering Antarctic waters, to be collected by the IHB to prepare a final submission, in liaison with Dr. Schenke.
 17. HCA Members to consider nominating suitable candidates to participate in the work of IBCSO Editorial Board; names to be provided to the IHB.
 18. HCA Members to review the list of IHO-IOC GEBCO undersea feature names, as in the SCUFN Gazetteer (Doc. HCA4-7.3B), and provide comments to the IHB as appropriate.
 19. IHB to thank the NZ HO (LINZ), on behalf of HCA, for their offer to host the 5th HCA Meeting and liaise with them to organize it.
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HCA SURVEY PROGRAMME WORKING GROUP

TERMS OF REFERENCE¹

Objectives

1. Establish prioritised HCA Statement of Survey Requirements:
 - a. Identify special regional geographical factors e.g. ice cover; significant changes in shelf ice edge; complex bottom topography.
 - b. Identify Maritime Shipping Routes and port/site calls and derive usage category (A = frequent; B = regular; C = infrequent), verifying INT chart coverage and availability.
 - c. Identify and categorise existing coverage from S-59.
 - d. Develop assessment criteria and produce a prioritised statement of areas requiring survey.
 - e. Compare national prioritised lists of survey intentions and rolling programmes with the HCA statement. Provide advice to national hydrographic and marine scientific research programming authorities to avoid duplication and to utilise spare capacity. Liaise with COMNAP, SCAR and IAATO to utilise ships of opportunity.
2. Develop guidelines, complementing S-44, for gathering and submitting surveying observations in ships of opportunity².
3. Promote and co-ordinate hydrographic activity for maximum output during the International Polar Year (2007-2008) by advocacy for an IPY Hydrographic Initiative:
 - a. To develop a scheme for fully surveyed marine corridors in Antarctic Peninsula [and Ross Sea].
 - b. To seek support of IMO, IOC, ATCM, and IPY Planning Committee.
 - c. To develop a plan for survey and charting of marine corridors.
 - d. To seek national programming authorities' cooperation and involvement in implementing the plan.
 - e. To identify tasks for ships of opportunity. To include options for states without polar vessels to provide surveyors and equipment.

Work Procedures

4. The Group will work by E-mail.
5. The group will meet annually, whenever possible in conjunction with HCA meetings.
6. The chairman will report progress by E-mail to HCA members and IHB every 4 months.
7. Membership is open to HCA members and observers.

¹To be submitted to ATCM as part of IHO HCA report.

²The term "Ships of opportunity" refers to ships other than those deployed for Hydrographic surveying for nautical charting purposes, e.g. cruise, research or re-supply vessels.

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LIST OF DOCUMENTS

HCA4- 1A rev.11	List of Documents
HCA4- 1B rev.4	List of Participants
HCA4- 2A rev.1	HCA Membership and Observers List
HCA4- 3A rev.1	Agenda
HCA4- 3B	Annotated Agenda
HCA4- 3C rev.1	Timetable
HCA4- 5A rev.2	Status of Actions List from HCA/3
HCA4- 6.1B rev.1	COMNAP Report to HCA/4
HCA4- 6.1C	IMO Report to HCA/4
HCA4- 6.1D	Tourism Activities in Antarctica (D. Landau, IAATO)
HCA4- 7.1A rev.3	INT Chart Scheme and Production Status for Region 'M' (IHB)
HCA4- 7.1B	ENC Production Status in Antarctica (IHB)
HCA4- 7.3A	GEBCO Report to HCA/4 (H-W. Schenke)
HCA4- 7.3B	Undersea Feature Naming Status for Region 'M' (IHB)
HCA4- 7.3C	IBCSO Report to HCA/4 (H-W. Schenke)
HCA4- 7.4Aa rev.1 HCA4- 7.4Ab HCA4- 7.4Ac HCA4- 7.4Ad HCA4- 7.4Ae HCA4- 7.4Af HCA4- 7.4Ag HCA4- 7.4Ah HCA4- 7.4Ai HCA4- 7.4Aj HCA4- 7.4Ak HCA4- 7.4Al	Collection of National Reports to HCA/4 UKHO Report Norway Report France Report Argentine Report Germany Report Italy Report New Zealand Report Australia Report Chile Report China Report South Africa Report Russian Federation Report
HCA4- 7.4B	S-55 Progress Report (M. Barritt)
Information Papers	
HCA4-INF1	Minutes of the 3 rd HCA Meeting, IHB, Monaco, 2003

HCA4-INF2 rev.1	HCA Statutes as approved by the 3 rd HCA Meeting in 2003
HCA4-INF3	IHO Report to IMO on Remote Areas (2004)
HCA4-INF4 (E, F, S)	IHO Report to ATCM-XXVII, Cape Town, South Africa, 2004
HCA4-INF5	SCAR Report on Marine Acoustic Technology and the Antarctic Environment
HCA-INF6	IHO Report to 15 TH IAATO General Meeting, Christchurch, New Zealand, April – 2004
HCA-INF7	IAATO Annual Report 2003-2004
HCA-INF8	IAATO Overview of Antarctic Tourism 2003-2004
HCA4-INF9	SCAR Report to SCOR, Venice, September 2004

