

INTERNATIONAL HYDROGRAPHIC ORGANIZATION



**4th
EXTRAORDINARY
INTERNATIONAL
HYDROGRAPHIC CONFERENCE**

2 – 4 June

2009

MONACO

REPORT OF PROCEEDINGS

INTERNATIONAL HYDROGRAPHIC ORGANIZATION



**4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC
CONFERENCE
Monaco, 2-4 June 2009**

REPORT OF PROCEEDINGS

published by the
International Hydrographic Bureau
4, Quai Antoine 1er
B.P. 445 - MC 98011 MONACO Cedex
Principality of Monaco
Telefax : (377) 93 10 81 40
E-Mail: info@ihb.mc
Web-site: www.iho.int

INTERNATIONAL HYDROGRAPHIC ORGANIZATION

LIST OF MEMBER STATES (June 2009)

*ALGERIA
*ARGENTINA
*AUSTRALIA
BAHRAIN
BANGLADESH
*BELGIUM
*BRAZIL
*CANADA
*CHILE
*CHINA
*COLOMBIA
CONGO (ZAÏRE)**
*CROATIA
*CUBA
*CYPRUS
DEMOCRATIC PEOPLE'S REPUBLIC OF
KOREA
*DENMARK
DOMINICAN REPUBLIC**
ECUADOR
EGYPT
ESTONIA
FIJI
*FINLAND
*FRANCE
*GERMANY
*GREECE
GUATEMALA
*ICELAND
*INDIA
*INDONESIA
*IRELAND
* ISLAMIC REPUBLIC OF IRAN
*ITALY
JAMAICA
*JAPAN
KUWAIT
*LATVIA
*MALAYSIA
MAURITIUS
MEXICO
*MONACO
*MOROCCO
MOZAMBIQUE
MYANMAR
*NETHERLANDS
*NEW ZEALAND
*NIGERIA
*NORWAY
*OMAN
*PAKISTAN
*PAPUA NEW GUINEA
*PERU
*PHILIPPINES
POLAND
*PORTUGAL
*QATAR
*REPUBLIC OF KOREA
*REPUBLIC OF SOUTH AFRICA
*ROMANIA
*RUSSIAN FEDERATION
*SAUDI ARABIA
*SERBIA
*SINGAPORE
*SLOVENIA
*SPAIN
*SRI LANKA
*SURINAME
*SWEDEN
*SYRIAN ARAB REPUBLIC
*THAILAND
TONGA
TRINIDAD & TOBAGO
*TUNISIA
*TURKEY
*UKRAINE
*UNITED ARAB EMIRATES
*UNITED KINGDOM
*UNITED STATES OF AMERICA
*URUGUAY
VENEZUELA

* Represented at the 4th Extraordinary International Hydrographic Conference.

** Suspended Member States.

4th Extraordinary International Hydrographic Conference
See List of Participants, Pages 3 to 16



4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC CONFERENCE



TABLE OF CONTENTS

	Page
GENERAL INFORMATION	
General Description	1
List of Participants	3
Agenda	17
Programme	19
Officers of the Conference	22
OPENING ADDRESSES	
By the President of the Directing Committee	23
By the President of the Conference	25
By the Secretary General of the International Maritime Organization (IMO).....	27
By HSH Prince Albert II of Monaco	30
PROPOSALS	
Proposals submitted to the Conference	33
DECISIONS	
Decisions of the Conference	77
SUMMARY RECORDS	
1st Plenary Session	91
2nd Plenary Session	93
3rd Plenary Session.....	101
4th Plenary Session.....	112
5th Plenary Session	117
6th Plenary Session	125
APPENDIX I	
Reports submitted to the Conference	133
APPENDIX II	
Information Documents submitted to the Conference	353
List of Exhibitors	377

GENERAL INFORMATION

GENERAL INFORMATION

GENERAL DESCRIPTION OF THE 4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC CONFERENCE

The 4th Extraordinary International Hydrographic Conference was held at the *Auditorium Rainier III* in Monaco, from 2 to 4 June 2009. 213 delegates from 61 Member States and 31 Observers from non Member States and International Organizations attended the Conference.

During the first plenary session in the morning of 2 June, Captain Rachid ESSOUSSI (Tunisia) was confirmed and Vice Admiral Luiz Fernando PALMER (Brazil) elected as President and Vice-President of the Conference respectively.

The Conference was honoured by the presence of HSH Prince Albert II of Monaco who formally opened the Conference later in the first morning. During the Opening Ceremony, the President of the Directing Committee and the President of the Conference delivered opening addresses followed by a keynote address from Mr. E. MITROPOULOS, Secretary General of the IMO. The ceremony closed with the International Cartographic Association Prize being presented to Australia and, in keeping with IHO tradition, the new IHO Member States, Ireland and Qatar, formally presented their flags to the Organization. Immediately after the Opening Ceremony, HSH Prince Albert II opened the Hydrographic Industry Exhibition and made a tour of the exhibition. The Hydrographic Industry Exhibition with 31 companies was open from 2 to 5 June.

Fourteen Proposals, submitted by the ISPWG, HCIWWG, MSDIWG, Member States and the Bureau, were approved by the Conference. A presentation on the status of global ENC coverage was made by the IHB. The Conference then approved two further Resolutions aimed at ensuring adequate coverage, availability, consistency and quality of ENCs by 2010. The Conference also adopted a resolution thanking HSH Prince Albert II and his government for the support provided to this important event. Thanks were extended to all delegates for their contributions to the discussions and to the IHB Staff for ensuring the success of the Conference. The Conference decided that the XVIIIth International Hydrographic Conference would be held in April 2012.

Two hydrographic vessels visited the port of Monaco during the Conference: the USNS HENSON (USA) and the DONUZLAV (Russian Federation).

Several IHO meetings were organized back to back with the Conference. The first meetings of the S-23 Working Group (S23WG) and the Inter Regional Coordination Committee (IRCC) were held on 1 and 5 June, respectively. The celebration of World Hydrography Day was brought forward and celebrated in the afternoon of 5 June, taking advantage of the presence of the many Hydrographers from around the world. Four informative presentations in support of the World Hydrography Day theme were given on behalf of IHO and its sister organizations: IOC, IMO and WMO, followed by a reception at the IHB.

LIST OF PARTICIPANTS
LISTE DES PARTICIPANTS

DELEGATES FROM MEMBER STATES
DELEGUES DES ETATS MEMBRES

(CONF.EX4/G/02 rev.3)

ALGERIA/ALGERIE

Head of Delegation/Chef de délégation

Lt. Colonel Mohamed MOULOUDJ, Chef du Service hydrographique des forces
navales

Alternate and Advisor/Adjoint et conseiller

Lt. Colonel Abdelkader MENASRI, Chef du Bureau soutien hydrographique
Commandant Omar KHEDDAOUI, Chef du Bureau levés hydrographiques

ARGENTINA/ARGENTINE

Head of Delegation/Chef de délégation

Rear Admiral Andrés Roque DI VINCENZO

Alternate and Advisor/Adjoint et conseiller

Commander Fabián Alejandro VETERE

AUSTRALIA/AUSTRALIE

Head of Delegation/Chef de délégation

Commodore Rod NAIRN

Alternate and Advisor/Adjoint et conseiller

Mr. Jasbir Singh RANDHAWA
Mr. Ken POGSON

BELGIUM/BELGIQUE

Head of Delegation/Chef de délégation

Mr. Guido DUMON, Head, Flemish Hydrography

BRAZIL/BRESIL

Head of Delegation/Chef de délégation

Vice Admiral Luiz Fernando PALMER FONSECA

Alternate and Advisor/Adjoint et conseiller

Captain Carlos Alberto PÉGAS FERREIRA
Captain Wesley CAVALHEIRO

General Information Page 4

CANADA

Head of Delegation/Chef de délégation

Dr. Savithri NARAYANAN, Dominion Hydrographer

Alternate and Advisor/Adjoint et conseiller

Mr. Sean HINDS, Advisor

Mr. Aziz SAHEB-ETTABA, Legal Counsel

Mr. Dale NICHOLSON, Director

CHILE/CHILI

Head of Delegation/Chef de délégation

Captain Mariano E. ROJAS, Director

Alternate and Advisor/Adjoint et conseiller

Lieutenant Miguel E. VASQUEZ

CHINA/CHINE

Head of Delegation/Chef de délégation

Mr. Aiping CHEN, Director General, MSA

Alternate and Advisor/Adjoint et conseiller

Mr. Binsheng XU, Senior Engineer, MSA

Mr. Congcong LIANG, Secretariat, MSA

Professor Yanchun LIU, Chinese NGD

Mr. Hongda MA, Staff, Chinese NGD

Mr. Kwok-chu NG, Hydrographer, Hong Kong HO

Mr. Chun-kuen WONG, Assistant Hydrographer, Hong Kong HO

Mr. Vnn Leong TONG, Head of Navigation, Surveillance Division, Maritime Dept.
(Macao) (TBC)

COLOMBIA/COLOMBIE

Head of Delegation/Chef de délégation

Rear Admiral Jairo Javier PEÑA GÓMEZ

Alternate and Advisor/Adjoint et conseiller

Captain Esteban URIBE ALZATE

CROATIA/CROATIE

Head of Delegation/Chef de délégation

Dr. Zvonko GRŽETIČ, Director

Alternate and Advisor/Adjoint et conseiller

Mr. Zeljko BRADARIC, Assistant Director

Mr. Nenad LEDER, Assistant Director

Professor Josip KASUM

CUBA

Head of Delegation/Chef de délégation

Mr. Dennos CASARES BENITEZ, Premier Secrétaire

Alternate and Advisor/Adjoint et conseiller

Mr. Iskander BÁSTER, Secrétaire du Bureau Commercial

CYPRUS/CHYPRE

Head of Delegation/Chef de délégation

Mr. Christos ZENONOS

DENMARK/DANEMARK

Head of Delegation/Chef de délégation

Mr. Svend ESKILDSEN, Director General, Danish Maritime Safety Administration (DAMSA)

Alternate and Advisor/Adjoint et conseiller

Mr. Jesper JARMBAEK, Director, Kort & Matrikelstyrelsen (KMS)
Mr. Jens Peter HARTMANN
Commander Lars HANSEN

ESTONIA/ESTONIE

Head of Delegation/Chef de délégation

Mr. Toivo PRELA, Director

Alternate and Advisor/Adjoint et conseiller

Mr. Taivo KIVIMÄE, Department Head
Mr. Tõnis SIILANARUSK, Department Head
Dr. Jaan LUTT, Department Head
Dr. Vaido KRAAV, Adviser

FINLAND/FINLANDE

Head of Delegation/Chef de délégation

Mr. Jukka VARONEN, Head of Hydrographic Surveys Division

Alternate and Advisor/Adjoint et conseiller

Ms. Tiina TUURNALA, Director, Hydrographic Department
Mr. Rainer MUSTANIEMI
Mr. Juha KORHONEN, Assistant Hydrographer

FRANCE

Head of Delegation/Chef de délégation

IGA Gilles BESSERO, Director General

Alternate and Advisor/Adjoint et conseiller

ICETA Yves GUILLAM
Commissaire en chef Richard LUIGI
Capitaine de vaisseau (R) Jean-Christophe LONG

General Information Page 6

GERMANY/ALLEMAGNE

Head of Delegation/Chef de délégation

Mrs. Monika BREUCH-MORITZ, President, BSH

Alternate and Advisor/Adjoint et conseiller

Dr. Mathias JONAS

Mr. Thomas DEHLING

Cdr. Thomas RINKE

Dr. Hans-Werner SCHENKE

GREECE/GRECE

Head of Delegation/Chef de délégation

Commodore Demetrios PALIATSOS

Alternate and Advisor/Adjoint et conseiller

Mr. Ioannis PAPAIOANNOU

ICELAND/ISLANDE

Head of Delegation/Chef de délégation

Mr. Georg Kr. LARUSSON, Director General

Alternate and Advisor/Adjoint et conseiller

Mr. Hilmar HELGASON, Hydrographer

INDIA/INDE

Head of Delegation/Chef de délégation

Rear Admiral Bola Radhakrishna RAO, Chief Hydrographer to the Government of India

INDONESIA/INDONESIE

Head of Delegation/Chef de délégation

First Admiral SUGENG SUPRIYANTO

Alternate and Advisor/Adjoint et conseiller

Captain SAMIYONO

Captain TRISMADI

IRELAND/IRLANDE

Head of Delegation/Chef de délégation

Captain Michael PURCELL

Alternate and Advisor/Adjoint et conseiller

Mrs. Mairead NIOCLAIS

ISLAMIC REPUBLIC OF IRAN/REPUBLIQUE ISLAMIQUE D'IRAN

Head of Delegation/Chef de délégation

Mr. Saeed IZADIYAN

Alternate and Advisor/Adjoint et conseiller

Mr. Ahmad PARHIZI
Mr. Saeid PARIZI
Mr. Hamid MASOUMI
Mr. Habibollah NEMATOLLAHI
Mr. Mohammad Hassan KHODDAM MOHAMMADI
Mr. Mohammad Hossein MOSHIRI
Mr. Ali KERDABADI, Economic Advisor

ITALY/ITALIE

Head of Delegation/Chef de délégation

Cdr. Paolo LUSIANI

Alternate and Advisor/Adjoint et conseiller

Cdr. Roberto CERVINO

JAPAN/JAPON

Head of Delegation/Chef de délégation

Dr. Shigeru KATO, Chief Hydrographer

Alternate and Advisor/Adjoint et conseiller

Mr. Shigeru KASUGA
Mr. Shinichi HAMADA
Mr. Koji TAKAHASHI
Dr. Hideo NISHIDA, former Chief Hydrographer
Dr. Hiroki YAJIMA

KOREA, REPUBLIC OF/COREE, REPUBLIQUE DE

Head of Delegation/Chef de délégation

Mr. Ye-Jong WOO, Director General

Alternate and Advisor/Adjoint et conseiller

Mr. Young Tae LIM, Deputy Director, Oceanographic Division
Mr. Jun Ho JIN, Deputy Director, Oceanographic Division
Mr. Jong Yeon PARK, Hydrographer
Mr. Jung Hyun KIM
Mr. Yeon-Taek RYU
Mr. Sungjae CHOO
Mr. Gil SOU SHIN
Mr. Eun Ju PARK
Mr. Sung Jun HWANG
Dr. Sang Hyun SUH

General Information Page 8

LATVIA/LETTONIE

Head of Delegation/Chef de délégation
Mr. Ansis ZELTINS

Alternate and Advisor/Adjoint et conseiller
Mr. Janis KRASTINS

MALAYSIA/MALAISIE

Head of Delegation/Chef de délégation
Captain Zaaim BIN HASAN, Director General

MONACO

Head of Delegation/Chef de délégation
Mr. Gilles TONELLI, Government Counsellor for Facilities, the Environment and Town Planning

Alternate and Advisor/Adjoint et conseiller
Mr. Claude COTTALORDA, General Controller of Expenditure and Chairman of the IHO Finance Committee
Mr. Jean-Michel MANZONE, Technical Adviser to the Department of Facilities, the Environment and Town Planning
Mr. Jean-Louis BISSUEL, Director of Maritime Affairs
Mr. Frédéric PARDO, Administrator, Directorate of International Affairs and Member of the IHO Legal Advisory Committee

MOROCCO/MAROC

Head of Delegation/Chef de délégation
Captain Mohamed KHALIPHY, Director

NETHERLANDS/PAYS-BAS

Head of Delegation/Chef de délégation
Captain Floor DE HAAN, RNLN

Alternate and Advisor/Adjoint et conseiller
PgD NT Erwin WORMGOOR

NEW ZEALAND/NOUVELLE- ZELANDE

Head of Delegation/Chef de délégation
Mr. Adam GREENLAND, National Hydrographer

Alternate and Advisor/Adjoint et conseiller
Mr. Geoffrey HOWARD, Manager SPDM
Mr. Gavin THOMPSON, DGIPS, GIO
Mr. David CROSSMAN, RNZN

NIGERIA

Head of Delegation/Chef de délégation
Commodore A.G. INUSA

Alternate and Advisor/Adjoint et conseiller
Commander A.O. OLUGBODE

NORWAY/NORVEGE

Head of Delegation/Chef de délégation
Mr. Gerry LARSSON-FEDDE, Director General, Norwegian Hydrographic Service

Alternate and Advisor/Adjoint et conseiller
Mr. Kjell Magne OLSEN, Director, PRIMAR
Mr. Noralf SLOTSVIK, International Coordinator

OMAN

Head of Delegation/Chef de délégation
Mr. Rashid AL KIYUMI, Director General Maritime Affairs at the Ministry
of Transport & Communications

Alternate and Advisor/Adjoint et conseiller
Cdr. David WYATT, RNO, Hydrographer
Lt. Cdr. Khalid SAID GHARID AL JABRI, RNO
Mr. Mansoor KHALFAN AL WAHABI

PAKISTAN

Head of Delegation/Chef de délégation
Lt. Cdr. Ovais BUTT

PAPUA NEW GUINEA/PAPOUASIE-NOUVELLE-GUINEE

Head of Delegation/Chef de délégation
Mr. Joseph KUNDA

PERU/PEROU

Head of Delegation/Chef de délégation
Rear Admiral Guillermo HASEMBANK ROTTA, Director

Alternate and Advisor/Adjoint et conseiller
Captain Jorge PAZ ACOSTA, Technical Manager
Lt. Cdr. Jaime VALDEZ

PHILIPPINES

Head of Delegation/Chef de délégation
Mr. Diony VENTURA, Administrator

General Information Page 10

Alternate and Advisor/Adjoint et conseiller

Mr. Efren CARANDANG, Deputy Administrator
Commodore Romeo HO
Mr. Mariano SANTIAGO, Atty.

PORTUGAL

Head of Delegation/Chef de délégation

Vice Admiral José AUGUSTO DE BRITO, General Director

Alternate and Advisor/Adjoint et conseiller

Captain Carlos VENTURA SOARES
Captain Fernando FREITAS ARTILHEIRO
Mrs. Teresa LAGINHA SANCHES

QATAR

Head of Delegation/Chef de délégation

Mr. Ali ABDULLA AL-ABDULLA, Director General

Alternate and Advisor/Adjoint et conseiller

Mr. Ahmad MUSAED AL-MOHANNADI, Manager of Department
Mr. Vladan JANKOVIC, Head of Section

ROMANIA/ROUMANIE

Head of Delegation/Chef de délégation

Captain Romeo BOSNEAGU, Head of Maritime Hydrographic Directorate

Alternate and Advisor/Adjoint et conseiller

Commander Octavian ȚERINEANU

RUSSIA/RUSSIE

Head of Delegation/Chef de délégation

Rear Admiral Sergey KOZLOV, Chief of the Department of Navigation and Oceanography (DNO)

Alternate and Advisor/Adjoint et conseiller

Captain Alexander BELOV, Deputy Chief, DNO
Captain Valentin SMIRNOV, Chief of the Oceanography Division, DNO
Captain Leonid SHALNOV, Deputy Chief of the Oceanography Division, DNO
Captain Yuriy ROZHKOV, Chief of the Chart Division
Captain Vadim SOBOLEV, Chief of the International Division, DNO
Captain 2nd rank Sergey TRAVIN, Chief of Hydrographic Equipment Repair Factory
Captain 2nd rank Vjacheslav SHEVTSOV, Deputy Chief of Hydrographic Equipment Repair Factory
Mrs. Liudmila MALKINA, Senior Expert, DNO
Mrs. Tatiana POLOYNIKOVA, Senior Expert, DNO
Mr. Alexander KARACEV, Senior Council of the Ministry of Foreign Affairs
Mr. Gennady BATALIN, Chief of Federal State Unitary Hydrographic Department
Mr. Anatoly MASSANYUK, Deputy Chief of Federal State Unitary Hydrographic Department

SAUDI ARABIA/ARABIE SAOUDITE

Head of Delegation/Chef de délégation

Mr. Morrayyea AL-SHAHRANI

Alternate and Advisor/Adjoint et conseiller

Rear Admiral Abdulrahman AL SHEHRI

Vice President Civilian Survey Saeed Abrahime ALZHRNI

Colonel Mohammed AL-HARBI

Cdr. Abdullah AL-QHTANI

Lt. Waleed Abdulaziz AL-MUHANNA

+

Consultant Mohammed ALGHAMIDI

Consultant Mohammed AL-ZAHRANI

Consultant Musa ALZURAIGI

Consultant Mustafa MOAMAR

Cartographer Abdullah AL-GHAMIDI (Aramco)

SERBIA/SERBIE

Head of Delegation/Chef de délégation

Ms. Zaneta OSTOJIC-BARJAKTAREVIC, Director General, Directorate for Inland Waterways

Alternate and Advisor/Adjoint et conseiller

Dr. Jasna MUSKATIROVIC, Head of Survey and Design Department, Directorate for Inland Waterways

SINGAPORE/SINGAPOUR

Head of Delegation/Chef de délégation

Dr. Parry OEI, Chief Hydrographer

SLOVENIA/SLOVENIE

Head of Delegation/Chef de délégation

Mr. Igor KARNICNIK

SOUTH AFRICA (REPUBLIC OF)/AFRIQUE DU SUD (REPUBLIQUE D')

Head of Delegation/Chef de délégation

Captain Abri KAMPFER, Hydrographer of the South African Navy

SPAIN/ESPAGNE

Head of Delegation/Chef de délégation

Captain Francisco J. PEREZ CARRILLO DE ALBORNOZ, Director

Alternate and Advisor/Adjoint et conseiller

Commander Angel CHANS FERREIRO, Sub-Director

SRI LANKA

Head of Delegation/Chef de délégation

Mr. Malawara ARIYAWANSA, Hydrographer

SURINAME

Head of Delegation/Chef de délégation

Mr. Freddy DELCHOT

SWEDEN/SUEDE

Head of Delegation/Chef de délégation

Mr. Åke MAGNUSSON, Head of the Hydrographic Office

Alternate and Advisor/Adjoint et conseiller

Mr. Patrik WIBERG

SYRIAN ARAB REPUBLIC/REPUBLIQUE ARABE SYRIENNE

Head of Delegation/Chef de délégation

Eng. Ghedar BARAKAT, Head of Hydrographic Office

Alternate and Advisor/Adjoint et conseiller

Ms Mazen AL KHATEB, Head of Lawful Division

THAILAND/THAÏLANDE

Head of Delegation/Chef de délégation

Vice Admiral Nakorn TANUWONG

Alternate and Advisor/Adjoint et conseiller

Captain Bongkoch SAMOSORN

TUNISIA/TUNISIE

Head of Delegation/Chef de delegation

Lt. Cdr. Karim TAGA

Alternate and Advisor/Adjoint et conseiller

Lt. Haythem KHERIJI

TURKEY/TURQUIE

Head of Delegation/Chef de délégation

Rear Admiral Mustafa IPTES

Alternate and Advisor/Adjoint et conseiller

Lt. Eşref GÜNSAY

Lt. Halim BIRKAN

UKRAINE

Head of Delegation/Chef de délégation

Mr. Sergiy SYMONENKO, Head, State Hydrographic Service

Alternate and Advisor/Adjoint et conseiller

Mr. Oleg MARCHENKO, Head of Nautical Charts and Special Publications
Department, Ukrmorkartographia (Branch of State Hydrographic Service)

Ms. Alla MIAGKOVA, Head of International Relations, State Hydrographic Service

UNITED ARAB EMIRATES/EMIRATS ARABES UNIS

Head of Delegation/Chef de délégation

Dr. Adel Khalifa AL-SHAMSI

Alternate and Advisor/Adjoint et conseiller

Eng. Abdulla Mohamed AL-NAQBI

Eng. Sulaiman Abdulla AL-SHAMSI

Eng. Khalid Saleh AL MELHI

UNITED KINGDOM/ROYAUME-UNI

Head of Delegation/Chef de délégation

Rear Admiral Ian MONCRIEFF

Alternate and Advisor/Adjoint et conseiller

Mr. Mike ROBINSON

Captain Vaughan NAIL

Ms. Kellie JAMES

Mr. Christopher SMITH

Mr. Robert HOOTON

Mr. John PEPPER

Mr. Keith TATMAN

Mrs. Jo WALLACE

Mr. Graham SAUNDERCOCK

UNITED STATES OF AMERICA/ETATS-UNIS D'AMERIQUE

Head of Delegation/Chef de delegation

Captain Steve BARNUM

Alternate and Advisor/Adjoint et conseiller

Captain John LOWELL

Ms. Katie RIES

Ms. Meg DANLEY

Mr. Craig WINN

Mr. Erich FREY

Rear Admiral (Ret.) Chris ANDREASEN

Mr. Peter DOHERTY

Mr. Steve KEATING

Mr. Rich DELGADO

Mr. Matt THOMPSON

Ms. Marian CLOUGH

Commander Brian CONNON

Mr. James BRAUD

URUGUAY

Head of Delegation/Chef de délégation
Captain Leonardo ALONSO

OBSERVERS

OBSERVERS FROM 6 NON-MEMBER STATES
OBSERVATEURS DE 6 ETATS NON MEMBRES

BOLIVIA/BOLIVIE

Captain DAEN Jorge E. ESPINOSA HURTADO, Director of Naval Hydrographic Service
Lt. CGON Willan GUTIERREZ GUARDIA

GAMBIA/GAMBIE

Chief Pilot Momodou A.B.S. MBOOB, Gambia Ports Authority
Lt. Commander Dembo JARJU, Gambia Ports Authority

GHANA

Mr. George OWUSU-ANSAH, Port Hydrographic Surveyor, Ghana Ports and Harbours
Authority

KENYA

Ms. Dorothy N. ANGOTE, Permanent Secretary, Ministry of Lands
Mr. Bowers N. OKELO OWINO, Deputy Director, Ministry of Lands

MALTA/MALTE

Mr. Joseph BIANCO, Malta Maritime Authority

TOGO

Mr. Alfa LEBGAZA, Port Autonome de Lomé
Mr. Komi Essonëya KABITCHADA, Port Autonome de Lomé
Captain Bitassa MIGNARBOUGA, Port Autonome de Lomé

**OBSERVERS FROM 13 INTERGOVERNMENTAL AND
NON-GOVERNMENTAL ORGANIZATIONS
*OBSERVATEURS DE 13 ORGANISATIONS INTERGOUVERNEMENTALES ET
NON GOUVERNEMENTALES***

**INTERNATIONAL RADIO-MARITIME COMMITTEE (CIRM) / *COMITÉ
INTERNATIONAL RADIO-MARITIME (CIRM)***

Mr. Tor SVANES

**FEDERAL AGENCY GEODESY AND CARTOGRAPHY [(FAGC) RUSSIA] / *AGENCE
FEDERALE DE GEODESIE ET DE CARTOGRAPHIE [(FAGE) RUSSIE]***

Mr. Alexander V. BORODKO, Chief of the FAGC

Mr. Boris FRIDMAN General Director of the North-West Regional Production Center of
Geoinformation

**INLAND ENC HARMONIZATION GROUP (IEHG) / *GROUPE D'HARMONISATION DES
ECDIS POUR LES EAUX INTERIEURES (IEHG)***

Mr. Bernd BIRKLUHUBER

**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC) / *COMMISSION
OCEANOGRAPHIQUE INTERGOUVERNEMENTALE (COI)***

Captain Dmitri TRAVIN

Dr. Thorkild AARUP

**INTERNATIONAL ASSOCIATION OF INSTITUTES OF NAVIGATION (IAIN) /
*ASSOCIATION INTERNATIONALE DES INSTITUTS DE NAVIGATION (AIIN)***

IGA Yves DESNOËS

**INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND
LIGHTHOUSE AUTHORITIES (IALA) / *ASSOCIATION INTERNATIONALE DE
SIGNALISATION MARITIME (AISM)***

Mr. Torsten KRUUSE, Secretary-General

**INTERNATIONAL CARTOGRAPHIC ASSOCIATION (ICA) / *ASSOCIATION
CARTOGRAPHIQUE INTERNATIONALE (ACI)***

Prof. William CARTWRIGHT, President

**INTERNATIONAL MARITIME ORGANIZATION (IMO) / *ORGANISATION MARITIME
INTERNATIONALE (OMI)***

Mr. E.E. MITROPOULOS, Secretary-General

Captain Gurpreet SINGHOTA, Head, Operational Safety Section, Maritime Safety Division

**INTERNATIONAL MARITIME PILOTS' ASSOCIATION / *ASSOCIATION
INTERNATIONALE DES PILOTES MARITIMES (IMPA)***

Captain Rodolphe STRIGA

PAN AMERICAN INSTITUTE OF GEOGRAPHY AND HISTORY (PAIGH) / *INSTITUT PANAMERICAIN DE GEOGRAPHIE ET D'HISTOIRE (IPGH)*

Mr. Paul R. COOPER

RADIO TECHNICAL COMMISSION ON AERONAUTICS (RTCA) / *COMMISSION RADIOTECHNIQUE SUR L'AERONAUTIQUE (RTCA)*

Mr. Michael BERGMANN

Mr. Greg BOWLIN

REGIONAL ORGANIZATION FOR THE PROTECTION OF THE MARINE ENVIRONMENT (ROPME) / *ORGANISATION REGIONALE POUR LA PROTECTION DE L'ENVIRONNEMENT MARIN (ROPME)*

Dr. Hassan MOHAMMADI, Co-ordinator

WORLD METEOROLOGICAL ORGANIZATION (WMO) / *ORGANISATION METEOROLOGIQUE MONDIALE (OMM)*

Mr. E. CABRERA, Chief, Maritime Meteorology and Ocean Affairs Division, Weather and Disaster Risk Reduction Services Department

**FORMER IHB PRESIDENTS/ DIRECTORS
*ANCIENS PRESIDENTS/DIRECTEURS DU BHI***

Rear Admiral Giuseppe ANGRISANO

Captain Jim AYRES

Rear Admiral Sir David HASLAM

**AGENDA FOR
THE FOURTH EXTRAORDINARY
INTERNATIONAL HYDROGRAPHIC CONFERENCE
CONF.EX4/G/01 rev.1**

Dates: 02 - 04 June 2009

Venue: Auditorium Rainier III, Monaco

ITEM	DESCRIPTION	DOCUMENT
1	CONFERENCE ORGANIZATION	
	<ul style="list-style-type: none"> • Welcoming Remarks by the President of the Directing Committee. • Confirmation of the Election of the President and Election of the Vice President of Conference. • Appointment of Rapporteurs. • Adoption of the Agenda and Programme. 	CONF.EX4/G/01 rev.1
2	OPENING CEREMONY	
	<ul style="list-style-type: none"> • Opening Address by the President of the Directing Committee. • Opening Address by the President of the Conference. • Keynote Address by the Secretary General of the IMO. • Formal Opening of the Conference by HSH Prince Albert II of Monaco. • Presentation of New Member States' Flags (Ireland and Qatar). • Prize for IHO Chart Exhibition at ICC 2007 (Australia). • Opening of Exhibition. • Group Photo. 	CONF.EX4/MISC/01 CONF.EX4/MISC/02 CONF.EX4/MISC/03 CONF.EX4/MISC/04
3	CONSIDERATION OF REPORTS AND PROPOSALS	
	<p>a) Report and Proposals Submitted by the ISPWG:</p> <ul style="list-style-type: none"> • Proposal 1 Note ISPWG Report. • Proposal 2 New definition of Hydrography. • Proposal 3 Revised Strategic Plan. • Proposal 4 Administrative Resolution T 5.1. • Proposal 5 Transition to the New Structure of the IHO Work Programme. • Proposal 6 Review possible needs for assistance in preparing the Annual Cycles of the New Strategic Mechanism. • Proposal 7 Review the implementation of the New Planning Mechanism. <p>b) Report and Proposal Submitted by the HCIWWG:</p> <ul style="list-style-type: none"> • Proposal 8 Note the HCIWWG Report. • Proposal 9 Endorsement of the Recommendations of the HCIWWG. • Proposal 10 Adoption of the Resolution as in Annex G of the HCIWWG Report. 	CONF.EX4/REP/01 CONF.EX4/G/03 CONF.EX4/REP/02 CONF.EX4/G/03

ITEM	DESCRIPTION	DOCUMENT
	<p>c) Report and Proposals Submitted by the MSDIWG:</p> <ul style="list-style-type: none"> • Proposal 11 Note the MSDIWG Report. • Proposal 12 Endorsement of the Recommendations of the MSDIWG. • Proposal 13 Adoption of the Resolution as in Annex H of the MSDIWG Report. <p>d) Proposals Submitted by Member States</p> <ul style="list-style-type: none"> • Proposal 14 rev.1 Informing States seeking Membership of the Organization on the Protocol of Amendments to the IHO Convention. • Proposal 15 (USA) Regional Hydrographic Commissions as Bodies of the International Hydrographic Organization. <p>e) Report by the IHB</p> <ul style="list-style-type: none"> • Progress on the Ratification of the Protocol of Amendments to the Convention. 	<p>CONF.EX4/REP/03 CONF.EX4/G/03</p> <p>CONF.EX4/G/03 PRO 14 rev.1</p> <p>CONF.EX4/REP/04</p>
4	DISCUSSION ON ENC DEVELOPMENTS	
	<ul style="list-style-type: none"> • Status Report on ENC developments by the IHB. • Discussion. 	CONF.EX4/REP/05
5	CLOSING CEREMONY	
	<ul style="list-style-type: none"> • Any Other Business. • Date of the next Conference. • Seating order at the next Conference. • Closing remarks by the President of the Conference. 	

**PROGRAMME FOR
THE FOURTH EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC CONFERENCE
CONF.EX4/G/01 rev.1**

Note: All events will take place at the Auditorium Rainier III, except when otherwise indicated.

Monday 01 June	09:00 - 11:00	Meeting of Officers (Pres/Chairs and DC)	IHB
	13:00 - 18:00	Registration of Delegates <i>(Note: There is no Registration of Delegates at the IHB)</i>	Auditorium
	14:00 - 17:00	Meeting S-23WG (Room C)	Auditorium
	18:30 - 19:00	Meeting of Heads of Delegation	IHB
		Designation of the Conference Vice-President	IHB
		Information on the Conference Programme	IHB
	20:00 - 22:00	Reception on Russian Ship	On board

Tuesday 02 June	08:00 - 17:30	Registration of Delegates	Auditorium
	09:00 - 09:45	Conference Organization	Auditorium
		Welcoming remarks by the President of the Directing Committee	Auditorium
		Confirmation of Election of the President and Election of the Vice President of the Conference	Auditorium
		Appointment of Rapporteurs	Auditorium
		Adoption of the Agenda and Programme	Auditorium
	10:00 - 11:00	Opening Ceremony	Auditorium
		Opening Address by the President of the Directing Committee	Auditorium
		Opening Address by the President of the Conference	Auditorium
		Keynote Address by the Secretary-General of the International Maritime Organization	Auditorium
		Formal Opening of the Conference by HSH Prince Albert II of Monaco	Auditorium
		Presentation of New Member States' Flags	Auditorium
		Presentation of Prize for IHO Chart Exhibition at ICC 2007 (Australia)	Auditorium
	11:00 - 11:45	Opening and Visit of the Hydrographic Industry Exhibition	Auditorium
	12:00 - 12:30	Group Photograph	Casino
	12:30 - 14:00	Lunch Break	
	14:00 - 15:30	Consideration of Reports and Proposals	Auditorium
		ISPWG Report	Auditorium
		Proposal 1 - Note ISPWG Report	Auditorium
		Proposal 2 - New definition of Hydrography	Auditorium
	15:30 - 16:00	Coffee Break	Auditorium
	16:00 - 17:30	Consideration of Reports and Proposals (cont.)	Auditorium
		Proposal 3 - Revised Strategic Plan	Auditorium
		Proposal 4 - Administrative Resolution T 5.1	Auditorium
	18:30 - 20:00	Exhibitors' Reception	Auditorium

General Information Page 20

Wednesday 03 June	09:00 - 10:30	Consideration of Reports and Proposals (cont.)	Auditorium
		Proposal 5 - Transition to the New Structure of the IHO Work Programme	Auditorium
		Proposal 6 - Review possible needs for assistance in preparing the Annual Cycles of the New Strategic Mechanism	Auditorium
		Proposal 7 - Review the implementation of the New Planning Mechanism	Auditorium
	10:30 - 11:00	Coffee Break	Auditorium
	11:00 - 12:30	Consideration of Reports and Proposals (cont.)	Auditorium
		HCIWWG Report	Auditorium
		Proposal 8 – Note the HCIWWG Report	Auditorium
		Proposal 9 – Endorsement of the Recommendations of the HCIWWG	Auditorium
	12:30 - 14:00	Lunch Break	
	14:00 - 15:30	Consideration of Reports and Proposals (cont.)	Auditorium
		Proposal 10 – Adoption of the Resolution as in Annex G of the HCIWWG Report	Auditorium
		MSDIWG Report	Auditorium
		Proposal 11 - Note the MSDIWG Report	Auditorium
	15:30 - 16:00	Coffee Break	Auditorium
16:00 - 17:30	Consideration of Reports and Proposals (cont.)	Auditorium	
	Proposal 12 - Endorsement of the Recommendations of the MSDIWG	Auditorium	
	Proposal 13 - Adoption of the Resolution as in Annex H of the MSDIWG Report	Auditorium	
18:30 - 20:00	Reception hosted by the Government of Monaco	Casino Monaco	

Thursday 04 June	09:00 - 10:30	Consideration of Reports and Proposals (cont.)	Auditorium
		Proposal 14 rev.1 - Informing States seeking Membership of the Organization on the Protocol of Amendments to the IHO Convention (AUSTRALIA)	Auditorium
		Proposal 15 - Regional Hydrographic Commissions as Bodies of the International Hydrographic Organization (USA)	Auditorium
		IHB Report - Progress on the Ratification of the Protocol of Amendments to the Convention	Auditorium
	10:30 - 11:00	Coffee Break	Auditorium
	11:00 - 12:30	Discussion on ENC Developments	Auditorium
		IHB Report – Status Report on ENC Developments. Discussion	Auditorium
	12:30 - 14:00	Lunch Break	
	14:00 - 16:00	Discussion on ENC Developments (cont.)	Auditorium
		Discussion (cont.)	Auditorium
	16:00 - 16:30	Coffee Break	Auditorium
	16:30 - 17:30	Closing Ceremony	Auditorium
		<ul style="list-style-type: none"> • Any Other Business • Date of the next Conference • Seating order at the next Conference • Closing remarks by the President of the Conference 	Auditorium
	18:30 - 20:00	Reception hosted by USA NAVOCEANO	On board

Friday 05 June	08:30 - 11:00	First Meeting of the Inter Regional Coordination Committee (IRCC1)	Auditorium
			Auditorium
	11:00 - 11:30	Coffee Break	Auditorium
	11:30 - 13:30	IRCC-1 (cont.)	Auditorium
	13:30 - 15:00	Lunch Break	
	15:00	Hydrographic Industry Exhibition closes	Auditorium
	17:00 - 18:30	Celebration of World Hydrography Day Presentations by Keynote Speakers on subjects related to the 2009 WHD Theme : "Hydrography – Protecting the Marine Environment". Note: Detailed Programme provided in CL 31/2009	Auditorium Auditorium
	19:00 - 21:00	Reception hosted by IHB	IHB

Saturday 06 June	09:00 - 17:00	IC-ENC Steering Committee Meeting	IHB
-----------------------------	---------------	--	-----

Monday 08 June	09:00 – 17:00	Third Meeting of the ROPME Sea Area Hydrographic Commission	IHB
---------------------------	---------------	--	-----

Tuesday 09 June	09:00 -17:00	Third Meeting of the ROPME Sea Area Hydrographic Commission	IHB
----------------------------	--------------	--	-----

**OFFICERS OF THE
4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC CONFERENCE**

PRESIDENT OF THE CONFERENCE Captain Rachid ESSOUSSI (Tunisia)

VICE-PRESIDENT OF THE CONFERENCE Vice Admiral Luiz Fernando PALMER
FONSECA (Brazil)

RAPORTEURS

**TO THE 4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC CONFERENCE
1 – 4 June 2009**

PLENARY SESSION		RAPORTEUR
Plenary Session 1 <i>Tuesday 2 June</i> Opening of the Conference	(AM)	Captain Federico BERMEJO BARO (IHB)
Plenary Session 2 <i>Tuesday 2 June</i> ISPWG matters	(PM)	Mrs. Teresa LAGINHA SANCHES (Portugal)
Plenary Session 3 <i>Wednesday 3 June</i> HCIWWG matters MSDIWG matters	(AM)	Mr. Dale NICHOLSON (Canada) Mr. Craig WINN (USA)
Plenary Session 4 Others Proposals and IHB Report	PM	Ms. Kellie JAMES (UK)
Plenary Session 5 <i>Thursday 4 June</i> ENC Development	(AM)	Ing. en chef Michel HUET (IHB)
Plenary Session 6 ENC Development (Ctd) and Closing Ceremony	(PM)	Ing. en chef Michel HUET (IHB)

OPENING ADDRESSES

**OPENING ADDRESSES OF THE
4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC CONFERENCE**

1. The President of the Directing Committee
Vice-Admiral Alexandros MARATOS
2. The President of the Conference
Captain Rachid ESSOUSSI (Tunisia)
3. The Secretary General of the International Maritime Organization (IMO)
Mr. Efthimios E. MITROPOULOS
4. His Serene Highness Prince Albert II of Monaco

**OPENING ADDRESS BY THE PRESIDENT OF THE IHB DIRECTING COMMITTEE
Vice Admiral Alexandros MARATOS**

Your Serene Highness Prince Albert,
Excellencies,
Distinguished Delegates and Observers,
Ladies and Gentlemen,

Your Serene Highness, all of us here present at this Opening Ceremony of the 4th Extraordinary International Hydrographic Conference (EIHC) are extremely privileged and grateful that you have honoured us by agreeing to officially open our Conference. May I, on behalf of the International Hydrographic Organization (IHO), thank you Your Serene Highness and your Government for your interest in and support of the Organization and also to congratulate you on your personal interest and efforts in tackling the environmental issues that the world faces today. You are one of the leaders in global initiatives for the protection of the environment especially in the Polar Regions.

On behalf of the Directing Committee, may I extend a warm welcome to the delegates from our Member States (and particularly those who have only recently joined the Organization); to the Observers from those countries not yet Members of the Organization; to the observers from many important International Organizations with whom we have fruitful and mutually beneficial cooperation and of course to the representatives of the companies who, at considerable expense, have arranged exhibits of their latest products for use in hydrography, oceanography, navigation and marine cartography. I would especially like to welcome the Minister of State, members of the Government, the Minister of State, Ambassadors, Consuls and other local dignitaries who are here with us at this Opening Ceremony. A special welcome and thanks go to the Secretary-General of IMO Mr. Mitropoulos, who has accepted to be with us this morning and to deliver the key note address. His presence is especially welcome considering that the Maritime Safety Commission is currently in session at the IMO Headquarters in London.

During this week the Conference will examine, discuss and decide on important issues. Issues that will improve the functioning of the Organization but also improve the efficiency and effectiveness in our response to the current and future maritime needs for the provision of hydrographic services based on the technological developments and challenges. The Conference will examine the reports and the

proposals of three Working Groups that were established by the XVII IHC to consider important subjects:

- The IHO Strategic Plan Working Group. This group is presenting a new Strategic Plan that is considering the proposed amendments to the IHO Convention and the technical restructuring of the Organization and will endeavour to meet the upcoming maritime needs and requirements in a global and rapidly changing technological environment. The introduction for the first time of a Risk Management Framework, a tool to support delivery of the Strategic Plan, will minimize and prevent adverse consequences emanating from foreseeable risks to the achievement of the aims and objectives of the Organization, the performance of which will be measured through performance indicators. All Member States, the Committees and the Bureau have an important role in the management of risk. The Conference will also consider an improved definition of Hydrography contained in the new Strategic Plan, based on the broader understating of its applicability and its connection with other related sciences;
- The Conference will examine the report and the proposals of the WG on the Hydrography and Cartography of Inland Waters, analyzing and recommending the level and nature of the possible involvement of the Organization in the Hydrography and Cartography of Inland Waterways. An important issue that is connected with the new proposed definition of Hydrography and where the Regional Hydrographic Commissions have an important role to play in progressing hydrographic standards and mutual cooperation for the enhancement of navigation safety in navigable inland waters within a region. The valuable participation and contribution of members of the Inland ENC Harmonization Group in the work of this WG noted with satisfaction. The acceptance by the IHO of this Group as an accredited NGIO will further strengthen the cooperation between the two organizations ensuring consistency and harmonization between the ENCs and the Inland ENCs, which are based on the IHO standards, so that the mariners of the sea and inland waterways will use similar hydrographic products;
- It has been recognized at national and international levels that data and information collected for the production of navigational charts and the support of safety to navigation are also important in many other aspects of ocean and marine environment, science and management. The Hydrographic Office is an important part of the National Geospatial Data Infrastructure and the IHO has an important role to play in coordinating the various demands and requirements on this issue. The Conference will examine the report of the Marine Spatial Data Infrastructure Working Group and its proposals considering the actions that need to be undertaken by the Organization and the RHCs, especially in developing an SDI policy and an SDI capacity building plan to provide the necessary skills, knowledge and understanding of key components of this infrastructure.

The Conference will also examine the progress of the approval of the Protocol of Amendments to the IHO Convention and what possibly can be done to accelerate the process. So far we have had a slow response from Member States to ratify the Protocol of the Amendments and we all appreciate that there is an imperative need for the improvements to the Convention to be implemented as soon as possible.

Finally, proposals from Member States covering the status of the RHCs within the Organization and the liaison with States seeking membership of the IHO in order to be informed on the pending amendments to the Convention will also be examined.

During this week some other important events will take place. The IMO decision for the phased in mandatory carriage requirements of ECDIS for various types and tonnages of ships, has mainly been accepted on the firm position of the IHO that by 2010 an appropriate coverage of ENCs will be in place, as it was unanimously decided during the XVII IHC in 2007. A round-table discussion on the

status of ENC developments will give us the opportunity to examine and evaluate where we stand today, what are possible problems in coverage, quality and distribution that need to be considered and what needs to be done. It has to be noted that ENCs have also been recognized as one of the important factors in the implementation of the e-Navigation strategy progressed by IMO. The first meeting of the IRCC, the meeting of the ROMPE HC and the celebration of the WHD are some other events that will take place in the margins of this Conference, while the S- 23 WG had its first meeting yesterday.

Dear colleagues,

This Extraordinary International Hydrographic Conference will give us the opportunity to examine fundamental strategic and technological issues and developments that will reinforce the position of the Organization to improve our response to national, regional and global demands and challenges for safety at sea, protection of the marine environment, development and security. Hydrography is very closely related with all the maritime activities and the decisions of this Conference will further contribute to improving the support of all those having a professional, academic or research interest in the sea. I wish success to this important Conference.

OPENING ADDRESS BY THE PRESIDENT OF THE CONFERENCE
Captain Rachid ESSOUSSI (Tunisia)

Your Serene Highness
Your Excellencies
Distinguished Delegates, Observers and Guests
Ladies and Gentlemen

It is a great honour for me to address you at the Opening Ceremony of this fourth Extraordinary International Hydrographic Conference especially in the presence of His Serene Highness Prince Albert. We are deeply honoured and grateful that you are here with us today. On behalf of the Members of the International Hydrographic Organization and guests here present, I would like to extend our very respectful thanks to you for your attendance at this Opening Ceremony and for the continuous assistance and encouragement dedicated through the reign of your late father, His Serene Highness Prince Rainier III, which you still ensure today.

I am also immensely pleased to have this opportunity to preside such an important event, especially as this is the first time a developing country has provided a President to an International Hydrographic Conference. Tunisia is honoured to receive such trust that the Member States of the International Hydrographic Organization, the President and Directors of the International Hydrographic Bureau have given us for this task.

This nomination is certainly a prize to the palpable leap that Tunisia, and especially the Tunisian Hydrographic and Oceanographic Center, has achieved in Hydrography during the last decade, and it would be an incentive to work harder and progress further.

It is also definitely tangible proof that all IHO members are on an equal stance within the IHO and all have equal chances to participate and be stakeholders in the worldwide hydrographic issues.

The International Hydrographic Organization has always focused on the efficient and effective responses to the hydrographic situation world wide, and is continuously trying to identify the best operational procedures and structures in order to achieve its sole objective: safety to navigation.

Opening Addresses Page 26

As a matter of fact, the significant work and thorough reports presented by the IHO Strategic Plan Working Group, the Hydrography and Cartography of Inland Waters Working Group and the Marine Spatial Data Infrastructure Working Group clearly reflect this.

On the occasion of these reports, I would like to raise a number of points.

Firstly, I would like to highlight the revision of the existing IHO Strategic Plan proposed by the ISPWG which directly involves the different bodies of the IHO as well as IHO Member States in the formulation, monitoring and reporting of the Strategic Plan; a proposal which could enhance the development of the scope of work of the IHO.

In addition, the new definition of Hydrography proposed by the ISPWG would reflect the evolving nature of hydrography as a science and as a technique. I encourage therefore considering the ISPWG proposals presented.

Secondly, transition from coastal to inland waters should be as flawless and harmonious as possible, taking into consideration the complex nature and various national jurisdictions ruling inland water navigation. The report of the HCIWWG clearly captured this fact and I would invite all members to consider endorsing it along with the recommendations proposed.

Thirdly, Marine Spatial Data Infrastructure is becoming more and more urgent within the hydrographic offices in order to equal all other MSDI stakeholders on national or regional levels. The MSDIWG has addressed this issue in its report and proposed a number of recommendations which I highly encourage you to consider in the corresponding sessions.

Fourthly I would like to point out that the first Inter Regional Coordination Committee meeting on the occasion of this Conference will be an important opportunity to hold discussions between all the Regional Hydrographic Commissions; an opportunity which only countries involved in more than one RHC would benefit. I strongly invite all RHC Chairmen to take advantage of this important meeting to make the discussions as fruitful as possible.

On this important occasion I would also like to stress the importance of accelerating the process of approving the Protocol of Amendments of the IHO Convention in order to achieve the number of votes required to bring the new Convention into force. Let me remind you that the amended Convention has a positive reflection on the future work of the IHO.

It is also important to note that one of our main concerns in this Extraordinary Conference is the progress of ENC coverage. Our mission would be to seek rapid and tangible progress in covering major global routes with an official and reliable digital vector service, enabling safer navigation through better marine environmental tools and fulfilling the IHO commitments towards the International Maritime Organization.

I strongly believe that the discussions of this matter, along with the other important issues throughout the different sessions of this conference would be a prolific continuity to the work of the IHO and the whole hydrographic community.

I would like to finally commend all working groups for the outstanding work they have carried out and I am quite confident that we will reach agreements on all the issues before us, especially with the cooperative atmosphere we have always witnessed throughout the history of the IHO.

Thank you for your kind attention.

**OPENING ADDRESS BY THE SECRETARY GENERAL OF THE INTERNATIONAL
MARITIME ORGANIZATION (IMO)
Mr. Efthimios E. MITROPOULOS**

"HYDROGRAPHY - PROTECTING THE MARINE ENVIRONMENT"

Your Serene Highness, Excellencies,
President of the Directing Committee of the International Hydrographic Bureau,
President of the Conference,
Past Presidents of IHB, Heads of international organizations,
Distinguished delegates and observers,
Ladies and gentlemen,

It is both an honour and a pleasure to be with you today at this, the fourth Extraordinary International Hydrographic Conference, which, and I am sure this is no coincidence, neatly bisects the regular five-year cycle between regular meetings of the Conference, as the supreme governing body of your Organization.

However, before I proceed any further, let me say that my, and IMO's entire membership's, thoughts and prayers are with those on board the missing Air France plane, their families and friends.

Ladies and gentlemen,

IHO's constitution allows for Extraordinary Conferences to be convened for the purpose of considering specific topics and proposals. And so, this Extraordinary Conference will consider three reports and recommendations from working groups that were set up at your last regular Conference in 2007. You will also consider a number of other proposals that have been submitted by individual Member States on various related subjects.

In addition, however, this week will see a range of other activities, presentations and exhibits, all related to the discipline of hydrography, culminating in the celebration of World Hydrography Day on Friday, for which, this year, you have chosen the theme "Hydrography - Protecting the Marine Environment".

As the theme suggests, the celebrations will highlight the many ways in which hydrography helps to minimize environmental damage. This is indeed an apt theme, coming, as it does, at a time when there is, quite rightly, a growing concern for our environment and a genuine fear that, if we do not change our ways right now, the damage we will inflict on our planet will be severe and permanent. It is only very recently that mankind has begun to understand that the planet that sustains us and gives us life is a fragile entity and that our actions can, and do, have massive repercussions. That the earth and its resources do not belong to us and are not ours to squander without thought for the future is not proving an easy lesson for us to learn, but we are gradually succeeding - or, at least, waking up to the enormity of the task that confronts us. And I remember, quite distinctly, Your Serene Highness, your personal interest in all matters environmental during our conversation last year in Paris in the margins of the 14th of July celebrations.

Individually and collectively, we all need to examine the part we can play. As for hydrography, one of its principal objectives has always been to assist safe navigation, through the production of up-to-date nautical charts and related publications - and there is a simple and direct correlation between safe navigation and the protection of the marine environment. In an era when ships have become larger, with correspondingly deeper drafts; when new trading patterns are emerging; and when new ports and offshore terminals are being built, often from scratch, creating the need for new channels to access

them to be designed and constructed, the basic requirement for accurate and reliable charts has seldom been so important.

But, more than this, hydrographic data are also essential to a multitude of other diverse activities, such as global seabed studies; mapping and predicting shoreline erosion and sediment transport; delimitation of maritime boundaries; coastal construction; the study of marine resources, both living and non-living; pollution control; and the development of marine geographic information systems - all of which can be enlisted in the battle to preserve and protect our environment.

Accurate hydrographic surveys and up-to-date charts are, indeed, pillars of safe navigation; and, by the same token, the work of the International Hydrographic Organization is a central part of IMO's achievements in this arena. While our Sub-Committee on Safety of Navigation may be the principal beneficiary of IHO's input and that our Radiocommunications and Search and Rescue has benefited from your input in the development of the Global Maritime Distress and Safety System - not to mention the joint project we executed, together with IALA, to enhance safety and environmental protection in Lake Victoria following the tragic "Bukoba" accident in 1996 - our Organization, as a whole, has good cause to be grateful for your contribution and I should like to take this opportunity to thank you, on behalf of the membership of IMO, for the many years of fruitful collaboration between our two Organizations.

By way of an example of this collaboration at work, this very week, at IMO, the Maritime Safety Committee expressed its keenness to adopt amendments to existing regulations under the Safety of Life at Sea Convention to make mandatory the carriage of Electronic Chart Display and Information Systems, known as ECDIS - a development in which the contribution of IHO and its Members has been a key factor. IHO's input to the preparation of the relevant performance standards for ECDIS, including the development of corresponding Electronic Navigational Charts, or ENCs, has been of major significance.

The use of ECDIS, with ENCs, has been recognized as a major factor in improving navigational safety. But there was always something of a "chicken and egg" situation, in that, in the absence of sufficient ENC coverage, the mandatory carriage requirement was not really feasible; but, in the absence of a mandatory carriage requirement, the commercial incentive to develop widespread ENCs was also lacking.

It is greatly to the credit of IHO and its Member States that your Organization took the bull by the horns, so to speak, and undertook the necessary measures to develop ENC coverage in anticipation of possible IMO requirements. The fact that IHO was able, in 2007, to report to IMO that ENC coverage was steadily increasing and that there would be an adequate coverage of consistent ENCs by the time any further mandatory ECDIS carriage requirements were likely to be adopted, helped considerably to move this agenda item forward to the point where, as I just mentioned, we are on the verge of a successful outcome.

This is just one example of IHO's strong support of IMO's efforts, and I note that the events of this week will include a seminar for IHO Member States on the status of global coverage of electronic navigational charts, from which I have no doubt that reports of continuing progress will emerge.

While the move from paper chart to ECDIS navigation should produce clear benefits in terms of safety and, by extension, environmental protection, there is general agreement that the transitional period needs careful management. To this end, once again, your Organization and its Members have been commendably pro-active, providing an online chart catalogue that details the coverage of electronic charts; references to coastal State guidance on any requirements for paper charts; links to IHO Member States' websites, where additional information may be found; as well as an online publication detailing the facts about electronic charts and carriage requirements.

The switchover to electronic charting will undoubtedly prove more straightforward in some countries and regions than in others. To address the relatively poor state of hydrographic capabilities in developing countries and Small Island Developing States and, in particular, the slower progress of ENC coverage, IHO is actively involved in capacity-building by conducting seminars, workshops and training through Member States and regional hydrographic commissions from all over the world.

In other areas, often related, IHO is also actively pursuing a wide agenda that promotes the practical and useful application of hydrography itself and of what one might call its "end products". While I do not want to risk losing my audience by simply reading out a list, I would like to mention just a few examples: the support of the hydrographic community for the Marine Electronic Highway Demonstration Project in the Strait of Malacca; the development of chart symbology for Particularly Sensitive Sea Areas and for ships' routeing systems; and the IHO working group to develop an international standard to ensure common and consistent means for depicting marine environment protection measures on electronic charts. All of these demonstrate clearly how hydrography can enhance the ability of mariners to navigate safely and, as your World Hydrography Day theme so rightly highlights, help to protect the environment.

Ladies and gentlemen,

Safe navigation requires accurate, up-to-date and timely hydrographic data, information and products, delivered in a standardized and internationally recognized form. The fact that, every day, millions of tonnes of cargo are safely delivered and thousands of seafarers routinely go about their working lives with an unthinking confidence in the accuracy and fidelity of their navigational charts - and, of course, the hydrographical data on which those charts are based - speaks volumes for the effectiveness of the work carried out by the hydrographic community over the course of a long and proud history.

Indeed, the importance of your work and of the collaboration between our Organizations has been recognized at the highest level. I refer, of course, to the United Nations General Assembly resolution A/RES/58/240 on Oceans and the Law of the Sea, adopted in 2003; dealing, in large part, with safety of navigation, this resolution welcomes the work of IHO and its 14 Regional Hydrographic Commissions, noting IHO's capacity to provide technical assistance, facilitate training and identify potential funding sources for development or improvement of hydrographic services; and, among other things, it invites IHO and IMO to continue efforts and to jointly adopt measures with a view to encouraging greater international cooperation and coordination for the transition to electronic nautical charts; and to increase the coverage of hydrographic information on a global basis, especially in areas of international navigation and ports and where there are vulnerable or protected marine areas. I trust we have not disappointed those who turn to us for guidance, leadership and successful delivery in our respective fields of competence.

Implicit in the resolution is an understanding that the vital work of hydrographic surveying can never truly be said to be complete. On the one hand, there is a constant requirement for the world's sparsely surveyed waters, often around developing nations, to be more accurately charted. And, on the other, even in intensively surveyed areas, many charts that were adequate a decade ago may have to be recompiled using new survey data, collected to a higher degree of accuracy and providing improved coverage. Just as developments, such as the echo sounder in the 1930s and sonar in the 1960s, brought huge advances in the charting of the sea bed, so more recent technology, such as satellite navigation and advanced data handling techniques, has made possible a level of accuracy that was unimaginable only a few years ago and greatly increased the precision to which modern hydrographic surveys can be conducted.

Moreover, since 1 July 2002, when the revised chapter V of the Safety of Life at Sea Convention entered into force, the provision and maintenance of hydrographic services is no longer a matter of choice for most countries, but a binding requirement. Signatories to SOLAS have an obligation to collect hydrographic data and information, to produce charts and nautical publications and to keep them up-to-date and to promulgate Maritime Safety Information - activities, which all contribute to enhanced navigational safety and to the protection of the marine environment.

World Hydrography Day, and the surrounding celebratory activities, provide you with a wonderful opportunity to bring the objectives and achievements of the International Hydrographic Organization to the attention of a wider audience and, by so doing, increase overall public awareness of the vital, yet largely unsung, role that hydrography plays in people's lives.

It is IMO's and my pleasure to be associated with it, so let me conclude by congratulating you on your many achievements; acknowledging the leadership role played by Admiral Maratos and his fellow Directors; and wishing you all a successful, fruitful and rewarding Conference.

Ladies and gentlemen, thank you.

**OPENING ADDRESS BY
HIS SERENE HIGHNESS PRINCE ALBERT II OF MONACO**

Admiral Maratos, President of the International Hydrographic Bureau, Captain Essoussi, President of the 4th Extraordinary International Hydrographic Conference, Secretary General of the International Maritime Organization, Former Presidents of the IHB, Minister of State, Excellencies, Distinguished Delegates, Observers, Ladies and Gentlemen

I am pleased to be here to wish you a warm welcome to the Principality of Monaco for the 4th Extraordinary International Hydrographic Conference. Sad circumstances had prevented me from doing so personally four years ago.

Other tragic events are in our thoughts this morning. I join the Secretary General of the International Maritime Organization in expressing our deepest sympathy to the victims and their families of flight Air France 447 which disappeared over the Atlantic yesterday.

I know your work pays tribute to my Father's commitment to hydrography and Prince Albert I's voluntarism when, eighty years ago, the cornerstone was laid in Monaco for the permanent International Bureau, originally the *Club des Hydrographes*.

How much has been accomplished since then!

The International Hydrographic Organization was founded here in 1967, which is why my country has the honour of periodically hosting the Hydrographic Conference and being home to the International Hydrographic Bureau.

Thus, the Hydrographic Community is perfectly at home in the Principality.

Yes, for me my country's constant support to your Organization and its Bureau is cause for pride.

I am aware that your Conference agenda is very rich, as attested in particular by your different working groups' reports addressing:

- ✓ Strategy,
- ✓ Hydrography and the mapping of inland bodies of water,
- ✓ Infrastructures for marine satellite data,
- ✓ Progression of ratification of the protocol aiming to modify the Convention relative to the International Hydrographic Organization, of which my Government is the depositary.

All this work is witness to your organization's capacity to adapt to changes in hydrographic science.

I am also delighted by the large-scale commercial hydrographic exhibition that is held alongside this conference and which is very complementary.

And how could we overlook the fact that your meeting will close on Friday with a celebration of the World Hydrography Day, whose theme this year, "Hydrography – Protection of the Marine Environment", will provide an opportunity for eminent specialists from the International Maritime Organization, UNESCO Intergovernmental Oceanographic Commission and International Hydrographic Organization to promote defence and protection of the environment from this angle.

As you well know, the Mediterranean Sea, on whose shores we are meeting, is extremely vulnerable today, under threat from climate change in particular.

It happens that it is at the Poles that we can study these hazards, the better to understand and mitigate them.

This is why it struck me as essential, in the context of my own commitment to saving our Planet, to punctuate the close of the International Polar Year with my expedition to Antarctica last January.

I can see each day the changes wrought by this commitment, thanks to the support of men and women who, like each of you, are convinced that we must do our utmost to protect our environment, and in particular the marine environment, for ourselves and for future generations.

There is in Antarctic an exceptional scientific community made up of people from all continents studying climate change, in particular, by seeking clues to understanding the evolution of our Planet and its climate in the millennia-old ice.

I undertook this expedition to listen to the scientific community and appreciate their work.

This communion around shared goals transcends nationalities; it is for me the completion of one of the dreams of my great-great-grandfather, Prince Albert I, witness to a loyalty to his values, so closely linked to Science and his struggle in favour of the Planet.

This reinforces my conviction that the action I have instigated is right and that there is a need for all of us to mobilize and heed the words of scientists and assist them.

This is one of the keys for our societies' future development in a world where innovation is so crucial. Such is the message of confidence I received from the scientific community I met during this expedition, a message I am sharing with you this morning.

I know I can count on your commitment, today and tomorrow, to place your discussions in the context of this momentum that is primordial for our Planet's future.

It is my immense pleasure to officially open the 4th Extraordinary International Hydrographic Conference.

Thank you very much.

PROPOSALS SUBMITTED TO THE CONFERENCE

**LIST OF CONFERENCE PROPOSALS
(CONF.EX4/G/03)**

INDEX OF PROPOSALS

PROPOSAL N°	NAME OF PROPOSAL	SUBMITTED BY	PAGE
1.	NOTE THE ISPWG REPORT.	ISPWG	35
2.	NEW DEFINITION OF HYDROGRAPHY.	ISPWG	38
3.	REVISED STRATEGIC PLAN (ANNEX 9 TO THE ISPWG REPORT).	ISPWG	41
4.	ADMINISTRATIVE RESOLUTION T5.1 (ANNEX 10 TO THE ISPWG REPORT).	ISPWG	45
5.	TRANSITION TO THE NEW STRUCTURE OF THE IHO WORK PROGRAMME, SECTION 8 OF ISPWG REPORT.	ISPWG	47
6.	REVIEW POSSIBLE NEEDS FOR ASSISTANCE IN PREPARING THE ANNUAL CYCLES OF THE NEW STRATEGIC MECHANISM.	ISPWG	50
7.	REVIEW THE IMPLEMENTATION OF THE NEW PLANNING MECHANISM.	ISPWG	52
8.	NOTE THE HCIWWG REPORT.	HCIWWG	54
9.	ENDORSEMENT OF THE RECOMMENDATIONS OF THE HCIWWG, SECTION 8 OF THE HCIWWG REPORT.	HCIWWG	56
10.	ADOPTION OF THE RESOLUTION AS IN ANNEX G OF THE HCIWWG REPORT.	HCIWWG	59
11.	NOTE THE MSDIWG REPORT.	MSDIWG	63
12.	ENDORSEMENT OF THE RECOMMENDATIONS OF THE MSDIWG, SECTION 7 OF THE MSDIWG REPORT.	MSDIWG	65
13.	ADOPTION OF THE RESOLUTION AS IN ANNEX H OF THE MSDIWG REPORT.	MSDIWG	68

PROPOSAL N°	NAME OF PROPOSAL	SUBMITTED BY	PAGE
14. rev.1	INFORMING STATES SEEKING MEMBERSHIP OF THE ORGANIZATION ON THE PROTOCOL OF AMENDMENTS TO THE IHO CONVENTION.	AUSTRALIA	71
15.	REGIONAL HYDROGRAPHIC COMMISSIONS AS BODIES OF THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION.	USA	74

PROPOSALS SUBMITTED BY ISPWG, HCIWWG AND MSDIWG

PRO 1 - PROPOSAL TO NOTE THE ISPWG REPORT

Submitted by: ISPWG

PROPOSAL

The 4th EIHC is invited to **Note** the Report of the ISPWG.

EXPLANATORY NOTE:

In May 2007, the XVIIth IHC decided to establish the IHO Strategic Plan Working Group (ISPWG) which was charged to review the existing IHO Strategic Plan, prepare a revised draft Strategic Plan and report to the Member States no later than 1st January 2009.

This report details the work completed by the ISPWG in accordance with its terms of reference. It describes the ISPWG membership, work method and work plan and reviews the various issues that were addressed. The report and the resulting proposals are submitted for consideration by the 4th EIHC.

The ISPWG worked mainly by correspondence, with a single plenary face-to-face meeting. It agreed on the following main tasks:

- review of the structure of the Strategic Plan,
- review of the different sections of the Strategic Plan,
- review of risk management,
- review of progress monitoring,
- review of the transition to the new structure.

The revised draft Strategic Plan prepared by the ISPWG is attached in Annex 9 of the report.

The ISPWG proposes arrangements for the transition to a new structure of the Work Programme aligned on the revised Strategic Plan.

IHB COMMENT

1. The ISPWG report clearly identifies a number of new and significant activities and responsibilities that the IHB will be required to undertake. The Directing Committee has particular concerns about the additional workload that the proposed Strategic Plan process will place on the IHB. Under this proposal, Member States, the HSSC and IRCC, the RHCs and other bodies and Organizations all have an increased and more direct involvement in the formulation, monitoring and reporting of the Strategic Plan. At the same time, the preparation, collation, coordination, analysis and other requirements to support these new responsibilities all fall under the workload of the IHB.

2. Paragraph 1.3 of Annex A of the Report concerning the Risk Management Framework provides an example of the extended scope of work that the Bureau would undertake under the new Strategic Plan process. According to the paragraph: “The IHB is *ultimately responsible* to Member States for the IHO’s risk management. It has the *responsibility* for ensuring that the risk management framework is *effectively implemented* within IHO and that its principles are communicated at all levels. It will also *provide the necessary profile to advance a risk management culture in IHO*, including participation in its monitoring and reporting. The IHB in consultation with the chairs of the

HSSC and IRCC, *is responsible for the routine oversight of the IHO's risk management programme, its implementation, agreeing risk tolerance and treatment and their regular monitoring*". Similar responsibilities and consequently increased workloads are placed on the Bureau regarding the management of PIs, the WP, the Strategic Assumptions and the Directions.

3. The Directing Committee has been informed by other International Organizations and by some Member States who have implemented strategic planning and reporting mechanisms similar to those identified in the ISPWG report that their implementation and operation is a complex task that requires experienced and specialized dedicated personnel and which is, in effect, a full time job. The Directing Committee must therefore indicate that it appears unlikely that the current capacity of the Bureau is sufficient to undertake the extensive and regular reporting, monitoring and coordinating tasks envisaged under the ISPWG Proposal.

4. The Directing Committee takes note of the ISPWG observation at paragraph 8 of its Report, that: "... recognizes that the IHB may be confronted to some difficulties in implementing the additional tasks associated with risk management and performance monitoring" and also its Proposal 6, for the IHB "...to review possible needs for assistance in preparing the annual cycles of the new strategic mechanism in consultation with the HSSC and IRCC chairs, and to report to Member States before the end of 2010". However, given that the IHB workload is already fully committed to the current WP, and in order to provide such a report, the Directing Committee will need the short-term secondment of suitably experienced personnel either from MS or from other sources, to assist them.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada notes this report and appreciates the significant work that was done by the ISPWG and the Chair Group specifically. Canada looks forward to supporting the IHO in realizing these recommendations and will work with the IHO should any further refinement of the Strategic Plan processes be required.

FINLAND

Supported. Finland agrees to the IHB comments, but the need for a full time job for implementing and operating the planning and reporting mechanisms is to be analyzed more thoroughly.

FRANCE

France approves this Proposal to note the ISPWG Report.

GREECE

Supports this proposal.

NETHERLANDS

No comments on ISPWG Report.

NORWAY

Taken into consideration.

UNITED KINGDOM

UK, an active contributor to the ISPWG discussions, fully supports the proposal.

UK notes the point raised by the Directing Committee with respect to additional workload on the IHB and believes that, if the IHO is to build on the strong strategic leadership provided by the ISPWG, it will need to give due consideration to these resourcing issues (noting that those associated with risk management are covered in PRO 6). If this cannot be found from reprioritizing existing workloads in present bureau staff, then in advertising for a seconded person such a planning task should be billed as suitable for someone who will get specific insight to the workings of the directors and to the strategic business of the IHO. UKHO employs candidates such as these in key planning officer roles as part of senior management grooming posts.

UNITED STATES OF AMERICA

The United States endorses the report of the IHO Strategic Plan Working Group recognizing that implementation could involve challenges for the Organization. The U.S. is concerned about the Directing Committee conclusion that implementation of the recommendations is beyond the capacity of the existing staff of the Bureau. In this case, the U.S. would like IHO to consider options for implementation of the risk management system, including a phased or delayed implementation until the resource implications are fully understood. This needs to be delineated before the 2012 International Hydrographic Conference where resources will be considered for the next 5-year plan. Any proposal for added Bureau resources should be presented in the 2012 Finance documents as an option for Member State consideration along with the projected benefits of adopting a risk management approach.

PRO 2 - PROPOSAL TO APPROVE NEW DEFINITION OF HYDROGRAPHY

Submitted by: ISPWG

PROPOSAL

The 4th EIHC is invited to approve the following new definition of hydrography as agreed by the Committee on the Hydrographic Dictionary (see Annex 4 to the ISPWG Report):

“Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their change over time, for the primary purpose of safety of navigation and in support of all other marine activities, including economic development, security and defence, scientific research, and environmental protection”.

EXPLANATORY NOTE:

1. The current definition of “Hydrography” contained in the Hydrographic Dictionary (S-32) states that “Hydrography is that branch of applied sciences which deals with the measurement and description of the features of the sea and coastal areas for the primary purpose of navigation and all other marine purposes and activities including (inter alia) offshore activities, research, protection of the marine environment and prediction services”.

2. The ISPWG in considering the Preamble of the Strategic Plan, decided to improve the definition of Hydrography as follows: “Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of oceans, seas coastal areas, lakes and rivers, as well as with the prediction of their evolution, for the primary purpose of safety of navigation and all other marine activities, including economic development, security and defence, scientific research, and environmental protection”.

3. This definition was sent through the IHB to Mr. Jerry Mills, Chairman of the Committee on the Hydrographic Dictionary (CHD) for consideration and agreement. The Chairman after consulting with members of the Committee has agreed with the proposed definition with a small revision. The phrase “... prediction of their evolution ...” to be modified to “...prediction of their change over time ...”. Hence the final wording of the **definition of Hydrography** is submitted for approval by the 4EIHC.

MEMBER STATES' COMMENTS

BANGLADESH

It is intimated that the new definition of Hydrography should also include the activities of intelligence gathering as mentioned “and any kind of intelligence gathering” in the definition below:

Definition proposed:

“Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their change over time, for the primary purpose of safety of navigation and in support of all other marine activities, including economic development, security and defence, scientific research, environmental protection and any kind of intelligence gathering.”

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports the adoption of the proposed new definition of hydrography.

FINLAND

Supported. No comments.

FRANCE

France approves the new definition of Hydrography which takes into account the changing issues and concerns with which this activity is confronted.

GERMANY

The wider scope of the proposed new definition of hydrography now also includes topics falling under the responsibility of other international bodies (e.g. IOC, FIG). Therefore, the general nature of this definition should be pointed out clearly and unambiguously. The definition should be accompanied by a statement of the limited scope of responsibility of IHO, especially with regard to inland waters.

GREECE

Supports this proposal.

JAPAN

In view of significantly growing importance of disaster management in such cases as eruption of submarine volcanoes and earthquakes, Japan proposes to add “disaster management” to the marine activities currently enumerated in the new definition of hydrography : i.e. economic development, security and defence, scientific research, and environmental protection.

NETHERLANDS

The Netherlands agree with the proposed definition of Hydrography.

NORWAY

Norway would like to have a clarification on the term “hydrographic features”. Norway has experienced some difficulties in defining the overlap and the distinction between hydrographic and oceanographic features. Among physical oceanographers, at least in Europe, it is common to denote “oceanographic features” like temperature, salinity/conductivity as “hydrographic features”. Our impression is that HOs normally refer to seafloor surveying, tides and currents, together with the provision of navigational charts and associated publications, when referring to *hydrography*.

UNITED KINGDOM

UK, an active contributor to the ISPWG discussions, fully supports the proposal.

UNITED STATES OF AMERICA

As Chair of the IHO Committee on the Hydrographic Dictionary, the U.S. supports adoption of this proposed new definition.

PRO 3 - PROPOSAL TO APPROVE REVISED STRATEGIC PLAN

Submitted by: ISPWG

PROPOSAL

The 4th EIHC is invited to review and approve the draft revised Strategic Plan submitted in Annex 9 to the ISPWG Report.

EXPLANATORY NOTE:

The contents of the draft Strategic Plan proposed by the ISPWG are as follows:

1. Preamble
2. Vision / Mission / Object
3. Strategic assumptions
4. Strategic directions
5. Ways and means
 - 5.1. Planning and review cycles
 - 5.2. Risk analysis and mitigation
 - 5.3. Work Programme
6. Progress monitoring

Annex A - Risk management framework

Annex B - Responsibilities of IHO organs

In accordance with the ISPWG's terms of reference, the first two sections are based on the IHO's new Vision, Mission and Objectives as defined in the amendments to the IHO Convention.

The strategic assumptions from which the strategic directions are derived are organized in five categories:

1. Status of hydrographic services / Benefits and beneficiaries
2. Political and societal trends
3. Economic and market related trends
4. Technological trends
5. Legal and regulatory trends

The relevant strategic assumptions are identified as "strengths" (S), "weaknesses" (W) "opportunities" (O) or "threats" (T) for the implementation of IHO objectives.

Five main strategic directions are proposed:

1. Strengthen the role and effectiveness of the IHO
2. Facilitate global coverage and use of official hydrographic data, products and services
3. Raise global awareness of the importance of hydrography
4. Assist Member States to fulfil their roles

The ways and means section outlines the planning and review cycles for the Strategic Plan and the associated Work Programme and addresses risk management aspects, referring to a risk management framework annexed to the revised draft Strategic Plan. This section also deals with the IHO Work Programme.

Proposals Page 42

Under the current Strategic Plan and in order for the Organization to meet its current goals, the IHO has developed and manages the following five principal programmes:

- Co-operation between Member States and with International Organizations
- Capacity building
- Techniques and standards co-ordination and support
- Information management and public relations
- General organization development

The ISPWG in studying the Strategic Plan has identified the following three principal programmes which, if approved, will replace the five existing ones. These programmes are the following:

- *Corporate Affairs* under the responsibility of the International Hydrographic Bureau (to be replaced by the Secretary General when the revised IHO Convention enters into force),
- *Hydrographic Services and Standards* under the responsibility of the relevant Committee (HSSC),
- *Inter Regional Coordination and Support* under the responsibility of the Inter Regional Coordination Committee (IRCC).

Progress monitoring is based on performance indicators against which progress in implementing the strategic directions can be periodically assessed. Two levels of performance indicators are proposed:

- strategic level: a small number of PIs associated with the objectives of the IHO (1 or 2 PIs per objective), to be agreed by the Conference (*the Conference* to be replaced by *the Assembly* when the revised IHO Convention enters into force) and managed by the IHB (*the IHB* to be replaced by *the Secretary General and the Council* when the revised IHO Convention enters into force);
- working level: PIs associated with the strategic directions and managed by the appropriate subsidiary organs;

A selection of strategic performance indicators is proposed and the monitoring procedure is outlined.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports the revised Strategic Plan as outlined in Annex 9. Canada looks forward to working with IHB and Member States to implement the proposed Strategic Plan and to make any refinements that may be required as experience is gained.

FINLAND

Supported. No comments.

FRANCE

France approves the draft revised Strategic Plan proposed by the ISPWG. France notes that the present economic crisis, which occurred after the conclusion of the Group's work, has resulted in a reduction in the demand for maritime transport and it is difficult to forecast how long this will last. France does not therefore consider it necessary at this stage to alter the corresponding strategic assumption in 2.1.

GREECE

Supports this proposal.

NETHERLANDS

The Netherlands agree with the draft revised Strategic Plan.

NORWAY

Norway supports the proposed Strategic Plan. The proposals bring good consistency between the Work Programme and the main structure of the Organization.

UNITED KINGDOM

UK, an active contributor to the ISPWG discussions, fully supports the proposal.

UNITED STATES OF AMERICA

The U.S. supports the three principal programs, Corporate Affairs, Hydrographic Services and Standards and Inter Regional Coordination and Support, as well as the introduction of progress monitoring. The inclusion of performance indicators and a mechanism for monitoring progress is considered to provide an important and useful tool to help maintain progress of strategic directions of the Organization and the U.S. looks forward to participating and contributing to the strategic directions.

PRO 4 - PROPOSAL TO ADOPT REVISED TEXT FOR ADMINISTRATIVE RESOLUTION T5.1

Submitted by: ISPWG

PROPOSAL

The 4th EIHC is invited to approve the draft revised text for Administrative Resolution T5.1 submitted in Annex 10 to the ISPWG Report.

EXPLANATORY NOTE:

Administrative Resolutions under Section 5 of Chapter T “Administration” refer to the Strategic Plan and Work Program. The existing A.R. T5.1 which deals with the Planning Cycle has been reviewed in accordance with the monitoring mechanism outlined in the draft Strategic Plan.

Two versions are submitted to the 4th EIHC. The first one deals with the existing five-year cycle and incorporates the new structure of IHO committees effective as of 1st January 2009. The second one deals with the three-year cycle which will apply when the revised IHO Convention enters into force.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports the revised text for Administrative Resolution T5.1.

FINLAND

Supported. No comments.

FRANCE

France approves the draft proposed by the ISPWG.

GREECE

Supports this proposal.

NETHERLANDS

The Netherlands agree with the revised text for T5.1.

NORWAY

Norway sees no difficulties with this proposal.

UNITED KINGDOM

UK, an active contributor to the ISPWG discussions, fully supports the proposal.

PRO 5 - PROPOSAL TO APPROVE TRANSITION ARRANGEMENTS TO NEW IHO STRUCTURE

Submitted by: ISPWG

PROPOSAL

The 4th EIHC is invited to approve the arrangements for the transition to the new structure of the IHO Work Programme described in section 8 of the ISPWG Report and to task the IHB Directing Committee accordingly.

EXPLANATORY NOTE:

The IHO Work Programme covers the period starting 1st January of the year following the ordinary session of the International Hydrographic Conference - IHC (*the IHC* to be replaced by *the Assembly* when the Assembly is established) and ending on 31st December of the year of the next ordinary session of the IHC (Assembly). Under the current structure of the IHO the Work Programme is a five-year programme while under the new structure it will be a three-year programme.

In introducing the new programmes based on the new Strategic Plan, there are two options:

- continue with the current five programmes until 2012, cross referencing it to the three new ones, or
- develop a new three-year 2010-2012 Work Programme considering the new structure together with the associated budget.

An intermediate option which would consist in rearranging the tasks of the current Work Programme according to the new structure with no change in contents seems feasible with very limited extra work necessary to re-compute the associated budget aggregates within the limits of the approved five-year budget.

The ISPWG proposes the following arrangements for the transition to the new structure of the Work Programme:

- retain the contents of the current Work Programme until the next ordinary session of the IHC/Assembly,
- re-arrange the tasks according to the new three programme structure based on the cross-reference in Annex 8 starting with the 2010 Work Programme edition,
- compute new budget aggregates starting with the 2010 budget, within the limits of the approved five-year budget,
- present to the IHC/Assembly in 2012 a new Work Programme and budget for the period 2013-2017 based on the new Strategic Plan as approved by the 4th EIHC. This Work Programme and budget will be prepared under the aegis of the IHB in close cooperation with the two new Committees and they shall have their endorsement.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports the gradual transition of the current Work Programme with final conversion to the new Strategic Plan structure for the 2013-2017 planning period. Canada supports the proposal to re-arrange the 2010 Work Programme tasks according to the new three tier structure while respecting the limits of the approved five-year budget.

FINLAND

Supported. No comments.

FRANCE

France approves the arrangements proposed by the ISPWG.

GREECE

Supports this proposal.

NETHERLANDS

The Netherlands agree with the transition arrangements to new IHO structure.

NORWAY

The IHB Directing Committee will in the next few years have to allocate resources and give priority to the new tasks related to *Risk Management* and *Performance Indicators*. For this reason it is important to keep the extra workload related to transition to the new Work Programme at a low level. The proposal of the ISPWG seems to be rational arrangements.

UNITED KINGDOM

UK, an active contributor to the ISPWG discussions, fully supports the pragmatic transition proposed.

UK has one editorial comment: the last paragraph should incorporate the contingency that, if the 2012 IHC/Assembly is in fact an Assembly, the new Work Programme and budget would be for the period 2013-2015.

UNITED STATES OF AMERICA

The U.S. supports the proposal of the ISPWG and considers the gradual transition to the new structure to be the most appropriate approach. Consequently, the intermediate option proposed by ISPWG to rearrange the tasks of the current Work Programme according to the new structure is the most acceptable approach. However, the restructuring should be limited so as to not negatively impact the Work Programme. Further, the U.S. fully supports the idea of addressing the current Work Programme while retaining the current structure of the budget. The U.S. is opposed to any reconsideration of the budget for 2010-2012.

PRO 6 - PROPOSAL TO REVIEW POSSIBLE NEEDS FOR ASSISTANCE IN PREPARING THE ANNUAL CYCLES OF THE NEW STRATEGIC MECHANISM

Submitted by: ISPWG

PROPOSAL

The 4th EIHC is invited to request the IHB Directing Committee to review possible needs for assistance in preparing the annual cycles of the new strategic mechanism, in consultation with the HSSC and IRCC chairs, and to report to Member States before the end of 2010.

EXPLANATORY NOTE:

The ISPWG agreed that risk management should be included in the strategic planning process and recommends that risk management activities be addressed at two levels:

- strategic level by the IHB (*the IHB* to be replaced by *the Secretary General* when the revised IHO Convention enters into force) and processed top down,
- working level by subordinate bodies under HSSC/IRCC and processed bottom up.

The ISPWG considered that the appropriate monitoring of the implementation of the Strategic Plan requires the definition of performance indicators (PIs) against which progress in implementing the strategic directions can be periodically assessed. The ISPWG agreed to adopt a two level approach, similar to the approach which is proposed for risk management:

- strategic level: a small number of PIs associated with the objectives of the IHO (1 or 2 PIs per objective) and managed by the IHB (*the IHB* to be replaced by *the Secretary General and the Council* when the revised IHO Convention enters into force);
- working level: PIs associated with the strategic directions and managed by the appropriate subsidiary organs;

The ISPWG recognizes that the IHB may be confronted with some difficulties in implementing the additional tasks associated with risk management and performance monitoring.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada considers the addition of risk management and performance indicators as positive elements of the new Strategic Plan. In this regard Canada fully supports the proposal that the IHB consult with the HSSC and the IRCC to determine the level of effort and report back to Member States before the end of 2010.

FINLAND

Supported. No comments.

FRANCE

France approves the arrangements proposed by the ISPWG (see comments on PRO 7).

GREECE

Supports this proposal.

NETHERLANDS

The Netherlands agree with the secondment of suitably experienced personnel for the assistance of IHB for the report in 2010.

NORWAY

Norway recognizes that it is likely that the IHB Directing Committee will face some problems with capacity in the coming year(s). The most efficient way to compensate the shortage would probably be to have assistance of competent personnel from Member States in order to keep the extra cost at a minimum level. If adequate competence and capacity are not attainable from Member States the Directing Committee should try to reallocate means from the budget with the purpose of contracting external consultant(s).

UNITED KINGDOM

UK, an active contributor to the ISPWG discussions, fully supports the proposal.

UK notes the point raised by the Directing Committee, with respect to additional workload on the IHB in the wider context of PRO 1, and believes that, if the IHO is to build on the strong strategic leadership provided by the ISPWG, it will need to give due consideration to these resourcing issues.

UNITED STATES OF AMERICA

The U.S. considers the introduction of risk management to be a very positive principle. Further, we do not object to undertaking a review to assess possible needs for assistance in preparing the Annual Cycles of the New Strategic Mechanism. However, the U.S. recognizes that the IHB staff workload will likely be impacted and could result in financial implications. Therefore the U.S. strongly suggests that any review include options as to how this assistance might be handled without increasing staff/budget.

PRO 7 - PROPOSAL TO REVIEW THE IMPLEMENTATION OF THE NEW PLANNING MECHANISM

Submitted by: ISPWG

PROPOSAL

The 4th EIHC is invited to request the IHB Directing Committee to review the implementation of the new planning mechanism, in consultation with the HSSC and IRCC chairs, at the end of each annual cycle in early 2011 and 2012 and report back to the next ordinary IHC (or to the first Assembly) in 2012.

EXPLANATORY NOTE:

The ISPWG suggests that the new planning mechanism be monitored annually by the IHB as further experience is gained with the new committee structure and that the implementation of the new planning mechanism be reviewed by the Conference / Assembly in 2012.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports this proposal.

FINLAND

Supported. No comments.

FRANCE

France approves the arrangements proposed by the ISPWG. France considers that Proposals 6 and 7 provide a set of consistent arrangements which allow the experience which will be gained from implementing the new planning mechanism, which France fully approves (see PRO 3), to be properly taken into account. Furthermore, France considers that the efforts which are thus demanded of the new committees and of the IHB are reasonable and will be a determining factor in the improvement of the overall efficiency of the IHO.

GREECE

Supports this proposal.

NETHERLANDS

The Netherlands agree with the new planning mechanism.

NORWAY

Norway sees no difficulties with this proposal.

UNITED KINGDOM

UK, an active contributor to the ISPWG discussions, fully supports the proposal.

PRO 8 - PROPOSAL TO NOTE THE HCIWWG REPORT

Submitted by: HCIWWG

PROPOSAL

The 4th EIHC is invited to **Note** the Report of the HCIWWG.

EXPLANATORY NOTE:

1. The XVIIth International Hydrographic Conference decided (Decision 19) to ask the Committee on Hydrographic Requirements for Information Systems (CHRIS) to establish a working group on *Hydrography and Cartography of Inland Waters (HCIWWG)* with the purpose to analyse and recommend the level and nature of IHO involvement in the Hydrography and Cartography of Inland Waterways. The study was to involve all relevant non-IHO international bodies in its deliberations, including the IEHG. A Report was to be submitted to the 4th EIHC in 2009.
2. The CHRIS established the HCIWWG at its 19th meeting in November 2007.
3. All work was done by correspondence, except for two face-to-face meetings of the Chair Group, taking the opportunity of programmed IHO meetings: one during the 19th meeting of CHRIS, and the second one during the 11th meeting of the Committee on the World-Wide Electronic Navigational Chart Database (WEND).
4. The work program had three phases:
 - data research – from Nov 15th 2007 to Feb 10th 2008;
 - data analysis – from Feb 10th 2008 to Apr 20th 2008; and
 - report production – from Apr 20th 2008 to Sep 12th 2008.

The HCIWWG reported to CHRIS at its 20th meeting in November 2008. The CHRIS endorsed the HCIWWG report, subject to some minor amendments which have been incorporated into this report. The CHRIS decided (CHRIS Decision 20/28) that its Dictionary WG should develop a definition for *navigable inland waters*. The CHRIS acknowledged that the HCIWWG had completed its task. As a result, the HCIWWG was disbanded.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada recognizes the good work of the HCIWWG in the presentation of its reports. The report does capture the complex nature of inland waters given the various jurisdictions and players involved. The ever increasing demand for optimizing the marine transportation infrastructure requires harmonized hydrography across coastal and inland waters.

FINLAND

Supported. No comments.

FRANCE

France approves the noting of the HCIWWG Report.

GREECE

Greece does not object to this proposal.

NETHERLANDS

No comments on HCIWWG Report.

NORWAY

Taken into consideration. The inland waters are outside the responsibility of the Norwegian Hydrographic Service. As the proposals from the actual Working Group are of little relevance to us, Norway has decided to give no comments.

UNITED KINGDOM

UK, an active contributor to the HCIWWG discussions, supports the proposal.

UNITED STATES OF AMERICA

The U.S. commends the HCIWWG on their thorough work and contributions to the report. The U.S. concurs with the disbanding of the HCIWWG noting that, in accepting the report, CHRIS decided to pursue an IHO definition for “inland navigable waters”. The U.S. considers that this may be a difficult task for the Hydrographic Dictionary Working Group in that it may involve national regulatory issues. In many instances, the definition will be dictated and/or influenced by the national authority under which inland waterways operate, often an authority other than the National Hydrographic Offices. Thus, we, as Hydrographic Offices, need to liaise with those entities, some of which may even be private, that operate/regulate inland waterways. This could be a very complex issue with the different regimes involved. It will be important for Member States to provide their national regulatory definitions to the Working Group for its deliberations. Essentially, this may turn out to be more of a “management” problem as opposed to a definition problem.

PRO 9 - ENDORSEMENT OF THE RECOMMENDATIONS OF THE HCIWWG, SECTION 8 OF THE HCIWWG REPORT

Submitted by: HCIWWG

PROPOSAL

The 4th EIHC is invited to endorse the following Recommendations:

- a) **Invite** relevant Regional Hydrographic Commissions to
 - i. consider establishing liaison committees or other bodies, where relevant, to ensure consistent use and development of hydrographic standards and mutual cooperation for the enhancement of navigation safety in navigable inland waters within a region, and
 - ii. to encourage cooperation and mutual assistance between authorities, even from different regions but with common interests, particularly for the safety of navigation in navigable inland waters, with the purpose of mutual support and the establishment of instructions and guidance for hydrographic survey and the production of nautical charts, in accordance with the guidance in Technical Resolutions T1.3 and A3.4, and Article 8 of the future General Regulations.
- b) **Invite** relevant Member States and/or Regional Hydrographic Commissions (RHCs) to submit proposals to IHO for Capacity Building Committee (CBC) projects in support of regional coordination and the exchange of know-how in inland hydrography and cartography.
- c) **Agree** that, wherever possible, when developing the IHO Work Programme, and standards and guidelines, the potential applicability to hydrography and cartography for navigable inland waters should be taken into consideration.
- d) **Direct** the IHO Hydrographic Dictionary Working Group to establish a definition for navigable *inland waters*, taking as a starting point the definitions contained in **Annex B of the HCIWWG Report**.
- e) **Establish** a formal cooperation agreement between IHO and the Inland Electronic Navigation Chart Harmonization Group (IEHG) to produce, and to advise and assist the IHO on providing for the development and extension of specifications to cover Electronic Navigational Charts (ENCs) and digital nautical publications for navigable inland waters.
- f) **Invite** the IHO Hydrographic Services and Standards Committee (HSSC) to develop guidelines for those who seek to develop extensions to IHO specifications for use in navigable inland waters.
- g) **Invite** the HSSC to consider the adoption of relevant extensions to IHO specifications for use in navigable inland waters developed by other organizations.
- h) **Invite** the Inter-Regional Coordination Committee (IRCC) to foster and coordinate inland-related capacity building proposals/actions/work of RHCs and review their status at its annual meetings.

EXPLANATORY NOTE:

The recommended actions, if adopted, can:

- a. Improve the safety of navigation and protection of the environment.

- b. Provide greater consistency in charting and navigation services for those vessels transiting between the sea and navigable inland waters.
- c. Promote the IHO and expand its influence.
- d. Have minor, if any, implications on the IHO budget.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports the proposal. Canada agrees that the development of the IHO Work Programme should try to accommodate any opportunities in inland waters. Canada supports cooperation between IHO and IEHG recognizing the need for as seamless a transition as possible from open, to coastal, to inland waters.

FINLAND

Supported. No comments.

FRANCE

Noting that less than 60% of the IHO Member States replied to the questionnaire issued by the Working Group, France maintains its reservations, as expressed at the XVIIth International Hydrographic Conference, as to the IHO's collective capability to globally take into account the requirements of inland waterways, beyond the needs of the maritime traffic liable to use these waterways. France acknowledges, however, that specific regional circumstances may justify the involvement of such and such regional hydrographic commission, but would urge the IHO not to diversify its efforts at a time when the Organization must tackle crucial challenges in its traditional domain. Therefore:

- France recommends limiting recommendations a) and b) to those regions where safety of navigation in the inland waters is a regional interest shared by several neighbouring states;
- France approves recommendations c) and d);
- France approves the establishment of a formal cooperation agreement between IHO and IEHG proposed in recommendation e) but does not a priori approve the extension of the IHO specifications to all the navigational needs of navigable inland waters;

- France recommends that the requirements contained in recommendations f) and g) be examined on a case by case basis when the HSSC's Work Programme is drawn up, ensuring that those requirements which are the "core of the work" of the IHO be given priority;
- France recommends limiting the IRCC's involvement, the subject of recommendation h), to simply examining any requests coming from RHC who have identified a need at a regional level, without necessarily inviting the IRCC to actively promote the examination of these matters.

GREECE

Greece does not object to this proposal.

NETHERLANDS

The Netherlands agree with the recommendations of section 8 of the HCIWWG Report.

NORWAY

Norway has no comments.

UNITED KINGDOM

UK, an active contributor to the HCIWWG discussions, supports the proposal.

UNITED STATES OF AMERICA

The U.S. finds this Proposal to be somewhat fragmented with inclusion of a number of items that should not have to be Conference decisions. The HSSC and IRCC should handle items a) through d) and f) and the Conference should consider endorsement of e), g) and h). Overall the U.S. has no objection to any of the recommendations.

PRO 10 - ADOPTION OF THE RESOLUTION AS IN ANNEX G OF THE HCIWWG

Submitted by: HCIWWG

PROPOSAL

The 4th EIHC is invited to adopt the following Resolution:

A 1.xx Hydrography and Cartography of Navigable Inland Waters

1. Relevant Regional Hydrographic Commissions (RHC), through appropriate liaison bodies, are invited to:
 - a. encourage the consistent use of hydrographic and nautical cartographic standards and mutual cooperation for the enhancement of navigation safety in navigable inland waters within and between regions.
 - b. encourage the identification of needs for developing additional regional extensions to IHO specifications to cater for navigable inland waters and foster these developments together with other relevant organizations.
 - c. encourage liaison with relevant IHO bodies (International Hydrographic Bureau (IHB), Hydrographic Services & Standards Committee (HSSC)) to ensure that any extensions to IHO specifications for navigable inland waters are consistent with IHO specifications and are as far as possible harmonised between other regional extensions.
 - d. encourage liaison, when appropriate, with other bodies working with inland hydrographic and nautical specifications, especially with the Inland Electronic Navigational Chart Harmonisation Working Group (IEHG), to ensure consistency and harmonisation as far as feasible with their specifications.
 - e. encourage cooperation and mutual assistance between relevant authorities, even from different regions but with common interests, particularly for the safety of navigation in navigable inland waters, with the purpose of mutual support and the establishment of instructions and guidance for hydrographic survey and the production of nautical charts (see also Resolution A3.4).
 - f. Monitor the development and use of hydrographic and cartographic standards on navigable inland waters, and report as necessary to the Inter-Regional Coordination Committee (IRCC).