AGENDA

- 1.- Opening.
 - 2.- HCA Membership Status.
 - 3.- Approval of the Agenda.
 - 4.- Election of Vice-Chairman.
 - 5.- Status of List of Actions resulting from the 3rd HCA Meeting.
 - 6.- Relevant International Organizations' Report.
 - 6.1 ATCM
 - 6.2 COMNAP
 - 6.3 IMO
 - 6.4 IAATO
 - 6.5 SCAR
 - 7.- HCA Activities in the light of the IHO Work Program:
 - 7.1 INT chart scheme: progress made since last meeting; actual Charting status (S-55); ENC production status; new requirements and modifications proposed to the scheme (M-11).
 - 7.2 Bilateral and Regional cooperation agreements, projects and capacity building initiatives in progress.
 - 7.3 Interaction with IOC:
 - The IOC/IHO GEBCO Project
 - The IBCSO Project, an IOC/IHO/SCAR Project.
 - 7.4 Hydrographic surveying, nautical charting, nautical publications and information status.
 - Presentation of National Reports. Experiences with new techniques and equipment. Project proposals to speed-up compilation and production.
 - Hydrographic Survey status (S-55)
 - Development of an HCA Hydrographic Survey Plan. Priorities, Coordination and Program.
 - 7.5 Nautical Publications and Information. IHO/HCA web page.
 - 8.- Any other business.
 - 9.- Time and Place of next Meeting
 - 10.- Closure
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INTERNATIONAL POLAR YEAR (2007-2008)
Letter from HCA Chairman to SCAR Executive Director

(Sent out on 10 September 2004, for discussion at the IPY Planning Committee meeting, Paris, France, 13-14 September 2004)

Title: Co-ordination of Bathymetric Survey Programs in Antarctica during IPY and Exchange of Data

Noting the high importance of safety of navigation and safety of life at sea in Antarctic waters, recognizing the need of actual and reliable Nautical Charts for ship's operation in this difficult environment, and the necessity of including detailed information about the sea floor topography into the Nautical Charts,

Recalling XXVIth ATCM Resolution 3 (2003),
 XXVIIth ATCM HCA Recommendation (2004),
 XXVIIth SCAR Conference Recommendation 2, and
 IOC-EC XXVIIth Resolution (4.3.2) IBCSO proposal

Recognizing the IHO-HCA work on production of the international INT-Scheme of Nautical Charts in Antarctic waters,

Noting that the seafloor topography of large regions in the Southern Ocean are still unsurveyed and unknown,

it is proposed to the IPY Planning Committee to:

- co-ordinate the planning of regional survey programs in order to avoid duplicate work,
- support proposals which include detailed and systematic bathymetric surveys,
- encourage scientists to collect continuously multibeam and single beam sonar data,
- consider liaison with HCA for cruise planning and meta data exchange.

The HCA offers to assist with information, such as:

- meta data exchange from existing data bases (IHO DCDB),
- recommendations about requirements for new surveys,
- support data exchange between hydrographic and scientific organisations.

HCA has established during its 4th Meeting, 6-8 September 2004 a new Working Group:

HCA SURVEY PROGRAMME WORKING GROUP

with the specific aim is to establish co-operation and collaboration between hydrographic organisations and scientific institutions in hydrographic surveying in Antarctica. The (draft) Terms of References (ToR) are attached (Annex 1³) to this proposal.

HCA supports the development and the production of the new International Bathymetric Chart of the Southern Ocean (IBCSO) to be performed under the auspices of the IOC, IHO and SCAR, and will urge HCA member states to make their bathymetric data available for this project.

HCA offers co-operation through its Working Group with national and international IPY Planning Committees.

³These TOR already appear at Appendix to Annex A and have not been repeated here.