Where the responsibility for hydrography and nautical cartography of maritime and navigable inland waters is divided among different organizations, Member States are encouraged to create National Hydrographic Committees. (See also Resolution T1.3).

EXPLANATORY NOTE:

Recognizing that:

- a. under the Convention on the International Hydrographic Organization (IHO), Article II, an object of the Organization is to seek the greatest possible uniformity in nautical charts and publications;

- b. under the amendments to the Convention, agreed by the 3rd Extraordinary International Hydrographic Conference (EIHC) and now awaiting formal ratification by the required majority of Member States, Article II has been expanded to include: *the widest possible use of hydrography, and the widest possible use of IHO standards*. These amendments place no geographical limits on the application of hydrography or its associated standards;
- c. the IHO is already involved in hydrography and cartography of navigable inland waters, both through the responsibility that some of its members already hold, and by the fact that considerable nautical traffic passes from the sea to navigable inland waters and vice versa. This calls for the harmonization of hydrographic and cartographic information and services provided to navigators to assist the safety of navigation and protection of the environment;
- d. the IHO is recognized by the United Nations General Assembly and the United Nations International Maritime Organization (IMO) as the technical authority for issues concerning hydrography and nautical cartography;
- e. the responsibility for hydrography and nautical cartography for navigable inland waters in States is often divided among different organizations, not all of them having representation in the IHO, and that the limits of responsibility among these organizations may differ according to the legislation in each State.

Acknowledging that:

- a. IHO has an extensive set of specifications for hydrography and nautical cartography developed for sea and coastal areas, but used widely also on navigable inland waters; however
- b. these IHO specifications for hydrographic survey and nautical cartography are currently not sufficient for application to all navigable inland waters and do not cover all hydrographic and nautical cartographic needs in navigable inland waters;
- c. extended regional specifications for hydrographic survey and for nautical cartography for navigable inland waters are needed to take into account a variety of environmental characteristics and the different nature of circumstances, use and traffic in each waterway; and
- d. these extended regional specifications should be as far as possible consistent with the IHO specifications;
- e. there are other bodies, such as the Inland Electronic Navigational Chart Harmonization Group (IEHG), which has already published format and data specifications for inland electronic nautical cartography;
- f. no recognized organization other than the IHO is in a position to foster harmonization between hydrography and cartography in maritime areas and the corresponding activities in navigable inland waters;

The HCIWWG has proposed the above resolution.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports these proposals as a reasonable way forward in the effort to harmonize the use of IHO standards across coastal and inland waters.

FINLAND

Supported. No comments.

FRANCE

France approves the draft resolution, subject to:

- 1) Limiting its scope, whilst bearing in mind the Hydrographic Dictionary Working Group's proposals on the definition of "navigable inland waters", for example by specifying in the first paragraph:

"Regional Hydrographic Commissions (RHC) concerned by safety of navigation in the navigable inland waters of their region are invited, through appropriate liaison bodies, to: ..."

- 2) to leave to the Member States the responsibility of coordinating, at their convenience, with the organizations concerned. Moreover, Administrative Resolution T1.3, cited in the draft, does not contain any clause concerning national hydrographic committees. The following alternative wording is therefore proposed for Article 2:

"Where the responsibility for hydrography and nautical cartography of maritime and navigable inland waters is divided among different organizations, Member States are encouraged to ~~create National Hydrographic Committees. (See also Resolution T1.3).~~ ensure that these organizations' activities are properly coordinated."

Editorial remarks on the French version of the text have been provided to the IHB.

GREECE

Greece does not object to this proposal.

NETHERLANDS

The Netherlands agree with the adoption of the Resolution for Hydrography and Cartography of Navigable Inland Waters.

NORWAY

Norway has no comments.

UNITED KINGDOM

UK, an active contributor to the HCIWWG discussions, supports the proposal. In particular, UK believes strongly in encouraging liaison to ensure consistency with current and future IHO specifications and standards, such as S-57 and S-100.

UNITED STATES OF AMERICA

The U.S. considers that reporting of hydrographic and cartographic standards, as given in paragraph f. of the proposed IHO Resolution, should not be reported to the IRCC but rather should be reported to the HSSC as part of the liaison with HSSC. It is recognized that the Regional Hydrographic Commissions relate to the IRCC, but any reporting of standards should be to HSSC. Overall, the Proposal is acceptable to the U.S.

PRO 11 - PROPOSAL TO NOTE THE MSDIWG REPORT

Submitted by: MSDIWG

PROPOSAL

The 4th EIHC is invited to **Note** the Report of the MSDIWG.

EXPLANATORY NOTE:

1. The XVIIth International Hydrographic Conference, in May 2007, considered the development of national and marine spatial data infrastructures and directed that the Committee on Hydrographic Requirements for Information Systems (CHRIS) establish a Marine Spatial Data Infrastructure Working Group (MSDIWG), the purpose of which would be to analyse and recommend the nature and level of the IHO role in assisting Member States to support their NSDI through development of and/or aligning with the Marine Spatial Data communities in the development of an MSDI. The MSDIWG was duly constituted at the 19th meeting of CHRIS.

2. The MSDIWG reported to CHRIS at its 20th meeting in November 2008. The CHRIS endorsed the MSDIWG report, subject to some minor amendments which have been incorporated into this report. The CHRIS agreed that the MSDIWG should continue its work to complete a definitive and practical publication to assist IHO Member States in contributing to MSDI at their national or regional level and submit the document to the Hydrographic Services and Standards Committee (HSSC) at its inaugural meeting in late 2009.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada recognizes the substantial contribution of the MSDIWG and its report.

FINLAND

Supported. No comments.

FRANCE

France approves the noting of the MSDIWG Report.

GREECE

Greece does not object to this proposal.

NETHERLANDS

No comments on MSDIWG Report.

NORWAY

Taken into consideration.

UNITED KINGDOM

UK fully supports the proposal.

UNITED STATES OF AMERICA

The U.S. commends the MSDIWG on this very clear and useful report on Marine Spatial Data Infrastructure and the U.S. agrees that more emphasis needs to be placed on this concept.

PRO 12 - ENDORSEMENT OF THE RECOMMENDATIONS OF THE MSDIWG, SECTION 7 OF THE MSDIWG REPORT

Submitted by: MSDIWG

PROPOSAL

The 4th EIHC is invited to endorse the following Recommendations:

- a. The IHO develops an SDI policy in support of its Member States by developing relationships with other SDI stakeholder groups and through active participation in such groups to strengthen understanding and knowledge of the role of hydrography in MSDI.
- b. IHO develops, through the MSDIWG, a definitive and practical publication to assist IHO Member States to be better prepared to develop and / or join MSDI at their national or regional level.
- c. IHO develops an SDI capacity building plan (e.g. in-country practical training and advice) to provide the necessary skills, knowledge and understanding of key components of SDI as described above.
- d. IHO considers the development of a web-based facility to encourage knowledge transfer, best practice and online guidance and training material.
- e. MSDI be introduced as a standing agenda item at meetings of Regional Hydrographic Commissions in order to monitor and report progress in Member States' MSDI engagement and development. MSDIWG will provide benchmarks against which reporting might be measured.

EXPLANATORY NOTE:

The MSDIWG drew the following conclusions.

1. The data gathering served its purpose in measuring the current status and future aspirations for MSDI within Member States and providing headline information to enable the MSDIWG to understand the issues involved.
2. The analysis provided clear evidence that there is a need for assistance in helping to develop the roles of hydrographic offices in MSDI/ NSDI which in turn enables the IHO to define its role and the possible help it can give to Member States as they work towards involvement in a fully optimised MSDI.
3. Training and knowledge transfer is required mainly in data management, MSDI framework development, data standards and dissemination. IHO should be encouraged to develop and disseminate guidelines and procedures in these areas.
4. Capacity and capability across the HO community will be improved through increased resources, funding and policy development.
5. Member States in Southern Europe/ North Africa, Asia, Africa, Central and South America will benefit most from IHO assistance.

6. The work undertaken has provided valuable information about those Member States who responded. Concerns remain as to how non-responding Member States understand and / or participate in MSDI/ NSDI development in their respective States.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports the adoption of the MSDIWG recommendations.

FINLAND

Supported. No comments.

FRANCE

France endorses the recommendations of the Working Group subject to the following remarks:

- 1) Recommendation a)
France considers that it is important that the IHO is recognized as an appropriate contact organization, even if it is represented in various bodies by one of its Member States. Its interventions must be targeted primarily towards regional or international groups.
- 2) Recommendation b)
This activity is already included in the HSSC's Work Programme which was adopted at the 20th CHRIS Committee Meeting (see CL 106/2008 of 15 December 2008).
- 3) Recommendation c)
Including SDI in the capacity building plans must not be done to the detriment of the building of fundamental capacities corresponding to phases 1 (MSR services) and 2 (hydrographic capabilities) of the IHO strategy on capacity building.
- 4) Recommendation d)
France recommends that the Web based facility in this recommendation be included in the IHO site and that its maintenance be included in the corresponding element of the Work Programme (Task 4.1.1).
- 5) Recommendation e)
For information, the subject of "geospatial studies" is included under the heading "Other Activities" in the Executive Summary of the National Reports in Administrative Resolution T1.3.

GREECE

Greece does not object to this proposal.

NETHERLANDS

The Netherlands agree with the recommendations of Section 7 of the HCIWWG Report.

NORWAY

The recommendations should be more specific on the integration between terrestrial and marine SDI at a national and regional level, to facilitate compatible spatial information in coastal areas. Norway proposes to change paragraph b) to read: *..... to develop and / or join MSDI and to integrate terrestrial and marine SDI at their national or regional level.*

UNITED KINGDOM

UK supports the proposal and notes that the inclusion of SDI as a standing agenda item on RHC meetings was proposed previously in IHO CL 24/2007. Experience shows that RHCs each have their own form of agenda and that only a couple of RHCs have a standing agenda. The provision of a listing on the IHO website of those matters which RHCs should be addressing currently, would assist.

UNITED STATES OF AMERICA

The U.S. supports the recommendations outlined in Section 7 of the MSDIWG Report.

PRO 13 - ADOPTION OF THE RESOLUTION AS IN ANNEX H OF THE MSDIWG REPORT

Submitted by: MSDIWG

PROPOSAL

The 4th EIHC to adopt a formal resolution on MSDI reflecting in general terms the role and involvement of IHO in supporting MS' roles in MSDI. The proposed draft Resolution is as follows:

A1.xx Marine Spatial Data Infrastructure (MSDI) Policy

1. The IHO will support Member States in the identification, development and implementation of an appropriate role in national Spatial Data Infrastructure (SDI) and MSDI initiatives. This will be achieved through:
 - The development and maintenance of a Special Publication that will provide a definitive procedural guide to establishing the role of the national hydrographic authority in MSDI.
 - Developing an MSDI capacity building plan comprising knowledge transfer and training to Member States.
 - Developing and managing a web-based facility to encourage knowledge transfer, best practice and provision of online guidance and training material.
 - Formalising relations between IHO and other SDI stakeholder groups and through actively participating in these groups to strengthen understanding and knowledge of the role of hydrography in MSDI.
2. IHO Regional Hydrographic Commissions are encouraged to monitor and report progress in Member States' MSDI engagement and development as a means of benchmarking the role of the national hydrographic authority in MSDI.

EXPLANATORY NOTE:

Recognising that:

1. The Vision of the IHO is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment;
2. The IHO has developed standards and specifications in areas of nautical cartography, hydrography and geospatial data management that have been accepted and implemented on a world-wide basis;
3. National and/or Regional legislative processes are increasingly mandating IHO Member States' public sector information providers to engage in greater interoperability at the organizational and technical level;
4. IHO publication M-2 provides guidance on how a national hydrographic service can be established, how to define individual national requirements, how to decide upon the necessary resource levels and describes the benefits which accrue in respect of many aspects of national development.

Acknowledging that:

1. In relation to the development of EU legislation concerning SDI, the IHO is recognised by the European Commission as a Spatial Data Interest Community (SDIC);
2. It is appropriate for IHO to define its role in MSDI activity.

The MSDIWG has proposed the above resolution.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports the adoption of the proposed Resolution for a MSDI Policy.

FINLAND

Supported. No comments.

FRANCE

France approves the draft resolution proposed by the Working Group. Editorial remarks on the French version of the text have been provided to the IHB.

GREECE

Greece does not object to this proposal.

NETHERLANDS

The Netherlands agree with the adoption of the Resolution for Marine Spatial Data Infrastructure Policy.

NORWAY

No comments.

UNITED KINGDOM

UK supports the development of the Special Publication to assist those nations who need such information and considers this should be made freely available on the IHO website.

UK observes that some RHCs (such as NSHC) will be driven along the SDI path much more rapidly than others by national/regional government (eg EU inspire project) and considers that, given the very basic needs of many IHO Member States with regard to capacity building, Member States should develop this capability as their need arises and in their own timescale.

UNITED STATES OF AMERICA

The U.S. supports the adoption of a resolution as outlined. However we believe that the role noted in the first bullet of paragraph 1 can be made more positive by revising a few words as follows:

- a. The IHO will support Member States in the identification, development and implementation of an appropriate role in national Spatial Data Infrastructure (SDI) and MSDI initiatives. This will be achieved ~~through~~ *by*:
 - o ~~The development~~ *Developing* and ~~maintenance of~~ *maintaining* a Special Publication that will provide a definitive procedural guide to establishing the role of the national hydrographic authority in MSDI.
 - o Developing an MSDI capacity building plan comprising knowledge transfer and training to Member States.
 - o Developing and managing a web-based facility to encourage knowledge transfer, best practice and provision of online guidance and training material.
 - o Formalising relations between IHO and other SDI stakeholder groups and through actively participating in these groups to strengthen understanding and knowledge of the role of hydrography in MSDI.

PROPOSALS SUBMITTED BY MEMBER STATES

PRO 14 rev.1 - INFORMING STATES SEEKING MEMBERSHIP OF THE ORGANIZATION OF THE PROTOCOL OF AMENDMENTS TO THE IHO CONVENTION

Submitted by: Australia

PROPOSAL

The Conference is requested to consider and approve the following:

- (a) That the IHB be directed to inform States seeking membership of the IHO of the existence of the Protocol of Amendments to the Convention on the IHO and of the status of approval of that Protocol, and
- (b) That the IHB explain to each State seeking membership of the IHO the mechanism by which the Protocol of Amendments to the Convention of the IHO come into effect pursuant to Administrative Resolution T6.

EXPLANATORY NOTE

Because Administrative Resolution T6 has recently been approved by Member States (as reported in CL 18/2009), the details of PRO 14 are no longer relevant. However, the underlying implications on prospective new Member States remain. Rather than withdrawing its proposal, Australia has submitted an amended text, as shown above, for consideration by the 4th EIHC.

IHB COMMENT

This proposal should be considered in conjunction with the recommendations of the Legal Advisory Committee (LAC), forwarded to Member States for approval with CL 02/2009.

MEMBER STATES' COMMENTS

BRAZIL

Brazil agrees with this proposal.

CANADA

Canada supports this Australian proposal. Canada considers it good practice to inform and invite prospective Member States of the IHO to adopt the Protocol of Amendments in a timely manner.

FINLAND

Supported. Finland welcomes efforts to foster the process of approval of amended Convention.

FRANCE

As only a small number of Member States have so far approved the Protocol amending the IHO Convention, it is highly likely that it will take several years to attain the two-thirds majority required by the Convention. The practice currently in force is to fix this two-thirds majority based on the number of contracting parties who were entitled to vote at the time of the decision of the 3rd EIHC. If this practice is maintained, as proposed in CL 2/2009 of 12 January 2009, the approval of the Protocol by new Member States will not affect the attainment of the two-thirds majority. Speeding up the process only makes sense if the membership of the new Member States is taken into account in the calculation of the two-thirds majority. It is for that reason that France believes that the related proposal submitted to the Member States in the above-mentioned Circular Letter should be discussed at the 4th EIHC.

France considers that the adoption of a sliding majority, which, according to the Legal Advisory Committee's findings, nothing stands in the way of, would appear, from a political point of view, better adapted to the IHO's present situation, taking into account the importance given to increasing membership. This measure, along with the request that countries applying for membership approve the Protocol of Amendments at the same time, can only speed up the ratification process of the Protocol by the current Member States. Furthermore, with the current very slow rate of approval of the Protocol (2 in 2005, 9 in 2006, 7 in 2007 and only 2 in 2008), the adoption of a sliding majority would make the two-thirds majority more easily attainable, although it will not prevent the process taking several years. As an example, with only 20 approvals out of 80 "old" members, the majority of two-thirds (53) is far from being reached. 100 new members would need to join the IHO and approve the protocol to reach the two-thirds majority of 120 out of 180 members ($180=80+100$). If, during the same period, 10 "old" members also approve the Protocol, only 70 "new" members would be required to attain the two-thirds majority (i.e. 100 out of $80+70=150$). With 40 approvals out of the 80 "old" members, the two-thirds majority could be attained with 40 "new" members (80 out of $120=80+40$).

To sum up, France approves Proposal 14, on condition that a "sliding" two-thirds majority is adopted, continually calculated on the number of States entitled to vote, even if this measure is not going to enable the required majority for the ratification of the Protocol of Amendments to be rapidly attained.

GREECE

Greece considers that the proposal made by Australia is in the right way, but it should be further considered in conjunction with the recommendations of the LAC and the results of CL 02/2009.

JAPAN

Japan shares the aim of Australia's proposal which is to achieve the early entry into force of the Protocol of Amendments to the Convention on the International Hydrographic Organization. However, noting that there remain many IHO Member States that have not ratified the Protocol yet, Japan believes that promoting the ratification of the Protocol by those Member States is a priority.

NETHERLANDS

The Netherlands agree with the Australian proposal to expedite the ratification.

NORWAY

Norway supports the proposal submitted by Australia.

UNITED KINGDOM

UK supports the philosophy behind this proposal; that is, the wish to facilitate the process of becoming a Member of the IHO and acceding to both the current and amended Conventions.

However, the first Explanatory Note indicates that one of the aims in expediting ratification of the new Convention by new members could be to achieve, more quickly, the number required to bring it into force. UK is mindful of the closely related complexities detailed in IHO Circular Letter 2/2009 with respect to the number of members required to ratify the amendments to the Convention, and believes that, if the vote in response to CL 2/2009 is “Yes”, the number of Member States will be “frozen” as stated in the CL. In that event, it could be difficult to justify giving a vote to states subsequently acceding to the IHO Convention, as they would not have been counted in the total number of Member States at the time of a Conference vote. Giving them a right to vote would skew the numbers, as they would not have been one of those included when the number required was determined. In that event, UK foresees strong objections from Member States opposed to those amendments.

UNITED STATES OF AMERICA

The U.S. supports the Proposal by Australia. Prospective Member States should be made aware of the Protocol of Amendments to the IHO Convention at the time of application and should be prepared to accept them.

PRO 15 - REGIONAL HYDROGRAPHIC COMMISSIONS AS BODIES OF THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION

Submitted by: United States of America

- References:
- Convention on the International Hydrographic Organization
 - IHO Administrative Resolution T1.3 ESTABLISHMENT OF REGIONAL HYDROGRAPHIC COMMISSIONS (RHC)
 - IHO Work Programme for 2008-2012

PROPOSAL

The United States proposes that the Regional Hydrographic Commissions be designated as bodies of the International Hydrographic Organization.

EXPLANATORY NOTE

U.S. RATIONALE

The Regional Hydrographic Commissions (RHC) concept was formed several decades ago as the result of a proposal for more frequent I.H. Conferences to increase coordination and communication. An alternative solution was to create the RHCs to increase regional coordination while maintaining independence from the IHO. Membership in an RHC was voluntary.

During the 2007 I.H. Conference, it was noted that even with the eventual adoption of the Protocol of Amendments to the Convention of the International Hydrographic Organization (IHO) and the increased role of the RHCs, their status would be unchanged and RHCs would still NOT be bodies of the IHO.

The U.S. considers that the RHCs have become important elements of the Objects of the IHO (Article II of the Convention), particularly with regard to the coordination of the activities of national hydrographic offices, and the achievement of the greatest possible uniformity in nautical charts and documents. Most recently, the RHCs have clearly become an important element of the IHO capacity building effort and are now included in detail as a part of Work Programme 1, Co-operation with Member States and with International Organizations, and Work Programme 2, Capacity Building, of the IHO Work Program for 2008-2012. In addition, when the new Convention comes into effect, 2/3 of the membership of Council will be selected on the basis of the RHCs.

The U.S. believes that many of the issues problematical with the achievement of global coverage and harmonization of the data and products produced by IHO Member States, especially those that are digital, transcend regional coordination, and that the RHCs should be recognized as an integral part of the Organization. In view of the significant impact of RHCs on the structure and operation of the Organization, the U.S. believes the RHCs should properly be bodies of the Organization.

Participation would remain voluntary and funding of the activities would remain within the purview of the RHCs with costs defrayed by the respective regional Governments. Regional coordination would continue to be a primary focus of their activities. IHO Technical Resolution T 1.3 ESTABLISHMENT OF REGIONAL HYDROGRAPHIC COMMISSIONS (RHC) governs the membership of regional commissions and this would remain the same. That is, although IHO bodies are normally open to the participation of any Member State, in this case, the purpose is to foster regional interaction and the Technical Resolution as currently written, which provides for participation as observers, is proper and should continue as written.

Implementation of this proposal does not require amendment of Technical Resolution T 1.3 in that the first paragraph already states, "As part of the IHO, the RHC shall complement the work of the

Bureau.” Inclusion of the RHCs as bodies of the IHO will foster cross RHC harmonization of data, products and consistency efforts.

IHB COMMENT

In order to contribute to discussion of this proposal, the IHB makes the following comments:

- The issue of whether RHCs should become bodies of the IHO was discussed at length during the meetings of the SPWG. This was required in order for the SPWG and LEX to properly and correctly draft the new and amended Articles of the Convention and General Regulations. New Article 8 of the amended General Regulations, concerning the RHCs, was drafted and agreed based on this decision;
- The decision regarding the status of RHCs presented and accepted at the 2005 and 2007 Conferences was that “RHCs should be recognized by the Assembly, without formally becoming organs of the IHO”;
- If it is now accepted that the RHCs should become bodies of the IHO, further consideration will be required regarding their formal status and relationship with the Organization and whether the new and amended Articles of the IHO Convention, the General Regulations and Technical Resolution 1.3 require further amendment;
- The US Proposal does not appear to have financial implications for the Organization.

MEMBER STATES' COMMENTS

BRAZIL

Brazil would like to kindly request to ask the Legal Advisory Work Group to formally express its opinion on the necessity of the amendment of IHO Convention and/or IHO General Regulations in the case the proposal be approved.

FINLAND

Not Supported. Finland does not support to re-open this issue which has already been agreed at previous Conferences. Finland agrees with the IHB comments.

FRANCE

Whilst supporting the USA’s opinion on the importance of the role now assigned to the regional hydrographic commissions, France wonders about the practicality of the American proposal. If it is a question of modifying Article IV of the revised IHO Convention to explicitly refer to regional hydrographic commissions, France does not consider it opportune to proceed with another modification to the Convention, which would probably destabilize the laborious approval process of the Protocol of Amendments adopted in 2005 and would oblige the 20 or so Member States who have already approved the Protocol to do the approval process all over again.

France, for its part, believes that Article 8 of the future IHO General Regulations, taken in application of Article IV of the revised Convention and Administrative Resolution T1.3 which results from it, provide appropriate status and visibility to the regional hydrographic commissions.

France notes, however, on this subject that the modification of clause (e) of Article 8 of the future IHO General Regulations, the subject of CL 53/2008 of 27 June 2008, wrongly assimilates the Hydrographic Commission on Antarctica (HCA) to a regional hydrographic commission (title of Article 8). France recalls that, in their opinion, the arrangements, which are specific to the membership of the HCA, should come under Article 6 (Subsidiary organs and subordinate bodies) and not under Article 8 (Regional Hydrographic Commissions). France proposes that the International Hydrographic Conference reconsider this point when this proposal is discussed.

GREECE

Greece considers that the conference decision that “*RHCs should be recognized by the Assembly, without formally becoming organs of the IHO*” is quite recent (2007). In case of a new decision providing that the RHCs should become bodies of the IHO, a further amendment of the IHO Convention, General Regulations and Technical Resolutions should be considered.

NETHERLANDS

The Netherlands agree with the IHB comment and prefer to maintain the present status of RHCs as accepted at the 2005 and 2007 Conferences.

NORWAY

The organizational changes of IHO have been quite extensive after 2005. Several new tasks are likely to be added during the EIHC related to the proposal from the ISPWG. Norway would like the organization to gain experience from the restructuring, included increased participation by the RHCs, before considering any formal change of the affiliation of the RHCs.

UNITED KINGDOM

UK understands the aims of PRO 15 with respect to the relationship between the RHCs and the IHO, particularly in view of the increasing importance of RHCs in the work of the IHO, and the fact also that a significant percentage of the Council in future will be there as specific representatives of RHCs rather than a member of Council based on hydrographic interest (tonnage), and so can see the sense of more directly “wiring RHC” into the structure as proposed. UKHO also notes the extensive discussions which took place over a number of years in IHO fora, particularly SPWG, during development of the new Convention and associated Basic Documents.

If further discussion reaches the conclusion that circumstances have now changed, then it has to be appreciated that there are matters which the IHO cannot action by itself. Principal among these is that RHCs are international organizations in their own right. This means that they cannot become constituent parts of the IHO unless they agree to disband themselves (the various statutes and conventions that currently regulate operation of RHCs would need to be set aside) and submit to the IHO’s Convention. General Regulations and Rules of Procedure of the IHO, and those documents themselves would, almost certainly, need to be amended accordingly. The IHO has no coercive power by which it could compel any RHC to become a part of it.

DECISIONS OF THE CONFERENCE

**DECISIONS OF THE FOURTH EXTRAORDINARY INTERNATIONAL
HYDROGRAPHIC CONFERENCE**

CONTENTS

CONFERENCE DECISIONS RESULTING FROM THE APPROVAL OF PROPOSALS SUBMITTED			
DECISION	RELEVANT PROPOSAL	DESCRIPTION	Page
No. 1	PRO 1	NOTING THE ISPWG REPORT	79
No. 2	PRO 2	APPROVAL OF THE NEW DEFINITION OF HYDROGRAPHY	79
No. 3	PRO 3	APPROVAL OF THE REVISED STRATEGIC PLAN	79
No. 4	PRO 4	ADOPTION OF A REVISED TEXT FOR ADMINISTRATIVE RESOLUTION T5.1	79
No. 5	PRO 5	APPROVAL OF TRANSITION ARRANGEMENTS TO THE NEW IHO STRUCTURE	79
No. 6	PRO 6	REVIEWING OF THE POSSIBLE NEEDS FOR ASSISTANCE IN PREPARING THE ANNUAL CYCLES OF THE NEW STRATEGIC MECHANISM	79
No. 7	PRO 7	REVIEWING OF THE IMPLEMENTATION OF THE NEW PLANNING MECHANISM	80
No. 8	PRO 8	NOTING THE HCIWWG REPORT	80
No. 9	PRO 9	NOTING THE RECOMMENDATIONS OF THE HCIWWG, SECTION 8 OF THE HCIWWG REPORT	80
No. 10	PRO 10	ADOPTION OF THE RESOLUTION AS IN ANNEX G OF THE HCIWWG	81
No. 11	PRO 11	NOTING THE MSDIWG REPORT	82
No. 12	PRO 12	NOTING THE RECOMMENDATIONS OF THE MSDIWG, SECTION 7 OF THE MSDIWG REPORT	82
No. 13	PRO 13	ADOPTION OF THE RESOLUTION AS IN ANNEX H OF THE MSDIWG REPORT	83
No. 14	-	ENC COVERAGE	83
No. 15	-	ENC CONSISTENCY AND QUALITY	83
No. 16	PRO 14 rev.1	INFORMING STATES SEEKING MEMBERSHIP OF THE ORGANIZATION OF THE PROTOCOL OF THE AMENDMENTS TO THE IHO CONVENTION	84

DECISION	RELEVANT PROPOSAL	DESCRIPTION	Page
No. 17	-	DATES OF THE XVIIIth INTERNATIONAL HYDROGRAPHIC CONFERENCE – 2012	84
No. 18	-	SEATING ORDER AT THE NEXT CONFERENCE	84
No. 19	-	CONVEYING IHO'S GRATITUDE TO THE GOVERNMENT OF MONACO	84

**DECISIONS OF THE 4th EXTRAORDINARY INTERNATIONAL
HYDROGRAPHIC CONFERENCE**

DECISION No. 1 (PRO 1) NOTING THE ISPWG REPORT

The 4th EIHC noted the Report of the ISPWG.

**DECISION No. 2 (PRO 2) APPROVAL OF THE NEW DEFINITION OF
HYDROGRAPHY**

The 4th EIHC approved the following new definition of hydrography as agreed by the former Committee on the Hydrographic Dictionary:

“Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their change over time, for the primary purpose of safety of navigation and in support of all other marine activities, including economic development, security and defence, scientific research, and environmental protection”.

This definition was approved on the understanding that the debate on the question would be reflected in the summary records of the Conference.

DECISION No. 3 (PRO 3) APPROVAL OF THE REVISED STRATEGIC PLAN

The 4th EIHC approved the revised Strategic Plan submitted in Annex 9 to the ISPWG Report.

**DECISION No. 4 (PRO 4) ADOPTION OF A REVISED TEXT FOR ADMINISTRATIVE
RESOLUTION T5.1**

The 4th EIHC approved the draft revised text for Administrative Resolution T5.1 submitted in Annex 10 to the ISPWG Report.

**DECISION No. 5 (PRO 5) APPROVAL OF TRANSITION ARRANGEMENTS TO THE
NEW IHO STRUCTURE**

The 4th EIHC approved the arrangements for the transition to the new structure of the IHO Work Programme described in section 8 of the ISPWG Report and to task the IHB Directing Committee accordingly.

**DECISION No. 6 (PRO 6) REVIEWING OF THE POSSIBLE NEEDS FOR ASSISTANCE
IN PREPARING THE ANNUAL CYCLES OF THE NEW
STRATEGIC MECHANISM**

The 4th EIHC agreed to request the IHB Directing Committee to review possible needs for assistance in preparing the annual cycles of the new strategic mechanism, in consultation with the HSSC and IRCC chairs, and to report to Member States before the end of 2010. This proposal was approved in the hope that the IHO Member States will join Norway in helping the IHB to fulfil its task.

DECISION No. 7 (PRO 7) REVIEWING OF THE IMPLEMENTATION OF THE NEW PLANNING MECHANISM

The 4th EIHC agreed to request the IHB Directing Committee to review the implementation of the new planning mechanism, in consultation with the HSSC and IRCC chairs, at the end of each annual cycle in early 2011 and 2012 and report back to the next ordinary IHC (or to the first Assembly) in 2012.

DECISION No. 8 (PRO 8) NOTING THE HCIWWG REPORT

The 4th EIHC noted the Report of the HCIWWG with the modification proposed by France to remove the maps from the report and replace them by lists of the countries concerned.

DECISION No. 9 (PRO 9) NOTING THE RECOMMENDATIONS OF THE HCIWWG, SECTION 8 OF THE HCIWWG REPORT

The 4th EIHC approved the proposal with the amendment proposed by Australia to change “To endorse” into “To note”. Therefore, the Conference noted the following Recommendations:

The HCIWWG

- a) *Invite relevant Regional Hydrographic Commissions to*
 - i. *consider establishing liaison committees or other bodies, where relevant, to ensure consistent use and development of hydrographic standards and mutual cooperation for the enhancement of navigation safety in navigable inland waters within a region, and*
 - ii. *to encourage cooperation and mutual assistance between authorities, even from different regions but with common interests, particularly for the safety of navigation in navigable inland waters, with the purpose of mutual support and the establishment of instructions and guidance for hydrographic survey and the production of nautical charts, in accordance with the guidance in Technical Resolutions T1.3 and A3.4, and Article 8 of the future General Regulations.*
- b) *Invite relevant Member States and/or Regional Hydrographic Commissions (RHCs) to submit proposals to IHO for Capacity Building Committee (CBC) projects in support of regional coordination and the exchange of know-how in inland hydrography and cartography.*
- c) *Agree that, wherever possible, when developing the IHO Work Programme, and standards and guidelines, the potential applicability to hydrography and cartography for navigable inland waters should be taken into consideration.*
- d) *Direct the IHO Hydrographic Dictionary Working Group to establish a definition for navigable inland waters, taking as a starting point the definitions contained in Annex B of the HCIWWG Report.*

- e) *Establish a formal cooperation agreement between IHO and the Inland Electronic Navigation Chart Harmonization Group (IEHG) to produce, and to advise and assist the IHO on providing for the development and extension of specifications to cover Electronic Navigational Charts (ENCs) and digital nautical publications for navigable inland waters.*
- f) *Invite the IHO Hydrographic Services and Standards Committee (HSSC) to develop guidelines for those who seek to develop extensions to IHO specifications for use in navigable inland waters.*
- g) *Invite the HSSC to consider the adoption of relevant extensions to IHO specifications for use in navigable inland waters developed by other organizations.*
- h) *Invite the Inter-Regional Coordination Committee (IRCC) to foster and coordinate inland-related capacity building proposals/actions/work of RHCs and review their status at its annual meetings.*

DECISION No. 10 (PRO 10) ADOPTION OF THE RESOLUTION AS IN ANNEX G OF THE HCIWWG

The 4th EIHC adopted the following Resolution, as amended by France

A 1.xx Hydrography and Cartography of Navigable Inland Waters

- 1. *Relevant Regional Hydrographic Commissions (RHC), through appropriate liaison bodies, are invited to:*
 - a. *encourage the consistent use of hydrographic and nautical cartographic standards and mutual cooperation for the enhancement of navigation safety in navigable inland waters within and between regions.*
 - b. *encourage the identification of needs for developing additional regional extensions to IHO specifications to cater for navigable inland waters and foster these developments together with other relevant organizations.*
 - c. *encourage liaison with relevant IHO bodies (International Hydrographic Bureau (IHB), Hydrographic Services & Standards Committee (HSSC)) to ensure that any extensions to IHO specifications for navigable inland waters are consistent with IHO specifications and are as far as possible harmonised between other regional extensions.*
 - d. *encourage liaison, when appropriate, with other bodies working with inland hydrographic and nautical specifications, especially with the Inland Electronic Navigational Chart Harmonisation Working Group (IEHG), to ensure consistency and harmonisation as far as feasible with their specifications.*

- e. *encourage cooperation and mutual assistance between relevant authorities, even from different regions but with common interests, particularly for the safety of navigation in navigable inland waters, with the purpose of mutual support and the establishment of instructions and guidance for hydrographic survey and the production of nautical charts (see also Resolution A3.4).*
- f. *Monitor the development and use of hydrographic and cartographic standards on navigable inland waters, and report as necessary to the Inter-Regional Coordination Committee (IRCC).*

Where the responsibility for hydrography and nautical cartography of maritime and navigable inland waters is divided among different organizations, Member States are encouraged to ~~create National Hydrographic Committees. (See also Resolution T1.3).~~ ensure that these organizations' activities are properly coordinated."

DECISION No. 11 (PRO 11) NOTING THE MSDIWG REPORT

The 4th EIHC noted the Report of the MSDIWG.

DECISION No. 12 (PRO 12) NOTING THE RECOMMENDATIONS OF THE MSDIWG, SECTION 7 OF THE MSDIWG REPORT

The 4th EIHC noted the following Recommendations:

- a. *The IHO develops an SDI policy in support of its Member States by developing relationships with other SDI stakeholder groups and through active participation in such groups to strengthen understanding and knowledge of the role of hydrography in MSDI.*
- b. **IHO develops, through the MSDIWG, a definitive and practical publication to assist IHO Member States to be better prepared to develop and / or join MSDI at their national or regional level.**
- c. **IHO develops an SDI capacity building plan (e.g. in-country practical training and advice) to provide the necessary skills, knowledge and understanding of key components of SDI as described above.**
- d. **IHO considers the development of a web-based facility to encourage knowledge transfer, best practice and online guidance and training material.**
- e. **MSDI be introduced as a standing agenda item at meetings of Regional Hydrographic Commissions in order to monitor and report progress in Member States' MSDI engagement and development. MSDIWG will provide benchmarks against which reporting might be measured.**

**DECISION 13 (PRO 13) ADOPTION OF THE RESOLUTION AS IN ANNEX H OF
THE MSDIWG REPORT**

The 4th EIHC adopted the proposed Resolution as follows:

A1.xx Marine Spatial Data Infrastructure (MSDI) Policy

1. ***The IHO will support Member States in the identification, development and implementation of an appropriate role in national Spatial Data Infrastructure (SDI) and MSDI initiatives. This will be achieved through:***
 - ***The development and maintenance of a Special Publication that will provide a definitive procedural guide to establishing the role of the national hydrographic authority in MSDI.***
 - ***Developing an MSDI capacity building plan comprising knowledge transfer and training to Member States.***
 - ***Developing and managing a web-based facility to encourage knowledge transfer, best practice and provision of online guidance and training material.***
 - ***Formalising relations between IHO and other SDI stakeholder groups and through actively participating in these groups to strengthen understanding and knowledge of the role of hydrography in MSDI.***
2. ***IHO Regional Hydrographic Commissions are encouraged to monitor and report progress in Member States' MSDI engagement and development as a means of benchmarking the role of the national hydrographic authority in MSDI.***

DECISION No. 14 ENC COVERAGE

The 4th EIHC resolved that Member States and non-Member States should report on whether they will have ENC coverage in place to support international voyages and trade by 2010, in accordance with the Resolution (Decision 20) of the XVII International Hydrographic Conference, to the International Hydrographic Bureau and the Chair of the relevant Regional Hydrographic Commission as soon as possible, and not later than 1 August 2009, so that appropriate remedial plans can be identified and put into place to achieve the target.

DECISION No. 15 ENC CONSISTENCY AND QUALITY

The 4th EIHC resolved that Member States put in place all necessary measures to ensure consistency of content between ENCs and the corresponding paper charts, including close liaison and cooperation with other Member States concerned where ENCs or paper charts are being produced on their behalf.

**DECISION No. 16 INFORMING STATES SEEKING MEMBERSHIP OF THE
(PRO 14 Rev.1) ORGANIZATION OF THE PROTOCOL OF THE
 AMENDMENTS TO THE IHO CONVENTION**

The 4th EIHC approved the following proposal:

- (a) That the IHB be directed to inform States seeking membership of the IHO of the existence of the Protocol of Amendments to the Convention on the IHO and of the status of approval of that Protocol, and*
- (b) That the IHB explain to each State seeking membership of the IHO the mechanism by which the Protocol of Amendments to the Convention of the IHO comes into effect pursuant to Administrative Resolution T6.*

**DECISION No. 17 DATES OF THE XVIIIth INTERNATIONAL HYDROGRAPHIC
 CONFERENCE - 2012**

The Conference agreed to hold the XVIIIth I.H. Conference in April 2012. The dates will be announced to Member States after the IHB Directing Committee's consultation with the Monegasque Government.

DECISION No. 18 SEATING ORDER AT THE NEXT CONFERENCE

The Conference established that the order of seating at the XVIIIth IHC would commence with the letter "N".

**DECISION No. 19 CONVEYING IHO'S GRATITUDE TO THE GOVERNMENT OF
 MONACO**

The Conference resolved to convey IHO's profound gratitude to HSH Prince Albert II and to the Government of Monaco for the kind hospitality extended to the Organization through the following Resolution:

"The Conference:

Recognizing the continued close association and significant support of His Serene Highness Prince ALBERT II and the Government of the Principality of Monaco in Hosting the International Hydrographic Organization,

Appreciating the provision of the Auditorium RAINIER III in Monaco for the 4th Extraordinary International Hydrographic Conference and its associated Exhibition,

Further appreciating the provision of the Port Facilities of Monaco for the ships that were placed on exhibition during the Conference,

Expresses its profound gratitude to His Serene Highness Prince ALBERT II and the Government of the Principality of Monaco for their graciousness and kind hospitality extended to the Organization, and

Requests the delegation of the Principality of Monaco to convey to His Serene Highness and the Government of the Principality of Monaco the sincere sentiments of the Conference expressed above."

PLENARY SESSIONS

**PLENARY SESSIONS OF THE 4th EXTRAORDINARY INTERNATIONAL
HYDROGRAPHIC CONFERENCE**

CONTENTS

Item	Page
FIRST PLENARY SESSION	
- Welcoming Remarks by the President of the IHB Directing Committee	91
- Confirmation of the election of the President and election of the Vice-President of the Conference	91
- Appointment of Rapporteurs	92
- Adoption of the Agenda and Programme	92
- Opening Ceremony	92
SECOND PLENARY SESSION	
Consideration of Reports (Agenda item 3 (a))	93
- Report and Proposals Submitted by the IHO Strategic Plan Working Group (ISPWG) (Agenda item 3(a))	93
Consideration of Proposals (Agenda item 3 (a))	94
- PRO 1 - Proposal to note the ISPWG Report	94
- PRO 2 - Proposal to approve new definition of Hydrography	94
- PRO 3 - Proposal to approve the revised Strategic Plan	96
- PRO 4 - Proposal to adopt revised text for Administrative Resolution T5.1	97
- PRO 5 - Proposal to approve transition arrangements to new IHO structure	97
- PRO 6 - Proposal to review possible needs for assistance in preparing the annual cycles of the new strategic mechanism	97
- PRO 7 - Proposal to review the implementation of the new planning mechanism	100
THIRD PLENARY SESSION	
Consideration of Reports (Agenda item 3 (b))	102
- Report and Proposals submitted by the Hydrography and Cartography in Inland Waters Working Group (HCIWWG) (Agenda item 3 (b))	102

THIRD PLENARY SESSION (continued)	
Consideration of Proposals (Agenda item 3)	105
- PRO 8 - Proposal to note the HCIWWG Report	105
- PRO 9 - Endorsement of the Recommendations of the HCIWWG, Section 8 of the HCIWWG Report	105
- PRO 10 - Adoption of the Resolution in Annex G of the HCIWWG Report	105
Consideration of Report (Agenda item 3 (c))	106
- Report submitted by the Marine Spatial Data Infrastructure Working Group (MSDIWG) (Agenda item 3 (c))	106
Consideration of Proposals (Agenda item 3 (c))	107
- PRO 11 - Proposal to note the MSDIWG Report	107-108
- PRO 12 - Endorsement of the Recommendations of the MSDIWG; Section 7 of the MSDIWG Report	108
- PRO 13 - Adoption of the Resolution as contained in Annex H of the MSDIWG Report	108
Status Report on ENC Development by the IHB (Agenda item (4))	109
- Status Report on S-100 – IHO Geospatial Standard for Marine Data and Information (CNF.EX4/INFODOC.1)	109
FOURTH PLENARY SESSION	
Status Report on ENC Development by the IHB (Agenda item (4))	112
- Status Report on S-100 – IHO Geospatial Standard for Marine Data and Information (CNF.EX4/INFODOC.1)	112
Consideration of Proposals (Agenda item 3 (d))	113
PRO 14 Rev.1 - Informing States seeking Membership of the Organization on the Protocol of Amendments to the IHO Convention (CONF.EX4/G/03)	113
PRO 15 - Regional Hydrographic Commissions as bodies of the International Hydrographic Organization (CONF.EX4/G/03)	114
Consideration of the Report by the IHB (Agenda item 3(e))	114
Progress on the Ratification of the Protocol of Amendments to the Convention (Agenda item 3 (e)) (CONF.EX4/REP/04)	114

FIFTH PLENARY SESSION	
Discussion on ENC Developments (Agenda item 4) (CONF.EX4/REP/05)	117
SIXTH PLENARY SESSION	
- Discussion on status report on ENC developments by the IHB (Agenda item 4) (continued)	126
- Leisure and small Fishing Boats – Use of Official Electronic Charts (CONF.EX4/INFODOC.3)	129
- Any other Business	130
- Closing Ceremony (Agenda item 5)	131
- Date of the next Conference	131
- Seating order at the next Conference	131
- Closing Remarks by the President of the Conference	131

SUMMARY RECORDS

CONF.EX4/P/SR.1

FIRST PLENARY SESSION

2 June 2009

0910 - 1115

Rapporteur : Captain Federico BERMEJO BARO (IHB)

CONTENTS

- Welcoming Remarks by the President of the IHB Directing Committee
 - Confirmation of the election of the President and election of the Vice-President of the Conference
 - Appointment of Rapporteurs
 - Adoption of the Agenda and Programme
 - Opening Ceremony
-

**WELCOMING REMARKS BY THE PRESIDENT OF THE DIRECTING COMMITTEE
(Item 1 of the Provisional Agenda)**

The PRESIDENT OF THE DIRECTING COMMITTEE welcomed delegates, and expressed the condolences of the Conference to the delegation of France on the loss of Air France flight 447, which had disappeared over the Atlantic Ocean the previous day.

CONFIRMATION OF ELECTION OF THE PRESIDENT AND ELECTION OF THE VICE-PRESIDENT OF THE CONFERENCE

The PRESIDENT OF THE DIRECTING COMMITTEE announced that Captain Rachid ESSOUSSI (Tunisia) had been elected President of the Extraordinary Conference, in accordance with Rule 17 of the Rules of Procedure.

The election of Captain Essoussi (Tunisia) as President was confirmed by acclamation.

Captain Steve BARNUM (United States of America), seconded by IGA Gilles BESSERO (France), Dr. Savithri NARAYANAN (Canada), Commodore Rod NAIRN (Australia), Mr. Svend ESKILDSEN (Denmark) and Vice Admiral José AUGUSTO DE BRITO (Portugal), nominated Vice Admiral Luiz Fernando PALMER FONSECA (Brazil) for election as Vice-President of the Conference.

Vice Admiral Luiz Fernando Palmer Fonseca (Brazil) was elected Vice-President by acclamation.

Captain Essoussi took the Chair and Vice Admiral Palmer Fonseca the Vice Chair.

APPOINTMENT OF RAPPORTEURS

Captain Federico BERMEJO BARO (IHB), Mrs. Teresa LAGINHA SANCHES (Portugal), Mr. Dale NICHOLSON (Canada), Mr. Craig WINN (United States of America), Ms. Kellie JAMES (United Kingdom) and Ingénieur en chef Michel HUET (IHB) were appointed Rapporteurs.

ADOPTION OF THE AGENDA AND PROGRAMME (CONF.EX4/G/01 Rev.1)

The Agenda and Programme were adopted.

OPENING CEREMONY (Item 2 of the Agenda)

His Serene Highness PRINCE ALBERT II of Monaco was escorted into the Hall and took his seat on the podium.

Lt. Cdr. SHIPMAN (IHB), speaking as master of ceremonies on behalf of the Directing Committee and the staff of the IHB, welcomed delegates to the Fourth Extraordinary Conference. The Conference was being attended by almost 250 delegates from 53 Member States, 15 delegates from nine pending or non-member States, 15 observers from intergovernmental and nongovernmental organizations and almost 100 representatives of the 35 companies participating in the Hydrographic Exhibition.

The PRESIDENT OF THE DIRECTING COMMITTEE and the PRESIDENT OF THE CONFERENCE delivered opening addresses, which are reproduced in these Conference Proceedings.

Mr. Efthimios MITROPOULOS, Secretary-General of the International Maritime Organization, delivered a keynote address, which is reproduced in these Conference Proceedings.

HIS SERENE HIGHNESS PRINCE ALBERT II delivered an address, which is also reproduced in these Conference Proceedings, declaring open the Fourth Extraordinary International Hydrographic Conference.

FLAG PRESENTATION CEREMONY

Lt. Cdr. Steve SHIPMAN (IHB) announced that the Organization now comprised 80 Member States. Since the Seventeenth International Hydrographic Conference in 2007, Qatar and Ireland had become full Members. In keeping with tradition, he invited the representatives of those countries to formally present their countries' flags.

PRESENTATION OF THE PRIZE FOR IHO CHART EXHIBITION

The Master of Ceremony (IHB) announced that the prize for the best exhibit in the IHO Chart Exhibition, held in Moscow during the 2007 International Cartographic Conference, had been awarded to Australia and the PRESIDENT OF THE INTERNATIONAL CARTOGRAPHIC ASSOCIATION, Prof. William CARTWRIGHT, proceeded with the presentation of the prize to the winning country.

Rear Admiral KOZLOV (Russian Federation) welcomed the efforts of the IHO to coordinate national hydrographic services in the interest of maritime safety. In recognition of its work, he was presenting the Organization with a painting by the Russian artist Ivan Aivazovsky, depicting a sailing ship engaged in a hydrographic exercise.

His Serene Highness Prince Albert II was then escorted from the Hall to the exhibition venue to open and visit the Hydrographic Exhibition.

Rapporteur : Mrs. Teresa LAGINHA SANCHES (Portugal)CONTENTS

Consideration of Reports (Agenda item 3 (a))

- Report and Proposals Submitted by the IHO Strategic Plan Working Group (ISPWG) (Agenda item 3(a))

Consideration of Proposals (Agenda item 3 (a))

- PRO 1 - Proposal to note the ISPWG Report
- PRO 2 - Proposal to approve new definition of Hydrography
- PRO 3 - Proposal to approve the revised Strategic Plan
- PRO 4 - Proposal to adopt revised text for Administrative Resolution T5.1
- PRO 5 - Proposal to approve transition arrangements to new IHO structure
- PRO 6 - Proposal to review possible needs for assistance in preparing the annual cycles of the new strategic mechanism
- PRO 7 - Proposal to review the implementation of the new planning mechanism

CONSIDERATION OF THE REPORT SUBMITTED BY THE IHO STRATEGIC PLAN WORKING GROUP (ISPWG) (CONF.EX4/REP.01) (Agenda Item 3(a))

The PRESIDENT invited IGA BESSERO (ISPWG Chairman) to introduce the report of the Working Group.

IGA BESSERO (ISPWG Chairman) recalled that the XVIIth International Hydrographic Conference had adopted Decision No. 12, establishing the IHO Strategic Plan Working Group (ISPWG) and its Terms of Reference (CONF.EX4/REP.01, Annex 1). It had also agreed, through Decision No. 16, that one of the main tasks of the 4th Extraordinary International Hydrographic Conference would be to examine the proposed new Strategic Plan. In accordance with its Terms of Reference, the Working Group had worked mainly by correspondence, conducting exchanges by email and through an online forum. A single face-to-face plenary meeting had been held in September 2008. In addition, the Chair, the two Vice-Chairs and the representative of the IHB Directing Committee had held three face-to-face meetings. The Working Group had commenced its work in August 2007 and had submitted its final report, together with the draft Strategic Plan (CONF.EX4/REP.01, Annex 9), to the IHB on 17 December 2008.

In his view, working through correspondence had proved an efficient and cost-effective method and had enabled the ISPWG to complete its work on time. It did, however, require more self-discipline from members of the Working Group than face-to-face meetings, since they had had to respond to communications by specific deadlines. Moreover, some regional hydrographic commissions had taken longer than expected to nominate their points of contact. On another occasion, it would be better to plan for two more face-to-face meetings.

The Working Group had focused on three main tasks: reviewing the existing IHO Strategic Plan in view of the Organization's new vision, mission and objectives; preparing a revised draft strategic plan; and considering the transition to its new structure. The Group's proposals reflected several innovations. Risk management had been incorporated into the strategic planning process; performance indicators had been adopted in order to monitor more efficiently the implementation of the Strategic Plan; and the IHO Work Programme had been divided into three programmes, instead of the current five, in line with the new structure comprising the IHB itself, the Hydrographic Services and Standards Committee (HSSC) and the Inter-Regional Coordination Committee (IRCC). The Working Group had identified only one potential difficulty in implementing its proposals: the possibility that resourcing issues might arise because of the additional tasks relating to risk management and progress monitoring. The Group had done its best to address such matters in a pragmatic and realistic manner.

The Working Group had submitted seven proposals for consideration by the Conference (CONF.EX4/G/03, Proposals 1 to 7). He expressed his appreciation of the active participation and commitment shown by the Working Group members. Since the Group had now completed its work, it should be dissolved.

THE PRESIDENT OF THE DIRECTING COMMITTEE said that the Directing Committee had concerns about the new responsibilities and additional workload for the IHB as a result of the proposed strategic planning process. The ISPWG report recognized that the IHB might experience difficulty in carrying out the additional tasks associated with risk management and performance monitoring. He would provide additional information in that regard when the Conference took up PRO 6.

CONSIDERATION OF THE PROPOSALS SUBMITTED BY THE IHO STRATEGIC PLAN WORKING GROUP (ISPWG)

PRO 1 - PROPOSAL TO NOTE THE ISPWG REPORT (CONF.EX4/G/03) (Agenda item 3(a))

The PRESIDENT invited the Conference to note the ISPWG report.

PRO 1 was adopted.

PRO 2 - PROPOSAL TO APPROVE NEW DEFINITION OF HYDROGRAPHY (CONF.EX4/G/03) (Agenda item 3(a))

The CHAIRMAN OF THE ISPWG said there had been a consensus among members of the Working Group that some minor amendments were needed to the existing definition of "hydrography", to reflect the increased scope of the subject. The proposed new definition had been developed in collaboration with the Hydrographic Dictionary Working Group (HDWG) and was specifically intended for inclusion in the dictionary. It was not however intended either to define or to expand the responsibilities of the IHO, for example with regard to inland waters. The view of the Working Group was that the list of activities supported by hydrography should be spelt out more clearly while remaining as generic as possible. He was aware of suggestions that additional activities should be included in the list, such as intelligence-gathering and disaster management. Those activities were however covered by the "other marine activities" mentioned in the proposed definition.

Dr. JONAS (Germany) supported the broadened scope of the proposed definition. His delegation had been concerned that the new definition might be misinterpreted as expanding the responsibilities of the IHO to inland waters. The Chairman of the Working Group had however addressed that concern.

Commodore NAIRN (Australia) supported the proposal as currently drafted. There was no need for any extra detail.

Dr. NARAYANAN (Canada) congratulated the Working Group on its excellent report. She fully supported the new, broader definition. Some of the activities mentioned in it touched upon the areas of responsibility of other organizations, but she was confident that the IHO would collaborate effectively with those organizations.

Dr. KATO (Japan) observed that disaster management was growing in importance because of recurring volcanic eruptions, tornados, tsunamis and other extreme marine events. The list of activities in the definition should include disaster management.

Rear Admiral MONCRIEFF (United Kingdom) agreed with the remarks by the representative of Canada concerning coordination between the IHO and other organizations. The proposed definition did in fact touch upon areas of work of other organizations. However, he fully supported the proposed wording.

Mr. Ye-Jong WOO (Republic of Korea) agreed with the representative of Japan. Disaster management was of crucial importance for Asian countries.

ICETA GUILLAM (France) said that his country had been directly involved in the work of the Committee on the Hydrographic Dictionary. In his delegation's view, the definition corresponded to the Strategic Plan and was sufficiently generic and comprehensive.

Commodore INUSA (Nigeria) welcomed the inclusion of a list of marine activities in the definition, which would be useful for countries where hydrography currently had a low priority in government circles. Disaster management could be included, since environmental protection was mentioned in the definition.

ICETA GUILLAM (France) said that he sympathised with the view that disaster management should be mentioned. However, activities in that area were already covered by security and defence.

Vice Admiral PALMER FONSECA (Brazil) agreed.

Rear Admiral RAO (India) said it would be difficult to include all relevant marine activities. The words "including economic development, security and defence, scientific research, and environmental protection" should be deleted.

Commander CHANS (Spain) said the examples listed in the proposed definition encompassed all relevant areas of marine activity.

Dr. OEI (Singapore) shared the concerns expressed by the representatives of Japan and the Republic of Korea. Disaster management was a distinctly different type of activity from those listed and should therefore be included.

Mr. ZENONOS (Cyprus) said that hydrography was a dynamic science encompassing many different activities, including data management, which ought to be reflected in the definition.

Mr. AL KIYUMI (Oman), thanking the ISPWG for its hard work, supported the proposed definition.

Rear Admiral KOZLOV (Russian Federation) also supported the proposed definition.

The PRESIDENT observed that, in the view of most delegations, the proposed definition already encompassed disaster management.

IGA BESSERO (ISPWG Chairman) said that disaster management was not the part only of IHO's mission, but disaster prevention was also important. Disaster prevention was already covered by the proposed definition. He suggested two options: the definition could be approved as submitted by the ISPWG; or it could be amended as proposed by the representative of India, by deleting the list of activities. Of the two options, he would prefer the former.

Dr. OEI (Singapore) said he could support the first option, provided the views expressed in the Conference concerning disaster management were placed on record.

Captain BARNUM (United States of America) supported the proposed definition. He agreed with the representative of Singapore.

First Admiral SUGENG SUPRIYANTO (Indonesia) said that, given his country's experience of managing the tsunami disaster in 2006, he would prefer disaster management to be specifically included in the list of activities included in the definition. In his view it was not covered by security activities.

Mr. IZADIYAN (Islamic Republic of Iran) agreed.

Dr. KATO (Japan) withdrew his proposed amendment, being persuaded that disaster management was covered by the marine activities listed in the proposed definition.

The PRESIDENT took it that the Conference was prepared to approve the proposed definition of hydrography, on the understanding that debate on the question would be reflected in the summary record.

On that understanding, PRO 2 was adopted.

**PRO 3 - PROPOSAL TO APPROVE REVISED STRATEGIC PLAN
(CONF.EX4/G/03) (Agenda item 3(a))**

IGA BESSERO (ISPWG Chairman), introducing the proposal, said the Conference was invited to review and approve the revised draft Strategic Plan submitted in Annex 9 to the ISPWG report. As indicated in the explanatory note in CONF.EX4/G03, the draft revised Strategic Plan comprised six sections and two annexes. Sections 1 and 2 were similar to the corresponding sections in the existing Strategic Plan. Section 1 included the new definition of hydrography just approved in PRO 2. In accordance with Decision 12, section 2 was taken from the Vision, Mission and Objectives for IHO, as set out in the amendments to the IHO Convention. Strategic assumptions were set out in section 3. Details of how the Working Group had arrived at those assumptions were given in the Group's report. Section 4 outlined the strategic directions IHO should take, and section 5 indicated the ways and means of following those directions in relation to: the Organization's planning and review cycles; risk analysis and mitigation, which was an innovation; and the Work Programme. Section 6, another innovation, indicated how progress towards the IHO's objectives would be monitored on the basis of performance indicators. A risk management framework was set out in Annex A, and the responsibilities of IHO organs in handling the strategic directions were shown in Annex B.

Captain BARNUM (United States of America) supported PRO 3.

PRO 3 was adopted.

PRO 4 - PROPOSAL TO ADOPT REVISED TEXT FOR ADMINISTRATIVE RESOLUTION T5.1 (CONF.EX4/G/03) (Agenda item 3(a))

IGA BESSERO (ISPGWG Chairman), introducing the proposal, said that the draft revised text for Administrative Resolution T5.1 was contained in Annex 10 to the ISPGWG report. It related to the new planning cycle just approved under PRO 3. Because the protocol of amendments to the IHO Convention had not yet been approved, two regimes had been proposed. The first was an interim regime that would apply pending the ratification of the amendments, setting out arrangements for a five-year planning cycle and a five-year Work Programme running from one ordinary session of the Conference to the next. The second would apply once the amended Convention came into force, after which there would be a three-year planning cycle and a three-year work plan running between two sessions of the new Assembly.

Commander LUSIANI (Italy) supported PRO 4, which he felt offered the best solution for a period of transition.

PRO 4 was adopted.

PRO 5 - PROPOSAL TO APPROVE TRANSITION ARRANGEMENTS TO NEW IHO STRUCTURE (CONF.EX4/G/03) (Agenda item 3(a))

IGA BESSERO (ISPGWG Chairman), introducing the proposal, explained the four steps that were being proposed for transition to the new structure of the Work Programme.

Rear Admiral (Ret.) ANDREASEN (United States of America) supported the proposal. The restructuring should not negatively affect the work plan.

The PRESIDENT said he took it that the Conference agreed with the proposal to approve transition arrangements to the new IHO structure.

It was so agreed.

PRO 6 - PROPOSAL TO REVIEW POSSIBLE NEEDS FOR ASSISTANCE IN PREPARING THE ANNUAL CYCLES OF THE NEW STRATEGIC MECHANISM (CONF.EX4/G/03) Agenda item 3(a))

IGA BESSERO (ISPGWG Chairman), introducing the proposal, said that it addressed the concern of the President of the IHB Directing Committee that the new strategic mechanism might generate extra work for the IHB, the HSSC, the IRCC and Member States. The additional tasks were limited in scope, and there was a simple, pragmatic framework clearly linked to the Strategic Plan, which would help the IHB in its work. He outlined four options for obtaining assistance in preparing the annual cycles: (1) to adjust the current work plan, after identifying any tasks that could be abandoned or postponed, to allow efficient performance of the tasks identified as priorities; (2) to recruit additional staff to the IHB; (3) to solicit assistance from Member States in the form of seconded personnel; and (4) to contract for assistance from external consultants. Only options (1) and (3) would be without implications for the budget.

Rear Admiral (Ret.) ANDREASEN (United States of America) said he supported those [(1) and (3)] options.

The PRESIDENT OF THE DIRECTING COMMITTEE reiterated the views he had expressed during discussion of Proposal 1. Annex 9.A to the report spelt out the new responsibilities of the IHB under the new Strategic Plan. The IHB would ultimately be responsible for the effective implementation of risk management practices within the IHO, for communicating its principles at all levels, for introducing a 'risk management culture' in the IHO, and for reporting. The workload would also be

increased by the requirement to monitor performance indicators, the work plan, the strategic assumptions and the directions. He had been informed by other international organizations and some Member States with experience of strategic planning and reporting that the process was a complex one requiring experienced personnel working full time. The capacity of the IHB was insufficient for the additional tasks proposed; it was already fully committed in implementing the current Work Programme. If it had to provide the report requested in Proposal 6 before the end of 2010, a short-term secondment would be necessary. The Directing Committee would therefore issue a circular letter to Member States, requesting the secondment of an expert in risk management development.

Rear Admiral MONCRIEFF (United Kingdom) agreed with the Chairman of the ISPWG that the first and third options that he had outlined represented the best potential solutions. He asked whether the Directing Committee had determined which aspects of the current Work Programme could be removed, in order to free existing personnel to perform the functions required by Proposal 6. What would the period of secondment be? Continuity was essential in the complex type of work involved in monitoring performance indicators and risk management. The number of performance indicators should be limited to five or ten, as was the practice elsewhere, in order to lighten the burden.

The PRESIDENT OF THE DIRECTING COMMITTEE said the Directing Committee had not yet looked at the current Work Programme to determine which tasks could be eliminated. He proposed that the Directing Committee request the secondment of a person experienced in risk management to prepare a detailed report by the end of 2010.

Captain WARD (IHB Director) said the IHB needed help from Member States in determining its personnel requirements under Proposal 6. The Directing Committee did not feel it had either the time or the experience to work out what was needed.

Mr. KRUISE (International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)) said risk management was complicated. The first step was to determine what had to be prevented. His own experience of risk management for waterways had involved intensive work in four universities, including work by legal experts and an international working group. Why not ask those Member States who have already implemented a risk management plan for the help required?

Rear Admiral (Ret.) ANDREASEN (United States of America) agreed with the remarks of previous speakers about the complexity of risk management. He suggested that the report could be prepared over a longer timescale.

The PRESIDENT OF THE DIRECTING COMMITTEE summarized the comments of the representatives of the United Kingdom, the United States of America, and IALA. He concluded that the IHB's report could be issued in time for the conference in 2012, and that extra time could be devoted to recruiting experienced risk management personnel and to considering all the available options before preparing the report.

Captain KAMPFER (South Africa) supported that suggestion.

Commander LUSIANI (Italy) said the suggestion of delaying the reporting date was merely a way of postponing the problem, not solving it. The Conference had to decide whether the Strategic Plan would be implemented; if it was, the decision had to be taken to increase the manpower of the IHB, assuming that no other solution could be found, such as voluntary assistance from one or another of the Hydrographic Offices.

Rear Admiral (Ret.) ANDREASEN (United States of America) said that while the United States supported the concept of moving forward with risk management, the exercise was not now carried out in its own Hydrographic Offices. He was aware that Norway had done some studies on risk management, but his delegation had not yet had time to look at them. More time was needed to get the balance right.

Commander WYATT (Oman) agreed with the representative of Italy. The Conference had to face up to the resource implications of the problem.

Rear Admiral MONCRIEFF (United Kingdom) concurred. To operate under the Convention as amended, the Directing Committee must receive strategic information. Simply shelving the problem until some time in the future would risk unravelling the Strategic Plan. The resources must be found to implement it. The United Kingdom did have some expertise in risk modelling, and would be glad to continue contributing. He hoped other countries would do likewise. One approach could be to see what results could be obtained by 2011 on such an ad hoc basis, and then to test and adjust the outcome in 2012.

Mr. CARANDANG (Philippines) agreed. He suggested sending a circular letter identifying the amount and duration of work that would be needed from any volunteering States, and that work should then proceed on the basis of the actual response of the Members.

Rear Admiral RAO (India) said that probably every nation in the world was developing a disaster management plan. He suggested that the Regional Hydrographic Commissions could collect and collate them, and the combined result would at least provide a way of moving forward.

Captain WARD (IHB Director) recalled that the Explanatory Note to Proposal 6 invited the Conference to request the IHB Directing Committee to review possible needs for assistance in preparing the annual cycles of the new strategic mechanism. The IHB did not itself have the expertise to determine those resource implications. That was why it was seeking to ascertain which Member States did have such expertise and could provide it to the IHB, to enable it to prepare the report which was required by the end of 2010.

IGA BESSERO (ISPGWG Chairman) emphasized that the Working Group had provided a realistic framework for risk management and progress monitoring, one that did not require a particularly high level of resources. Moreover, it had outlined a limited number of strategic performance indicators, which could be handled without too many additional resources. He suggested that work might start with existing resources for a trial phase.

Mr. ESKILDSEN (Denmark) asked for clarification of the concept of “risk management”: was the aim to identify and mitigate any threats against the IHO as an organization, or against countries and their Hydrographic Offices? What exactly was the task involved?

IGA BESSERO (ISPGWG Chairman) said that, as explained in Annex A to the Strategic Plan, the risk management under consideration at present was related to the strategic directions of the Strategic Plan. Not all the risks were included.

The PRESIDENT asked whether the Conference would be willing to change the reporting date to 2012, which would give the HSCC and IRCC, with the Directing Committee, more time to study all the issues and prepare their reports.

Commander LUSIANI (Italy) said that a postponement would be an opportunity lost. There was now an opportunity to start with a limited number of issues. The resource problem was well-known, and it had already been accepted that the way forward was to take a step-by-step approach, eventually reaching an optimum situation after a number of years.

Captain DE HAAN (Netherlands), Captain NAIL (United Kingdom) (Chairman of the HSSC) and Mr. PARIZI (Islamic Republic of Iran) all expressed support for the view expressed by the representative of Italy and the Chairman of the ISPWG.

Dr. JONAS (Germany) also agreed that momentum should not be lost. He wondered whether one possible approach would be to split the entire risk management operation into the three component parts of the new Strategic Plan.

Dr. NARAYANAN (Canada) said it was important to identify what could be done, and to look for the relevant expertise in Member States. Then it might be possible to report in 2010.

Mr. LARSSON-FEDDE (Norway) agreed with the views of the delegations of Canada, the Netherlands and Italy. Norway had done considerable work on risk management and could offer resources to move the project forward. He had understood from Captain Ward that what might be needed would be for someone to spend a relatively short period in discussions with the IHB to define the needs, and for that person then to go on working on the project within the home organization. On that basis, Norway was prepared to contribute resources to move the project forward.

Dr. OEI (Singapore) said that if the aim was to create a more effective and efficient Organization, there could be no question of the necessary resources not being forthcoming.

ICETA GUILLAM (France) agreed with the representatives of Italy, the United Kingdom and the Netherlands, recommending that work start with a pragmatic and incremental approach. He was not in favour of outsourcing the work, which would scatter outside the Organization resources and knowledge that should be kept within it.

The PRESIDENT said that he took it that the Conference wished to approve Proposal 6 without amendment, in the hope that Member States would join Norway in helping the IHB fulfil its task.

It was so agreed.

PRO 7 – PROPOSAL TO REVIEW THE IMPLEMENTATION OF THE NEW PLANNING MECHANISM (CONF.EX4/G/03) (Agenda item 3(a))

The PRESIDENT drew attention to the relevant section in document CONF.EX4/G/03 (the “Red Book”).

IGA BESSERO (ISPWG Chairman) said that the adoption of Proposal 6 would automatically result in the adoption of Proposal 7, since the intention was that once the new planning mechanism was operational, it should be reviewed by the Directing Committee at the end of the following two annual cycles and reported on to the next ordinary session of the Conference or the first session of the Assembly in 2012.

The PRESIDENT asked if there were any comments, or whether he should take it that the Conference wished to approve Proposal 7 without amendment.

It was so agreed.

**Rapporteurs : Mr. Dale NICHOLSON (Canada) for HCIWWG matters and
Mr. Craig WINN (USA) for MSDIWG matters**

CONTENTS

Consideration of Reports (Agenda item 3 (b))

- Report and Proposals submitted by the Hydrography and Cartography in Inland Waters Working Group (HCIWWG) (Agenda item 3 (b))

Consideration of Proposals (Agenda item 3 (b))

- PRO 8 - Proposal to note the HCIWWG Report
- PRO 9 - Endorsement of the Recommendations of the HCIWWG, Section 8 of the HCIWWG Report
- PRO 10 - Adoption of the Resolution in Annex G of the HCIWWG Report

Consideration of Report (Agenda item 3 (c))

- Report submitted by the Marine Spatial Data Infrastructure Working Group (MSDIWG) (Agenda item 3 (c))

Consideration of Proposals (Agenda item 3 (c))

- PRO 11 - Proposal to note the MSDIWG Report
- PRO 12 - Endorsement of the Recommendations of the MSDIWG; Section 7 of the MSDIWG Report
- PRO 13 - Adoption of the Resolution as contained in Annex H of the MSDIWG Report

Status Report on ENC Development by the IHB (Agenda item (4))

- Status Report on S-100 – IHO Geospatial Standard for Marine Data and Information (CNF.EX4/INFODOC.1)

Tribute to the memory of those who died in Air France flight 447

*All rose and observed a minute of silence in memory of those who died in
Air France flight 447 on 1 June 2009.*

CONSIDERATION OF THE REPORT SUBMITTED BY THE HYDROGRAPHY AND CARTOGRAPHY IN INLAND WATERS WORKING GROUP (HCIWWG) (Agenda Item 3(b)) (CONF.EX4/REP.02)

PRO 8 – REPORT OF THE HYDROGRAPHY AND CARTOGRAPHY IN INLAND WATERS WORKING GROUP (HCIWWG) (Agenda item 3b)

Captain NAIL (HSSC Chairman), formerly the Committee on Hydrographic Requirements for Information Systems (CHRIS), said that agenda items 3b) and 3c) referred to matters, namely inland waters and spatial data infrastructures, that had been referred to the CHRIS by the XVIIth International Hydrographic Conference. Two working groups had been established by the CHRIS at its nineteenth meeting to deal with the two items, and both items had then been considered by the Committee at its twentieth session, before the new Hydrographic Services and Standards Committee (HSSC) came into being. Consequently, the relevant technical working groups had only had one full year in which to complete their reports. The Conference was also due to be briefed on the progress made on IHO S-100, the new IHO Geospatial Standard for Marine Data and Information, which was nearing approval stage. The three subjects of inland waters, spatial data infrastructure and IHO S-100, provided a good cross-section of the work conducted by the CHRIS, now HSSC, and its various working groups. His own work as Chairman of the CHRIS, and now of the HSSC, had been facilitated by the support of the hydrographic offices, which made a valuable contribution to IHO's technical work programme. However, the pool of talent was spread thinly among the offices, and any further increase in the scope of the IHO's work could involve a risk of reducing the Organization's focus on some of its main technical objectives.

Turning to the report of the Working Group on Hydrography and Cartography in Inland Waters (HCIWWG), contained in document CONF.EX4/REP.02, he said that under its Chairman, Captain Wesley Cavalheiro of Brazil, the primary task of the Working Group had been to analyse and make recommendations on the level and nature of the IHO's involvement in the hydrography and cartography of inland waters. The IHO was already implicated in the task, both through the responsibilities exercised by some Member States and as a result of the passage of significant traffic from the high seas to connected navigable waters. It was appropriate that the IHO, which was recognized by the United Nations General Assembly and the International Maritime Organization (IMO) as the technical authority for issues of hydrography and nautical cartography, should provide guidance in the matter. However, the existing diversity in the level of involvement of individual Member States presented a significant challenge for the Working Group. That was reflected in the proposed resolution (PRO 10, contained in document CONF.EX4/REP.02), which recognized that effective, but different, working practices were already embedded within the regions studied. The Working Group had completed its work in time to be reviewed by the twentieth meeting of the CHRIS, which had endorsed its report subject to minor amendments, duly incorporated in the report before the Conference. The CHRIS had agreed that the work had been completed, and the Working Group had accordingly been disbanded. He invited the Chairman of the Working Group to review its findings.

Captain CAVALHEIRO (Brazil), Chairman of the HCIWWG, summarized the report of the Working Group, and read out the proposed draft resolution shown at Annex G. The recommendations and proposals of the Working Group were intended to provide support only to those hydrographic services which were in need of it for the purposes of the IHO. None of them had financial implications for the Organization's budget. The Conference was invited to note the report, endorse the recommendations contained in it and adopt the draft resolution shown at Annex G.

Captain WARD (IHB Director) said it would be clear from the presentation of the report, and from PRO 10 (Adoption of the resolution as in Annex G of the HCIWWG Report), that close cooperation was encouraged with the Inland Electronic Navigation Chart Harmonization Group (IEHG). The IEHG was recognized by the IHO as a non governmental international organization and was represented at the Conference. In addition, during deliberations between the Chair of the HSSC, the

Chair of the HCIWWG and the IHB, it had been noted that the recommendations contained in PRO 9 (Endorsement of the Recommendations of the HCIWWG, section 8 of the HCIWWG Report), were generally reflected in the resolution contained in PRO 10. He would therefore advise that in the case of PRO 9, instead of adopting the recommendations themselves, the Conference should note them and decide whether to approve the resolution containing their principal elements.

Captain BARNUM (United States of America) commended the HCIWWG on its work and concurred with its disbandment.

Mr. SAHEB-ETTABA (Canada) said the report clearly highlighted the complexities associated with hydrography and cartography in inland waters. The question of harmonization was very important in connection with trade and navigation, particularly on certain rivers. However, he warned against reaching too hasty a decision on a definition of “inland waters”, pointing out that the term contained two distinct legal concepts: inland and navigable. Delegations might wish to consider whether it was, in fact, essential to define the term, or whether the IHO might continue to play its role while leaving the definition to individual Member States, which could then apply their own rules and regulations. In the interests of clarity, he suggested replacing the term “inland waters” by “internal waters”, in conformity with the United Nations Convention on the Law of the Sea (UNCLOS). He pointed out that the proposed definition contained the concept of navigability, which was not necessarily the same in all countries.

Captain WARD (IHB Director) said he understood that the final definition of waters other than the high seas was still being developed by the IHO’s Hydrographic Dictionary Working Group. The information provided by the representative of Canada would accordingly be taken into consideration by that working group, which would welcome more input from Member States.

Captain KHALIPHY (Morocco), while broadly welcoming the report contained in document CONF.EX4/REP.02, took issue with the way in which Morocco’s response to IHO CL 112/2007 had been represented in the maps contained in Annex D. In order to avoid any misunderstanding, the maps should either be corrected or replaced by a table showing which countries had responded, with columns corresponding to the different categories of responses.

Rear Admiral RAO (India), referring to the comments by the representative of Canada, drew attention to the varying criteria used by countries in determining responsibility for different types of inland waters, such as different baselines. In India, the inland waterways authority was responsible for the lakes and rivers inside the baseline. Given the legal implications, it might be appropriate to take account of the situation in individual countries instead of trying to define an abstract term.

Admiral KOZLOV (Russian Federation) explained that although it had not replied to the questionnaire in IHB CL 112/2007, his country did support the proposals it contained, particularly with regard to harmonization. There were several major inland waterways in Russia, such as the waterway linking the Caspian and Baltic Seas. The Russian hydrographic office was not a part of the Transport Ministry, which was responsible for inland waterways. Nor was there necessarily a clear-cut distinction between inland waters and the high seas; a number of maritime ports were situated on rivers, such as the port of Astrakhan on the Volga river. A possible solution to a complex problem might be for countries to set up special agencies to coordinate the different authorities concerned.

Captain NAIL (HSSC Chairman) assured the representative of Morocco that the final version of the report would contain a corrected map. He was well aware that good working practices were already in place, and that numerous organizations were ensuring that navigable waters were harmonized with the charting of the seas. The HCIWWG was not trying to interfere in national jurisdictions or legislation. Its objective was to provide a standard, possibly an extension to the existing standards for paper and electronic charting, for the use of countries struggling to develop a standard of their own. The question of flexibility in the standards which the IHO hoped to introduce would be covered in the discussion on S-100. He recognized the difficulties associated with jurisdictional issues, but the role of the CHRIS,

now the HSSC, was purely technical, relating to the expansion of standards. In his view, the IHO had a role in setting standards in the present case.

Mr. BIRKLHUBER (Chairman, Inland ENC Harmonization Group (IEHG)) said that the goal of the IEHG was to develop and maintain a standard for inland ENCs based on, and compatible with, maritime ENCs. The Group's focus was on rivers mainly used for inland vessels and not on ports located in inland waters. It was a combined governmental and nongovernmental expert group on which the United States, the Russian Federation, Brazil and all European countries with a connection to an inland waterway network were represented, as well as a number of companies. The IHO S-57 standard was not used for inland waterways because many features were not covered by maritime standards. For example, the water level in rivers was not horizontal, there were often hydraulic obstructions, and in Europe the traffic rules were different from those applying to maritime navigation. IMO instruments, such as COLREG and SOLAS, and codes such as the IMDG code, were not applicable to inland waterways, which were instead regulated by the United Nations Economic Commission for Europe. Since IEHG standards for inland waterways were based on IHO S-57, it was important for the Group to work with the IHO. It was therefore a source of satisfaction that IEHG had been granted observer status, enabling it to attend IHO Conferences and other meetings. The resolution proposed by the HCIWWG was a good basis for future cooperation. It was also gratifying that the S-100 register already contained a number of inland ENCs that were the responsibility of the IEHG. Inland ENCs were not merely a vague future prospect, because the standard for inland ENCs had been formally adopted by the European Union and the United Nations Economic Commission for Europe. Over 4000 vessels were already using the inland ENCs. He invited Member States to send representatives to the IEHG.

Mr. DEHLING (Germany), agreeing with the representative of India, supported Proposals 8, 9 and 10. The term "inland waterways" should be retained, rather than the concept of "internal waters". He believed that the proposals were flexible enough to allow each country to apply its own legislation and regulations.

Rear Admiral (Ret.) ANDREASEN (United States of America) said his delegation had initially had concerns about referring the definition of "navigable inland waters" to the Dictionary Working Group, but now realized that the latter was formulating a very high-level definition which did not really touch on regulatory issues. It could well be left to frame a suitable definition.

Mr. CARANDANG (Philippines) said that, as he understood it, "internal waters" in the United Nations Convention on the Law of the Sea included bays or indented portions of a coast which were considered to be historic bays or waters enclosed by closing lines. That was different from the intended scope of the term "inland waters" as defined by the Working Group, which referred to areas within land boundaries.

Commodore PALIATSOS (Greece) observed that it was the responsibility of the IHO, as an international organization, to provide guidance and specifications in relation to international waters. It should be left to individual countries to define what was meant by "inland waters" in their respective national contexts. The Conference was being waylaid, for a second time, by the question of definitions which ought to be left to the Dictionary Working Group.

The PRESIDENT invited the Conference to consider the three proposals submitted by the Working Group.

CONSIDERATION OF THE PROPOSALS SUBMITTED BY THE HYDROGRAPHY AND CARTOGRAPHY IN INLAND WATERS WORKING GROUP (HCIWWG)

PRO 8- PROPOSAL TO NOTE THE REPORT OF THE HYDROGRAPHY AND CARTOGRAPHY IN INLAND WATERS WORKING GROUP (HCIWWG) (CONF.EX4/REP/02 and CONF.EX4/G03) (Agenda item 3(b))

The PRESIDENT said he would take it that the Conference wished to note the report, with the amendment requested by the representative of Morocco.

Captain KHALIPHY (Morocco) wished to be sure that his reservation concerning the maps contained in the report was placed on record.

Lt. Colonel MOULOUDJ (Algeria) said the Conference could not take note of the amendment requested by the representative of Morocco, which was entirely political in nature and outside the remit of the IHO. The International Hydrographic Organization, as a technical and advisory body, had to work on the basis of the resolutions of the United Nations. There was an official map recognized by the United Nations, and the Conference could not change that fact.

IGA BESSERO (France) suggested that, for the sake of avoiding a political debate without relevance for the technical issues under discussion, the maps should be removed from the report and replaced by lists of the countries concerned.

Captain KHALIPHY (Morocco) and Lt. Colonel MOULOUDJ (Algeria) agreed to that proposal.

The PRESIDENT said he took it that the Conference wished to note the report, with the modification proposed by the representative of France.

It was so agreed.

PRO 9- ENDORSEMENT OF THE RECOMMENDATIONS OF THE HCIWWG, SECTION 8 OF THE HCIWWG REPORT (CONF.EX4/REP/02 and CONF.EX4/G03) (Agenda item 3(b))

Commodore NAIRN (Australia) said it would be more appropriate for the Conference simply to note, rather than endorse, the recommendations of the Working Group. He suggested that the proposal should be amended accordingly, as well as Proposal 12.

Hearing no objection, the PRESIDENT said he took it that the Conference wished to note the recommendations of the Working Group.

Proposal 9, as amended, was adopted.

PRO 10- ADOPTION OF THE RESOLUTION AS IN ANNEX G OF THE HCIWWG REPORT (CONF.EX4/REP/02 and CONF.EX4/G03) (Agenda item 3(b))

IGA BESSERO (France) invited the Conference to consider the two amendments proposed by his delegation, which appeared in the “Red Book” (CONF.EX4/G/03) under Proposal 10. In order to delimit the scope of the resolution more precisely, in paragraph 1 he proposed adding “concerned about the safety of navigation in the navigable inland waters of their region” following “Relevant Regional Hydrographic Commissions (RHC)”. In the last part of the same paragraph, as Administrative Resolution T1.3 did not mention national hydrographic committees, he proposed replacing “create National Hydrographic Committees. (See also Resolution T1.3)” by “ensure that these organizations’ activities are properly coordinated”.

Dr. JONAS (Germany) supported the second amendment proposed by the representative of France. As for the first proposed amendment, matters relating to the safety of navigation in inland waters did not fall within the purview of regional hydrographic commissions, and he would therefore prefer to retain the wording proposed by the Working Group.

Rear Admiral (Ret.) ANDREASEN (United States of America), noting that paragraph 1(f) of the proposed resolution concerned standards, suggested that it should perhaps be amended to read “report as necessary to the Hydrographic Standards and Services Committee (HSSC) through the Inter-Regional Coordination Committee (IRCC)”.

Captain NAIL (HSSC Chairman) said it should be left to the IRCC to decide whether or not a matter should be referred to the HSSC. He saw no need to amend paragraph 1(f).

Commodore NAIRN (Australia) agreed that the suggested amendment to paragraph 1(f) was unnecessary, as was the first amendment proposed by the representative of France. He supported the first of the two proposed amendments.

The PRESIDENT said that there appeared to be general support for the second of the two amendments proposed by the representative of France, as well as general agreement that neither the first of the two, nor the amendment suggested by the representative of the United States of America, was necessary. He would take it that the Conference wished to adopt PRO 10, with the second of the French amendments proposed by the representative of France.

Proposal 10, as amended, was adopted.

CONSIDERATION OF THE REPORT SUBMITTED BY THE MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG) (CONF.EX4/REP/03 AND CONF.EX4/G/03) (Agenda item 3(c))

Captain NAIL (HSSC Chairman), introducing the report, recalled that the Marine Spatial Data Infrastructure Working Group (MSDIWG) had been established pursuant to Decision No. 22 of the XVIIth International Hydrographic Conference. Its report (CONF.EX4/REP/03) had been endorsed by the Committee on Hydrographic Requirements for Information Systems (CHRIS), now the Hydrographic Standards and Services Committee (HSSC), at its 20th meeting in November 2008. At that meeting, the IHB had strongly recommended that CHRIS should develop a recommendation on spatial data infrastructure (SDI) policy for submission to the 4th Extraordinary International Hydrographic Conference. That recommendation was contained in Proposal 12, currently before the Conference.

The Working Group’s report did not contain a great deal of specific information but did, in his view, make a valuable contribution to the Organization’s understanding of the issues surrounding the development of spatial data infrastructure. A draft of the SDI Guide produced by the Working Group had been distributed to all delegations. It was not intended that the latter document should be discussed in detail during the present Conference, but comments from Member States would be most welcome.

Mr. PEPPER (United Kingdom, Chairman, Marine Spatial Data Infrastructure Working Group) reviewed the objectives of the Working Group (CONF.EX4/REP.03, para. 2.1) and the definitions of SDI and marine SDI (paras. 3.1 and 3.2). The Working Group’s 2008 work plan had concentrated on two areas: research and analysis. A workshop had been held in February 2008 in order to devise a research programme, with the participation of all Member States. Five areas of research had been identified: strategy and policy, communications and people, data management, data frameworks and standards, and data dissemination. A questionnaire had been developed in order to evaluate, by means of a five-level “maturity matrix”, the current (2008) status and projected future status (in 2011) with respect to each area; identify barriers to the achievement of their 2011 goals; and determine what role

the IHO might play in helping them to overcome those barriers. Forty-three countries had responded. The findings were summarized in the report (paras. 5.1–5.3). It had been concluded that the IHO had a crucial role to play in developing understanding of, and confidence in, spatial data infrastructure.

In the light of those findings, the Working Group had formulated the recommendations appearing in section 7 of the report. It had also drafted the aforementioned SDI Guide and identified capacity-building requirements to be addressed by the IHO, including training and knowledge transfer and dissemination of case studies and best practice examples. During the remainder of 2009, the Working Group intended, inter alia, to publish the SDI Guide and develop training and knowledge-transfer content, case studies and examples of best practice, as well as framework content for the IHO website and for potential discussion groups.

The Conference was invited to consider three proposals submitted by the Working Group: Proposals 11, 12 and 13.

Captain WARD (IHB Director) suggested that the Conference might wish simply to note, rather than to endorse, the recommendations contained in Proposal 12, as most of them had been incorporated either into the Working Group's ongoing work programme or into the proposed resolution contained in Proposal 13.

The PRESIDENT invited the Conference to consider the three proposals submitted by the Working Group.

CONSIDERATION OF THE PROPOSALS SUBMITTED BY THE MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG)

PRO 11- PROPOSAL TO NOTE THE REPORT OF THE MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG) (CONF.EX4/REP/03 AND CONF.EX4/G/03) (Agenda item 3(c))

Ms. RIES (United States of America), commending the report, said she fully agreed with the continuing emphasis on work on marine spatial data infrastructure.

Commander OLUGBODE (Nigeria) said his country had participated in the Working Group and fully endorsed its work and recommendations.

Mr. HINDS (Canada) commended members of the Working Group on the results they had achieved. His country would continue to participate in the Working Group.

IGA BESSERO (France), speaking for his delegation and also as the former Chairman of the IHO Strategic Plan Working Group, stressed the importance of the work on the S-100 standard and its strategic significance for IHO's future positioning in that field. However, if present aspirations were to be fulfilled, ways must be found to overcome the obstacle of limited resources.

Commodore NAIRN (Australia) supported the proposal. He thanked the IHB for providing the technical facilities necessary to enable the Australian participant to take part in the work of the Group through video- and telephone-conferencing.

The PRESIDENT said he took it that the Conference wished to adopt PRO 10.

It was so agreed.

CONSIDERATION OF THE PROPOSALS SUBMITTED BY THE MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG)

PRO 11 - PROPOSAL TO NOTE THE MSDIWG REPORT (CONF.EX4/REP.03, CONF.EX4/G03) (Agenda item 3 (c))

The representatives of Australia, Canada, France and Nigeria supported the proposal and endorsed the work of the Working Group. IGA BESSERO (France) mentioned the problem of resources in implementing MSDI.

Mr. AL KIYUMI (Oman) supported the proposal. He drew attention to the omission of the Middle East from the list of regions contained in paragraph 5.1 of the report.

Mr. PEPPER (United Kingdom), Chairman, Marine Spatial Data Infrastructure Working Group, explained that no responses had been received from Member States in the Middle East.

The PRESIDENT said he took it that the Conference wished to note the report.

It was so agreed.

PRO 12 - ENDORSEMENT OF THE RECOMMENDATIONS OF THE MSDIWG; SECTION 7 OF THE MSDIWG REPORT CONF.EX4/REP.03, CONF.EX4/G03) (Agenda item 3 (c))

The PRESIDENT said he took it that the Conference wished to note the recommendations contained in section 7 of the report.

It was so agreed.

PRO 13 - ADOPTION OF THE RESOLUTION AS CONTAINED IN ANNEX H OF THE MSDIWG REPORT CONF.EX4/REP.03, CONF.EX4/G03) (Agenda item 3 (c))

Dr. OEI (Singapore), referring to paragraph 2 of the proposal, said that, as Chairman of a Regional Hydrographic Commission (RHC), he would appreciate clarification of how and when the RHCs should monitor progress in Member States' MSDI engagement and development, and to whom they should report.

Mr. PEPPER (United Kingdom), Chairman of the MSDIWG, said the Working Group appreciated that Member States' knowledge and the speed of their engagement with MSDI varied. Its view was that the information could best be obtained, and supplied to the IHO, through the RHCs. Essentially, however, the management, programme and process of MSDI engagement rested with Member States. The Working Group envisaged a formal process, possibly in the form of a small questionnaire, by which Member States could report to the RHC, the time-scale being governed by the schedule of each RHC. In the case of abnormal developments of regional significance or with implications for the information provided to Member States through IHO web resources and training, reporting to the RHCs could take place at other times. In that way, training material would be available for use by Member States.

Dr. OEI (Singapore) said that some Member States in his region were unfamiliar with databases, or had not yet started to engage with MSDI. What basic framework did they need? How should monitoring take place? Capacity building might be required to help them understand the MSDI framework and attain a certain level of capability, before progressing further.

Captain WARD (IHB Director) said that one of the recommendations in the report was that MSDI should be a standing agenda item at RHC meetings. The information gathered at those meetings could then be collated. A standardized reporting approach should be adopted for MSDI, as for other standing agenda items. The matter could be further discussed in the new Inter-Regional Coordination Committee (IRCC).

The PRESIDENT said he took it that the Conference wished to adopt the resolution contained in Annex H of the MSDIWG report.

It was so agreed.

STATUS REPORT ON ENC DEVELOPMENTS BY THE IHB (CONF.EX4/REP/05), (Agenda item 4)

STATUS REPORT ON S-100 – IHO GEOSPATIAL STANDARD FOR MARINE DATA AND INFORMATION (CONF.EX4/INFODOC.1)

The PRESIDENT invited the Chairman of the Hydrographic Standards and Services Committee (HSSC), formerly the Committee on Hydrographic Requirements for Information Systems (CHRIS), to present the progress report on S-100.

Captain NAIL (HSSC Chairman), said it was the task of the HSSC and its working groups to provide the IHO with the tools it would need to perform its new broader role once the Protocol of Amendments to the Convention had been ratified.

The current in-service spatial standard S-57, a successful and widely used standard, had been developed within a more limited understanding of the Organization's role. However, maintaining S-57 had become problematic, and changes to it were time-consuming. The new technology now available presented both opportunities and threats. In the view of the technical working groups, S-57 was not well suited to meeting the new requirements as they affected the IHO. Nevertheless, S-57 was a dependable standard, which was only just becoming widely used by mariners. Take-up had not been as quick or as widespread as had been hoped.

It was important to disassociate S-100 from ENC development alone. S-100 addressed much wider technical challenges, though ultimately of course it would apply to ENCs as well. He gave an assurance, however, that there was no danger of moving quickly in that direction without the full approval of the Organization. In any case, with the tight controls that existed on ECDIS performance standards and displays, moving from S-57 to a new ENC format would not be too daunting.

Given the need for GIS systems linking land and sea, S-100 would allow the use of technology that was commercially available and being developed for other purposes. No component part of the standard would be developed in isolation for hydrographic or marine purposes. Interoperability would be a key feature.

Governments went to a great deal of expense to collect data, yet data used only for the purpose of safety of navigation represented in some respects a poor return on investment. Updates were expected to work immediately with the hardware used by the customer community, consisting mainly, but not exclusively, of mariners.

S-100 would allow for the inclusion of deferred S-57 connections and extensions. Although it was being opened to a wider community, IHO would maintain complete control of those aspects which remained important to the Organization, and of product specifications that were central to its role. S-100, unlike S-57, could be adjusted to meet a particular need, without changing the product specifications for other needs, by separating the content and the carrier. The core standard S-100 could

evolve through extensions without immediately impacting on product specifications. The feature catalogues themselves were also more flexible and capable of expansion.

The HSSC had no firm ideas as yet on ECDIS and e-Navigation requirements, but it was certain that S-57 would not be suitable. S-100 was built on well established international standards. The working group responsible for developing standards liaised regularly with interested parties to ensure and enhance compatibility. Ultimately, it was hoped that the registry would be hosted by the IHO. An embryonic registry was already in place, and some component parts were already in use in other product specifications.

The proposed timetable for implementing S-100 was broadly on track. Final examination and editing of the standard at the IHB had been completed. It should be possible to have a robust standard in place by 1 January 2010, for subsequent modification as required. The old S-57 standard would remain in place for many years, until superseded by its equivalent for ENC or other purposes.

In his capacity as Chairman of HSSC, he had sent out a letter some six weeks earlier explaining the process of S-100 approval to Committee members. The final revised draft of the document was available on the IHO website, so that all interested parties, including those outside the IHO, would have an opportunity to comment for a last time on S-100 before the first meeting of the HSSC in October 2009. It was a large, technical document that had been prepared by technical experts after consultation with a broad stakeholder community within the Organization and beyond. The HSSC, at its first meeting in October 2009, would consider any relevant feedback before endorsing the standard. The IHB, in November 2009, would then seek the approval of Member States by circular letter, so that S-100 could become effective on 1 January 2010.

IHO and IHB would continue to monitor the development of the geospatial information infrastructure (GII), in particular to identify as soon as practicable any significant requirements for increased administrative resources, an issue that had caused divisions at the previous meeting of CHRIS. Since then many practical solutions had come to light, and they could be considered at the first or second meeting of the HSSC. The Committee's work would be made easier if Member States would put forward their views on S-100 and on how it should be brought into service and applied.

In summary, S-100 would be an improvement on S-57 by enabling the wider use and transfer of hydrographic data, and it would better support IHO's emerging requirements, which the Organization was technically not well placed to meet. S-100 had the benefit of being aligned with the contemporary ISO 19100 series of standards. It would not, at a single stroke, or for a long time to come, make S-57 ENCs obsolete. Hydrographic offices need not feel that by approving S-100 they were inviting pressure to switch rapidly to an S-100-based standard for ENCs. There was no requirement for hydrographic offices to change to S-100 in the near future. S-100 was a relatively immature concept and standard, and would need considerable testing and development. It was important that Member States continue to support the work of HSSC in that regard, until the important decision stage in the development of S-100 and the product specifications flowing from it had been reached.

Commodore NAIRN (Australia) commended the CHRIS Committee on its work on S-100. The new standard would link the hydrographic community into the wider GIS community, and provide flexibility for the IHO's emerging requirements. He urged Member States to give due consideration to the document, provide their comments early and respond in good time to IHB's circular letter, so that the IHO could proceed with the process of adoption as and when appropriate.

Ms. RIES (United States of America) said the S-100 standard was important for the future of IHO, as it would make hydrographic information available for purposes other than traditional navigation. For example, the report of the MSDIWG had identified standards as one of the basic steps in the development of MSDI. The development and subsequent approval of S-100 would contribute significantly to the efforts of the IHO and Member States to implement MSDI, by making hydrographic data available for multiple uses. The approval of S-100 would lay the foundation for

other product specifications, as the Chairman of the HSSC had pointed out. The S-100 could be completed within the proposed time-frame if Member States responded rapidly to the circular letter. Her delegation looked forward to continuing participation in the development of S-100 with other Member States and partners.

Commodore PALIATSOS (Greece) commented that IHO had set S-57 as the standard 10 years previously, but was now changing to S-100. He considered it unwise to change standards every 5–10 years. Although his delegation was in favour of S-100, the standard should be changed only minimally in future, so that countries would not have to invest repeatedly in new knowledge, training and equipment. Full coverage with ENC's was already a problem, and that would be exacerbated if products or specifications were changed every 10 years.

Vice Admiral PALMER (Brazil) commended the work done and said that his delegation supported S-100. He suggesting issuing a statement to the effect that the S-57 would not become obsolete for some time.