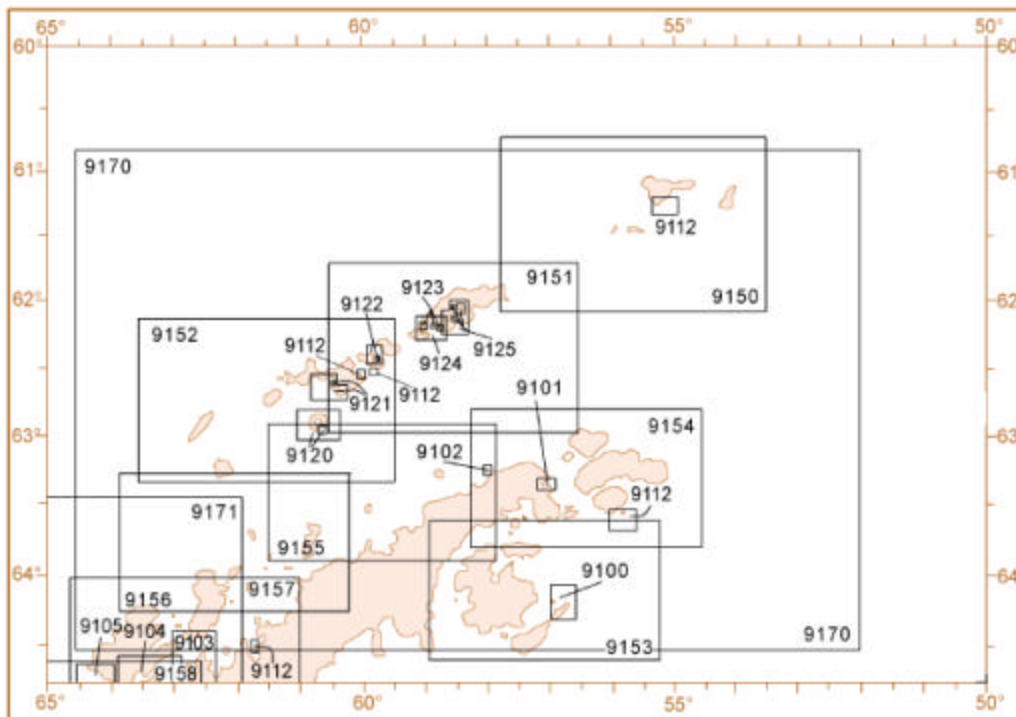
ENC STATUS FOR REGION 'M'

Sample page

**ANTARCTIC PENINSULA, GRAHAM
LAND – SOUTH SHETLANDS
ISLANDS**

***PENINSULE ANTARCTIQUE, TERRE
DE GRAHAM – ILES SHETLAND DU
SUD***

INT No.	Scale 1:	Latest Edition	INT Producer	ENC available ?	ENC Producer	Edition Date	ENC Number
9102	10 000	2003	CL	Yes	CL	2004	CL5MA890
9121	35 000	1998	ES	No			
9122	20 000	1998	CL	No			
9150	200 000	1999	BR	No			
9153	150 000	2004	GB & AR	No			
9154	150 000	2002	GB & AR	No			
9155	150 000	2003	CL	Yes	CL	2003	CL3MA800
9170	500 000	1997	AR	No			



LIST OF ACRONYMS

ATCM	Antarctic Treaty Consultative Meeting
AWI	Alfred Wegener Institute (Germany)
BAS	British Antarctic Survey
BSH	Bundesamt für Seeschifffahrt und Hydrographie (Germany)
CBC	Capacity Building Committee (IHO)
COMNAP	Council of Managers of National Antarctic Programmes
DCDB	Data Centre for Digital Bathymetry (IHO)
DGPS	Differential Global Positioning System
ENC	Electronic Navigational Chart
GDA	GEBCO Digital Atlas (IHO-IOC)
GEBCO	General Bathymetric Chart of the Oceans (IHO-IOC)
GIS	Geographic Information System
HCA	Hydrographic Committee on Antarctica (IHO)
HNHS	Hellenic Navy Hydrographic Service
HO	Hydrographic Office
IAATO	International Association of Antarctic Tour Operators
IBC	International Bathymetric Chart
IBCSO	International Bathymetric Chart of the Southern Ocean (IOC-IHO-SCAR)
IHB	International Hydrographic Bureau
IHO	International Hydrographic Organization
IMO	International Maritime Organization
INT	INTernational (Charts) (IHO)
IOC	Intergovernmental Oceanographic Commission
IPY	International Polar Year (2007-2008)
LINZ	Land Information New Zealand
M-11	Publication “Catalogue of INT Charts” (IHO)

MBES	Multi-Beam Echo-Sounder
MS	Member State
MSI	Maritime Safety Information
NAV	Sub-committee on Navigation (IMO)
NAVAREA	NAVigational AREAs (IMO/IHO)
NGA	National Geospatial-intelligence Agency (USA)
NGDC	National Geophysical Data Center (USA)
NOAA	National Oceanic and Atmospheric Agency (USA)
NSF	National Science Foundation (USA)
POBACE	Polar Ocean BATHymetry Co-ordination Effort
S-55	Publication “Status of Hydrographic Surveying and Nautical Charting” (IHO)
SCAR	Scientific Committee on Antarctic Research
SCDB	Sub-Committee on Digital Bathymetry (GEBCO)
SCOR	Scientific Committee on Oceanic Research
SCUFN	Sub-Committee on Undersea Feature Names (GEBCO)
SHOA	Servicio de Hidrografia y Oceanografia de la Armada (Chile)
SSPARR	Seafloor Sounding in Polar And Remote Regions
TC	Tidal Committee (IHO)
UKHO	United Kingdom Hydrographic Office
UN	United Nations
WG	Working Group