Commander LUSIANI (Italy) said that although his delegation agreed in principle with the new standard, hydrographic offices like Italy's would find it difficult to continue producing ENC's according to S-57 while simultaneously developing the new S-100, especially in the current climate of continuous reductions in personnel and scarce funding.

Mr. VALDEZ (Peru) said that according to the presentation on S-100 ENC's produced according to S-57 would not be obsolete, and hydrographic offices would not be required to change to S-100 in the near future. His delegation supported the new standard. Standards were important in encouraging the widest possible use of hydrographic data for purposes other than charting.

Dr. JONAS (Germany) said that S-100 reflected current changes in the digital world in the maritime sector. Customized solutions were being found to support pilots and offshore activities which were in accordance with the standard but were established in their own technical environment. IHO needed a standard that kept hydrography united at the technical level but was flexible enough to allow customized solutions beyond the collection of data for ENC's. The S-100 would provide that flexibility. ENC's produced with the new standard would be similar to existing ones, and the two types could be maintained in parallel. The production software could easily be transformed. The result would be products that included customized requirements in parallel with ENC's. His delegation supported the new standard, as it ensured the continuing role of IHO in hydrographic standardization.

Mr. NICHOLSON (Canada) said that S-100 would ensure the continued and improved relevance of hydrography. His delegation was committed to contributing to the development, acceptance and implementation of the S-100 standard.

Rear Admiral DI VINCENZO (Argentina) said that his delegation supported S-100. A clear statement should be made, however, that hydrographic offices could continue to use S-57 as long as necessary, until they could make the transition to S-100.

Rapporteur : Ms. Kellie JAMES (United Kingdom)

CONTENTS

Status Report on ENC Development by the IHB (Agenda item (4))

- Status Report on S-100 – IHO Geospatial Standard for Marine Data and Information (CONF.EX4/INFODOC.1)

Consideration of Proposals (Agenda item 3 (d))

- PRO 14 Rev.1 - Informing States seeking Membership of the Organization on the Protocol of Amendments to the IHO Convention (CONF.EX4/G/03)
- PRO 15 - Regional Hydrographic Commissions as bodies of the International Hydrographic Organization (CONF.EX4/G/03)

Consideration of the Report by the IHB (Agenda item 3(e))

Progress on the Ratification of the Protocol of Amendments to the Convention (Agenda item 3 (e)) (CONF.EX4/REP/04)

STATUS REPORT ON S-100 - IHO GEOSPATIAL STANDARD FOR MARINE DATA AND INFORMATION (CONF.EX4/INFODOC.1) (Continued)

Captain NAIL (HSCC Chairman), said that in the view of a number of delegates there had been no proper conclusion to the consideration of the Status Report on S-100. By way of a conclusion, he suggested that all Member States should take the opportunity to read the S-100 standard on the IHO website and transmit their comments, if any, to the IHB. Any issues arising would be discussed within the Hydrographic Services and Standards Committee (HSSC), and once they had been resolved, a circular letter could be issued, by means of which the standard could be adopted.

IGA BESSERO (France) suggested that it was important that the IHO should, if possible, anticipate trends in the demand for products and services relevant to the Organization, and for the development of new standards when it was not sufficient merely to adapt existing ones. The proposal to adopt the S-100 standard, supported by his delegation, would be a step in the right direction, although the resulting impact on the obligations of national hydrographic services must be brought under control. If adopted, Standard S-100 would provide the standardized framework within which Member States would be able to develop new products and services falling within geospatial data infrastructures. However, that did not inevitably imply the creation of second-generation ENCs. That was a step to be considered at the right moment, taking into account the scope for converting existing ENCs, and in full consultation with Member States. Adoption of S-100 in no sense prejudged the result of such consultation.

CONSIDERATION OF PROPOSALS (Agenda item 3 (d))

PRO 14 Rev.1 - INFORMING STATES SEEKING MEMBERSHIP OF THE ORGANIZATION ON THE PROTOCOL OF AMENDMENTS TO THE IHO CONVENTION (Agenda item 3 (d)) and (CONF.EX4/G/03)

The PRESIDENT drew attention to the relevant section in document CONF.EX4/G/03 (the “Red Book”).

Commodore NAIRN (Australia) recalled that the original intention of Proposal 14 had been to put in place a method of expediting the ratification of amendments to the Convention. It had been drawn up in December 2008, when the closing date for proposals arrived. In the intervening period, the recommendations of the Legal Advisory Committee that had been forwarded under CL 2/2009 had been voted on and adopted by the Member States, as advised in CL 18/2009. The original Proposal had consequently been amended, so that Member States joining the Organization after the 2005 Conference would be fully informed of the pending Protocol of Amendments, due to take effect when sufficient ratifications were received from the Member States present at the 2005 Conference.

IGA BESSERO (France) recalled that in response to CL 2/2009, his delegation had abstained from voting, and had expressed the view that the method of calculating the two-thirds majority for approving amendments to the Convention was a matter for decision at the present Conference.

According to the opinion of the Legal Advisory Committee, either option – a set number based on Administrative Resolution T6, or a sliding figure that would change every time a new State became a member – was acceptable. Since however it was likely that several years would elapse before the two-thirds majority was achieved, it might be politically advantageous if the new Member States were given the opportunity to express their views on the amendments, as a result of being included in the calculation in the years following their joining.

Mrs. BREUCH-MORITZ (Germany) said her delegation had changed its view and now supported the pragmatic compromise in the amended text.

THE PRESIDENT OF THE DIRECTING COMMITTEE thanked the Legal Advisory Committee for its support to the Directing Committee on the question, by giving a legal opinion based, for the first time, on consensus. Its opinion had been sought in July 2008, and it had recommended using the Circular Letter procedure to inform the Member States, not about amendments to the Convention but rather about the method of calculating the two-thirds majority for approving them.

Member States had shown overwhelming support for the Committee’s approach. One or two had taken a different view of the process in certain respects, and had been told that they were most welcome to bring a new proposal to the Conference.

The Directing Committee would now, in the light of the proposal from Australia, draw up a text for submission to the Department of External Relations of Monaco. On the basis of that text, the Department, in its role as Depositary, would inform any new Member State of the Protocol of Amendment and the Directing Committee would also communicate directly with that new Member State. By those two routes, any new Member State would be fully informed of the amendments soon to come into force.

Captain BARNUM (United States of America) spoke in support of the proposal from the delegation of Australia.

The PRESIDENT said that in the absence of any other comments he would take it that there was general agreement to adopt Proposal 14 Rev. 1

It was so agreed.

PRO 15 - REGIONAL HYDROGRAPHIC COMMISSIONS AS BODIES OF THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION (Agenda item 3 (d)) and (CONF.EX4/G/03)

The PRESIDENT drew attention to the relevant section in document CONF.EX4/G/03 (the “Red Book”).

Rear Admiral (Ret.) ANDREASEN (United States of America) recalled that when the Regional Hydrographic Commission (RHC) concept had originated several decades earlier, RHCs were the product of voluntary cooperation between Member States, with each RHC establishing its statutes independently of the IHO, and membership in them had also been voluntary. RHCs were not at present “bodies of the IHO”, and participation was not open to all Member States, whereas official IHO meetings were open to the whole of the membership.

In the view of the United States, the RHCs had become important elements in the operation of the IHO and the time had come for them to be included within the Organization. They played a significant role in the IHO Capacity Building Programme, were formally included in the IHO Work Programme, and would serve as the regional basis for determining the two-thirds membership of the proposed new IHO Council. They were not however formally part of the IHO for the purposes of international funding organizations or the transfer of funds related to capacity-building initiatives.

Nevertheless, in the light of a negative response by Member States to Proposal 15, and an observation received from the United Kingdom delegation that the IHO had no authority to impose the integration of RHCs into the IHO, his delegation was withdrawing Proposal 15.

Taking a different approach to the integration of RHCs into the Organization, his delegation suggested that the IHO could develop standardized statutes, which any RHC might adopt if it wished voluntarily to become an integral part of the Organization. His country would produce an initial draft of a possible version of statutes of that kind.

The Conference took note of the withdrawal of Proposal 15.

CONSIDERATION OF THE REPORT BY THE IHB (Agenda item 3(e))

PROGRESS ON THE RATIFICATION OF THE PROTOCOL OF AMENDMENTS TO THE CONVENTION (Agenda Item 3 (e)) (CONF.EX4/REP/04)

The PRESIDENT OF THE DIRECTING COMMITTEE said that in June 2005 the Directing Committee had passed the Protocol to the Department of External Relations of Monaco, for circulation to Member States through diplomatic channels, in accordance with Decision No. 2 of the 3rd Extraordinary International Hydrographic Conference. The Protocol had been sent to Member States in July 2005. By Decision No. 23 of the XVIIth International Hydrographic Conference in May 2007, given the significance of the Protocol for modernizing the IHO, the Contracting Parties were strongly encouraged to approve the Protocol as soon as possible, and to treat its entry into force as a priority.

At the request of the Directing Committee in June 2007, the Department of External Relations of Monaco had reminded Member States of the need to approve the Protocol of Amendments as soon as possible. A further reminder had been sent in May 2008. The Department had informed the Directing Committee that, as of 1 June 2009, the following 23 Member States had indicated their approval of the Protocol: Australia, Cuba, Cyprus, the Democratic People’s Republic of Korea, Denmark, Estonia, Finland, France, Germany, Greece, Japan, Latvia, Mexico, Morocco, the Netherlands, Norway, Pakistan, Qatar, the Republic of Korea, Spain, Sweden, Tunisia and the United Kingdom.

Commander LUSIANI (Italy) reported that on 15 May 2009 the Italian Parliament had approved the ratification of the Protocol, and the instrument of ratification would be deposited in the coming weeks.

Dr. NARAYANAN (Canada) announced that Canada's instrument of ratification of the Protocol had been deposited with the Government of Monaco on 29 May 2009.

Captain BARNUM (United States of America) announced that the United States had approved ratification of the Protocol and his delegation would deposit the instrument of ratification that very day. The Protocol represented a great step forward for the IHO and for United States interests. It was the first treaty to be signed by President Obama since his assumption of office.

Mr. KUNDA (Papua New Guinea) reported that his Government had signed the instrument of ratification on 2 February 2009, and had sent it to the Government of Monaco. Since it had not apparently been received in Monaco, he had brought a copy with him.

Captain SOBOLEV (Russian Federation) said his country was close to ratification. The process had proved more complicated than expected, but the various ministries involved had now approved the Protocol. It was presently with the Ministry of Foreign Affairs for approval and for the preparation of the instrument of ratification.

The PRESIDENT OF THE DIRECTING COMMITTEE said that, as previously, the Directing Committee stood ready to provide information and support to Member States to enable them to accelerate their ratification procedures. The Conference might wish to request that a further note be sent through diplomatic channels to Member States that had not yet ratified the Protocol, reminding them of the need to do so as soon as possible.

Mr. CARANDANG (Philippines) requested the IHB to provide his delegation with copies of letters sent to his Ministry of Foreign Affairs, so that it could follow up the action taken to date. He agreed that a further reminder should be sent to Member States.

Captain KAMPFER (South Africa), supported by Rear Admiral DI VINCENZO (Argentina) and Mr. AL KIYUMI (Islamic Republic of Iran), said that a further reminder would be helpful in drawing the attention of governments to the importance of ratification.

The PRESIDENT said he took it that the Conference wished to instruct the Directing Committee to send a further reminder to Member States.

It was so agreed.

The PRESIDENT OF THE DIRECTING COMMITTEE said that according to the current procedure, when the Government of Monaco received requests from the IHO to pass letters through diplomatic channels, it transmitted the letters to the consuls in Monaco. In the case of Member States without consular offices in Monaco, letters were sent to their embassies in Paris. In some cases, letters had not been forwarded or had been delayed. Member States were asked to inform the IHO of any difficulty experienced in that respect.

Mr. BISSUEL (Monaco) said he regretted the difficulties encountered in communicating with his Government as the depositary for the Protocol. Monaco now had full international status, and was increasing its ambassadorial representation. It would however be preferable to communicate with it through embassies in Paris, rather than honorary consuls in Monaco.

IGA BESSERO (France) proposed that Member States that had yet to ratify the Protocol and had not informed the Conference of progress made in the ratification process should do so now.

At the invitation of the PRESIDENT, delegations of Member States reported as follows: **Algeria** – the ratification process was under way and completion was expected during 2010; **Argentina** – the ratification process had begun in 2005 and completion was anticipated soon; **Belgium** – the ratification process was under way, but the Protocol had to be approved by the two regional parliaments and the federal parliament, and the approval of the Flemish parliament was anticipated in the coming weeks; **Brazil** – the ratification process had begun in 2005, but the projected date of ratification was not known; **Chile** – ratification was being studied by the Ministry of Foreign Affairs, and completion was expected before the next IHO conference; **China** – the ratification process was under way, and completion anticipated soon. **Colombia** – the ratification process was initiated in 2006. The Protocol had not yet been approved by the maritime authorities and delay was likely owing to the elections; **Croatia** – no information had been received from the IHO; **Iceland** – ratification was under way, and completion was expected within a few weeks; **India** – the IHO had been informed that the Ministry of Foreign Affairs had not received the necessary information. Efforts were being made to resolve the matter and proceed with ratification; **Indonesia** – the Ministry of Foreign Affairs was to be requested to proceed with the ratification process; **Ireland** – being a new Member State, having joined the Organization since 2005, ratification did not apply; **Islamic Republic of Iran** – IHO was requested to send a letter to the country's Paris embassy as soon as possible so that the ratification process could be initiated; **Malaysia** – the ratification process was under way, the date of ratification was not known; **Monaco** – the ratification process was under way, completion being expected by the end of 2009 or early 2010; **New Zealand** – the ratification process was under way; **Nigeria** – the necessary information had not been received, and the IHO was requested to provide support; **Oman** – ratification was the responsibility of the Ministry of Transport, and progress would be followed up; **Pakistan** – the Hydrographic Department had recommended ratification and it was expected soon; **Peru** – the Protocol had been ratified in 2009 and the instrument of ratification sent to the Government of Monaco; **Portugal** – the ratification process was under way and completion was expected in 2010; **Saudi Arabia** – the ratification process was under way and completion anticipated by the end of 2009; **Singapore** – the ratification process was under way and completion anticipated soon; **South Africa** – the Protocol had been approved in cabinet but was not yet tabled in parliament, and no date had been set for ratification; **Sri Lanka** – the ratification process was under way and completion anticipated soon; **Suriname** – the ratification process was under way; **Syria** – the necessary information had not been received, and the IHO was requested to provide copies so that ratification could take place in 2010; **Thailand** – the ratification process was under way, but political instability had resulted in delays. Ratification was expected within two years. **Turkey** – the ratification process was under way; the Protocol had been tabled for consideration by the parliament, the projected date being 2009 or early 2010; **Ukraine** – the ratification process was initiated at the end of 2005, the Protocol being now under consideration by the relevant ministries, but there was no set date of ratification; **Uruguay** – the ratification process was under way but the probable date of ratification was not yet known.

Delegations also told the Conference that on their return home they would endeavour to ensure that the ratification process was speeded up.

The report by the IHB on progress towards ratification of the Protocol of Amendments to the Convention of the IHO was noted.

Rapporteur : Ingénieur en chef Michel HUET (IHB)CONTENTS

Discussion on ENC Developments (Agenda item 4) (CONF.EX4/REP/05)

Captain WARD (IHB Director) announced that the Bureau had been informed of the untimely death of Mr. Don Vachon of the Canadian Hydrographic Service and Deputy Chair of the IHO Transfer Standards Maintenance and Application Development (TSMAD) Working Group. His passing was a great loss to the community of hydrographers and to the world's mariners. He expressed deepest condolences to the Vachon family.

DISCUSSION ON ENC DEVELOPMENTS ((Agenda Item 4) (CONF.EX4/REP.05, CONF.EX4/INFODOC.2, CONF.EX4/INFODOC.3, CONF.EX4/INFODOC.4)

The PRESIDENT invited Captain Ward to introduce the IHB report on the status of ENC coverage (CONF.EX4/REP.05).

Captain WARD (IHB Director) recalled that the Maritime Safety Committee of the International Maritime Organization (IMO) had agreed that most ships should be required to use electronic chart display and information systems (ECDIS). The first vessels to be affected by that decision would be new passenger ships built after 1 July 2012. The IHB report provided an overview of the availability, as of early May 2009, of reliable and up-to-date electronic navigation charts (ENCs) in support of the ECDIS carriage requirement. As the report noted, the IHO, through its Member States, had agreed to achieve global ENC coverage for international voyages by 2010. That meant that wherever a paper chart existed for such voyages, an electronic chart should also be available. In assessing ENC coverage, the IHB had endeavoured to determine who was publishing ENCs, whether mariners could purchase them easily on the international market, and where gaps in coverage existed. The information on ENC availability had been obtained from the Internet, the source of information used by mariners themselves, in May 2009. Member States were invited to correct or supplement the data in the report as appropriate.

Approximately 9,500 ENC cells were now available on the international market, and their availability was growing steadily. The report (para. 10) provided comparative data on the availability of paper and electronic charts. Globally, coverage was high, but there were significant gaps in some areas, notably in the Caribbean, South America, East Asia, Africa and some small island States in the South Pacific. Regional Hydrographic Commissions had an important role to play in monitoring the situation in their regions and in identifying and addressing gaps.

Three possible resolutions, contained in Annex B to the report, were suggested in order to address the principal shortcomings with regard to ENCs: coverage, consistency and quality, and validation and distribution. The first resolution requested up-to-date information from each Member State on its expectations of meeting the 2010 target date, so that the Regional Hydrographic Commissions could coordinate any necessary regional action and assistance. At the global level, the Inter-Regional

Coordination Committee would consider at its first meeting, scheduled for 5 June 2009, a recommendation from the Worldwide Electronic Navigational Database (WEND) Committee for the establishment of an ENC Coverage Working Group to study ways of ensuring global ENC coverage.

There were various shortcomings in the matter of consistency and quality, including differences between electronic and paper charts of the same areas; overlapping data; delays in updating ENCs; and updating notices being published only in local languages. Captain Ward used a slide presentation to illustrate several cases of overlapping and inconsistent data. Those problems were largely the result of lack of coordination and cross-checking between the personnel producing ENCs and those producing paper charts, as well as a lack of resources in many cases. The second proposed resolution was aimed at ensuring consistency of content between electronic and paper charts.

As for the availability and distribution of ENCs, the subject of the third proposed resolution, IHO Member States had repeatedly endorsed the so-called WEND concept, calling for the validation of ENCs by regional ENC coordinating centres (RENCs) and their distribution through a worldwide database. However, only about two-thirds of the world's ENCs were currently being validated by a RENC, and some ENCs were only being distributed locally. Accordingly, the third resolution sought to emphasize the role of RENCs in the validation and global distribution of ENCs. Their role was further described in document CONF.EX4/INFODOC.2, presented subsequently by the Chairman of the PRIMAR Advisory Committee.

Whatever the Conference decided in relation to the proposed resolutions, within IMO and in the maritime community it was expected that by 2010 mariners on international voyages would be able to obtain reliable, up-to-date, comprehensive ENCs. They must be able to obtain them on the international market, and they must have full confidence in them. From the examples and information presented, it was clear that there were a number of weaknesses to be addressed in that regard.

IGA BESSERO (France) speaking as Chairman of the PRIMAR Advisory Committee, introduced paper CONF.EX4/INFODOC.2 and pointed out that RENCs were an integral part of the WEND concept. RENCs were defined in the WEND principles as a footnote to WEND principle 1.3. The principles were set out in IHO Technical Resolution K2.19, and the definition was reproduced in document CONF.EX4/INFODOC.2 (Annex B). Cooperation through RENCs would eliminate the need for mariners to deal with many different hydrographic offices in order to obtain ENC coverage for a long voyage. Moreover, ENCs that were distributed through a RENC benefited from holistic harmonization checks and feedback, which had a positive impact on quality and consistency. They were also available to end users through a broad range of service providers and benefited from the widest possible distribution, which in turn had a positive impact on availability and innovation. However, only two RENCs, IC-ENC and PRIMAR, had so far been established, and fewer than half the Member States of IHO were reported to be RENC members. That raised the question whether Member States were serious about implementing the WEND principles.

At present, there were no robust regional alignments. For example, some coastal States around the North Sea were members of IC-ENC and some of PRIMAR. That did not encourage the creation of an integrated, high-quality, consistent database. Leverage for addressing consistency and overlap issues was limited, there was some duplication of activities between the two existing RENCs, and there was no clear distinction between the official sector of ENC integrated services, as defined in the International Convention on the Safety of Life at Sea (SOLAS), and the commercial sector. Apparently, most Member States of the IHO did not wish or were unable to invest in building up RENCs, and many were holding back because of the unresolved and fragmentary situation in Europe. The present discussion was a good opportunity for non-RENC members to state their reasons for not participating.

The main objectives for the future were to align the two existing RENCs, and to facilitate the participation of non-RENC members before the mandatory ECDIS carriage requirement came into full effect on 1 January 2012. Member States were invited to consider the proposals for RENC

implementation submitted by the PRIMAR Advisory Committee, set out in the framework contained in CONF.EX4/INFODOC.2. Short-term actions suggested for the interim period before the next IHO Conference or Assembly in 2012 were listed in proposals 1–5. Proposal 1 could be achieved by adopting the resolutions tabled in the IHB status report on ENC coverage. Long-term actions were set out in Proposals 6 and 7. Given the willingness on the part of Member States to co-operate, it would be possible to establish a worldwide network operating in accordance with WEND principles.

Captain WARD (IHB Director) drew attention to the information document submitted by the United Kingdom concerning the IHB status report on ENC coverage (CONF.EX4/INFODOC.4) and invited the delegation of that country to introduce the document.

Rear Admiral MONCRIEFF (United Kingdom) explained that Information Document No. 4 was based on the United Kingdom's experience of working on one possible approach to the delivery of an integrated ENC service. He agreed with the findings of the IHB status report. He emphasized that there were many examples of discrepancies between paper and electronic charts, in addition to the ones mentioned by Captain Ward.

The SOLAS amendments recently considered by the IMO Maritime Safety Committee, concerning extension of the mandatory carriage of ECDIS, were a mandate not only to mariners, but also to the IHO, to fulfil its commitment to IMO in terms of ENC coverage, consistency, quality and availability. The IHO must consider other aspects mentioned in the report, such as training in the use of ENCs on ECDIS, and should help to ensure that mariners were ready to meet the 2012 deadline. Users of the charts should not be let down. The IHO must ensure a smooth transition from paper charts to digital navigation, and must provide definitive guidance to the mariner on the meaning of official carriage compliance. During the transition period the IHO must act collectively and unambiguously.

The UK also stated that it believed that it had a role to play in training mariners in the use of ENCs in ECDIS and particularly the ability to read an ENC and understand its features, capabilities and caveats in much the same way as they read a paper chart, but for example to recognise the ENC CATZOC equivalence of paper chart source data diagrams in their planning. UKHO has conducted a trial with a 6 hour training package with an expert user group of Southampton Pilots and would be developing this capability for further consideration.

The situation with regard to coverage was gratifying, but more remained to be done. Any Member States with doubts about their ability to meet the 2010 deadline should inform their Regional Hydrographic Commission or the IHB. Members of the IHO should share their experience and lend mutual assistance.

As more mariners came to rely on ENCs as the primary means of navigation, they would inevitably make comparisons between paper charts and ENCs, and would question any discrepancies they found. The IHO must have answers, and must deliver an unambiguous service. The increased ability to compare charts on ECDIS with the real world might generate more queries than had arisen when paper charts were the norm.

As coverage grew, the IHO should turn its attention to quality, consistency and updating, which clearly affected the safety of navigation. A good start had been made. The United Kingdom would continue to cooperate in that regard with other Member States.

Captain WARD (IHB Director) encouraged delegates to put forward solutions for overcoming some of the shortcomings mentioned in the presentations. Coverage was good, but the gaps had to be filled, not only in the terms of the 2010 requirement, but overall. Not all mariners confined themselves to the world's primary trade routes or its top 800 ports. ECDIS equipment would increasingly be used for all voyages, and complete coverage was needed as soon as possible.

Commodore NAIRN (Australia) commended IGA Bessero on his presentation. He highlighted the fact there was already a third RENC, AUS-RENC, which was operated by Australia in the south-eastern hemisphere. Taking advantage of its association with IC-ENC, it followed the same checking and validation principles and used the same distribution network. The ENC's of Australia, Papua New Guinea and New Zealand were presently being validated and distributed by AUS-RENC, through the IC-ENC network. The benefits of the regional RENC were clear: it overcame communications difficulties by operating in similar time zones and made the alignment, deconfliction and edge-matching of ENC's possible within a given region. The cost of operating a RENC was significant. Australia was committed to the WEND principles, and had established the RENC in the south-west Pacific region in order to further their aims. It was willing to offer RENC services to any Asian, south-east Asian or Pacific State wishing to distribute its ENC's through a RENC and thereby access a global distribution network.

Commander LUSIANI (Italy) said he was pleased to note that the original idea of a virtual RENC had been reconsidered by the PRIMAR Advisory Committee. He agreed with the representative of Australia that regional RENC's were necessary, as it was difficult to see how just one or two RENC's could cover the entire world. All the problems in a particular area should be taken into consideration. It would be no easy task to impose a cooperative structure in his own area. A regional RENC would certainly be the best solution in some areas, and it should be a long-term aim to establish connections between RENC's through a virtual RENC.

Dr. OEI (Singapore), speaking as Chairman of the East Asia Hydrographic Commission, said that there were historical factors in his area too that would be difficult to resolve. Although East Asia did not have a RENC, the Commission had established an ENC task group to consider consistency, and had investigated the availability of pricing models. It had also established a technical advisory group to consider overlapping ENC data. The scope of the work undertaken encompassed all the areas covered by RENC's except distribution. His region was therefore implementing most of the WEND principles, and could not be considered inactive.

Captain DE HAAN (Netherlands), speaking as Chairman of the IC-ENC Steering Committee, said that the proposals submitted by the PRIMAR Advisory Committee represented a positive step towards future cooperation between IC-ENC and PRIMAR. The IC-ENC Steering Committee would consider the proposals on 6 June 2009, and he would report on the outcome as soon as possible.

Captain WARD (IHB Director) said that there was a high degree of harmony between the users of the two RENC's.

Mr. ZENONOS (Cyprus) suggested that, in the case of overlapping data, final approval of which data should prevail should be made by the coastal State with sovereignty over the waters concerned.

Rear Admiral (Retd.) ANDREASEN (United States of America), referring to the remarks by the representative of Cyprus, said that the IHO would never solve the problem of overlapping data because most countries, including his own, had boundary disputes. In such situations, mariners should simply choose to use one or other of the charts available.

Captain WARD (IHB Director) commented that if an engineering solution were chosen to overcome the overlapping data issues, the manufacturers would have to be informed, and if a data solution was chosen, then the Transfer Standard Maintenance and Applications Development Working Group (TSMAD), would be involved. However, back-engineering a solution through S-57 might be difficult, as the ENC standard was frozen.

Captain WARD (IHB Director) invited comments on coverage, and specifically on how the gaps could best be filled.

Mr. Kwok-chu NG (China) said his country had reported to the meeting of the Worldwide Electronic Navigational Database (WEND), held in Japan in September 2008, that it had 250 cells ready for distribution, covering all the country's major ports and harbours. The ENC's were already available through the ENC Centre in Shanghai. China was in discussion with some Member States with a view to wider distribution, and had promised to have ENC's covering all the waters of China ready by 2010. He requested that the report be amended accordingly.

Captain WARD (IHB Director) welcomed the information provided by the representative of China, but pointed out that the assessments in his presentation were based on whether a mariner could easily obtain ENC's for an entire voyage at the start point, as a package, instead of collecting them individually from each State.

Captain ROZHKOVA (Russian Federation) commended IGA Bessero on his analysis of the problem and the conclusions drawn for both the short and the long term. As far as coverage and ENC distribution were concerned, the first step was to organize the process within the IHO. Each Regional Hydrographic Commission should look at the situation in its own region, and countries that had already made some progress could assist others. The Russian Federation had completed coverage of its own coastal waters in 2008, and was ready to assist in filling gaps in other regions. The RENC network was important and useful, and his country was ready to discuss the possibility of creating a regional RENC in the Arctic and the eastern part of the Pacific Ocean.

First Admiral SUGENG SUPRIYANTO (Indonesia) said that in developing its ENC's Indonesia, which was situated on important shipping routes between the Indian and Pacific Oceans, had initially focused on major international ports. It had developed an ENC production system by 1999, and the first ENC, covering Jakarta Bay, had been developed as a pilot project in 2000. ENC's for the Malacca and Singapore Straits and the South China Sea had been produced cooperatively. By 2009 Indonesia had completed 150 ENC cells, covering 25 internal ports and hundreds of small ports and the roads between them. In extending coverage, priority had been given to the main roads and ports.

Commodore PALIATSOS (Greece) emphasized the role of the Regional Hydrographic Commissions (RHC) in improving coverage. They should identify gaps, encourage producing countries within their regions to give priority to fill gaps, and promote bilateral agreements to assist non-producing countries.

Dr. NARAYANAN (Canada) commended the presentations. More emphasis might have been given to ENC content. Clearly, the ENC equivalent of a paper chart that lacked detail would have just as little value.

Canada was especially concerned about the situation in the Arctic. A study had established that it would take generations of work to obtain adequate paper charts for the area. She suggested that as no hydrographic office, working either alone or collectively, had the resources to collect soundings of sufficient quantity or quality, commercial and tourist vessels should be encouraged to collect data according to IHO standards and make it available to hydrographic offices, which would then produce official navigational products.

Captain WARD (IHB Director) observed that the Hydrographic Commission on Antarctica had discussed the use of ships of opportunity to collect additional information. That possibility could easily be considered by other RHC's as a means, not of filling gaps directly with ENC's, but of making sure that ENC's themselves contained sound data.

Rear Admiral DI VINCENZO (Argentina) welcomed the proposal for cooperation between countries and organizations. Despite having extended its chart production capacity, Argentina did not expect to be able to meet the deadline for full electronic coverage, and had therefore signed a cooperation agreement with the United Kingdom Hydrographic Service.

Dr. OEI (Singapore) said that the East Asia Hydrographic Commission, of which he was the Chairman, was offering assistance to countries that were not Member States of either the IHO or the Hydrographic Commission, such as Vietnam, through training courses to encourage them to close existing gaps in ENC coverage in the region.

Captain WARD (IHB Director), referring to the table contained in Annex B of document CONF.EX4/REP.05, said a number of the delegates representing the majority of States shown in the table as having no coverage or very limited coverage had indicated that progress was being made. About half the Member States that had been assessed by the IHB as having no or very limited coverage were represented at the Conference, while only a few non-Member States in that category were represented. Some of them were however directly represented in regional hydrographic commissions, which therefore had a crucial role to play in ensuring that ENC coverage was made available.

Mr. GREENLAND (New Zealand) said that the presentation by the representative of France on ENC development had been extremely informative. New Zealand produced charts on the area for which it had charting responsibility in the South-west Pacific and Antarctica. Its ENC products were distributed through the Australian RENC, which ensured their consistency, quality and availability worldwide. New Zealand would achieve adequate ENC coverage within its area of responsibility by 2010.

Captain WARD (IHB Director) expressed his appreciation to Member States that had entered into bilateral arrangements to help to fill the gaps in ENC coverage. As for the action to be taken in future, the IHB would suggest obtaining confirmation of the data likely to be available in the international market, and updating the IHO's assessment of where gaps existed in order to allow individual Member States and non-Member States, through regional hydrographic commissions, and, potentially, the IRCC through its global coordination role, to continue to fill the gaps.

Commodore NAIRN (Australia), commenting on the proposed conference resolution on ENC coverage contained in Annex B of document CONF.EX4/REP.05, said that if only Member States that would not have ENC coverage were asked to respond, there was a risk that countries without coverage that did not respond would fail to be identified as potential problem areas.

Captain WARD (IHB Director) said that the proposed resolution applied to all Member States, and was a means of contacting other States to find out whether they would have coverage.

IGA BESSERO (France) was in favour of amending the text of the proposed resolution to take account of the point raised by the representative of Australia. The Regional Hydrographic Commissions should be made responsible, as they were in a position to cover the situation both in Member States and non-Member States.

Commander OLUGBODE (Nigeria) said that Nigeria's charting responsibilities were currently being met by the United Kingdom Hydrographic Office. The question of inconsistencies arising from the updating of data was currently being studied, in order to ensure that the information contained in ENCs was accurate. Nigeria was developing its own hydrographic capacity and should soon be able to carry out surveys. The Eastern Atlantic Hydrographic Commission was preparing an awareness programme for West African countries within the Commission, to be submitted to the IHB for its comments. Although hydrography was not a government priority, the increasing importance of nation-building initiatives, such as the New Economic Partnership for African Development (NEPAD) could result in an increased recognition of the role of hydrography in national economies. He was optimistic that the mandatory carriage of ENCs would be accepted by governments, especially in the West African sub-region. Meanwhile, countries should take advantage of the capacity-building initiatives being made available by the IHO.

Captain WARD (IHB Director) thanked the representatives of France and Australia for pointing out the ambiguity in the wording of the proposed resolution. Ultimately, the Regional Hydrographic Commissions would be responsible for coordinating the action required. However, asking them to provide an updated census would cause an unwelcome delay. Member States and non-Member States were invited to respond individually; the information gleaned would then be passed on to the Regional Hydrographic Commissions. He suggested amending the wording of the proposed resolution to read: "It is resolved that Member States and non-Member States should report on whether they will have ENC coverage in place to support international voyages and trade by 2010 in accordance with the Resolution (Decision 20) of the XVII International Hydrographic Conference to the International Hydrographic Bureau ..." The deadline for their responses would be 1 August 2009.

IGA BESSERO (France) asked how the proposed resolution would be brought to the attention of non-Member States.

Captain WARD (IHB Director) said the IHO was required to provide a report on the current and predicted status of ENC coverage to IMO's Sub-Committee on Safety of Navigation (NAV), which would be meeting shortly. All IMO Member States would be alerted through that mechanism, as well as through an IHO circular letter.

IGA BESSERO (France) said he had been referring to non-Member States.

Captain WARD (IHB Director) said that the majority of coastal States were members of IMO. He would also ask IMO to issue a circular letter to its Member States asking them to respond to the IHO and to encourage greater involvement and engagement with Regional Hydrographic Commissions.

Captain NAIL (United Kingdom) advised that when the IHB communicated with IMO and with States that were not members of the IHO, it should do so in the customary diplomatic language, since it had only recently given an assurance that the matter was under control. It was worth remembering that since the XVIIth International Hydrographic Conference, there had been considerable growth in the availability and coverage of ENCs, even though there might be some doubt regarding the 2010 deadline. The marked increase in activity and cooperation should also be taken into account.

Captain WARD (IHB Director) endorsed the remarks by the representative of the United Kingdom. The updating of the status of ENC coverage would be part of a broader report to IMO's Sub-Committee on Safety of Navigation (NAV), in which non-Member States of the IHO that were Member States of IMO would also be encouraged to consider engaging with the IHO. The Directing Committee was pleased to report that the IMO Secretary-General, who had been attending the Conference, had shown renewed interest in encouraging IMO Member States to engage more actively with the IHO.

Vice Admiral PALMER (Brazil) asked whether the 1 August 2009 deadline might be extended in order to allow more time for contacting non-Member States of the IHO.

Captain WARD (IHB Director) said the resolution placed an obligation on IHO Member States to report. There would be a parallel strategy to obtain the same information from non-Member States of IHO, which might take a little longer. The Directing Committee would prefer to keep to the date already chosen, so as to begin supplying the relevant up-to-date information to the Regional Hydrographic Commissions as soon as possible.

The PRESIDENT said that, in the absence of further comments, he took it that the Conference wished to adopt the proposed resolution on ENC coverage, as amended.

The resolution on ENC coverage, as amended, was adopted.

Captain WARD (IHB Director), introducing the topic of ENC consistency and quality, requested representatives to concentrate on the underlying issues rather than on consistency and quality at the present time in individual Member States or regions. The main objective was to ensure that what mariners saw on all their nautical documents – updates, charts, ENCs and sailing directions – was consistent. Adding ENCs to the collection was merely an extension of an ongoing task. Existing consistencies were all the more apparent because mariners can use a paper chart alongside an ENC, and steps must be taken to eliminate what were sometimes alarming differences.

Rear Admiral ANDREASEN (United States of America) said that the discrepancies between electronic and paper charts were starting to decline, as hydrographic organizations were beginning to use the former as the basis for the latter. In the United States, the electronic product was becoming the “gold standard”, and manufacturers were driving that process forward. However, updating for electronic charts was presently not as frequent as for paper charts, so that in emergencies the electronic chart might have to be updated quickly, outside the usual updating cycle, in order to produce an accurate paper chart. The United States was about to test digital-to-digital updating, which would obviate the need to distribute electronic charts on CD-ROM, and should permit weekly updating in due course. The aim was to phase out paper charts and paper notices to mariners.

Captain WARD (IHB Director) said that in his presentation he had drawn attention to the fact that in some cases the cycles for the production of updates for paper and electronic charts were not synchronized. He would welcome suggestions on how updates could best be harmonized.

Rear Admiral ANDREASEN (United States of America) said that the United States had been producing weekly updates for paper charts for some decades, and considered it a legal requirement to provide updates as quickly as possible. Although electronic updates were posted on the website, not all ships could access that information, and distribution by CD-ROM was currently slowing the electronic updating cycle. It was hoped that the new digital-to-digital system would speed up the process.

Commodore NAIRN (Australia) reported that Australia had ceased production of printed paper notices to mariners at the start of 2009, and was moving towards digital systems. However, it still produced a fortnightly edition of the notice to mariners that was posted on its website. The time delay in getting updates to mariners had been reduced by two weeks. That two weeks – the time taken for the contractors to prepare the printed updates – had previously been used to prepare ENC updates, check the corrections and validate the corrections through the RENCs so that the ENC and paper updates could be made available at the same time. That was no longer the case, so that the situation in Australia had in fact deteriorated. Solutions to align the workflows were still being sought.

Dr. JONAS (Germany) said the procedures for production flow within a hydrographic service could have a noticeable impact. For technical reasons, cartographers sometimes experienced difficulty in transferring items to be updated from paper to an electronic version. That could occasion uncertainty and delay. He therefore welcomed the comments by the representatives of the United States. Where both versions were available on a ship, it was important to ensure that they were identical, so as not to confuse mariners. Given that paper charts were still widely used, he supported the proposed resolution.

Commander LUSIANI (Italy) drew attention to the need to ensure equivalence between paper charts and ENCs. From a legal standpoint, it would be difficult to establish blame in the case of an accident involving more than one ship, if the information they were relying on turned out to be different. For that reason, the Italian Hydrographic Office updated both paper charts and ENCs simultaneously. He supported the proposed resolution.

Rear Admiral RAO (India) said that India had not experienced any difficulty in managing digital and paper versions. Both paper charts and ENCs were distributed fortnightly, and no complaints had been received about the late arrival of updates.

Captain ROZHKOV (Russian Federation) said that quality control was an important consideration when paper charts and ENC's existed side by side, in order to minimize mistakes. A number of countries had already developed some impressive technologies and, eventually, it was to be hoped that they would be implemented everywhere. In the meantime, the RENCs, as well as other institutions, performed a valuable role in checking quality. The ultimate goal would be to have a common digital database.

Captain WARD (IHB Director) said he hoped the discussion had highlighted the importance of maintaining harmony across all charting product ranges. He drew attention to the second proposed conference resolution on ENC consistency and quality, contained in Annex B of document CONF.EX4/REP.05, seeking to reaffirm IHO's commitment to achieving that harmony.

The PRESIDENT said that, in the absence of any objection, he took it that the Conference wished to adopt the proposed resolution on ENC consistency and quality.

The resolution on ENC consistency and quality was adopted.

IGA BESSERO (France) said that the representative of the United States had made some detailed comments about overlapping, and he would like the subject to be discussed further before the Conference dealt with the third proposed resolution on ENC availability and distribution.

Captain WARD (IHB Director) said that the comments by the representative of France had been noted and would be acted upon during the next plenary session. He announced that he had been asked by the media for copies of the IHB presentation on ENC development, and invited delegates to advise him informally during the breaks if they had any views on how to proceed, given that the presentations were Conference documents.

CONF.EX4/P/SR.6

SIXTH PLENARY SESSION

4 June 2009

1400 - 1700

Rapporteur : Ingénieur en chef Michel HUET (IHB)

CONTENTS

- Discussion on status report on ENC developments by the IHB (Agenda item 4) (continued)
 - Leisure and small Fishing Boats – Use of Official Electronic Charts (CONF.EX4/INFODOC.3)
 - Any other Business
 - Closing Ceremony (Agenda item 5)
 - Date of the next Conference
 - Seating order at the next Conference
 - Closing remarks by the President of the Conference
-

DISCUSSION ON STATUS REPORT ON ENC DEVELOPMENTS BY THE IHB (Agenda item 4) (continued) (CONF.EX4/REP/05)

IGA BESSERO (France) said the WEND principles included technical means for agreeing on political issues such as boundaries, in order to ensure regional coverage of ENCs for neighbouring coastal areas. The overall aim was to contribute to the safety of maritime navigation.

Captain WARD (IHB Director) reminded delegates that an annex to the WEND principles contained a section on establishing production boundaries for ENCs, and stating clearly that those boundaries had no political significance.

Rear Admiral (Ret.) ANDREASEN (United States of America) said he was aware of many boundary conflicts around the world. Problems of dual claims to areas covered by ENCs had remained unresolved for decades. Systems manufacturers would develop their own solutions to such problems, giving the user a choice of navigation charts and boundaries.

Captain WARD (IHB Director) suggested that Member States bring the issue to the HSSC, so that both digital and technical solutions could be considered.

Captain NAIL (United Kingdom), Chairman of the HSSC, suggested that since the question was not solely a technical one, it could be taken up by the IRCC.

Turning to the topic of ENC validation and distribution, Captain WARD (IHB Director) said that the comments already received, and the discussion at the present Conference on RENC models and the validation and distribution of ENCs, would produce a better understanding of the issues and the directions to be pursued. The aim was to ensure that mariners could readily obtain properly validated data for their voyages.

Mr. Kwok-chu NG (China) said that, in a perfect world, WEND would contain complete ENC data; however, the number of RENCs was small, and many Member States clearly had reasons not to join a RENC. According to the WEND principles, RENCs should ensure coordinated surfaces, with high-quality data. RENCs were not however working according to that definition, because they distributed both official and unofficial ENCs, and some data in the unofficial ENCs might have been obtained without the permission of the data owners, thus infringing copyright. The RENCs therefore faced the dilemma of possibly handling stolen goods. It had been proposed that in the third draft resolution in Annex B to document CONF.EX4/REP.05, the words “Member States are encouraged to distribute their ENCs through a RENC ...” should be replaced by “Member States should distribute their ENCs through a RENC ...”. His delegation would be reluctant to approve that change, since it might involve his country in unofficial data distribution.

Dr. NARAYANAN (Canada) said that her remit was to make Canadian data available through all channels, not through one or a few selected outlets. Any RENC, any country or any industry that met Canada’s criteria could obtain a licence to distribute its official products. Her delegation would therefore also have difficulty in approving the proposed change to the WEND principles.

Captain WARD (IHB Director) said that the broader issue was ensuring wide, readily accessed distribution of data from a central pool, which was the heart of the WEND concept. The RENCs represented a mechanism for validating data, preferably on a regional basis. The data were then contributed to the central pool, to which all distributors had access, for distribution to end-users. As that ideal situation was not being achieved with the present system, he invited suggestions for alternative approaches.

Rear Admiral RAO (India) said that his country distributed its data through the United Kingdom Hydrographic Office, which clearly stated that it undertook validity checks on ENCs from producer nations that were not members of RENCs. No distributor would willingly include data that were not

valid, and most of them used the same software. It was unnecessary to be a member of a particular RENC if other distributors could ensure that their data were error-free and were available to the wider community. Countries should be free to distribute their data as they considered fit. He rejected the proposed rewording.

Rear Admiral (Ret.) ANDREASEN (United States of America) said that, as a user of ENCs, he would not want to be obliged to seek data from several sources. He was therefore in favour of the proposal. Notices to Mariners were compiled for shipping companies by a commercial company, and then sent wherever they were needed. The IHO should either have a central point where the interfaces for each entry were examined or leave such work to commercial companies.

Dr. NISHIDA (Japan) said that, although his country's data were distributed through a RENC, he agreed with the representatives of Canada, China and India about the proposed change to the WEND principles.

Dr. JONAS (Germany) described the benefits to be derived from membership in a RENC, including quality assurance, relations with distributors and invoicing. Membership in a RENC also led to harmonization with neighbouring countries. Nevertheless, he considered that the proposed change in language, which would impose an obligation on Member States, was not covered by the IHO operating procedures.

Dr. OEI (Singapore) pointed out that the statement that ENCs should be widely available was contradicted by the recommendation to join a RENC. The focus should be on making data available; the decision about whether to join a RENC should be left to each Member State. He supported the view expressed by the representatives of Canada, China and Japan.

Commodore PALIATSOS (Greece) said his country was a member of two RENCs. The advantages of membership in a RENC included financial benefits and the transfer of experience and technology for validation. In the absence of experience from the RENCs, feedback on problems would be received only from users.

Mr. PARIZI (Islamic Republic of Iran) said that although his country produced ENCs, it had not yet decided to join one of the few available RENCs. He supported the view expressed by the representatives of Canada, China, India and Japan.

Captain LOWELL (United States of America) said that his delegation agreed that ENCs should be distributed as widely as possible for navigational and other purposes. At the same time, his country wished to make its own data and services widely available, through multiple distribution channels. Although it was not a member of a RENC, it had distribution agreements with a RENC and with other hydrographic offices. His country supported the integration of RENCs for the official distribution of navigational products.

Vice Admiral PALMER (Brazil) said his country was a member of two RENCs and was in favour of the concept. His delegation was not, however, in favour of the proposed amendment.

Mr. DUMON (Belgium) said membership in a RENC provided a number of benefits for ENC-producing countries. He endorsed the view expressed by the representative of Germany.

Commodore NAIRN (Australia) said his country strongly endorsed the WEND principles. It had established the Australian RENC to provide universally available data for global distribution that was independently validated. The operation was conducted by a not-for-profit institution that provided edge-matching and deconfliction by referring back to producer nations in order to solve problems of identification. External validation and verification reduced liability to litigation and ensured that only one authorized dataset was available at any one time. In any management system in which data were distributed through a number of sources, there was a risk that not the same version of the same file

would be distributed at the same time. In his country's system, validation and quality assurance were applied not only to new ENC's but also to the weekly updates, at which point inadvertent errors might be introduced that would make the data inaccessible to mariners. Distribution through the RENC reduced those risks and represented the best solution for both the mariner and the hydrographic office. He encouraged all hydrographic offices to see how they could reduce their risk and ensure that the mariner received only the best and unique product. He supported the proposed change in wording.

Captain KAMPFER (South Africa) said that his country was a member of a RENC. For a small office with limited resources, membership in a RENC meant that the data underwent an additional quality check. In order to ensure that the best-quality products reached the market, countries should be persuaded to join a RENC. He supported the proposed amendment.

Mr. KRASTINS (Latvia) said his country had been a member of a RENC for some time and had found that ENC's from those sources were of better quality, as well as benefiting from validation, exchanges of experience and transfers of knowledge. He supported the proposed amendment.

Commander LUSIANI (Italy) supported the view expressed by the representative of Canada. In his view, paragraph 1.3 of the WEND principles should be divided, so as to have one part referring to the technical advantages of RENC's, and the other to the distribution of ENC's.

Ms. TUURNALA (Finland) recalled that the task of the IHO was to provide worldwide, up-to-date, easily accessible ENC's for users. Although the WEND concept was valid, she supported the proposed new wording, if it was considered necessary. Finland was a satisfied member of a RENC.

Commander WYATT (Oman) said his country was not an ENC producer, and obtaining the data from a RENC gave them a sense of security. He supported the views expressed by the representatives of Australia and South Africa.

Captain ROZHKOVA (Russian Federation) pointed to the contradiction inherent in having the broadest possible distribution of ENC's and at the same time ensuring their quality. Technological progress was needed to improve the procedures for producing and distributing them. Countries should not be obliged to fit into a given framework. If, as the representative of France had stated, assurances could be given that the products were legitimate, a country such as China might change its position and become a member of a RENC. The objective was to facilitate international navigation, and that called for international instruments. He understood that there was currently no alternative to RENC's. Therefore, it was essential to promote their development and to ensure that the data were legitimate, without restricting the activities of hydrographic offices. His delegation supported the view expressed by the representative of Canada. The Russian Federation was a member of two RENC's, and he continued to support that approach.

IGA BESSERO (France) wished to address any doubts that might have arisen out of the earlier remarks made by the representative of China. The function of the PRIMAR network was as defined by the WEND principles: to supply ENC's, without any exclusivity, to the network of suppliers of final services, those suppliers being free to develop integrated products of their choice. It was not the role of the IHO to prevent them from also distributing non-official products.

He had heard the concerns of some Member States. The presentation at the previous session had not been intended to impose any exclusivity, such as requiring countries to distribute their data only through RENC's or not at all. On the contrary, ENC's produced by Member States of the IHO should be available in an integrated global database, while any Member States wishing also to distribute its own ENC's through some other channel had complete latitude to do so.

The term "should" in the proposed amendment should not cause anxiety. It had occasionally been used in IHO Technical Resolutions before.

Dr. NARAYANAN (Canada) was concerned that the phrase “should distribute their data through a RENC” seemed tantamount to an instruction by the IHO to governments to provide their data to a particular organization.

Mr. XU Binsheng (China) welcomed the clarification offered by the representative of France. He was sure that some members had received confusing messages to the effect that PRIMAR was directly involved with the distribution of unofficial ENC's. The press release that some countries had received was different to the explanation now provided by the representative of France.

China was not disputing the function of a RENC. China recognized that the existence of a RENC helped some countries, especially in their ability to produce ENC's. Technology transfer and sharing of experience were further benefits of joining a RENC. But China would be very uncomfortable if countries were being directed to join a RENC without liberty of choice as to whether doing so was appropriate to their own situation. The proposal seemed to be a step too far. At least 36 Member States had so far joined RENC's, and the RENC's should be allowed to pursue their activities as before while seeking to attract new members.

Captain WARD (IHB Director) summarized the discussion. Countries had different reasons for their decisions on how to proceed with the treatment of their ENC's. Opinion seemed to be divided on whether the use of RENC's should be the primary means of validating and distributing data, or only one of several options. That choice had consequences. If all data passed through a RENC, the result was a global integrated database, which as a single source should also be reliable. The alternative was to put into place a wide range of non-exclusive mechanisms. That would require the service providers to collect all the data themselves, package them and move them on. There were some disadvantages in that.

However, all Member States had the same aim, that the mariner should obtain the best possible data, and obtain it as easily as possible. There was a need for continued work, at regional, bilateral and national levels, to determine the best way to achieve that aim. It was not yet clear whether it was desirable to have a global integrated database.

The resolution had not been intended to be imposed on the Conference. Given the division of opinion about the terms “should” and “encourage,” he suggested that no amendment be attempted at present.

As a result, the Conference decided to take no action on this proposal.

LEISURE AND SMALL FISHING BOATS - USE OF OFFICIAL ELECTRONIC CHARTS (CONF.EX4/INFODOC.3)

Captain WARD (IHB Director) invited the delegation of Greece to present Information Document No. 3.

Commodore PALIATSOS (Greece) observed that after more than 20 years of effort the maritime community was now in a position to utilize technological achievements in electronic navigation that guaranteed increased safety while improving operational efficiency. In the past couple of years the hydrographic offices had made considerable efforts to accelerate the production of ENC's, the raw material for ECDIS, working towards the goal of worldwide coverage. However, much of the shipping market included leisure and fishing boats, which could not easily utilize ECDIS and ENC's, primarily because ECDIS, having functionalities essential for professional mariners, required considerable space for installation and a considerable budget. As a consequence, yachtsmen and fishermen still used conventional nautical charts or small electronic navigational aids such as GPS plotters, palmtop devices or, in the best case, laptops capable of displaying various types of unofficial electronic charts.

ENCs were used by only very few leisure mariners, owing to a lack of charting software capable of loading and displaying encrypted ENCs. Moreover, the leisure boat community faced some major difficulties in using ENCs, such as the lack of ENCs for small ports and marinas, or the lack of information on available facilities such as power, oil, telephone, etc., information supplied by the producers of non-official electronic chart systems.

The major benefits of ENCs included the fact that they were developed on the basis of international standards, were official products of the hydrographic offices, were continuously updated, and offered functionality guaranteeing safe navigation. He strongly believed that leisure boat mariners should be given the opportunity to navigate with ENCs. An effort should be made to eliminate the drawbacks he had mentioned.

He suggested setting up an ad hoc working group, to be coordinated by HSSC but not limited to IHO Member States, which would investigate in detail the needs of leisure boats and small fishing vessels, and propose action to promote ENCs to that market. Alternatively, those issues could be dealt with primarily at national level, perhaps using existing mechanisms and bodies such as Licensing Forum.

Commander LUSIANI (Italy) welcomed that initiative, which offered a solution to a problem that Italy had tried to resolve a few years earlier.

Dr. JONAS (Germany) pointed out that SOLAS did not distinguish between professional and leisure shipping, although there were of course national exemptions. He welcomed the proposal.

Rear Admiral MONCRIEFF (United Kingdom) said it might be useful to ask the HSSC to look at the issue in relation to its work on S-100. That would not preclude a further report to the Conference for it to determine the best way forward.

Captain LOWELL (United States of America) said his country had given much thought to the use of official products on a platform other than an ECDIS. It had recently improved its data access through an automated download system, which many electronic chart manufacturers had integrated into their software. The result had been unexpected: the United States had observed a tripling in the number of raster downloads, but virtually no change in the number of encrypted ENCs downloaded.

Captain WARD (IHB Director) suggested that the delegation of Greece might consider submitting a reworked version of its paper to HSSC, identifying the problem and leaving it to HSSC to determine the best way to address it, including overcoming some of the negative issues identified. Greece agreed to this suggestion.

PRESENTATION BY BOLIVIA

Captain ESPINOSA HURTADO (Observer, Bolivia) said he looked forward to the time when his country would no longer be participating as an observer. The discussions and the information presented had proved invaluable. As a token of gratitude, he wished to present to the President of the IHB a commemorative plaque and a chart of Lake Titicaca, Bolivia's largest inland body of water, which was shared with Peru.

The representative of Bolivia presented a commemorative plaque and a chart to the President of the IHB.

The PRESIDENT OF THE IHB, on behalf of the Directing Committee, expressed his thanks to the Observer for Bolivia. The IHB stood ready to help enhance Bolivia's hydrographic capabilities, and to expedite its future application for membership.

RESOLUTION EXPRESSING GRATITUDE TO THE HOST COUNTRY

The PRESIDENT OF THE IHB said he took it that the Conference wished to adopt a resolution requesting the delegation of Monaco to convey to H.S.H. Prince Albert II and the Government of the Principality of Monaco the sincere gratitude of the Conference for the generous support provided to the Organization in so many ways. He read out the proposed resolution.

"The Conference:

Recognizing the continued close association and significant support of His Serene Highness Prince ALBERT II and the Government of the Principality of Monaco in Hosting the International Hydrographic Organization,

Appreciating the provision of the Auditorium RAINIER III in Monaco for the 4th Extraordinary International Hydrographic Conference and its associated Exhibition,

Further appreciating the provision of the Port Facilities of Monaco for the ships that were placed on exhibition during the Conference,

Expresses its profound gratitude to His Serene Highness Prince ALBERT II and the Government of the Principality of Monaco for their graciousness and kind hospitality extended to the Organization, and

Requests the delegation of the Principality of Monaco to convey to His Serene Highness and the Government of the Principality of Monaco the sincere sentiments of the Conference expressed above."

The resolution was adopted by acclamation.

CLOSING CEREMONY (Agenda item 5)

DATE OF THE NEXT CONFERENCE

The PRESIDENT OF THE IHB said that the Directing Committee was proposing that the next Conference should be held in April 2012, the precise dates to be decided between the Directing Committee and the Government of Monaco and communicated to the Member States.

It was so agreed.

SEATING ORDER AT THE NEXT CONFERENCE

The letter "N" was drawn, and the PRESIDENT noted that Nigeria, being the first country to start with the letter "N" in the French alphabetical list of country names, would be the first in the seating order in 2012.

CLOSURE OF THE CONFERENCE

THE PRESIDENT OF THE IHB expressed thanks on behalf of the Conference to the President for the skilful way he had steered the deliberations, and presented him with a gift. He also thanked the Vice-President, and also presented him with a gift. He then also thanked all Member States for their attendance and participation, which had made the present Conference a very interesting and fruitful one.

Following the customary exchange of courtesies, the PRESIDENT declared the 4th Extraordinary International Hydrographic Conference closed.

APPENDIX I

REPORTS SUBMITTED TO THE
4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC
CONFERENCE

**REPORTS SUBMITTED TO THE 4th EXTRAORDINARY INTERNATIONAL
HYDROGRAPHIC CONFERENCE**

CONTENTS

Item	Page
REPORT OF THE IHO STRATEGIC PLAN WORKING GROUP (ISPWG) (CONF.EX4/REP.01)	137
REPORT OF THE HYDROGRAPHY AND CARTOGRAPHY IN INLAND WATERS WORKING GROUP (HCIWWG) (CONF.EX4/REP.02)	203
REPORT OF THE MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG) (CONF.EX4/REP.03)	287
REPORT BY THE IHB ON PROGRESS TOWARDS RATIFICATION OF THE PROTOCOL OF AMENDMENTS TO THE CONVENTION ON THE IHO (CONF.EX4/REP.04)	333
STATUS REPORT ON ENC COVERAGE (CONF.EX4/REP.05 Rev.2)	335

REPORT OF THE IHO STRATEGIC PLAN WORKING GROUP (ISPWG)

CONTENTS

Executive Summary		137
1	Introduction	138
2	Terms of Reference	138
3	Membership and Work Method	138
4	Work Plan.....	139
5	Strategic Analysis.....	139
6	Risk Management.....	140
7.	Performance Indicators	140
8.	Transition to the new structure.....	142
9.	Proposals to the 4th Extraordinary International Hydrographic Conference....	143
Annex 1 -	Terms of Reference	145
Annex 2 -	Membership.....	147
Annex 3 -	Work Plan.....	149
Annex 4 -	Definition of Hydrography.....	153
Annex 5 -	Strategic Analysis.....	155
Annex 6 -	Risk Management Overview	161
Annex 7 -	Performance Indicators	167
Annex 8 -	Cross-reference of the IHO current Work Programme to the new structure....	179
Annex 9 -	Draft Strategic Plan	183
Annex 10 -	Revision of AR T5.1	199

REPORT OF THE IHO STRATEGIC PLAN WORKING GROUP (ISPWG)

(CONF.EX4/REP.01)

EXECUTIVE SUMMARY

In May 2007, the XVIIth IHC decided to establish the IHO Strategic Plan Working Group (ISPWG) which was tasked to review the existing IHO Strategic Plan, prepare a revised draft Strategic Plan and report to the Member States no later than 1st January 2009.

This report details the work completed by the ISPWG in accordance with its terms of reference. It describes the ISPWG membership, work method and work plan and reviews the various issues that were addressed. The report and the resulting proposals are submitted for consideration by the 4th EIHC.

The ISPWG worked mainly by correspondence, with a single plenary face-to-face meeting. It agreed on the following main tasks:

- review of the structure of the Strategic Plan,
- review of the different sections of the Strategic Plan,
- review of risk management,
- review of progress monitoring,
- review of the transition to the new structure.

The revised draft Strategic Plan prepared by the ISPWG is attached in Annex 9 to this report.

The proposal includes a new definition of hydrography agreed by the Committee on the Hydrographic Dictionary.

The revised draft Strategic Plan is based on a review of the underlying strategic assumptions, from which updated strategic directions are derived.

The ISPWG agrees that risk management should be included in the strategic planning process according to a risk management framework annexed to the revised draft Strategic Plan. The ISPWG considers also that the appropriate monitoring of the implementation of the Strategic Plan requires the definition of performance indicators against which progress in implementing the strategic directions can be periodically assessed. A selection of strategic performance indicators is proposed. A revised text of the administrative resolution T5.1 which fixes the planning and review cycles for the Strategic Plan and the Work Programme is proposed also.

The ISPWG proposes arrangements for the transition to a new structure of the Work Programme aligned on the revised Strategic Plan.

Seven proposals are made to the 4th EIHC, resulting from the ISPWG work.

1. INTRODUCTION

In 1997, the XVth International Hydrographic Conference (IHC) established a Strategic Planning Working Group (SPWG). During the 2nd Extraordinary IHC (EIHC) in 2000, the International Hydrographic Organization (IHO) adopted its first Strategic Plan. In 2002, the XVIth IHC adopted the administrative resolution T5.1 which defines the planning cycle of the organization, based on the Strategic Plan and a five-year rolling Work Programme.

Following the approval by the 3rd EIHC of the protocol of amendments to the IHO Convention, the SPWG reviewed the Strategic Plan and Work Programme during its 2005-2006 work session. It concluded that the Strategic Plan should be revised and recommended to establish a new working group for that purpose.

In May 2007, the XVIIth IHC followed this recommendation and decided to establish the IHO Strategic Plan Working Group (ISPWG) which was charged to review the existing IHO Strategic Plan, prepare a revised draft Strategic Plan and report to the Member States no later than 1st January 2009.

This report details the work completed by the ISPWG in accordance with its terms of reference. It describes the ISPWG membership, work method and work plan and reviews the various issues that were addressed. The report and the resulting proposals are submitted for consideration by the 4th EIHC.

The revised draft Strategic Plan prepared by the ISPWG is attached in Annex 9.

2. TERMS OF REFERENCE

The terms of reference of the ISPWG are defined by Decision No 12 of the XVIIth IHC which is attached in Annex 1.

3. MEMBERSHIP AND WORK METHOD

The Chair and Vice-Chairs had been designated by the Conference (see Annex 1). In accordance with the Conference Decision, the IHB Directing Committee requested the Chairs of the Regional Hydrographic Commissions (RHC) as well as Member States wishing to participate individually in the WG to designate their representatives (LC 2007/52 of 8 June 2007) and inform the IHB by 31st July 2007. All but four RHCs had designated their representatives by the end of July 2007. The Baltic Sea Hydrographic Commission and the Nordic Hydrographic Commission decided to nominate a joint representative. It took an additional four months to obtain the designation of the last RHC representative. In addition to the 14 RHCs, 10 Member States designated individual representatives. The final list of the participants is provided in Annex 2.

In accordance with Decision No 12, the ISPWG worked mainly by correspondence. Exchanges were conducted mainly by e-mail. A specific online forum was opened in early November 2007 on <http://www.iho-discussions.org/>, with Lt. Cdr. Steve Shipman of the IHB acting as the moderator. All the interim documents were posted on the ISPWG forum. The basic information was also made available through the IHB on the ISPWG page of the IHO web site.

For each task, a discussion paper was initiated by the Chair Group, composed of the Chair, Vice-Chairs and the President of the IHB Directing Committee. The discussion paper was submitted to the ISPWG members for comments. A revised edition was then prepared by the Chair Group and circulated to ISPWG members for final approval. Figure 1 recaps the number of inputs from RHCs and MSs for the various tasks identified in the Work Plan (see Annex 3).

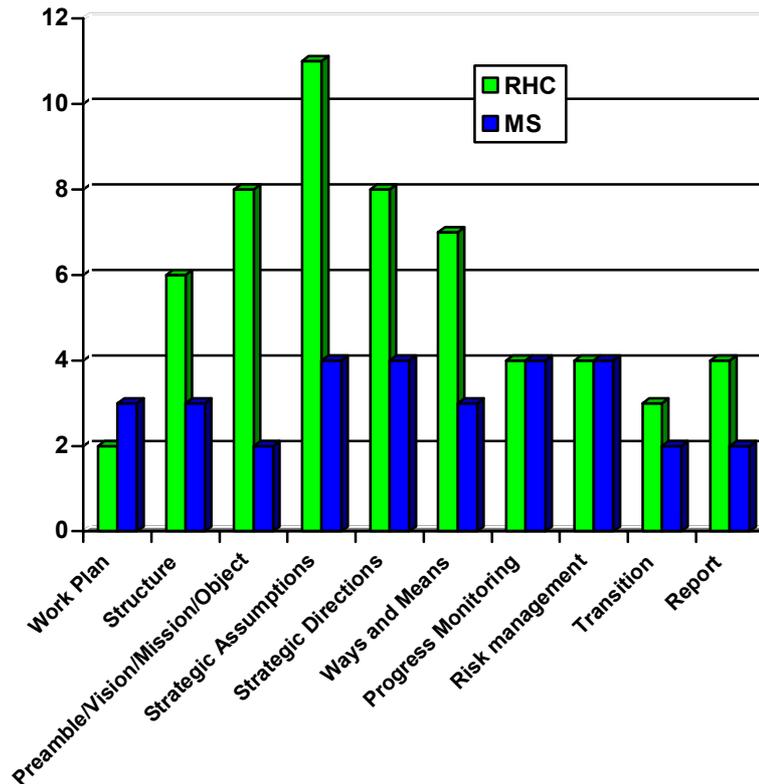


Figure 1
Number of RHC and MS inputs to the Work Plan tasks

The ISPWG met in plenary face-to-face session once, while the Chair Group held three meetings. The plenary meeting took place in Tokyo on 1st September 2008 just before the 11th meeting of the WEND committee hosted by Japan. The Chair Group met on the occasion of the Extraordinary WEND meeting on 31st October 2007 in Monaco and just before the plenary meeting. A final Chair Group meeting took place on 15th December 2008 in Paris to review the report.

During the review of the preamble of the Strategic Plan, the ISPWG agreed that the definition of hydrography needed to be refined. The proposed revised definition was passed through the IHB Directing Committee to the IHO Committee on the Hydrographic Dictionary whose final wording (see Annex 4) is inserted in the draft Strategic Plan (see Annex 9).

4. WORK PLAN

A draft work plan was prepared by the Chair Group. It was agreed by the members in August 2007 and then revised on two occasions: first after the review of the structure of the Strategic Plan in November 2007 and then after the plenary meeting in September 2008. The final version is attached in Annex 3.

5. STRATEGIC ANALYSIS

The ISPWG agreed to consider the strategic assumptions, on which the revised Strategic Plan should be based, in five categories:

1. Status of hydrographic services / Benefits and beneficiaries
2. Political and societal trends
3. Economic and market related trends

4. Technological trends
5. Legal and regulatory trends

The relevant strategic assumptions were identified as “strengths” (S), “weaknesses” (W) “opportunities” (O) or “threats” (T) for the implementation of IHO objectives. They are listed in Annex 5 together with the underlying analysis.

6. RISK MANAGEMENT

The ISPWG considered the overview of risk management detailed in Annex 6 and agreed that risk management should be included in the strategic planning process according to the following principles:

An analysis is conducted during the preparation of the Work Programme in order to:

- (i) identify the risks associated with each strategic direction in the Strategic Plan,*
- (ii) understand how and when they arise, identify the stakeholders, and*
- (iii) estimate their likelihood of occurrence and impact on the IHO, its Member States and other stakeholders if any (e.g. IMO), and*
- (iv) identify the range of mitigating actions required, responsible owners/stakeholders, priority/dates assigned to them with any resource requirement that will be needed.*

The Work Programme is designed to implement the strategic directions while mitigating these risks.

The risks associated with the strategic directions were identified and a risk management framework was developed as an annex to the draft Strategic Plan. The ISPWG recommends that risk management activities be addressed at two levels:

- *strategic* level by the IHB (*the IHB to be replaced by the Secretary General when the revised IHO Convention enters into force*) and processed *top down*,
- *working* level by subordinate bodies under HSCC/IRCC and processed *bottom up*.

7. PERFORMANCE INDICATORS

The ISPWG considered that the appropriate monitoring of the implementation of the Strategic Plan requires the definition of performance indicators (PIs) against which progress in implementing the strategic directions can be periodically assessed.

Performance or management indicators constitute a metric which provides ideally, quantitative, repeatable and measurable information relating to success in achieving specific objectives or to delivery of associated IHO outputs. It may however include qualitative evidence in relation to achievements, where quantification is not applicable. PIs should be “smart”:

- specific
- measurable
- achievable
- result-oriented or relevant
- time-bound

Two kinds of indicators are generally used:

- quality indicators that measure how the output (e.g.: product or service) is evaluated by the intended users and the process capacity to attend their requirements;
- productivity indicators that are related to efficiency in resource use to generate outputs.

Other kinds of indicators (capacity, effectiveness, etc.) are also used for specific situations.

From a financial perspective, PIs should enable evaluation of procedures, programmes and policies of the IHO as a whole. This embraces the rationality of the organizational structure and function distribution between its elements, as well as efficacy, efficiency, and economy in the use of organizational resources.

Taking into account the object of the Organization and the strategic directions, the ISPWG recommends that the Work Programme be measured by indicators which should show critical items / risk factors, picture of productivity (considering, among others, budget factor) and the level of achievement of strategic objectives. They should also indicate future trends: forecast upturn / downturn.

The ISPWG agreed to adopt a two level approach, similar to the approach which is proposed for risk management (see § 6):

- strategic level: a small number of PIs associated with the objectives of the IHO (1 or 2 PIs per objective) and managed by the IHB (*the IHB to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force*);
- working level: PIs associated with the strategic directions and managed by the appropriate subsidiary organs;

In this perspective, the ISPWG proposes that cross-references between the objectives, the strategic directions and the proposed PIs be arranged in the following way:

Objectives => strategic PIs => strategic directions => responsible organs => working level PIs

Accordingly, the assessment of the working level PIs and the review of progress with the strategic directions should be considered in two phases: an initial review by the leading organ and an overall review by the IHB (*the IHB to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force*). Together with the assessment of the strategic PIs, these results would then be submitted for consideration by the Conference/Assembly. The submission should include a qualitative and, where practicable quantitative, assessment of progress based on the value of the PIs. It should also include recommendations on management actions to be considered where trends indicate either a lack of progress or a change to an underlying assumption/direction is required. In this way the aim can be maintained and evidence of progress monitored/presented.

The ISPWG proposes that the review of the strategic assumptions be prepared by the IHB (*the IHB to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force*) for consideration by the Conference / Assembly. The submission should include an analysis of the relevance of the strategic assumptions and recommendations on the changes to be considered.

The periodicity of PIs measure should be at least annual, in accordance with the Work Programme review cycle.

At the end of the period of the Work Programme (every five years until the revised IHO Convention enters into force and then every three years) these indicators will compose data source for the review of the Strategic Plan and / or the Work Programme.

Table 1 in Annex 7 proposes strategic PIs to be agreed by the Conference.

Table 2 in Annex 7 cross-refers the strategic directions to the relevant IHO organs and indicates some possible working level PIs to be refined by the appropriate organs if the proposed monitoring mechanism is agreed by the Conference.

8. TRANSITION TO THE NEW STRUCTURE

The IHO Work Programme covers the period starting 1st January of the year following the ordinary session of the International Hydrographic Conference - IHC (*the IHC* to be replaced by *the Assembly* when the Assembly is established) and ending on 31st December of the year of the next ordinary session of the IHC (Assembly). Under the current structure of the IHO the Work Programme is a five year programme while under the new structure it will be a three year programme.

Under the current Strategic Plan and in order for the Organization to meet its current goals, the IHO has developed and manages the following five principal programmes:

- Co-operation between Member States and with International Organizations
- Capacity building
- Techniques and standards co-ordination and support
- Information management and public relations
- General organization development

The IHB Directing Committee, based on comments received from Member States, RHCs and other bodies of the Organization, develops the five year Work Programme and associated budget, which are then presented to the Conference for approval. The percentage of the budget devoted to the various elements and tasks of the programmes are clearly identified. Thereafter the Work Programme is considered every year based on possible improvements that need to be introduced and comments received from Member States. The revised Work Programme and budget are approved by the Member States annually.

The ISPWG in studying the Strategic Plan has identified the following three principal programmes which, if approved, will replace the five existing ones. These programmes are the following:

- *Corporate Affairs* under the responsibility of the International Hydrographic Bureau (to be replaced by the Secretary General when the revised IHO Convention enters into force),
- *Hydrographic Services and Standards* under the responsibility of the relevant Committee (HSSC),
- *Inter Regional Coordination and Support* under the responsibility of the Inter Regional Coordination Committee (IRCC)

In introducing the new programmes based on the new Strategic Plan, there are two options:

- continue with the current five programmes until 2012, cross-referencing it to the three new ones, or
- develop a new three-year 2010-2012 Work Programme considering the new structure together with the associated budget.

The two new Committees, the HSSC and the IRCC, will be established and become operational 1st January 2009, based on terms of reference and rules of procedures, as directed by the XVIIth IHC (see CL 115/2007 of 10 December 2007). They will not have their first meeting until after the 4th EIHC in 2009. They will have little or no time to contribute significantly to the preparation of the 2010 Work Programme and therefore it seems more realistic to continue with the existing Work Programme until 2012. This will also allow devoting more energy to consolidate the use of performance indicators and risk management.

A preliminary cross-referencing of the current Work Programme to the new structure (strategic directions and responsible organs) is attached in Annex 8. The following conclusions can be drawn:

- the new Strategic Directions are each covered by at least one task of the current Work Programme; therefore there is no urgent need to switch to a new Work Programme once the new Strategic Plan is approved;
- all the current elements of the Work Programme can be allocated totally to one of the three organs IHB/IRCC/HSSC.

An intermediate option which would consist in rearranging the tasks of the current Work Programme according to the new structure with no change in contents seems feasible with very limited extra work necessary to re-compute the associated budget aggregates within the limits of the approved five year budget.

The ISPWG proposes the following arrangements for the transition to the new structure of the Work Programme:

- retain the contents of the current Work Programme until the next ordinary session of the IHC / Assembly,
- re-arrange the tasks according to the new three programme structure based on the cross-reference in Annex 8 starting with the 2010 Work Programme edition,
- compute new budget aggregates starting with the 2010 budget, within the limits of the approved five year budget,
- present to the IHC / Assembly in 2012 a new Work Programme and budget for the period 2013-2017 based on the new Strategic Plan as approved by the 4th EIHC. This Work Programme and budget will be prepared under the aegis of the IHB in close cooperation with the two new Committees and they shall have their endorsement.

The ISPWG considers that this mechanism is progressive enough to allow a smooth transition in the “learn by doing” mode. However, it recognizes that the IHB may be confronted with some difficulties in implementing the additional tasks associated with risk management and performance monitoring. The ISPWG suggests that the issue be monitored annually by the IHB as further experience is gained with the new committee structure and that the implementation of the new planning mechanism be reviewed by the Conference / Assembly in 2012.

9. PROPOSALS TO THE 4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC CONFERENCE

The ISPWG proposals to the 4th EIHC, resulting from its work, are the following ones:

1. The Conference is invited to note the ISPWG Report.

2. The Conference is invited to approve the new definition of hydrography agreed by the Committee on the Hydrographic Dictionary as indicated in Annex 4 to the ISPWG Report.
 3. The Conference is invited to review and approve the draft revised Strategic Plan submitted in Annex 9 to the ISPWG Report.
 4. The Conference is invited to approve the draft revised text for Administrative Resolution T5.1 submitted in Annex 10 to the ISPWG Report.
 5. The Conference is invited to approve the arrangements for the transition to the new structure of the IHO Work Programme described in section 8 of the ISPWG Report and to task the IHB Directing Committee accordingly.
 6. The Conference is invited to request the IHB Directing Committee to review possible needs for assistance in preparing the annual cycles of the new strategic mechanism, in consultation with the HSSC and IRCC chairs, and to report to Member States before the end of 2010.
 7. The Conference is invited to request the IHB Directing Committee to review the implementation of the new planning mechanism, in consultation with the HSSC and IRCC chairs, at the end of each annual cycles in early 2011 and 2012 and report back to the next ordinary IHC (or to the first Assembly) in 2012.
-

ANNEX 1

TERMS OF REFERENCE

DECISION No. 12 (PRO 12) - ESTABLISHMENT OF A WORKING GROUP TO REVISE THE IHO STRATEGIC PLAN

The Conference established the IHO Strategic Plan Working Group (ISPWG) with the following characteristics:

Terms of Reference

Review the existing IHO Strategic Plan in view of IHO's new Vision, Mission and Objectives.

Prepare a revised draft strategic plan.

Present the draft Strategic Plan and any related recommendations to the Member States no later than 1 January 2009.

Composition

The Working Group will comprise representatives designated by the Regional Hydrographic Commissions. Individual Member States may be represented if they consider it necessary. The IHB shall be represented in the Working Group.

Chair

Chair: IGA G. Bessero (France)
Vice-Chairs: Capt. De Haan (Netherlands)
Capt. Cavalheiro (Brazil)

Working Method

The Working Group shall encourage maximum participation by working mainly by correspondence, using information technology, and with no more than two face-to-face meetings of the full membership.

ANNEX 2

MEMBERSHIP

Name	Member State	E-mail	Function
Chair group			
Gilles Bessero	France	gilles.bessero@shom.fr	Chair
Wesley Cavalheiro	Brazil	wesley.cavalheiro@yahoo.com	vice-chair
Floor de Haan	Netherlands	fpj.haan@mindef.nl info@hydro.nl	vice-chair
Alexandros Maratos		amaratos@ihb.mc	IHB representative
RHC representatives			
Juha Korhonen	Finland	juha.korhonen@fma.fi	BSHC & NHC
Parry Oei	Singapore	parry_s_l_oei@mpa.gov.sg	EAHC
José Augusto De Brito	Portugal	dirgeral@hidrografico.pt	EAHC
Angel Acanda Reyes	Cuba	onhg@enet.cu	MACHC
Paolo Lusiani	Italy	paolo.lusiani@marina.difesa.it	MBSHC
SS Karnik	India	inho@dataone.in	NIOHC
Floor de Haan	Netherlands	fpj.haan@mindef.nl info@hydro.nl	NSHC
Ahmad Riaz	Pakistan	hydroPk@paknavy.gov.pk	RSAHC
Abri Kampfer	South Africa	hydrosan@iafrica.com	SAIHC
Enrique Silva	Chile	esilva@shoa.cl	SEPHC
Nin Rodriguez	Uruguay	sohma_asesor@armada.mil.uy	SWAHC
Rudecindo Turban	Uruguay	sohma_hid_jefe@armada.mil.uy	SWAHC
Rod Nairn	Australia	rod.nairn@defence.gov.au	SWPHC
Meg Danley	USA	meg.danley@noaa.gov	USCHC
Matthew Kroll	USA	matt.kroll@noaa.gov	USCHC
Keith Alexander	USA	keith.e.alexander@nga.mil	USCHC

MS representatives

Carlos Pêgas	Brazil	pegas@chm.mar.mil.br
Savithri Narayanan	Canada	savithri.narayanan@dfo-mpo.gc.ca
Binsheng Xu	China	xubinsheng@msa.gov.cn
Kwok Chu NG	China Hong Kong	ngkwokchu@mardep.gov.hk
Paolo Lusiani	Italy	paolo.lusiani@marina.difesa.it
Horst Hecht	Germany	horst.hecht@bsh.de
Shigeru Kasuga	Japan	ico@jodc.go.jp
Yeong Jin Yeon	Korea (Rep. of)	info@nori.go.kr
Weng Choy Lee	Singapore	weng_choy_lee@mpa.gov.sg
Ian Moncrieff	UK	ian.moncrieff@ukho.gov.uk
Vaughan Nail	UK	vaughan.nail@ukho.gov.uk
Elizabeth Dunn	UK	elizabeth.dunn@ukho.gov.uk
Christian Andreasen	USA	christian.andreasen@nga.mil
Steven Keating	USA	steven.g.keating@nga.mil

ANNEX 3

WORK PLAN
(ISPWG Working Document)

1000 Management

What: manage the working group

Who: Chair Group (CG)

Deliverable: discharging decision 12

Deadline: 31 December 2008

1001 WG Membership

What: establish the membership of the working group

Who: CG and IHB

Deliverable: list of members

Deadline: 31 July 2007

1100 Work Plan

What: establish the work plan

Who: WG

Deliverable: work plan

Deadline:

- draft: 15 Sept 2007

- revision 1: 31 Oct. 2007

- revision 2: 1 Sept. 2008

1110 Review Breakdown

What: agree on how to break down the revision of the strategic plan

Who: WG

Deliverable: list of items to be reviewed

Deadline: 15 October 2007

1120 Review Preamble

What: revise the Preamble section

Who: WG

Deliverable: revised preamble section

Deadline: 30 November 2007

1130 Review Vision / Mission / Object

What: revise the Vision / Mission / Object section based on the protocol of amendments to the IHO Convention

Who: WG

Deliverable: revised Vision / Mission / Object section

Deadline: 30 November 2007

1140 Review Strategic assumptions

What: review the strategic assumptions

Who: WG

Deliverable: analysis of the strategic assumptions

Deadline: 29 February 2008

1150 Review Strategic directions

What: review the strategic directions derived from the strategic assumptions, in accordance with IHO vision, mission and object

Who: WG

Deliverable: analysis of the strategic directions

Deadline: 30 April 2008

1160 Review Ways and Means

What: review ways and means to implement the strategic directions

Who: WG

Deliverable: analysis of the ways and means

Deadline: 31 July 2008

1170 Review Progress monitoring

What: review the mechanism for monitoring the implementation of the strategic plan and identifying any needs for revision

Who: WG

Deliverable: proposal for monitoring the implementation of the strategic plan and identifying any needs for revision

Deadline: 15 November 2008

1180 Agree structure

What: agree the structure of the revised strategic plan

Who: WG

Deliverable: table of contents

Deadline: 30 September 2008

1190 Review risk management

What: review risk management principles and elaborate a draft IHO risk management framework

Who: WG

Deliverable: proposal for a IHO risk management framework

Deadline: 15 November 2008

1200 Review the transition to the new structure of the Work Programme

What: analyze the impact of the two options with regard to financial implications and elaborate a recommendation

Who: WG

Deliverable: proposal for the transition to the new structure of the Work Programme

Deadline: 15 November 2008

1300 Report

What: compile the WG report for submission to Member States through the IHB

Who: WG

Deliverable: final report

Deadline: 31 December 2008

1400 Meetings

What: face to face meetings

Who: WG and/or CG

Deliverable: settle contentious issues if any and expedite the finalization of the report if required

When: 1 September 2008

Appendix 3.1
Work plan diagram

Number	Task	2007						2008											
		July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1000	Management	-----																	
1001	WG Membership	----																	
1100	Work Plan	-----			---												---		
1110	Review Breakdown			-----															
1120	Review Preamble					-----													
1130	Review Vision / Mission / Object					-----													
1140	Review Strategic assumptions						-----												
1150	Review Strategic directions								-----										
1160	Review Ways and means										-----								
1170	Review Progress monitoring													-----					
1180	Agree Structure															-----			
1190	Review Risk management													-----					

Appendix I Page 152

1200 Review Transition

-----|

1300 Report

-----|

1400 Meeting

01/09



ANNEX 4

DEFINITION OF HYDROGRAPHY

1. The current definition of “Hydrography” contained in the Hydrographic Dictionary (S-32) states that “Hydrography is that branch of applied sciences which deals with the measurement and description of the features of the sea and coastal areas for the primary purpose of navigation and all other marine purposes and activities including (inter alia) offshore activities, research, protection of the marine environment and prediction services”.
 2. The ISPWG in considering the Preamble of the Strategic Plan, decided to improve the definition of Hydrography as follows: “Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their evolution, for the primary purpose of safety of navigation and all other marine activities, including economic development, security and defence, scientific research, and environmental protection”.
 3. This definition was sent through the IHB to Mr. Jerry Mills, Chairman of the Committee on the Hydrographic Dictionary (CHD) for consideration and agreement. The Chairman after consulting with members of the Committee has agreed with the proposed definition with a small revision. The phrase “... prediction of their evolution ...” to be modified to “...prediction of their change over time ...”. Hence the final wording of the definition of Hydrography would be as follows: “Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their change over time, for the primary purpose of safety of navigation and in support of all other marine activities, including economic development, security and defence, scientific research, and environmental protection”.
 4. This definition, approved by ISPWG members, is presented to the 4th Extraordinary International Hydrographic Conference for approval. After its approval it will be passed to the Chairman of the Hydrographic Dictionary Working Group (HDWG) for inclusion in the Hydrographic Dictionary.
-

ANNEX 5

STRATEGIC ANALYSIS

The ISPWG agreed to consider the strategic assumptions on which the revised Strategic Plan should be based under the following main headings:

1. Status of hydrographic services / Benefits and beneficiaries
2. Political and societal trends
3. Economic and market related trends
4. Technological trends
5. Legal and regulatory trends

The relevant strategic assumptions were identified as “strengths” (S), “weaknesses” (W) “opportunities” (O) or “threats” (T) for the implementation of IHO objectives. They are listed below together with the underlying analysis.

1. Status of hydrographic services / Benefits and beneficiaries

1.1 An adequate hydrographic infrastructure is an essential geospatial foundation layer (O)

An adequate hydrographic infrastructure is an essential foundation layer not only for the primary purpose of safety of navigation but also in support of all other marine activities, including economic development, security and defence, scientific research, environmental protection, coastal zone management and marine disaster prevention and mitigation.

It is also essential that the mariner receive coherent, standardized and well coordinated hydrographic services for safety and cost effective navigation and the IHO provides the framework to achieve this. The provision of accurate and up to date nautical charts, publications and services is central to the prevention of accidents which may result in the loss of life and property and in pollution of the marine environment. This should be regarded as a government controlled (public good) service with officially published products. Any move to suggest equivalence from unofficial products should be resisted and ambiguity between the basis of official and unofficial services in the eyes of users should be removed.

Increasingly, the non-navigational utility of hydrographic data will place a greater call on HOs to widen their geographic information system (GIS) horizons and make available and integrate their data in spatial data infrastructures (SDI) as well as with a growing number of ocean observatories. There is also a safety aspect to this issue as more uses of the offshore zone (e.g. wind farms and oil/mineral exploitation) require de-confliction from safe shipping routes especially in port approaches. That growing requirement will make individual HO and collective IHO involvement in cross-government GIS work at national and international level essential. The increasing number of stakeholders is a two-edged sword - more demands on the same resources but potentially more visibility and support for hydrographic matters.

The IHO will remain a competent international organization, as referred to in the United Nations Convention on the Law of the Sea, which coordinates on a worldwide basis the setting of standards of hydrographic data and the provision of hydrographic services and which facilitates capacity building of national hydrographic services. This is a strength that the IHO should leverage. The utility of hydrographic data, especially digital data, as a “platform” for derived products from nautical charts, and other type of products other than nautical charts, increases the importance and the visibility of national hydrographic services and IHO. In particular going forward, HOs must therefore have mechanisms to update their digital offerings and identify assistance required if applicable. Additional assistance should be

organized within the context of the IHO Capacity Building platform to guarantee efficiency, quality and widening of worldwide expertise.

- 1.2 There is globally still insufficient awareness (and therefore funding) about the level and importance of hydrographic services (W)

Despite the elements discussed in section 1.1, there is globally still insufficient awareness (and therefore funding) about the level and importance of hydrographic services. Enhancing maritime safety by ensuring that the hydrographic link in the chain of responsibility fully meets its obligations is a priority for the hydrographic community as a whole. Approximately half of IMO Member States are not yet IHO members and do not provide the hydrographic services specified by the SOLAS Convention. There is also insufficient awareness that survey coverage is still relatively sparse on a global scale or not up to modern standards in many areas. Raising awareness, prioritization, and capacity building is therefore crucial for developing hydrographic capabilities and services, especially when set against the globalization trends covered below. RHCs defining role means that they should place due weight on this issue.

Globalization has given rise to new (non-State) actors in the hydrographic arena; there is a concern that hydrographic standards might be compromised by forces of liberalization and competition. Next to this here is a perception in some communities (research institutes, environmental bodies, etc.) that HOs are too conservative and are overprotective of their databases for revenue and other considerations, e.g. security issues. IHO Member States individually and collectively must therefore find smarter ways to reach a mutual understanding and to raise their community profile.

2. Political and societal trends

- 2.1 Globalization will continue to increase the demands on maritime trade and coordinated support services (O)

The globalized world is characterized by freer movement of people, goods, services and information; it is a more interconnected world, actions taken in one place have implications in another. The volume of transactions, conducted irrespective of the physical distance between those engaged will continue to expand and this will stimulate accelerating economic growth. Politically, globalization will raise levels of interdependence between States and non-State actors that are increasingly integrated within the globalized economy. The implications for the maritime arena are that seaways will become busier and ports will change in numbers and sizes. Law of the Sea aspects will also be affected.

As navigation as well as maritime administration and marine sciences are international activities it is necessary to have a means of coordinating the work of national agencies and of standardizing hydrographic products and services both nationally and globally; awareness of what related professional bodies are saying or planning is necessary for coherence, removal of duplication, concentration of resource for mutual support or to ensure early avoidance of conflict of interest.

- 2.2 Growing environmental awareness will generate increasing demands and wider uses for hydrographic information beyond solely core navigational safety use (O)

Governments and the public are becoming more environmentally aware and responsible. The public is growing intolerant of environmental pollution from shipping incidents.

Marine/hydrographic spatial data infrastructures developed at national, regional and global levels are required to support and enhance safety at sea, protection of the marine environment, security and economic development. The growing importance of integrated coastal zone management associated with the development of geographic information systems sets new requirements for the hydrographic data infrastructure.

With the rapidly increasing significance of uses of the marine zones beyond navigation, such as exploration, environmental and coastal protection, and the increasing need for a comprehensive understanding of all physical and biological processes in the marine environment, administration and science of the seas have been moving ever more into the focus of governance. This is true not only nationally but, as a result of globalization, also internationally. Governments need competent bodies to assist them in their political decisions. Therefore, to avoid the risk of getting marginalized, HOs as well as IHO as the competent international organization must accept that they will need to increasingly play a role in the international processes of wider marine policy making and developments, for example in the implementation of the Global Earth Observation System of Systems (GEOSS) coordinated by the intergovernmental Group on Earth Observation (GEO).

- 2.3 Human performance in all sections of the maritime industry (including shipping) is a major concern in terms of safety (O/W).

Human performance in all sections of the maritime industry (including shipping) is a major concern in terms of safety and, beyond solely material safety matters, recognized, if not certificated, training is a significant human element that contributes to safety at sea. Within the life of this plan, the growth of digital navigation will require associated training to ensure safe use and interpretation as well as maximum exploitation of the capability. While not core to HOs work, a view will need to be developed on how HOs best contribute to this.

3. Economic and market related trends

- 3.1 90 % of the world trade is conducted through maritime routes and presently 800 major ports, a figure that is growing, and is a key dependency for the world economy (O).

The number of people using the sea as a medium for worldwide activities is still growing. It is foreseen¹ that the SOLAS fleet will grow on average by 2.4% CAGR² until 2013 and then slow to 0.5% CAGR to 2018, reinforcing current forecasts for economic growth. The prestige vessels in passenger and hazardous cargo and container carrying fleets are increasing in size and draught. The overall SOLAS user numbers approximate to 100 000 vessels of which 48 000 refer to truly international deep sea and short sea tankers, bulkers, general cargo, container, RoRo, reefers and passenger vessels. There is an additional 51 000 vessels over 100 GRT which consist of fishing, service, offshore, and others vessels that have a need for carriage compliant charts.

The provision of accurate and up to date nautical data offers significant economic and commercial benefits through facilitation of maritime trade and other marine activities

- 3.2 Maritime industry is an indispensable partner within the hydrographic community (O)

With the generalization of information technology and the acceleration of technological progress, industry is more and more an indispensable partner of HOs for the provision of hydrographic services. It has become obvious that regular and substantive interface and cooperation are necessary to design innovative and comprehensive solutions that meet

¹ Source: Lloyd's Register Fairplay.

² CAGR: Compound Annual Growth Rate.

customer demand or needs. This necessary cooperation must accommodate the principles of free competition in industry and the responsibility of contracting governments to provide official hydrographic services.

- 3.3 Long term investment is required to provide and maintain an appropriate hydrographic infrastructure and the benefits are indirect (W).

Setting up and maintaining an appropriate hydrographic infrastructure requires long term investment to constitute and maintain the required manpower, skills, facilities and organization. The collection of data is itself a painstaking process. The economic and environmental benefits can only be appreciated in the long run. They are mostly indirect, through facilitating various activities³, while the consequences of a single accident caused by inadequate charting could be horrendous.

4. Technological trends

- 4.1 Technological developments (digital era, high rate communication systems and precise positioning systems) are a major driving force for changes (O).

Not only are shipping lanes busier and bridges leaner-manned over the past 10 years, but the ability to integrate bridge services for better spatial awareness and to mitigate the risk from these trends, means ECDIS will increasingly be a less stand-alone facility and more an integrated service with other sensors and data layers. It will be more and more important to be able to provide recognized pictures of maritime situational awareness (including fusion of heterogeneous information: meteorology, shipping, areas and limits, associated regulations, etc.) and take into account the generalization of integrated cyber-infrastructure, web map services and open source software.

The use of Electronic Navigational Charts (ENCs) increases safety at sea and protection of the marine environment⁴. IHO ability to drive their greater use and give confidence to IMO in when to mandate ECDIS is related to issues of coverage, competitive cost (vs unofficial offerings with paper back-up) and consistency. This is a key issue in the life of this plan.

The generalization of precise satellite based navigation and integrated navigation systems increases survey accuracy and coverage requirements and needs to accelerate the transition to a digital hydrographic infrastructure. Modern survey methods also bring greater volumes of higher fidelity data to process that point towards investment in smarter database processing and management.

There will be an increasing range of precise positioning systems that will lessen the needs for traditional navigation techniques and may impact on physical aids to navigation and chart content.

Ship-to-Shore and Ship-to-Ship communications will become faster and cheaper allowing greater interchange of information and affecting traditional distribution methods for provision of navigational information.

³ See IHO Publication M2: National maritime policies and hydrographic services.

⁴ See DNV Report N° 2005-1565: formal safety assessment of ECDIS.

5. Legal and regulatory trends

- 5.1 The provision of hydrographic services by contracting governments will remain regulated at the international level by the SOLAS Convention (S).

ECDIS-carriage is already mandatory for High Speed Crafts (HSC). IMO is considering the extension of a mandatory ECDIS-carriage requirement to other types of ships. Paper charts and publications will therefore endure for some time but will reduce in stages with ENC's, digital publications and services becoming the progressively dominant media. In this transition period, production in both forms of media, and maintenance of both in ensuring that updates to both are coherent will require careful attention. Increasingly HOs shall need to look to smarter databases to process and produce to meet this need and the other non-navigational demands that they face. HOs must influence these other putative users to ensure that the current standards are accepted and that the proliferation of formats and standards is avoided. Therefore informing and influencing the SDI aspects of this debate on standards and protocols to be used will be essential.

- 5.2 National and international regulations are developing about mandatory data exchange/distribution/access for natural risk mitigation, protection of the environment and the competitive development of value added downstream services (O/T).

Often, the situation on spatial information is one of fragmentation of datasets and sources. National Authorities as well as some International Organizations are developing regulations to facilitate the identification of, access to and use of all available geospatial information for various applications such as the mitigation of natural risk, the protection of the environment and the competitive development of value-added downstream services. In some cases there is pressure to make the data collected by public organizations, such as national HOs, freely accessible which could threaten their long term sustainability if no alternative source of funding is put in place.

- 5.3 There will be increased regulation with regard to security that will require earlier and more detailed information on vessel movements and will potentially increase control over vessels within national waters (O).

Security and environmental considerations prompt Coastal States to develop traffic surveillance and control regulations and systems which require early and detailed information on vessel movements within national waters. Such systems need to be interfaced with up to date and accurate digital chart information.

ANNEX 6

RISK MANAGEMENT OVERVIEW

1. Introduction

Risk management is a structured approach to managing uncertainty related to a threat. It requires a sequence of human activities including: risk identification and assessment, strategies to treat these risks, and allocation of managerial resources to mitigate them.

The strategies may include transferring the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk.

Some traditional risk managements are focused on risks stemming from physical or legal causes (e.g. natural disasters or fires, accidents, death and lawsuits). Financial risk management, on the other hand, focuses on risks that can be managed using traded financial instruments.

The objective of *risk management* is to reduce different risks related to a pre-selected domain to the level accepted by society. It may refer to numerous types of threats caused by environment, technology, humans, organizations and politics. On the other hand it involves all means available for humans, or in particular, for a risk management entity (person, staff, organization).

Risks should be “owned” at the lowest level which controls the powers or resources required to influence the outcome of the risk.

In ideal risk management, a prioritization process is followed whereby the risks with the greatest loss and the greatest probability of occurring are handled first, and risks with lower probability of occurrence and lower loss are handled in descending order. In practice the process can be very difficult, and balancing between risks with a high probability of occurrence but lower loss versus a risk with high loss but lower probability of occurrence can often be mishandled.

Intangible risk management identifies a new type of risk - a risk that has a 100% probability of occurring but is ignored by the organization due to a lack of identification ability. For example, when deficient knowledge is applied to a situation, a knowledge risk materializes. Relationship risk appears when ineffective collaboration occurs. Process-engagement risk may be an issue when ineffective operational procedures are applied. These risks directly reduce the productivity of knowledge workers, decrease cost effectiveness, profitability, service, quality, reputation, brand value, and earnings quality. Intangible risk management allows risk management to create immediate value from the identification and reduction of risks that reduce productivity.

Risk management also faces difficulties allocating resources. This is the idea of opportunity cost. Resources spent on risk management could have been spent on more profitable activities. Again, ideal risk management minimizes spending while maximizing the reduction of the negative effects of risks.

2. Steps in the risk management process

2.1 Establish the context

Establishing the context involves:

1. **Identification** of risks in a selected domain of interest;
2. **Planning** the remainder of the process;

3. **Mapping out** the following:
 - the social scope of risk management,
 - the identity and objectives of stakeholders,
 - the basis upon which risks will be evaluated, constraints;
4. **Defining a framework** for the activity and an agenda for identification;
5. **Developing an analysis** of risks involved in the process;
6. **Mitigation** of risks using available technological, human and organizational resources.

2.2 Risk identification

After establishing the context, the next step in the process of managing risk is to identify potential risks. Risks are about events that, when triggered, cause problems. Hence, risk identification can start with the source of problems, or with the problem itself.

Source analysis

Risk sources may be internal or external to the system that is the target of risk management. Examples of risk sources relevant to IHO are: deficiency in standards or inadequate ENC coverage, or lack of appropriate funding for key objectives.

Problem analysis

Risks are related to identified threats, for example: the threat of accidents and casualties. The threats may exist with various entities, most important with Member States and other stakeholders.

When either source or problem is known, the events that a source may trigger or the events that can lead to a problem can be investigated. For example: lack of participation or failure to reach consensus in a committee or working group may endanger the timely production of standards.

The chosen method of identifying risks may depend on culture, industry practice and compliance. In order to weigh risks emanating from different causes or with different outcomes (e.g.: financial, operational, etc.) against each other, a degree of uniformity is required in the process. Accordingly, the identification methods are based usually on common and re-usable templates for identifying source, problem or event. It is recommended to use both a bottom-up and top-down approach so that the entire organization contributes to effective risk management. The process should also identify who should be responsible for managing / “owning” each risk.

Common risk identification methods are:

Objectives-based risk identification

Organizations and project teams have objectives. Any event that may endanger achieving an objective partly or completely is identified as risk.

Scenario-based risk identification

In scenario analysis different scenarios are created. The scenarios may be the alternative ways to achieve an objective, or an analysis of the interaction of forces in, for example, a market or battle. Any event that triggers an undesired scenario alternative is identified as risk.

Taxonomy-based risk identification

The taxonomy in taxonomy-based risk identification is a breakdown of possible risk sources. Based on the taxonomy and knowledge of best practices, a questionnaire is compiled. The answers to the questions reveal risks.

Common-risk Checking

In several industries lists with known risks are available. Each risk in the list can be checked for application to a particular situation.

Risk Charting

This method combines the above approaches by listing:

- resources at risk,
- threats to those resources,
- modifying factors which may increase or reduce the risk, and
- consequences it is wished to avoid.

Creating a matrix under these headings enables a variety of approaches. One can begin with resources and consider the threats they are exposed to and the consequences of each. Alternatively one can start with the threats and examine which resources they would affect, or one can begin with the consequences and determine which combination of threats and resources would be involved to bring them about.

2.3 Risk Assessment

Once risks have been identified, they must then be assessed as to their potential severity of loss and to the probability of occurrence. These quantities can be either simple to measure, in the case of the value of a lost building, or impossible to know for sure in the case of the probability of an unlikely event occurring. Therefore, in the assessment process it is critical to make the best educated judgements possible in order to properly prioritize the implementation of the risk management plan.

The fundamental difficulty in risk assessment is determining the rate of occurrence since statistical information is not available on all kinds of past incidents. Furthermore, evaluating the severity of the consequences (impact) is often quite difficult for immaterial assets. Asset valuation is another question that needs to be addressed. Thus, best educated opinions and available statistics are the primary sources of information. Nevertheless, risk assessment should produce such information for the management of the organization that the primary risks are easy to understand and that the risk management decisions may be prioritized. Thus, there have been several theories and attempts to quantify risks. Numerous different risk formulae exist, but perhaps the most widely accepted formula for risk quantification is:

Rate of occurrence (or probability) multiplied by the impact of the event equals risk

Usually, the probability and impact of risks are assessed as very low, low, medium, high or very high, where each rating requires a recorded definition (e.g.: lower and upper thresholds).

Research has shown that the financial benefits of risk management are less dependent on the formula used but are more dependent on the frequency and how risk assessment is performed.

In business it is imperative to be able to present the findings of risk assessments in financial terms. Robert Courtney Jr (IBM, 1970) proposed a formula for presenting risks in financial terms. The Courtney formula was accepted as the official risk analysis method for the US governmental agencies. The formula proposes calculation of ALE (annualized loss expectancy) and compares the expected loss value to the security control implementation costs (cost-benefit analysis).

2.4 Potential risk treatments

Once risks have been identified and assessed, all techniques to manage the risk fall into one or more of these four major categories:

- **avoidance** (elimination)
- **reduction** (mitigation)
- **retention** (acceptance and budgeting)
- **transference** (outsource or insure)

Ideal use of these strategies may not be possible. Some of them may involve trade-offs that are not acceptable to the organization or person making the risk management decisions. Another source, from the US Department of Defense, calls these categories **ACAT**, for Avoid, Control, Accept, or Transfer.

Risk avoidance

Risk avoidance includes not performing an activity that could carry risk. An example would be not buying a property or business in order to not take on the liability that comes with it. Another would be not flying in order to not take the risk that the airplane were to be hijacked.. Avoidance may seem the answer to all risks, but avoiding risks also means losing out on the potential gain that accepting (retaining) the risk may have allowed. Not entering a business to avoid the risk of loss also avoids the possibility of earning profits.

Risk reduction

Risk reduction involves methods that reduce the severity of the loss or the likelihood of the loss from occurring. Examples include sprinklers designed to put out a fire to reduce the risk of loss by fire. This method may cause a greater loss by water damage and therefore may not be suitable. Halon fire suppression systems may mitigate that risk, but the cost may be prohibitive as a strategy.

Modern software development methodologies reduce risk by developing and delivering software incrementally. Early methodologies suffered from the fact that they only delivered software in the final phase of development; any problems encountered in earlier phases meant costly rework and often jeopardized the whole project. By developing in iterations, software projects can limit effort wasted to a single iteration.

Outsourcing could be an example of risk reduction if the outsourcer can demonstrate higher capability at managing or reducing risks. In this case companies outsource only some of their departmental needs. For example, a company may outsource only its software development, the manufacturing of hard goods, or customer support needs to another company, while handling the business management itself. This way, the company can concentrate more on business development without having to worry as much about the manufacturing process, managing the development team, or finding a physical location for a call centre.

Risk retention

Risk retention involves accepting the loss when it occurs. True self insurance falls in this category. Risk retention is a viable strategy for small risks where the cost of insuring against the risk would be greater over time than the total losses sustained. All risks that are not avoided or transferred are retained by default. This includes risks that are so large or catastrophic that they either cannot be insured against or the premiums would be infeasible. War is an example since most property and risks are not insured against war, so the loss attributed by war is retained by the insured. Also any amount of potential loss (risk) over the amount insured is retained risk. This may also be acceptable if the chance of a very large loss is small or if the cost to insure for greater coverage amounts is so great it would hinder the goals of the organization too much.

Risk transference

Many sectors have for a long time regarded insurance as a transfer of risk. This is not correct. Insurance is a post-event compensatory mechanism (i.e.: the risk has manifested as an issue). That is, even if an insurance policy has been effected this does not mean that the risk has been transferred. For example, a personal injuries insurance policy does not transfer the risk of a car accident to the insurance company. The risk still lies with the policy holder namely the person who has been in the accident. The insurance policy simply provides that if an accident (the event) occurs involving the policy holder then some compensation may be payable to the policy holder that is commensurate with the suffering/damage.

Risk transference means causing another party to accept the risk, typically by contract or by hedging. Insurance is one type of risk transfer that uses contracts. Other times it may involve contract language

that transfers a risk to another party without the payment of an insurance premium. Liability among construction or other contractors is very often transferred this way. On the other hand, taking offsetting positions in derivatives is typically how firms use hedging to financially manage risk.

Some ways of managing risk fall into multiple categories. Risk retention pools are technically retaining the risk for the group, but spreading it over the whole group involves transfer among individual members of the group. This is different from traditional insurance, in that no premium is exchanged between members of the group up front, but instead losses are assessed on all members of the group.

2.5 Create a risk management plan

The risk management plan should propose applicable and effective security controls for managing the risks. For example, an observed high risk of computer viruses could be mitigated by acquiring and implementing antivirus software. A good risk management plan should contain a schedule for control implementation and responsible persons for those actions.

Risk mitigation needs to be approved by the appropriate level of management / “ownership”. For example, a risk concerning the image of the organization should have top management decision behind it whereas IT management would have the authority to decide on computer virus risks.

2.6 Implementation of the plan

Implementation of the risk management plan implies following all of the planned methods for mitigating the effect of the risks: purchase insurance policies as an element of risk reduction, avoid all risks that can be avoided without sacrificing the entity's goals, reduce others, and retain the rest.

2.7 Review and evaluation of the plan

Initial risk management plans will never be perfect. Practice, experience, and actual loss results will necessitate changes in the plan and contribute information to allow possible different decisions to be made in dealing with the risks being faced.

Risk analysis results and management plans must be updated periodically to evaluate:

- (i) whether the previously selected security controls are still applicable and effective, and
- (ii) the possible risk level changes in the business environment. For example, information risks are a good example of rapidly changing business environment.

3. Limitations

If risks are improperly assessed and prioritized, time can be wasted in dealing with risk of losses that are not likely to occur. Spending too much time assessing and managing unlikely risks can divert resources that could be used more profitably. Unlikely events do occur, but if the risk is unlikely enough to occur it may be better to simply retain the risk and deal with the result if the loss does in fact occur.

Conversely prioritizing too highly the *risk management processes* could keep an organization from ever completing a project or even getting started. This is especially true if other work is suspended until the risk management process is considered complete.

It is also important to keep in mind the distinction between risk and uncertainty. Risk can be appreciated and “measured” for decision-making purposes by adopting an informed impacts x probability model.

ANNEX 7

PERFORMANCE INDICATORS

Table 1

Strategic Performance Indicators

Objective	Strategic PIs	Reporting Period	Related Strategic Directions
(a) To promote the use of hydrography for the safety of navigation and all other marine purposes and to raise global awareness of the importance of hydrography.	SPI 1 Number and percentage of Coastal States providing ENC coverage directly or through an agreement with a third party. (Previous year figures in brackets)	Yearly	1.5; 2.5; 3.1; 3.2; 3.3; and 3.4
(b) To improve global coverage, availability and quality of hydrographic data, information, products and services and to facilitate access to such data, information, products and services.	SPI 2 Growth in ENC coverage worldwide, as reported in the IHO online catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008. SPI 3 Percentage of Coastal States which provide hydrographic services, directly or through an agreement with a third party, categorized by CB phases, as defined by the IHO Capacity Building Strategy.	Quarterly Yearly	2.1; and 4.2
(c) To improve global hydrographic capability, capacity, training, science and techniques.	SPI 4 Percentage of “acceptable” CB requests which are planned. SPI 4bis Percentage of planned CB requests which are subsequently delivered	Yearly	1.3; 2.3; 2.4; 3.4; and 4.4

Objective	Strategic PIs	Reporting Period	Related Strategic Directions
(d) To establish and enhance the development of international standards for hydrographic data, information, products, services and techniques and to achieve the greatest possible uniformity in the use of these standards.	SPI 5 Number of standards issued (including new editions), per category: - hydrographic standards to enhance safety of navigation at sea, - protection of the marine environment, - maritime security, - economic development.	Yearly	1.3; and 1.4
(e) To give authoritative and timely guidance on all hydrographic matters to States and international organizations.	SPI 6 Number of potential new IHO MS (indicated by the start of the application process) relative to the number of “non-IHO” IMO MS.	Quarterly	1.1; 1.2; 2.6; and 4.1
(f) To facilitate coordination of hydrographic activities among the Member States.	SPI 7 Increase in participation / membership in RHCs.	Yearly	2.1; and 4.3
(g) To enhance cooperation on hydrographic activities among States on a regional basis.	SPI 8 Percentage of available / agreed ENC schemes.	Yearly	2.2; 2.3; and 4.3

Table 2

Assignment of the strategic directions to the appropriate IHO organs and suggested working level performance indicators

Strategic directions	Responsible organ	Working level PIs	Related objectives
1.1 implementing proactive, efficient and dynamic procedures and mechanisms that respond effectively to emerging trends, developments and challenges.	IHB / Secretary General	<p>WPI 1 - Percentage of IHO MS e participation in the main IHO organs during the reporting period.</p> <p>WPI 2 - Response ratio to IHO CL during the reporting period.</p> <p>WPI 3 - Specific examples of changes made (e.g. implementation of S100) in the reporting period.</p> <p>WPI 4 - Number of times the IHB is required to respond to external demands without notice (or without opportunity to consult with MS).</p> <p>WPI 5 - Number of reactive circular letters published each year (the fewer the better).</p>	

Strategic directions	Responsible organ	Working level PIs	Related objectives
1.2 closer and more effective cooperation with other international organizations, in order to respond to cross-agency issues and thereby promote coherence and efficiency.	IHB / Secretary General	<p>WPI 6 - Number and names of relevant international organizations with which agreements are established.</p> <p>WPI 7 - Qualitative assessment of progress with such agreements including any noteworthy successes that promote the partners' positions.</p>	e
1.3 engaging the various stakeholders, including non-governmental international organizations, government, industry, academia and others, in the technical work of its bodies, in order to ensure a more inclusive approach to decision-making and the optimum use of high fidelity data.	IHB / Secretary General	<p>WPI 8 - Qualitative and quantitative assessment of the attendance by stakeholders in key IHO meetings and a short qualitative statement of any noteworthy benefits/outcomes delivered as a result.</p>	c and d

Strategic directions	Responsible organ	Working level PIs	Related objectives
1.4 developing, improving, promulgating and promoting clear, uniform global hydrographic standards to enhance safety of navigation at sea, protection of the marine environment, maritime security and economic development.	HSSC	<p>WPI 9 - Percentage of standards d considered up to date.</p> <p>WPI 10 - Number of standards issued (including new editions), per category (safety of navigation at sea, protection of the marine environment, maritime security and economic development) in the reporting period.</p> <p>WPI 11 - Percentage of standards considered adequately implemented / enforced.</p>	
1.5 promoting the role of hydrography in supporting relevant related ocean sciences.	HSSC	<p>WPI 12 - Number of events (including a letters, meetings, seminars, publications, Web actions for this purpose) during the reporting period.</p> <p>WPI 13 - Assessment of the effectiveness of the events based on specific feedback.</p> <p>WPI 14 - Increase in proportion of IHO web-site hits and enquiries to IHO for advice / assistance.</p>	

Strategic directions	Responsible organ	Working level PIs	Related objectives
2.1 coordinating effectively Member State activities for the provision of coherent, standardized and well coordinated hydrographic services, in accordance with regulation 9 of Chapter V of the SOLAS Convention.	IRCC	<p>WPI 15 - Growth in ENC coverage worldwide, as reported in the IHO online catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008.</p> <p>WPI 16 - Number of additional IHO MS starting to produce & maintain (with/without support) relevant ENCs (contributing to 'adequate coverage') in the reporting period relative to those already producing at 01 Aug. 2008.</p> <p>WPI 17 - Percentage of Coastal States delivering hydrographic services - categorized by CB phases (MSI services, surveying capabilities, charting capabilities), directly or through an agreement with a third party, at the end of the reporting period.</p> <p>WPI 18 - Percentage of IHO MS updating their S-55 entry data regarding hydrography survey, INT charts, ENC, and MSI in the reporting period.</p>	b and f

Strategic directions	Responsible organ	Working level PIs	Related objectives
2.2 enhancing and supporting cooperation on hydrographic activities among States on a regional basis under the aegis of the Regional Hydrographic Commissions.	IRCC	<p>WPI 19 - Status of hydrographic surveys in each region.</p> <p>WPI 20 - Percentage of agreed INT chart schemes, percentage of INT charts available.</p> <p>WPI 21 - Percentage of agreed ENC schemes, percentage of ENC available.</p> <p>WPI 22 - Increase in effective MS participation in RHC activities.</p>	g
2.3 expanding membership of the IHO.	IRCC	<p>WPI 23 - Percentage of Coastal States which are IHO Member States;</p> <p>WPI 24 - Number of new Coastal States joining the IHO during the reporting period.</p> <p>WPI 25 - Number of potential new IHO MS (indicated by the start of the application process) relative to the number of “non-IHO” IMO MS.</p>	c and g

Strategic directions	Responsible organ	Working level PIs	Related objectives
2.4 encouraging and supporting the establishment of new Hydrographic Offices.	IRCC	<p>WPI 26 - Percentage of Coastal States which have achieved phase 1, 2 or 3 and established a National Hydrographic Office.</p> <p>WPI 27 - Number of States which have achieved phase 1, 2 or 3 and established a National Hydrographic Office in the reporting period.</p>	c
2.5 encouraging and supporting the development and promotion of integrated navigation systems and geospatial data infrastructures.	HSSC	<p>WPI 28 - Percentage of Coastal States which provide ENC coverage directly or through an agreement with a third party.</p> <p>WPI 29 - Percentage of Coastal States which have set up a national geospatial infrastructure.</p>	a
2.6 promoting the use of new technologies and the opportunities offered by globalization and international cooperation.	IHB / Council	<p>WPI 30 - To be determined in relation with the relevant items in the Work Programme.</p>	e

Strategic directions	Responsible organ	Working level PIs	Related objectives
3.1 ensuring that the role and responsibilities of national Hydrographic Offices are clearly understood at all levels in the marine and public communities.	IRCC	<p>WPI 31 - Number of promotion actions in the reporting period along with feedback indicators of notable impact.</p> <p>WPI 32 - Number of invitations received and taken up to participate in engagement with other government agencies / maritime interest groups in the reporting period.</p>	a
3.2 supporting and promoting the benefits of national Hydrographic Offices and hydrographic programmes.	IRCC	<p>WPI 33 - Number of promotional events or activities conducted in the reporting period - including letters, meetings, and seminars for this purpose.</p>	a
3.3 bringing the importance of hydrography on issues affecting safety of navigation at sea, protection of the marine environment, maritime security and economic development to the attention of International Organizations, funding agencies, national governments, maritime stakeholders and others.	IRCC	<p>WPI 34 - Number of participations in national and international events in the reporting period year and specific examples of resultant successes.</p>	a

Strategic directions	Responsible organ	Working level PIs	Related objectives
3.4 preparing and promoting education and outreach programmes which involve fostering a well informed citizenry and creation of a public awareness of the importance of hydrography and its role in daily life.	IRCC	WPI 35 - Number of initiatives in the reporting period.	a and c
4.1 acting as a focal point and forum for all hydrographic matters.	IHB / Council	WPI 36 - Number of events dealing with hydrographic matters without any IHO participation in the reporting period.	e
4.2 supporting national initiatives aimed at developing and enhancing hydrographic infrastructure.	IRCC	WPI 37 - Number of initiatives in the reporting period. WPI 38 - Number of requests for support met in the reporting period. WPI 39 - Number of proactive measures taken during the reporting period to engage national hydrographic authorities.	b

Strategic directions	Responsible organ	Working level PIs	Related objectives
4.3 encouraging bilateral and regional cooperation on hydrographic and related matters.	IRCC	WPI 40 - Number of agreements signed in the reporting period, including bilaterals and RENC membership, etc.	f and g
4.4 strengthening the IHO capacity-building programme in order to better support the needs of Member States especially those developing their capabilities from maritime safety information through surveying to nautical charting and marine spatial data infrastructure.	IRCC	WPI 41 - Percentage of planned CB events that are achieved	c
		WPI 42 - Number of acceptable CB requests received	
		WPI 43 - Percentage of “acceptable” CB requests which are planned.	

ANNEX 8

**CROSS-REFERENCE OF THE IHO CURRENT WORK PROGRAMME
TO THE NEW STRUCTURE**

Task No	Designation	Responsible Organ	Strategic Direction
	Program 1: Co-operation between Member States and with International Organizations		
	Element 1.1 Co-operation with Member States	IRCC	
Task 1.1.1	Nordic Hydrographic Commission (NHC)		SD 2.2
Task 1.1.2	North Sea Hydrographic Commission (NSHC)		SD 2.2
Task 1.1.3	East Asia Hydrographic Commission (EAHC)		SD 2.2
Task 1.1.4	USA and Canada Hydrographic Commission (USCHC)		SD 2.2
Task 1.1.5	a) Mediterranean and Black Seas Hydrographic Commission (MBSHC) b) Black and Azov Seas WG of MBSHC		SD 2.2
Task 1.1.6	Baltic Sea Hydrographic Commission (BSHC)		SD 2.2
Task 1.1.7	Eastern Atlantic Hydrographic Commission (EAHC)		SD 2.2
Task 1.1.8	South East Pacific Hydrographic Commission (SEPHC)		SD 2.2
Task 1.1.9	South West Pacific Hydrographic Commission (SWPHC)		SD 2.2
Task 1.1.10	Meso American and Caribbean Hydrographic Commission (MACHC)		SD 2.2
Task 1.1.11	Southern Africa and Islands Hydrographic Commission (SAIHC)		SD 2.2
Task 1.1.12	ROPME Sea Area Hydrographic Commission (RSAHC)		SD 2.2
Task 1.1.13	North Indian Ocean Hydrographic Commission (NIOHC)		SD 2.2
Task 1.1.14	South West Atlantic Hydrographic Commission (SWAtHC)		SD 2.2
Task 1.1.15	Hydrographic Commission on Antarctica (HCA)		SD 2.2
Task 1.1.16	Inter Regional Coordinating Committee (IRCC) Meeting (subject to its establishment)		SD 2.2
Task 1.1.17	RHCs to work for completing ENC coverage for High Speed Crafts (HSC)		SD 2.1
Task 1.1.18	RHCs to work for completion of adequate ENC coverage for all other types of vessels		SD 2.1
Task 1.1.19	RHCs to work for completion of adequate ENC coverage Scheme		SD 2.1
Task 1.1.20	RHCs and the Hydrographic Industrial Sector		SD 1.3
	Element 1.2 Co-operation with International Organizations	IHB/SG	
Task 1.2.1	United Nations (UN)		SD 1.2
Task 1.2.2	International Maritime Organization (IMO)		SD 1.2
Task 1.2.3	Intergovernmental Oceanographic Commission (IOC)		SD 1.2
Task 1.2.4	International Association of Lighthouse Authorities (IALA)		SD 1.2
Task 1.2.5	International Cartographic Association (ICA)		SD 1.2
Task 1.2.6	International Federation of Surveyors (FIG)		SD 1.2
Task 1.2.7	International Association of Ports and Harbors (IAPH)		SD 1.2
Task 1.2.8	International Standardization Organization (ISO/TC211)		SD 1.2
Task 1.2.9	International Electro Technical Commission (IEC)		SD 1.2
Task 1.2.10	Antarctic Treaty Consultative Meetings (ATCM)		SD 1.2
Task 1.2.11	Pan American Institute of Geography and History (PAIGH)		SD 1.2
Task 1.2.12	Port Management Association West & Central Africa (PMAWCA) & Maritime Organizations of West and Central Africa (MOWCA)		SD 1.2
Task 1.2.13	Council of Managers of National Antarctic Programs (COMNAP)		SD 1.2
Task 1.2.14	International Association of Antarctic Tour Operators (IAATO)		SD 1.2
Task 1.2.15	Scientific Committee on Antarctic Research (SCAR)		SD 1.2

Task 1.2.16	Other International Organizations		SD 1.2 SD 4.1
Element 1.3 Co-operation with non-Member States		IRCC	
Task 1.3.1	Eastern Atlantic Hydrographic Commission		SD 2.2 SD 2.3
Task 1.3.2	South West Pacific Hydrographic Commission		SD 2.2 SD 2.3
Task 1.3.3	MesoAmerican & Caribbean Hydrographic Commission		SD 2.2 SD 2.3
Task 1.3.4	Southern Africa and Islands Hydrographic Commission		SD 2.2 SD 2.3
Task 1.3.5	ROPME Sea Area Hydrographic Commission		SD 2.2 SD 2.3
Task 1.3.6	North Indian Ocean Hydrographic Commission		SD 2.2 SD 2.3
Task 1.3.7	Baltic Sea Hydrographic Commission		SD 2.2 SD 2.3
Task 1.3.8	Mediterranean and Black Seas Hydrographic Commission		SD 2.2 SD 2.3
Program 2 Capacity Building			
Element 2.1 Capacity Building Management		IRCC	
Task 2.1.1	IHO Capacity Building Sub-Committee (IHOCBSC)		SD 4.4
Task 2.1.2	Capacity Building Fund (CBFund)		SD 4.4
Task 2.1.3	Meetings with other organizations, funding agencies, private sector and academia		SD 1.3 SD 3.3
Task 2.1.4	IHO Capacity Building Strategy		SD 2.3 SD 4.4
Task 2.1.5	Capacity Building Work Program (CBWP)		SD 4.4
Task 2.1.6	Follow-up of CB activities and initiatives. Development of procedures		SD 4.4
Task 2.1.7	Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IAB)		SD 1.4
Task 2.1.8	Hydrographic and Nautical Cartographic Training		SD 2.1
Element 2.2 Capacity Building Assessment		IRCC	
Task 2.2.1	Technical and Advisory Visits. Travel, subsistence and consultancy		SD 2.4 SD 3.2
Task 2.2.2	S-55 Status of Hydrographic Surveying and Nautical Charting Worldwide		SD 2.1
Task 2.2.3	Assessment procedures		SD 1.1
Element 2.3 Capacity Building Provision		IRCC	
Task 2.3.1	Raise Awareness of the Importance of Hydrography		SD 2.4 SD 3.3
Task 2.3.2	Technical Workshops, Seminars, Short Courses		SD 2.4 SD 3.2
Task 2.3.3	Hydrographic and Nautical Cartography Courses		SD 1.1 SD 3.2
Task 2.3.4	On the Job Training (ashore / on board)		SD 1.1
Task 2.3.5	Marine/Maritime Projects		SD 1.1
Task 2.3.6	Bilateral agreements		SD 4.3
Program 3 Techniques and Standards Co-ordination and Support			
Element 3.1 Meetings of the different Committees and Working Groups		HSSC	
Task 3.1.1	Hydrographic Services and Standards Committee (HSSC)		SD 1.4

Task 3.1.2	Transfer Standard Maintenance and Application Development Working Group (TSMAD)		SD 1.4
Task 3.1.3	Chart Standardization and Paper Chart Working Group (CSPCWG)		SD 1.4
Task 3.1.4	Digital Information Portrayal Working Group (DIPWG)		SD 1.4
Task 3.1.5	Standardization of Nautical Publications Working Group (SNPWG)		SD 1.4
Task 3.1.6	Data Protection Scheme Working Group (DPSWG)		SD 1.4
Task 3.1.7	Harmonizing Group on Marine Information Objects (HGMIO)		SD 1.4
Task 3.1.8	Hydrographic Dictionary Working Group (S-32)		SD 1.4
Task 3.1.9	Promulgation of Radio Navigational Warnings Sub Committee (PRNW)		SD 1.4
Task 3.1.10	IHO Standards for Hydrographic Surveys (S-44) (S44 WG)		SD 1.4
Task 3.1.11	Tidal and Water Level Working Group (TWLWG)		SD 1.4
Task 3.1.12	World-wide Electronic Navigational Chart Database (WEND)		SD 1.4
Task 3.1.13	General Bathymetric Chart of Oceans (GEBCO) Guiding Committee		SD 1.4 SD 1.5
Task 3.1.14	GEBCO Technical Sub-Committee on Ocean Mapping (GEBCO TSCOM)		SD 1.4 SD 1.5
Task 3.1.15	GEBCO Sub-Committee on Undersea Feature Names (GEBCO SCUFN)		SD 1.4 SD 1.5
Task 3.1.16	Advisory Board on the Law of the Sea (ABLOS)		SD 1.4 SD 1.5
Task 3.1.17	Joint Technical Experts Working Group (JTEWG)		SD 1.4
Task 3.1.18	Inland Waters Hydrography & Cartography Working Group		SD 1.1
Task 3.1.19	Data Quality Working Group (DQWG)		SD 1.4
Task 3.1.20	ENC Updating Working Group (EUWG)		SD 1.4
	Element 3.2 Hydrographic Surveying	HSSC	
Task 3.2.1	Publication S-44		SD 1.4
Task 3.2.2	Manual on Hydrography		SD 1.4
Task 3.2.3	Hydrographic Dictionary (HD)		SD 1.4
Task 3.2.4	Tidal and Water Level Working Group Publications		SD 1.4 SD 1.5
Task 3.2.5	Hydrographic Publications (for which there is no specific body in charge)		
	Element 3.3 Nautical Cartography	HSSC	
Task 3.3.1	Nautical Publications		SD 2.1
Task 3.3.2	Digital Data Protection		SD 2.1
Task 3.3.3	Liaison and cooperation with other organizations		SD 1.2
Task 3.3.4	ENC Production, Distribution and Update		SD 2.1
Task 3.3.5	INT Chart Series		SD 2.1
	Element 3.4 Marine Safety Information	HSSC	
Task 3.4.1	PRNW Expansion		SD 1.3?
Task 3.4.2	NAVAREA Coordinators		SD 2.1
Task 3.4.3	PRNW Publications		SD 1.4
	Element 3.5 Data for Geomatics Application	HSSC	
Task 3.5.1	Development of Standards		SD 1.4
Task 3.5.2	Maritime Spatial Data Infrastructure Working Group		SD 2.5 SD 4.2
	Element 3.6 Technical Aspects of the Law of the Sea	HSSC	
Task 3.6.1	ABLOS Conferences		SD 1.5
Task 3.6.2	Technical Aspects of the Law of the Sea Manual (TALOS Manual)		SD 1.4
Task 3.6.3	TALOS Technical Assistance		SD 4.4?

Element 3.7 Ocean Mapping Program		HSSC	
Task 3.7.1	Shallow Water Bathymetry		SD 1.5
Task 3.7.2	Bathymetric Data Integration		SD 1.5
Task 3.7.3	Maps and Digital Grids		SD 1.5
Task 3.7.4	New Products		SD 1.5 SD 2.6
Task 3.7.5	Global Education		SD 3.4
Task 3.7.6	IHO Digital Bathymetry Data Center		SD 1.5
Task 3.7.7	IBC Projects		SD 1.5
Task 3.7.8	GEBCO Publications		SD 1.5
Program 4 Information Management and Public Relations			
Element 4.1 Information Management		IHB/SG	
Task 4.1.1	Maintenance and development of the IHO Web Site Development and Maintenance of Web Map Services (e.g. IMO Catalogue)		SD 1.1 SD 2.1
Task 4.1.2	Communication between the IHB and Member States through Circular Letters		
Task 4.1.3	IHO Publications		
Task 4.1.4	IHB Technical Library		
Element 4.2 Public Relations		IHB/SG	
Task 4.2.1	Relationship with the Government of Monaco and other Authorities		SD 1.3?
Task 4.2.2	World Hydrography Day		SD 2.6 SD 3.1 SD 3.3
Task 4.2.3	Communication with Hydrographic Industry		SD 1.3
Task 4.2.4	Press Releases		
Task 4.2.5	Delivery of papers about the IHO		
Task 4.2.6	Public Relations' support		SD 4.1?
Task 4.2.7	Publicity		
Program 5 General Organization Development			
Element 5.1 IHO		IHB/SG	
Task 5.1.1	New IHO Structure		SD 1.1
Task 5.1.2	IHO Work Programme and Budget		SD 1.1
Task 5.1.3	IHO Strategic Plan. New ISPWG		SD 1.1
Task 5.1.4	IHO Legal Advisory Committee		
Element 5.2 IHB		IHB/SG	
Task 5.2.1	IHB Administration		
Task 5.2.2	IHB Staff Regulations		
Task 5.2.3	IHB Translation Service		
Task 5.2.4	IHB Finance Procedures		SD 1.1
Task 5.2.5	IHB Procedural Manual for Permanent Activities		SD 1.1
Task 5.2.6	Staff Training		
Task 5.2.7	Maintenance		
Task 5.2.8	Purchase of IT equipment, furniture and other equipment		
Task 5.2.9	Removal of Directors and applicable PAs		
Element 5.3 International Hydrographic Conferences		IHB/SG	
Task 5.3.1	4th Extraordinary Conference		SD 1.1
Task 5.3.2	XVIIIth International Hydrographic Conference		SD 1.1

ANNEX 9

DRAFT STRATEGIC PLAN

0. Contents

1. Preamble
 2. Vision / Mission / Object
 3. Strategic assumptions
 4. Strategic directions
 5. Ways and means
 - 5.1. Planning and review cycles
 - 5.2. Risk analysis and mitigation
 - 5.3. Work Programme
 6. Progress monitoring
- Annex A - Risk management framework
Annex B - Responsibilities of IHO organs

1. PREAMBLE

Hydrography is the branch of applied science which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their change over time, for the primary purpose of safety of navigation and in support of all other marine activities, including economic development, security and defence, scientific research, and environmental protection.

The International Hydrographic Organization (IHO) is an inter-governmental consultative and technical organization, governed by an international Convention. Its members are the Governments Parties to this Convention. Established in 1921, the IHO is a competent international organization, as referred to in the United Nations Convention on the Law of the Sea. It primarily supports the safety of navigation and the protection of the marine environment, and coordinates on a worldwide basis the setting of standards for the production of hydrographic data and the provision of hydrographic services in accordance with the SOLAS Convention. It also facilitates capacity building of national hydrographic services. It provides a forum at international level for the improvement of hydrographic services through the discussion and resolution of hydrographic issues and it assists member governments to deliver these services in the most cost effective way through their national hydrographic offices. The IHO Convention is subject to a protocol of amendments which is under ratification.

The work of the Organization is guided by two core documents:

- a strategic plan;
- a multi-annual Work Programme.

2. VISION, MISSION AND OBJECT

*The **vision** of the IHO is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment.*

*The **mission** of the IHO is to create a global environment in which States provide adequate and timely hydrographic data, products and services and ensure their widest possible use.*

The **object** of the IHO is proposed in Article II of the amended Convention. *It shall be the object of the Organization:*

- (a) *To promote the use of hydrography for the safety of navigation and all other marine purposes and to raise global awareness of the importance of hydrography;*
- (b) *To improve global coverage, availability and quality of hydrographic data, information, products and services and to facilitate access to such data, information, products and services;*
- (c) *To improve global hydrographic capability, capacity, training, science and techniques;*
- (d) *To establish and enhance the development of international standards for hydrographic data, information, products, services and techniques and to achieve the greatest possible uniformity in the use of these standards;*
- (e) *To give authoritative and timely guidance on all hydrographic matters to States and international organizations;*
- (f) *To facilitate coordination of hydrographic activities among the Member States; and*
- (g) *To enhance cooperation on hydrographic activities among States on a regional basis.*

3. STRATEGIC ASSUMPTIONS

The strategic assumptions are identified as “strengths” (S), “weaknesses” (W) “opportunities” (O) or “threats” (T) for the implementation of IHO objectives.

1. Status of hydrographic services / Benefits and beneficiaries

- 1.1 An adequate hydrographic infrastructure is an essential geospatial foundation layer (O).
- 1.2 There is globally still insufficient awareness (and therefore funding) about the level and importance of hydrographic services (W).

2. Political and societal trends

- 2.1 Globalization will continue to increase the demands on maritime trade and coordinated support services (O).
- 2.2 Growing environmental awareness will generate increasing demands and wider uses for hydrographic information beyond solely core navigational safety use (O).
- 2.3 Human performance in all sections of the maritime industry (including shipping) is a major concern in terms of safety (O/W).

3. Economic and market related trends

- 3.1 90 % of the world trade is conducted through maritime routes and presently 800 major ports, a figure that is growing, and is a key dependency for the world economy (O).
- 3.2 Maritime industry is an indispensable partner within the hydrographic community (O).
- 3.3 Long term investment is required to provide and maintain an appropriate hydrographic infrastructure and the benefits are indirect (W).

4. Technological trends

- 4.1 Technological developments (digital era, high rate communication systems and precise positioning systems) are a major driving force for changes (O).

5. Legal and regulatory trends

- 5.1 The provision of hydrographic services by contracting governments will remain regulated at the international level by the SOLAS Convention (S).
- 5.2 National and international regulations are developing about mandatory data exchange/distribution/access for natural risk mitigation, protection of the environment and the competitive development of value added downstream services (O/T).
- 5.3 There will be increased regulation with regard to security that will require earlier and more detailed information on vessel movements and will potentially increase control over vessels within national waters (O).

4. STRATEGIC DIRECTIONS

Taking into account the strategic assumptions, the IHO will pursue the following strategic directions, in order to fulfil its mission and objectives:

1. Strengthen the role and effectiveness of the IHO

The IHO will continue its leading role as the competent international organization on all hydrographic matters by responding more efficiently and effectively to the needs of the maritime community, government, science and industry for hydrographic data, products and information through:

- 1.1 implementing proactive, efficient and dynamic procedures and mechanisms that respond effectively to emerging trends, developments and challenges;
- 1.2 closer and more effective cooperation with other international organizations, in order to respond to cross-agency issues and thereby promote coherence and efficiency;
- 1.3 engaging the various stakeholders, including non-governmental international organizations, government, industry, academia and others, in the technical work of its bodies, in order to ensure a more inclusive approach to decision-making and the optimum use of high fidelity data;
- 1.4 developing, improving, promulgating and promoting clear, uniform, global hydrographic standards to enhance safety of navigation at sea, protection of the marine environment, maritime security and economic development;
- 1.5 promoting the role of hydrography in supporting relevant related ocean sciences.

2. Facilitate global coverage and use of official hydrographic data, products and services

The IHO will strive to achieve global coverage and availability of high quality official hydrographic data, information, products and services necessary for safety of

navigation at sea and for non-navigational uses, e.g. by means of the developing spatial data infrastructure, through:

- 2.1 coordinating effectively Member State activities for the provision of coherent, standardized and well coordinated hydrographic services, in accordance with regulation 9 of Chapter V of the SOLAS Convention;
- 2.2 enhancing and supporting cooperation on hydrographic activities among States on a regional basis under the aegis of the Regional Hydrographic Commissions;
- 2.3 expanding membership of the IHO;
- 2.4 encouraging and supporting the establishment of new Hydrographic Offices;
- 2.5 encouraging and supporting the development and promotion of integrated navigation systems and geospatial data infrastructures;
- 2.6 promoting the use of new technologies and the opportunities offered by globalization and international cooperation.

3. Raise global awareness of the importance of hydrography

The IHO will champion the awareness at national, regional and global levels of the importance and benefits of hydrography and the provision of hydrographic services for all marine activities, through:

- 3.1 ensuring that the role and responsibilities of national Hydrographic Offices are clearly understood at all levels in the marine and public communities;
- 3.2 supporting and promoting the benefits of national Hydrographic Offices and hydrographic programmes;
- 3.3 bringing the importance of hydrography on issues affecting safety of navigation at sea, protection of the marine environment, maritime security and economic development to the attention of International Organizations, funding agencies, national governments, maritime stakeholders and others;
- 3.4 preparing and promoting education and outreach programmes which involve fostering a well informed citizenry and creation of public awareness of the importance of hydrography and its role in daily life.

4. Assist Member States to fulfil their roles

The IHO will help and support its Member States in fulfilling their present roles and in meeting future demands and requirements as effectively and efficiently as possible, through;

- 4.1 acting as a focal point and forum for all hydrographic matters;
- 4.2 supporting national initiatives aimed at developing and enhancing hydrographic infrastructure;
- 4.3 encouraging bilateral and regional cooperation on hydrographic and related matters;

- 4.4 strengthening the IHO capacity-building programme in order to better support the needs of Member States, especially those developing their capabilities from maritime safety information through surveying to nautical charting and marine spatial data infrastructure.

5. WAYS AND MEANS

5.1 Planning and review cycles

The planning and review cycles for the Strategic Plan and the Work Programme are fixed by the administrative resolution T5.1.

The inter-sessional supervision of the Strategic Plan is coordinated by the International Hydrographic Bureau (IHB) until the Council is established.

5.2 Risk analysis and mitigation

An analysis is conducted during the preparation of the Work Programme in order to:

- (a) identify the risks associated with each strategic direction in the Strategic Plan, understand how and when they arise, identify the stakeholders, and
- (b) estimate their likelihood of occurrence and impact on the IHO, its Member States and other stakeholders if any (eg IMO), and
- (c) identify the range of mitigating actions required, responsible owners/stakeholders, priority/dates assigned to them with any resource requirement that will be needed.

The Work Programme is designed to implement the strategic directions while mitigating these risks.

A risk management framework is set out in Annex A.

5.3 Work Programme

The Work Programme covers the period starting on 1st January of the year following the ordinary session of the International Hydrographic Conference (*the International Hydrographic Conference* to be replaced by *the Assembly* when the Assembly is established) and ending on 31st December of the year of the next ordinary session.

The Work Programme is divided into the following three programmes:

- (a) *Corporate Affairs* under the responsibility of the International Hydrographic Bureau (to be replaced by the Secretary General when the revised IHO Convention enters into force),
- (b) *Hydrographic Services and Standards* under the responsibility of the relevant Committee (HSSC),
- (c) *Inter Regional Coordination and Support* under the responsibility of the Inter Regional Coordination Committee (IRCC),

according to the responsibilities of the main organs of the IHO which are summarized in Annex B.

The HSSC programme includes the activities to be conducted by its subordinate bodies.

The IRCC programme includes the activities to be conducted by its subordinate bodies as well as by the Regional Hydrographic Commissions.

Activities of individual Member States which are relevant to the implementation of the strategic directions are listed in the appropriate programme.

Each item of the programmes identifies:

- (a) the strategic direction to which it refers,
- (b) any stakeholder outside the IHO that is affected,
- (c) the deliverables and associated milestones,
- (d) the lead authority and participants, if any,
- (e) the estimated resources from the IHO budget,
- (f) other resources when significant,
- (g) the performance indicator(s) against which progress is monitored.

The Work Programme is reviewed annually under the supervision of the IHB, in consultation with the chairs of HSSC and IRCC (*the IHB in consultation with the chairs of HSSC and IRCC to be replaced by the Council when the Council is established*).

6. PROGRESS MONITORING

The mechanism to monitor the implementation of the Strategic Plan and identify any needs for revision includes the following elements:

- the definition of performance indicators (PIs) against which progress in implementing the strategic directions is periodically assessed;
- the review of progress with strategic directions through the performance indicators;
- the review of the adequacy of the strategic directions in relation with the progress made and with the strategic assumptions on which they are based;
- the review of the ongoing validity of the strategic assumptions themselves since they were first set, in relation to the objectives of the organization and taking into account any subsequent changes in
 - o status of hydrographic services / benefits and beneficiaries,
 - o political and societal trends,
 - o economic and market related trends,
 - o technological trends,
 - o legal and regulatory trends.

Taking into account the object of the Organization and the strategic directions, the Work Programme will be measured by indicators which should show critical items / risk factors picture of productivity (considering, among others, budget factor) and the level of achievement of strategic objectives. They should also indicate future trends: forecast upturn / downturn.

The periodicity of measure should be annual, in accordance with the Work Programme review cycle.

At the end of the period of the Work Programme (every five years until the revised IHO Convention enters into force and then every three years) these indicators will compose data source for the review of the Strategic Plan and / or the Work Programme.

The implementation of performance indicators is based on a two level approach:

- strategic level: a small number of PIs associated with the objectives of the IHO (1 or 2 PIs per objective), to be agreed by the Conference (*the Conference* to be replaced by *the Assembly* when the revised IHO Convention enters into force) and managed by the IHB (*the IHB* to be replaced by *the Secretary General and the Council* when the revised IHO Convention enters into force);
- working level: PIs associated with the strategic directions and managed by the appropriate subsidiary organs;

In this perspective cross-references between the objectives, the strategic directions and the PIs are arranged in the following way:

Objectives => strategic PIs => strategic directions => responsible organs => working level PIs

Accordingly, the assessment of the working level PIs and the review of progress with the strategic directions are considered in two phases: an initial review by the leading organ and an overall review by the IHB (*the IHB* to be replaced by *the Secretary General and the Council* when the revised IHO Convention enters into force). Together with the assessment of the strategic PIs, these results are then submitted for consideration by the Conference (*the Conference* to be replaced by *the Assembly* when the revised IHO Convention enters into force). The submission should include a qualitative and, where practicable, a quantitative assessment of progress based on the value of the PIs. It should also include recommendations on management actions to be considered where trends indicate either a lack of progress or a change to an underlying assumption/direction is required. In this way the aim can be maintained and evidence of progress monitored/presented.

The review of the strategic assumptions is prepared by the IHB (*the IHB* to be replaced by *the Secretary General and the Council* when the revised IHO Convention enters into force) for consideration by the Conference (*the Conference* to be replaced by *the Assembly* when the revised IHO Convention enters into force). The submission should include an analysis of the relevance of the strategic assumptions and recommendations on the changes to be considered.

Annex A

Risk management framework

1. RISK MANAGEMENT POLICY

1.1 Policy aim and objective

- to stimulate common risk management awareness within IHO,
- to adopt a uniform risk management framework and embed it in IHO's strategic planning processes,
- to proactively identify and analyse IHO's highest risk exposures and define the options to properly treat them,
- to select and implement the appropriate options which minimise IHO's exposure to risk in the most cost (both financial, and non-financial) effective way.

1.2 General Methodology

IHO requires that identified risks are managed in such a way that they are not unduly threatening the strategic objectives and consequently the successful achievement of IHO's Mission. Risk management activities are therefore addressed at two levels:

- *strategic* level by the IHB (*the IHB to be replaced by the Secretary General when the revised IHO Convention enters into force*) and processed *top down*,
- *working* level by subordinate bodies under HSSC/IRCC and processed *bottom up*.

Both levels are merged through the Work Programme which is reviewed annually under the supervision of the IHB, in consultation with the chairs of HSSC and IRCC (*the IHB in consultation with the chairs of HSSC and IRCC to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force*).

1.3 Roles and Responsibilities

The IHB (*the IHB to be replaced by the Secretary General when the revised IHO Convention enters into force*) is ultimately responsible to Member States for the IHO's risk management. He has the responsibility for ensuring that the risk management framework is effectively implemented within IHO and that its principles are communicated at all levels. He will also provide the necessary profile to advance a risk management culture in IHO, including participation in its monitoring and reporting.

The IHB, in consultation with the chairs of HSSC and IRCC, (*the IHB, in consultation with the chairs of HSSC and IRCC, to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force*), is responsible for the routine oversight of the IHO's risk management programme, its implementation, agreeing risk tolerances and treatment and their regular monitoring.

2. RISK MANAGEMENT PROCESS

2.1 Context

IHO's risk environment is established by the trends and developments identified as relevant to IHO's strategic objectives. The so called strategic assumptions are described in chapter 3 of this Strategic Plan and are labelled as "strengths" (S), "weaknesses" (W), "opportunities" (O), "threats" (T). These assumptions contain possible risks to the associated strategic directions (chapter 4) to fulfil IHO's

objectives and ultimately its mission, and will therefore be the starting point for an in-depth risk identification.

2.2 Risk Identification

The strategic directions (SD) are not necessarily independent of each other. Possible risks are firstly identified for each individual SD. During the risk assessment phase risks common to more than one SD will be identified. Risks will be categorized in (1) *internal*, i.e. originating from within the IHO community, and (2) *external*. The relevant strategic assumptions are indicated in brackets.

SD1 Strengthen the role and effectiveness of the IHO

Internal

- lack of means (capacity/competence/budget) (1.2, 2.3)
- lack of consensus 'how' (5.2, 5.3)
- deficiency in standards (4.1)

External

- technological developments too fast to cope (4.1)
- national developments (political/legal) hamper cooperation (5.2)

SD2 Facilitate global coverage and use of official hydrographic data, products and services,

Internal

- Member State (MS) not able to comply (2.3, 3.3)
- MS not aware of the level of importance to comply (1.2)
- lack of consensus 'how' (5.2, 5.3, 3.1)
- deficiency in standards (4.1)

External

- lack of means (capacity/competence/budget) (3.3)
- technological developments too fast to cope (4.1)
- national developments (political/legal) hamper cooperation (5.2)

SD3 Raise global awareness of the importance of hydrography

Internal

- lack of means (capacity/competence/budget) (1.2, 2.3)

External

- lack of knowledge/competence/interest (2.3)

SD4 Assist Member States to fulfil their roles

Internal

- lack of means (capacity/competence/budget) (1.2, 2.3)

External

- national developments (political/legal) hamper cooperation (5.2)

2.3 Risk Assessment

Identified risks need to be assessed in relation with their potential severity of impact and with their probability of occurrence. The risk assessment should produce such information for the management

of the organization that the primary risks are easy to understand and that the risk management decisions may be prioritized. The accepted formula for risk quantification is:

Rate of occurrence (or probability) multiplied by the numerical indicator of the impact of the event equals risk

A five-category approach is considered adequate:

Probability of occurrence within the time frame of the Work Programme:

- 5 – extreme**
- 4 – high**
- 3 – medium**
- 2 – low**
- 1 – negligible**

Impact of the event on the IHO:

- 5 – extreme – threatens survival of IHO**
- 4 – high - threatens credibility of IHO**
- 3 – moderate –threatens present structure of IHO**
- 2 – low – shift of focus/means**
- 1 – negligible – solved within existing process/structure IHO**
- 0 – absent – nil impact**

Based on this approach the identified risks are assessed as follows:

	<i>Prob.</i>	<i>Impact</i>	<i>Risk</i>
<u>Internal</u>			
- lack of means (capacity/competence/budget) (1.2, 2.3)	4	4	16
- lack of consensus ‘how’ (5.2, 5.3, 3.1)	3	4	12
- Member State (MS) not able to comply (2.3, 3.3)	4	5	20
- MS not aware of the level of importance to comply (1.2)	3	4	12
- deficiency in standards (4.1)	4	4	16
<u>External</u>			
- technological developments too fast to cope (4.1)	3	4	12
- national developments hamper cooperation (5.2)	3	2	06
- lack of means (capacity/competence/budget) (3.3)	4	4	16
- lack of knowledge/competence/interest (2.3)	4	3	12

The following prioritization of SD’s follows from this risk assessment:

	<i>Sum of risks</i>
(1) SD2 Facilitate global coverage and use of official hydrographic data, products and services ;,	94
(2) SD1 Strengthen the role and effectiveness of the IHO	62
(3) SD3 Raise global awareness of the importance of hydrography	28
(4) SD4 Assist Member States to fulfil their roles	22

One can observe that the impact differs from one SD to another. From this assessment it becomes clear that the realisation of SD2 is directly linked to the ‘survival of IHO’ and other SD’s much less.

2.4 Risk Treatment

Given the nature of the identified risks the treatment is to be found in ‘reduction’ and ‘retention’. As *internal* risks are within the direct influential sphere of the IHO it makes sense to initially identify the three most relevant **risks** at a strategic level, i.e. which threaten accomplishment of SD’s and ultimately the mission, and decide on an effective treatment.

(1)	SD2:	Member State (MS) not able to comply (2.3, 3.3)	4	5	20
		lack of consensus ‘how’ (5.2, 5.3, 3.1)	3	4	12
(2)	SD1&4:	lack of means (capacity/competence/budget) (1.2, 2.3)	4	4	16

When a MS is not able to comply with **SD2**, IHO has mechanisms (i.e. capacity building programmes through RHCs in the Work Programme, or support by individual HOs, e.g. drawing on the guidelines for the implementation of the WEND principles) in place to support the involved HO, and so reduce the risk. This confirms this risk has already been identified by the IHO. The solution to this particular situation however is also linked to both **SD1&4**, and therefore viable for their risks. If there is lack of means (capacity, competence, funding) to implement the existing mechanisms to support the involved HO it will still not timely comply with **SD2**. In this situation an individual HO can offer support; it is however essential that the way the support is executed is in line with the principles of IHO.

To mitigate the risk of MS’s not complying with **SD2**; it is essential that the management (IHB/Secretary General in conjunction with IRCC and RHC Chair) identifies (a) the number of possible HOs (lack of capacity; competence) involved, (b) a realistic (timely) estimate of the needed qualified capacity and funding (identifying shortcomings), and (c) if a supporting HO acts in accordance with the principles of the IHO (Capacity building; WEND).

An escalation mechanism could be considered if required: identified MS to be approached via IMO or directly through diplomatic channels to stress its responsibility.

The IHB (*The IHB* to be replaced by *The Secretary General* when the revised IHO Convention enters into force) (or RHC Chair) should preferably approach MS supported by individual HOs to verify the terms and conditions of this support. Action should be considered if these terms and conditions are not in accordance with agreed IHO principles.

In the interest of quality assurance of products (related to competence), IHO could put more emphasis on ISO-certification of HOs.

2.5 Implementation of the risk management plan

The agreed treatment should be executed to reduce the identified risks. It can be decided to select more risks to SDs and work out their ‘top down’ *risk treatment*. It is advised to also decide on possible risks from a bottom-up perspective; this could be executed by subordinate bodies of the IHO in line with this framework.

2.6 Review and evaluation of the plan

Risk management is dynamic. It is therefore important to monitor, review and evaluate the risk management plan. To monitor the progress on the SDs, the IHB (*the IHB* to be replaced by *the Secretary General and the Council* when the revised IHO Convention enters into force) and IHO subordinate bodies use the agreed performance indicators (PIs). In case of deficiencies originated by identified risks, action should be taken in accordance with the agreed treatment/plan. The risk management plan should be reviewed, evaluated and updated annually by the IHB (*the IHB* to be replaced by *the Secretary General and the Council* when the revised IHO Convention enters into force).

The attached scheme summarizes the risk management process.

3. GLOSSARY

Risk

A combination of the probability of any risk event and its consequences (impact).

Risk event

Any event which may adversely impact on the ability of the IHO to meet its objectives.

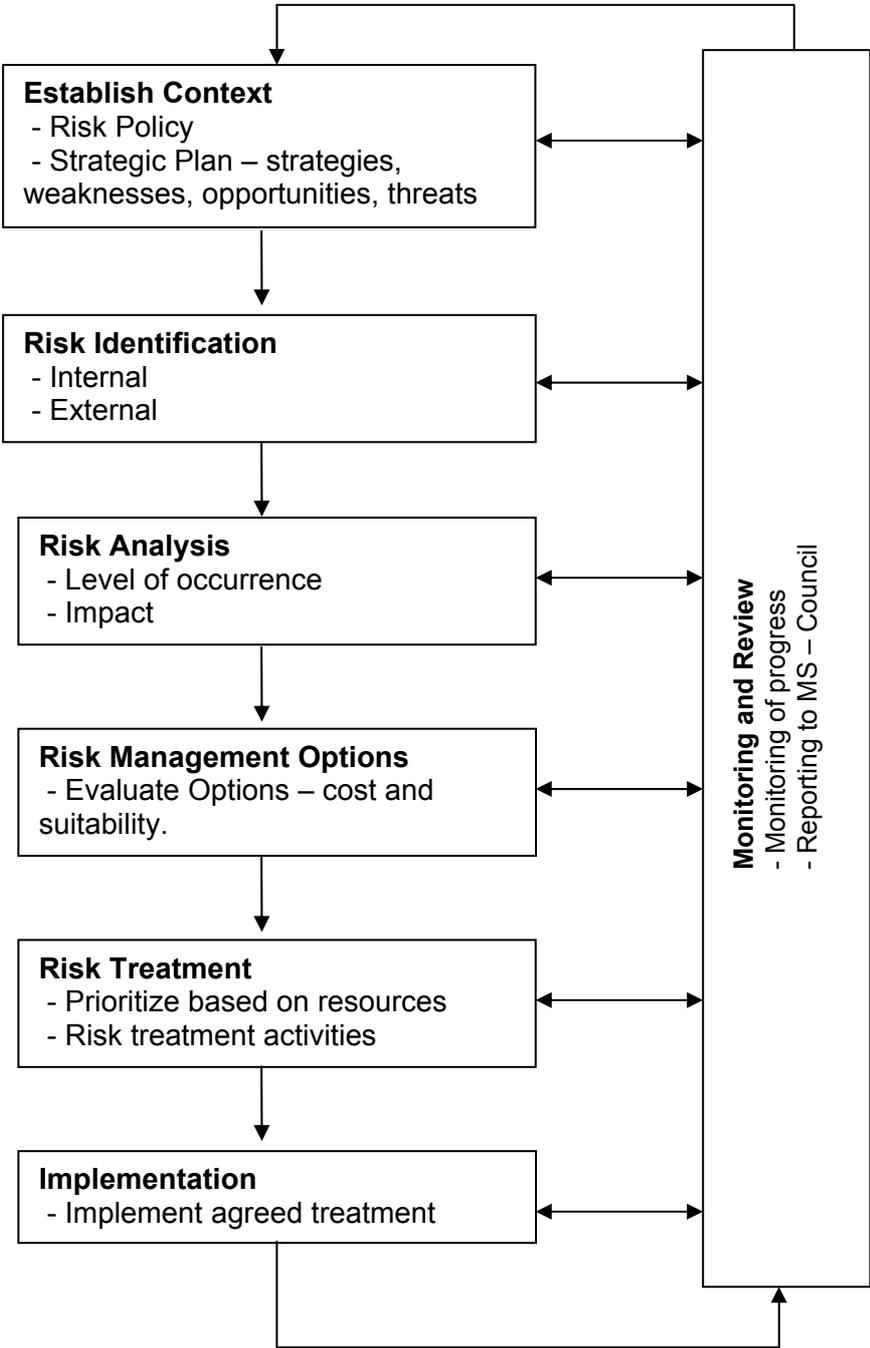
Risk management

The process of identifying, assessing, communicating and mitigating risks impacting on the IHO's ability to meet its objectives.

Risk tolerance

A measurement of the IHO's willingness to accept risk, being the highest level of risk at which additional mitigating controls are not required.

SCHEMATIC REPRESENTATION OF THE RISK MANAGEMENT PROCESS



Annex B

Responsibilities of IHO organs

1. International Hydrographic Bureau (IHB)

Extract from the IHO General Regulations

(...)

The Directing Committee [of the IHB], taking into consideration the work of Committees and Working Groups, should present to all ordinary Conferences a Programme Budget proposal containing the Work Programme to be carried out during the following period, and the financial implications related to it, to be analyzed, discussed and decided upon at Plenary Session. The plan should be distributed to all Member States at least 4 months before the Conference.

(...)

The Directing Committee shall be guided by the IHO Strategic Plan and the Five Year Rolling Work Programme

2. Secretary General

Extract from the revised IHO General Regulations

(...)

The Secretary-General shall:

(...)

- (c) support the Council in preparing proposals concerning the overall strategy and the Work Programme;

3. Hydrographic Services and Standards Committee (HSSC)

Extract from terms of reference for the HSSC (CL 115/2007 of 10 December 2007)

Considering the need to promote and coordinate the development of standards, specifications and guidelines for official products and services to meet the requirements of mariners and other users of hydrographic information, the International Hydrographic Organization establishes a Hydrographic Services and Standards Committee (HSSC) with the following Terms of Reference and Rules of Procedure.

(...)

- 6. Prepare a Committee Work Program and propose it to each ordinary session of the International Hydrographic Conference (“*each ordinary session of the International Hydrographic Conference*” to be replaced by “*the Assembly*” via the Council when the Assembly and the Council are established). Consider and decide upon proposals for new work items under the Committee Work Program, taking into account the financial, administrative and wider stakeholder consequences and the IHO Strategic Plan and Work Program.
- 7. Monitor the execution of the Committee Work Program and report to each ordinary session of the International Hydrographic Conference (“*ordinary session of the International Hydrographic Conference*” to be replaced by “*meeting of the Council*” when the Council and Assembly are established), including an evaluation of the performance achieved.

4. Inter Regional Coordination Committee (IRCC)

Extract from terms of reference for the IRCC (CL 115/2007 of 10 December 2007)

Considering the need to promote and coordinate those activities that might benefit from a regional approach, and considering further that Capacity Building has been identified as a strategic objective, the International Hydrographic Organization establishes an Inter Regional Coordination Committee (IRCC) with the following Terms of Reference and Rules of Procedure.

(...)

6. Prepare a Committee Work Program and propose it to each ordinary session of the International Hydrographic Conference (“*each ordinary session of the International Hydrographic Conference*” to be replaced by “*the Assembly*” via the Council when the Assembly and the Council are established). Consider and decide upon proposals for new work items under the Committee Work Program, taking into account the financial, administrative and wider stakeholder consequences and the IHO Strategic Plan and Work Program.
 7. Monitor the execution of the Committee Work Program and report to each ordinary session of the International Hydrographic Conference (“*ordinary session of the International Hydrographic Conference*” to be replaced by “*meeting of the Council*” when the Council and Assembly are established), including an evaluation of the performance achieved.
-

ANNEX 10

REVISION OF AR T5.1

(Interim regime)

T5.1 PLANNING CYCLE

The Organization shall prepare two plans to guide its work.

The Strategic Plan shall be for an indefinite period, and shall be reviewed at each Conference.

The 5-year Work Programme shall look five years ahead, and shall be reviewed annually.

T5.1.1 Planning Cycle for the Strategic Plan

Y-12 (Apr): IHB invites MS, HSSC and IRCC to submit proposals to update the Strategic Plan.

Y-08 (Aug): IHB circulates the proposals on strategic issues to all MS.

Y-05 (Nov): MS provide comments to IHB in relation to the proposals.

Y (Apr): At the IHC, the revised Strategic Plan is discussed, amended and decided upon in Plenary.

Y+02 (Jun): IHB circulates the updated Strategic Plan to MS.

Notes:

- 1) Rules of Procedure of IHC n° 14 and n° 15 apply.
- 2) "Y" means the year of the Ordinary Conference, and the numbers are months before (-) or after (+).

T5.1.2 Planning Cycle for the 5-year Work Programme

The 5-year Work Programme will be reviewed on a yearly basis.

Y (Jan): The corresponding Annual Programme enters in force.

Y+04 (Apr): IHB evaluates the accomplishment of the preceding year's Programme, in consultation with the HSSC and IRCC, and reports to MS, through the "IHO Annual Report", reviews the Work Programme upcoming years in consultation with the HSSC and IRCC, proposing changes (if needed) to the Programme in force and budgetary adjustments issuing from those changes, within the limits of the 5-year Budget.

Y+06 (Jun): MS provide IHB with comments and proposals, if any, for changes to the Programme in force.

Y+08 (Aug): IHB submits to the Finance Committee (FC) for approval the draft Programme and Budget for the upcoming year.

Y+09 (Sep): FC members provide comments and IHB issues CL submitting the draft Programme and Budget to MS for approval.

Appendix I Page 200

Y+11 (Nov): MS approve the draft Programme and Budget and IHB issues CL with the final version of the Programme and Budget.

Y+12 (Jan): The corresponding Annual Programme enters into force, and the Cycle is repeated.

During Conference years, Article 23 of the General Regulations will apply and the IHB will submit the new Work Programme and associated 5-year Budget for the intersessional period 4 months before the Conference. The Work Programme and proposed 5-year Budget will be discussed and approved by the Conference and will enter into force on 1st January of the year following the Conference. Then the Planning Cycle as described above will apply.

Note: "Y" means years.

(Future regime)

T5.1 PLANNING CYCLE

The Organization shall prepare two plans to guide its work.

The Strategic Plan shall be for an indefinite period, and shall be reviewed at each ordinary session of the Assembly.

The 3-year Work Programme shall look three years ahead, and shall be reviewed annually.

T5.1.1 Planning Cycle for the Strategic Plan

Y-12 (Apr): The Secretary-General invites MS, HSSC and IRCC to submit proposals to update the Strategic Plan.

Y-08 (Aug): The Secretary-General circulates proposals on strategic issues to all MS.

Y-05 (Nov): MS provide comments to the Secretary-General in relation to the proposals.

Y-04 (Dec): The Council reviews the comments and drafts a proposal to confirm, amend or revise the Strategic Plan.

Y (Apr): At the Assembly, the Council proposal is discussed, amended and decided upon in Plenary.

Y+02 (Jun): The Secretary-General circulates the updated Strategic Plan to MS.

Notes:

- 1) Rules of Procedure of the Assembly n° 4 and n° 9 apply.
- 2) "Y" means the year of the ordinary session of the Assembly, and the numbers are months before (-) or after (+).

T5.1.2 Planning Cycle for the 3-year Work Programme

The 3-year Work Programme will be reviewed on a yearly basis.

Y (Jan): The corresponding Annual Programme enters in force.

Y+04 (Apr): The Council evaluates the accomplishment of the preceding year's Work Programme, and reports to MS, through the "IHO Annual Report", reviews the Work Programme upcoming years, proposing changes (if needed) to the Programme in force and budgetary adjustments issuing from those changes, within the limits of the approved 3-year Budget.

Y+06 (Jun): MS provide the Secretary General with comments and proposals, if any, for changes to the Programme in force.

Y+08 (Aug): The Secretary General submits to the Council for approval the draft Programme and Budget for the upcoming year.

Y+12 (Dec): The Council approves the draft Programme and Budget and the Secretary General issues CL with the final version of the Programme and Budget.

Y+12 (Jan): The corresponding Annual Programme enters into force, and the Cycle is repeated.

During Assembly years, Article V (e) (v) of the Convention will apply and the Council will submit the new Work Programme and associated 3-year budget for the intersessional period 4 months before the opening of the session. The Work Programme and proposed 3-year Budget will be discussed and approved by the Assembly and will enter into force on 1st January of the year following the session. Then the Planning Cycle as described above will apply.

Note: “Y” means years.

REPORT OF THE HYDROGRAPHY AND CARTOGRAPHY IN INLAND WATERS WORKING GROUP (HCIWWG)

by Capt. (Ret.) Wesley W. CAVALHEIRO, Brazil

(CONF.EX4/REP.02)

Submitted by:	Chairman, HCIWWG
Related Documents:	<ol style="list-style-type: none"> 1) Report of Proceedings, Vol. 1, XVIIth International Hydrographic Conference, pages 101, 154-156 2) CHRIS 19th Meeting Report. 3) HCIWWG Chair Letters 01, 02, and 03. 4) IHB Circular Letters 62/2007, 112/2007 and 31/2008. 5) International Convention for the Safety of Life at Sea (SOLAS), Chapter V, Regulation 9, Item 3. 6) United Nations Convention on the Law of the Sea (UNCLOS). 7) IHO Convention (current and the amendments approved at the 3rd EIHC). 8) Publication M3 – Resolutions of the International Hydrographic Organization. 9) Future IHO General Regulations approved at the XVIIth IHC.

Chair:	<i>Capt (Ret.) Wesley W. CAVALHEIRO, Brazil</i>
Vice-Chair:	<i>Mr. Juha KORHONEN, Finland</i>
Secretary:	<i>Ms. Denise LADUE, USA</i>
Participating Member States:	<i>Argentina, Brazil, Canada, Colombia, Ecuador, Finland, France, Germany, Italy, Korea (Rep. of), Mexico, Mozambique, Nigeria, Peru, Serbia, Slovenia, UK, USA.</i>
Expert Contributor Organizations:	<i>Inland Electronic Navigation Chart Harmonization Group (IEHG)</i>

1. Background

- 1.1 The XVIIth International Hydrographic Conference decided (Decision 19) to ask the Committee on Hydrographic Requirements for Information Systems (CHRIS) to establish a working group on *Hydrography and Cartography of Inland Waters (HCIWWG)* to analyse and recommend the level and nature of IHO involvement in the Hydrography and Cartography of Inland Waterways. The study was to involve all relevant non-IHO international bodies in its deliberations, including the IEHG. A Report was to be submitted to the 4th EIHC in 2009.
- 1.2 The CHRIS established the HCIWWG at its 19th meeting in November 2007 with the following Terms of Reference (see Related Document 2):

The HCIWWG should:

- a) *Define those inland waterways for which the IHO may have a significant role.*

- b) *Determine any actions that the IHO might take to contribute positively to the hydrography and cartography of inland waterways and propose which IHO bodies might foster such actions.*
- c) *Propose any Technical and/or Administrative Resolutions that may be required to reflect IHO involvement in the hydrography and cartography of inland waterways.*
- d) *The WG should liaise with all relevant non-IHO international bodies including the Inland Electronic Navigational Chart Harmonization Group (IEHG), as appropriate;*
- e) *The WG should work by correspondence, and use group meetings, workshops or symposia only if required.*
- f) *Submit a report and recommendations to CHRIS/20 in 2008 for subsequent consideration at the 4th Extraordinary International Hydrographic Conference in 2009.*

2. HCIWWG Membership

- 2.1 A list of members of the HCIWWG is shown at **Annex A** to this report.

3. Meetings Held During Reporting Period

- 3.1 All work was done by correspondence, except for two face-to-face meetings of the Chair Group, taking the opportunity of programmed IHO meetings: one during the 19th meeting of CHRIS, and the second one during the 11th meeting of the Committee on the World-Wide Electronic Navigational Chart Database (WEND).

4. Work Program

- 4.1 The work program had three phases:
 - data research – from Nov 15th 2007 to Feb 10th 2008;
 - data analysis – from Feb 10th 2008 to Apr 20th 2008; and
 - report production – from Apr 20th 2008 to Sep 12th 2008.

5. Problems Encountered

- 5.1 There was a disappointing response to IHO Circular Letter (CL) 112/2007, especially from some Member States with extensive inland waterways.

6. Discussion

- 6.1 The following notes describe the outcomes of the work undertaken by the HCIWWG.

Definitions

- 6.1.1 There is currently no accepted IHO definition for “inland water” or “inland waterways”.
 - a. IHB CL 31/2008 highlighted the subject to all IHO Member States mentioning “*one of the outcomes of the HCIWWG Report will undoubtedly assist in providing an appropriate definition for the IHO to adopt in the future*”.

- b. Article 8 of the United Nations Convention on the Law of Sea (UNCLOS), see Related Document 6, states: “Internal waters - 1. Except as provided in Part IV, waters on the landward side of the baseline of the territorial sea form part of the internal waters of the State.” In many cases, “internal waters” covers maritime waters.
- c. In Europe, the inland water traffic regulations are based on the *European Code for Inland Waterways of the United Nations*. Although the Code does not provide a definition for “inland water” or “waterway”, it is based on the concept of an “inland waterway” as being the whole area of navigable water and not only the channel or route.
- d. For the purposes of this study, the HCIWWG considered the term “navigable” as meaning that hydrography and nautical cartography are required.
- e. As a result of discussions, the WG developed the preliminary definitions contained in **Annex B**, which are strictly focused on its work. For a generic or wide use definition of “inland water”, it will be necessary to conduct a more in-depth study.

MS Involvement in Navigable Inland Waters

- 6.1.2 A questionnaire was sent to all Member States under cover of IHO CL 112/2007 seeking information on which organizations are responsible for hydrography and cartography in navigable inland waters, about opinions whether IHO should or should not be involved in such issues and any other information considered relevant. 56 responses were received representing 46 IHO Member States and 10 non-Member States. **Annex C** contains a summary of the replies to the questionnaire. **Annex D** contains an analysis of the responses to the questionnaire made by the HCIWWG.

Workshops

- 6.1.3 The HCIWWG has noted the two related workshops held in 2006 and 2007. **Annex E** contains draft reports on the workshops: one on Inland Electronic Charting (Punta del Leste, Uruguay, November 2006) and one on Hydrography Fluvial Survey (Iquitos, Peru, November 2007).

Research Results

- 6.1.4 Analysis of the information in Annexes C to E indicates the following:
- a) In several countries, the responsibility for hydrography and nautical cartography is divided among different organizations. Not all of them are represented in the IHO.
 - b) The limit of responsibility among organizations differs according to the legislation of each country.
 - c) Most of those in charge of hydrography in navigable inland waters wish that IHO would provide parameters for applicable standards for hydrographic surveys as well as for nautical charts in both paper and digital formats.
 - d) The IHO standards for hydrographic survey and nautical cartography are currently not sufficient for application to all navigable inland waters.
 - e) Environmental and other conditions in navigable inland waters in different parts of the world are distinct and require specific work methodologies.

- f) Many inland waterways have a particular kind of traffic, requiring specific standards for navigation safety.
 - g) Some organizations in charge of hydrography and/or nautical cartography in States expressed a need for support (capacity building) in the practice of hydrographic surveying and in nautical cartography for their navigable inland waters.
- 6.1.5 Nothing in the current Convention on the IHO (Related Document 7) precludes the extension of IHO's activities to encompass any relevant aspects for inland navigation. Under the amendments to the Convention, agreed by the 3rd Extraordinary International Hydrographic Conference and now awaiting formal ratification by the required majority of Member States, Article II has been expanded to include: *the widest possible use of hydrography, and the widest possible use of IHO standards*. These amendments place no geographical limits on the application of hydrography or its associated standards.
- 6.1.6 The IHO has a diversity of instruments intended to meet its members' and stakeholders' needs for hydrography and nautical cartography. These include IHO Regional Hydrographic Commissions, IHO Technical Specifications and Resolutions, and the IHO Capacity Building Program. A number of relevant texts from IHO documents (Technical Resolutions T1.3 and A3.4; Report of Proceedings, Vol.1, XVII International Hydrographic Conference, pages 101, 154-156, and Article 8 of the future General Regulations approved by the XVIIth IHC) were considered by the WG. These texts are contained in **Annex F**.
- 6.1.7 The IHO S-100 series of Geospatial Standards for Hydrographic Data is being developed to accommodate a wide variety of hydrographic Stakeholders' requirements including standards for electronic nautical cartography in navigable inland waters, that is, IHO is already developing standards which may be applicable to navigable inland waters.
- 6.1.8 The IEHG has already published format and data specifications for inland electronic nautical cartography that search to be compatible with IHO specifications. The Inland Electronic Navigational Chart Product Specification has been adopted by the IEHG and is applicable in North and South America, Russia and Europe. It is intended that the Product Specification meets the basic needs for Inland Electronic Navigational Chart applications worldwide.

7. Conclusions

- 7.1 The HCIWWG reached the following conclusions:
- a. The IHO is already implicated in hydrography and cartography of navigable inland waters, both through the responsibility that some of its Members already hold, and by the fact that considerable nautical traffic passes from the sea to navigable inland waters and vice versa. This calls for the harmonization of hydrographic and cartographic information and services provided to navigators to assist the safety of navigation and protection of the environment. No recognized organization other than the IHO is in a position to foster this harmonization.
 - b. In many cases the existing IHO specifications developed for sea and coastal areas are also applicable for navigable inland waters and some Hydrographic Services are applying the existing specifications without any need for more specific ones to be developed. However, some Hydrographic Services noted there are hydrographic and nautical cartographic needs in navigable inland waters - survey guidelines, cartography representation, safety information, capacity development -, particularly in the interface with maritime areas where the traffic is the same, that are currently not being met. No recognized organization other than the IHO is in a position to meet these needs.

- c. Any standards for hydrographic survey and for nautical cartography for navigable inland waters should be in line with the existing IHO specifications. The variety of environmental characteristics and the different nature of the use and traffic in each waterway should be taken into account in a harmonized way.

8. Recommendations

8.1 The HCIWWG recommends that the IHO should:

- a) **Invite** relevant Regional Hydrographic Commissions to
 - i. consider establishing liaison committees or other bodies, where relevant, to ensure consistent use and development of hydrographic standards and mutual cooperation for the enhancement of navigation safety in navigable inland waters within a region, and
 - ii. to encourage cooperation and mutual assistance between authorities, even from different regions but with common interests, particularly for the safety of navigation in navigable inland waters, with the purpose of mutual support and the establishment of instructions and guidance for hydrographic survey and the production of nautical charts, in accordance with the guidance in Technical Resolutions T1.3 and A3.4, and Article 8 of the future General Regulations.
- b) **Invite** relevant Member States and/or Regional Hydrographic Commissions (RHCs) to submit proposals to IHO for Capacity Building Committee (CBC) projects in support of regional coordination and the exchange of know-how in inland hydrography and cartography;
- c) **Agree** that, wherever possible, when developing the IHO Work Program, and standards and guidelines, the potential applicability to hydrography and cartography for navigable inland waters should be taken into consideration.
- d) **Direct** the IHO Hydrographic Dictionary Working Group to establish a definition for *navigable inland waters*, taking as a starting point the definitions contained in **Annex B**.
- e) **Establish** a formal cooperation agreement between IHO and the Inland Electronic Navigation Chart Harmonization Group (IEHG) to produce, and to advise and assist the IHO on providing for the development and extension of specifications to cover Electronic Navigational Charts (ENCs) and digital nautical publications for navigable inland waters.
- f) **Adopt** a new Technical Resolution that recognizes the role of the IHO in contributing to the harmonization of the hydrography and cartography of navigable inland waters with the standards and specifications that apply at sea and on the coast. A proposed resolution is contained in **Annex G**.
- g) **Invite** the IHO Hydrographic Services and Standards Committee (HSSC) to develop guidelines for those who seek to develop extensions to IHO specifications for use in navigable inland waters.
- h) **Invite** the HSSC to consider the adoption of relevant extensions to IHO specifications for use in navigable inland waters developed by other organizations.

- i) **Invite** the Inter-Regional Coordination Committee (IRCC) to foster and coordinate inland-related capacity building proposals/actions/work of RHCs and review their status at its annual meetings.

9. Justification and Impacts

9.1 The recommended actions, if adopted, can:

- a. Improve the safety of navigation and protection of the environment.
- b. Provide greater consistency in charting and navigation services for those vessels transiting between the sea and navigable inland waters.
- c. Promote the IHO and expand its influence.
- d. Have minor, if any, implications on the IHO budget.

10. Endorsement by CHRIS

10.1 The HCIWWG reported to CHRIS at its 20th meeting in November 2008. The CHRIS endorsed the HCIWWG report, subject to some minor amendments which have been incorporated into this report. The CHRIS decided (CHRIS Decision 20/28) that its Dictionary WG should develop a definition for *navigable inland waters*. The CHRIS acknowledged that the HCIWWG had completed its task. As a result, the HCIWWG was disbanded.

11. Actions Required of the 4th EIHC

11.1 The 4th EIHC is invited to:

- 1) **Note** this Report.
- 2) **Endorse** the recommendations of the HCIWWG.
- 3) **Adopt** the Resolution shown at Annex G.

Annexes:

- A) Membership of HCIWWG
- B) Preliminary Definitions of Inland Waters assumed by the HCIWWG
- C) Responses to Chair Group IHB Circular Letter 112/2007
- D) Analysis of the responses to the Questionnaire in IHB CL 112/2007
- E) Draft Report on Seminar/Workshop on Inland Hydrography and Electronic Charting
- F) Reproduction of relevant parts of IHO publications
- G) Proposed Technical Resolution – Hydrography and Cartography of Navigable Inland Waters

Annex A to HCIWWG Report

Membership of [HCIWWG]

Member State	Name of Delegate	Email
Argentina	Mr. Rolando RIOS	rolando.o.rios@gmail.com
Brazil	Capt (Ret.) Wesley W. CAVALHEIRO (Chair)	wesley.cavalheiro@yahoo.com
Canada	Mr. Dale NICHOLSON	nicholsond@dfp-mpo.gc.ca
Colombia	Capt. Juan Manuel SOLTAU O.	cioh_hidro@sirius.enap.edu.co
Ecuador	Lt. Jorge ALAVERA A.	sec-hidrografia@inocar.mil.ec
Finland	Mr. Juha KORHONEN (Vice Chair)	Juha.korhonen@fma.fi
France	LtCdr. Serge ALLAIN	serge.allain@shom.fr
Germany	Mr. Harry WIRTH	Wirth@bafg.de
Italy	Cdr. Roberto Cervino	roberto.cervino@marina.difesa.it
Korea (Rep. of)	Mr. Yong BAEK	info@nori.go.kr
Mexico	Cmdr Mario Góngora Villareal	losgongora@yahoo.com
Mozambique	Mr. Augusto Jessenaó BATA	augustobata@yahoo.com.br
Nigeria	Capt. AZ MUAZU	nnho_nnhydrographicoffice@yahoo.com
Peru	Cdr. José GIANELLA H.	jgianella@dhn.mil.pe
Serbia	Ms. Jasna MUŠKATIROVIĆ	iho-serbia@plovput.co.yu
Slovenia	Mr. Igor KARNICNIK	igor.karnicnik@geod-is.si
UK	Mr. Thomas MELLOR	thomas.mellor@ukho.gov.uk
USA	Mr. Anthony NILES Ms. Denise LADUE (Secretary)	Anthony.R.Niles@erdc.usace.army.mil Denise.R.LaDue@usace.army.mil

Expert Contributor Organization	Name of Delegate	email
IEHG	Ms. Denise LaDue	Denise.R.LaDue@usace.army.mil
IEHG	Mr. Bernd Birkhuber	Bernd.Birkhuber@bmvit.gv.at
IEHG	Capt. (Ret.) Carlos Alberto Pêgas Ferreira	pegas@chm.mar.mil.br
IEHG	Dr. Lee Alexander	lee.alexander@ccom.unh.edu
IEHG	Mr. Peter Kluytenaar	peter@serendipity.nl
IEHG	Mr. Vladimir Sekachev	vladimir.sekachev@transas.com

Annex B to HCIWWG Report

PRELIMINARY DEFINITIONS OF INLAND WATERS ASSUMED BY THE WG

<i>Inland Waters</i> Spanish version: Aguas tierra adentro. French version: Eaux intérieures.	“Those areas of water, within land boundaries, such as rivers, lakes, lagoons, channels, etc., that cannot be considered as maritime ¹ water”.
<i>Navigational Inland Waters</i> Spanish version: Aguas navegables tierra adentro. French version: Eaux intérieures navigables	“Those navigable areas of water, within land boundaries, such as rivers, lakes, lagoons, channels, etc., that cannot be considered as maritime water, and upon which vessels need to navigate and for which navigational supporting tasks, such as hydrography and nautical cartography, are required. See INLAND WATERWAY”.
<i>Inland Waterway</i> Spanish version: Vía de navegación tierra adentro. French version: Voie de navigation intérieure.	“A waterway within navigable inland waters. See WATERWAY ² and NAVIGABLE INLAND WATERS”.
<i>International Inland Waters</i> Spanish version: Aguas tierra adentro internacionales. French version: Eaux intérieures internationales.	“A non-legal term which refers to those inland waters that belongs to more than one country. See INLAND WATERS, INTERNATIONAL WATERS ³ , and INTERNATIONAL NAVIGATIONAL INLAND WATERS”.
<i>International Navigational Inland Waters</i> Spanish version: Aguas de navegación tierra adentro internacionales. French version: Eaux internationales de navigation intérieure	“A non-legal term which refers to those navigational inland waters that belong to more than one country. See INLAND WATERS and INTERNATIONAL WATERS”.
<i>International Inland Waterways</i> Spanish version: Vía de navegación tierra adentro internacional. French version: Voies internationales de navigation intérieure	“A waterway which crosses more than one country. See INTERNATIONAL WATERS and WATERWAY”.

¹ In the IHO Hydrographic Dictionary (S-32), “sea water” is related to the physical characteristic of salinity, and “maritime” is “bordering on, concerned with, or related to the sea”. Relating “inland waters” to the maritime aspect, it will cover more possibilities.

² In the IHO Hydrographic Dictionary (S-32), “waterway” is defined as “A line of water (RIVER, CHANNEL, etc.) which can be utilized for communication or transport”, not specifying if maritime or inland. At the definition of PIANC, S-32 mentions the possibility of both types.

³ In the IHO Hydrographic Dictionary (S-32), “international water” is defined as “A non-legal term that refers to those waters subject to the high seas freedom of navigation and overflight, i.e., contiguous zone, EEZ, and high seas”.

Annex C to HCIWWG Report

RESPONSES TO CHAIR GROUP OF IHB CIRCULAR LETTER 112/2007
DRAFT SUMMARY TABLE OF THE REPLIES TO THE QUESTIONNAIRE IN IHB CL 112/2007

LEGEND:

Question 4: Light Green tint means “YES”; Yellow tint means “NO”.

Question 5: Light Green tint means “YES”, the same as for sea areas; Dark Green means “YES, but the role extends beyond that for sea areas”; Yellow tint means “NO”, Orange tint means “NOT APPLICABLE”. The tint is selected by interpreting the reply.

Country Date of reply	Q#2 Replying body	Q#3 Country/ Area/ Region	Q#4 Are there inland waters? Which organization is responsible.	Q#5 Does IHO have a role on these waters?	Q#6 International bodies	Q#7 Other information
Algeria 9.2.08	Service Hydrographique des Forces Navales	Algeria CHMMN	Non			
Angola 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	ZAIRE/Congo River Mr. Costa NETO: neto.francisco@netangola.com	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A
Argentina 9.2.08	Servicio de Hidrografia Naval (SHN) Rolando RIOS rolando.o.rios@gmail.com	Argentina SWAtHC	Servicio de Hidrografia Naval (SHN) is in charge of the cartography. This task was established by means of the National Hydrographic Law (Ley 19922). On the other side, hydrography of inland waters is responsibility of the Dirección Nacional	Provided that it was agreed that inland waters need a standard for cartographic representation (paper charts and ENCs) we think that it is important for IHO to define the terms of that standardization, to avoid countries using different ways of	a. Comité Intergubernamental de la Hidrovia Paraguay-Paraná (Member States: Argentina, Bolivia, Brazil, Paraguay and Uruguay) SECRETARIA EJECUTIVA DEL CIH Secretario Ejecutivo: Lic. Roberto BARATTA Hipólito Yrigoyen 250 - 11° Piso Oficina 1111- Buenos	

Country Date of reply	Q#2 Replying body	Q#3 Country/ Area/ Region	Q#4 Are there inland waters? Which organization is responsible.	Q#5 Does IHO have a role on these waters?	Q#6 International bodies	Q#7 Other information
			de Vías Navegables (DNVN), that is also in charge of sending the information to the SHN.	charting the inland waters. Also, in the hydrographic issue, it would be important to decide if the inland waters need special treatment for surveying processes.	<p>Aires Teléfono (+54-11) 4349-8788/5297 Fax: (+54-11) 4349-6527 E-mail: rbarat@minplan.gov.ar</p> <p>b. Comisión Administradora del Río de la Plata (CARP) Embajador Daniel OLMOS (Argentina) Contralmirante (R) José BELLO GANDRA (Uruguay) Isla Martín García, Casa N° 102 Provincia de Buenos Aires República Argentina Teléfono: +(54)(11) 4728 0013 E-mail: carp.sec.tec@netizen.com.ar</p> <p>c. Comisión Administradora del Río Uruguay (CARU) REPUBLICA ARGENTINA: C.C.34 C.P.3280 - (Colón Entre Ríos - R.A.) Telefonos: +598-722-5400/5500 /// Telefax: +598-722-6786 REPUBLICA ORIENTAL DEL URUGUAY: Av. Costanera Norte S/N. Paysandú</p>	

Country Date of reply	Q#2 Replying body	Q#3 Country/ Area/ Region	Q#4 Are there inland waters? Which organization is responsible.	Q#5 Does IHO have a role on these waters?	Q#6 International bodies	Q#7 Other information
					.C.C 57097 - R.O.U / REPUBLICA ARGENTINA: C.C. 34 C.P. 3280 - (Colón Entre Rios - R.A) E-mail: mailto:caru@caru.org.uy	
Australia 8.2.08	Australian Hydrographic Service international.relations @hydro.gov.au	Australia	Yes No SOLAS Class vessels navigate in the internal waters of Australia. Borders between the various states	No		
Austria 19.11.07	Inland waterways in Austria Bernd Birkhuber bernd.birkhuber@bmv it.gv.at	Austria	Danube and small parts of Traun, Enns and March. The Ministry of Transport, Innovation and Technology, Supreme Navigation Authority The private company via- donau, which is owned by the Ministry of Transport, is responsible for all the other data (geographical data including depth information)	A recognition of the standards for Inland ENCs by IHO would help to ensure that ECDIS applications on maritime vessels, which are using inland waterways, are able to use Inland ENCs.	The European Commission (EC) is preparing a binding regulation on Inland ECDIS for all the member states of the European Union (Contact: Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu) The Central Commission for Navigation on the Rhine (CCNR) has already adopted the Inland ECDIS standard as a binding regulation for the Rhine river (Contact: Mr. Gernot Pauli, g.pauli@ccr-zkr.org) The Economic Commission for Europe of the United Nations (UN/ECE) has adopted the Inland ECDIS Standard as a recommendation for all European countries and the	Within Europe there is a specific set of regulations for inland navigation, which is different from the respective regulations of IHO and IMO (e.g. technical regulations for inland vessels instead of SOLAS, European Code for Inland Waterways (CEVNI) instead of COLREG, Agreement concerning the International Carriage of Dangerous Goods

Country Date of reply	Q#2 Replying body	Q#3 Country/ Area/ Region	Q#4 Are there inland waters? Which organization is responsible.	Q#5 Does IHO have a role on these waters?	Q#6 International bodies	Q#7 Other information
					<p>Russian Federation (Contact: Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org) The Danube Commission is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation (Contact: Mr. Petar Margic, secretariat@danubecom-intern.org) The International Sava River Basin Commission is also using the Inland ECDIS Standard for the river Sava (Contact: Mr. Sinisa Spegar, sspegar@savacommission.org) The Inland ENC Harmonization Group (IEHG) is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs (Contact: Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil, Mr. Bernd Birkhuber, bernd.birkhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque,</p>	<p>by Inland Waterways (AND respectively ADNR and AND-D) instead of IMDG Code and BC Code, special regulations for crews on inland vessels instead of STCW). However, maritime certificates are recognized in most areas to allow maritime vessels to use inland waterways. But there are also maritime certificates, which are not sufficient for European inland waterways. E.g. tank vessels for dangerous goods need an additional certificate, if they want to use European inland waterways and skippers need a special license, if</p>

Country Date of reply	Q#2 Replying body	Q#3 Country/ Area/ Region	Q#4 Are there inland waters? Which organization is responsible.	Q#5 Does IHO have a role on these waters?	Q#6 International bodies	Q#7 Other information
					Albuquerque@dhn.mar.mil.br)	they do not want to use a pilot.
Bangladesh 12.02.2008	Directorate of Hydrography Bangladesh Navy Captain Mir Imdadul Haque BN Email:dhydro@banglad eshnavy.org	Bangladesh / Area J (NIOHC)	Yes. Bangladesh Inland Water Transport Authority (BIWTA) BIWTA Bhaban, 141- 143 Motijheel Commercial Area Post Box-76, Dhaka 1000 Bangladesh	There are rivers and inland waterways throughout the world which are used for international transportation of goods. The standard of hydrographic surveys, channel marking and nautical charting for these international internal waterways should be the same to ensure safe and easier navigation. These waterways should be located first and then IHO may promulgate certain standards/ specifications for the hydrographic survey and nautical charting for these waterways.	IALA may have significant influence in this issue to ensure similarity of the navigational markings and their usage in these internal waterways.	Nil

<p>Belgium 14.2.08</p>	<p>Flemish Hydrography guido.dumon@mow.vlaanderen.be</p>	<p>Belgium Flanders</p>	<p>Yes. 1.Flemish Hydrography (ENC-production; future Inland-ENC production ??) 2. NV Waterwegen en Zeekanaal (Inland-ENC production) 3. NV De Scheepvaart (Inland-ENC production) 4. Different Harbours (Oostende, Zeebrugge, Gent, Antwerpen) (Inland-ENC production) At 26/02/08 the next meeting concerning Inland-ENC production takes place. After this date more specific contact information will be sent by e-mail. The Flemish Hydrography is responsible for the hydrography and nautical cartography (ENC-production) of</p>	<p>Yes, since the EU RIS-directive mentions that Inland-ENC's should be distributed free of charge while the ENC's of the Flemish Hydrography are being sold by IC-ENC. If the Flemish Hydrography will have to make Inland-ENC's of the river Scheldt where already two ENC-cells are being produced, there will be a contradiction between the ENC's which are being sold and the Inland-ENC's which will be distributed for free. IHO could give some guidance concerning this matter by comparing national policies in different EU member states. In Belgium, the implementation of the EU RIS-directive concerning Inland-</p>	<p>The European Union through the RIS-directive; What about the Inspire directive ?? => information for free ?</p>	<p>Our apologies for this late answer.</p>
-----------------------------------	--	-----------------------------	---	--	--	--

			<p>the river Scheldt. The other organizations are responsible for the hydrography and nautical cartography (Inland-ENC production) in the areas covered by the EU RIS-directive (River Information System)</p>	<p>ENC production is at its starting point. Only the Flemish Hydrography has operational experience concerning the production and standardisation of ENC's, quality control, distribution of ENC's through RENC's, ...</p> <p>All other organizations mentioned above do not have any experience at all. There is also no standardisation of the Inland-ENC's which have to be produced in the near future. Most of the regulations and structures implemented by the IHO have to be repeated on a smaller level in the EU concerning Inland-ENC production. Perhaps IHO could play an important role.</p>		
--	--	--	--	--	--	--

<p>Brazil 26.12.07</p>	<p>DHN Email: albuquerque@dhn.mar.mil.br, freire@chm.mar.mil.br</p>	<p>B, C1</p>	<p>Yes. DHN</p>	<p>Yes, Brazil has waterways in which SOLAS ships sail. The hydrographic and cartographic activities in those waterways must follow the standards established by IHO. Besides, it is important to maintain uniform procedures as much as possible, adapting the requirements and specifications to the characteristics of the inland waters.</p>	<p>IEHG, CHI (Paraguai River Waterway Committee)</p>	
<p>Bulgaria 3.12.07</p>	<p>Executive Agency for Exploration and Maintenance of the Danube River, Bulgaria Desislava Ivanova Director, Hydrographical and Analysis Department EA EMDR desi@appd-bg.org www.appd-bg.org</p>	<p>Bulgaria</p>	<p>Danube River in Bulgaria (as part of common Bulgarian-Romanian Danube sector) The Executive Agency for Exploration and Maintenance of the Danube River, Bulgaria is responsible for all geodetic, geomatic, hydrographical, cartographical, ENC's, hydrological, hydrometeorological, hydromorphological, navigational, hydrotechnical, etc. data</p>	<p>Systematisation and standardisation of data acquiring and dissemination for all Inland waterways.</p>	<p>The European Commission (EC) is preparing a binding regulation on Inland ECDIS for all the member states of the European Union (Contact: Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu) The Central Commission for Navigation on the Rhine (CCNR) has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine (Contact: Mr. Gernot Pauli, g.pauli@ccr-zkr.org) The Economic Commission for Europe of the United Nations (UN/ECE) has adopted the Inland ECDIS Standard as a</p>	

			<p>for the Danube River.</p>		<p>recommendation for all European countries and the Russian Federation (Contact: Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org) The Danube Commission is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation (Contact: Mr. Petar Margic, secretariat@danubecom-intern.org) The International Sava River Basin Commission is also using the Inland ECDIS Standard for the river Sava (Contact: Mr. Sinisa Spegar, sspengar@savacommission.org) The Inland ENC Harmonization Group (IEHG) is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs (Contact: Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil, Mr. Bernd Birkhuber, bernd.birkhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque, Albuquerque@dhn.mar.mil.br)</p>	
--	--	--	------------------------------	--	---	--

<p>Canada 29.1.08</p>	<p>Canadian Hydrographic Service nicholsond@dfo-mpo.gc.ca</p>	<p>Canada</p>	<p>Yes Canadian Waters Canadian Hydrographic Service. Dr. Savithri Narayanan Director General, Dominion Hydrographer 615 Booth Street Ottawa, Ontario K1A 0E6 savithri.narayanan@dfo-mpo.gc.ca</p>	<p>Yes. Canada aspires to employ the same hydrographic and cartographic standards for all navigable waters, whether inland or coastal. As an IHO member, CHS actively supports international standards.</p>	<p>Canadian Shipowners Association 350 Sparks Street, Suite 705 Ottawa, ON, Canada K1R 7S8 Bruce Bowie Vice-President, Operations bowie@shipowners.ca Chamber of Marine Commerce 350 Sparks Street Suite 700 Ottawa, Ontario K1R 7S8 Raymond Johnston President rjohnston@cmc-ccm.com The Shipping Federation of Canada 300 rue du Saint-Sacrement, Suite 326 Montreal, Quebec Canada H2Y 1X4 Ivan Lantz Director, Marine Operations ilantz@shipfed.ca Canada Steamship Lines 759 Square Victoria Montreal, Quebec Canada, H2Y 2K3 e-mail: ships@cslmtl.com</p>	<p>International standards for ECDIS in their entirety are not accepted as applicable for inland water navigation by several major Canadian commercial shipping companies.</p>
----------------------------------	---	---------------	--	---	--	--

					<p>Upper Lakes Shipping 49 Jackes Avenue, Toronto, Ontario, Canada M4T 1E2 Bernie Johnson VP Marine Projects bjohnson@upperlakes.com</p> <p>Algoma Central 63 Church Street, Suite 600 St. Catharines, Ontario L2R 3C4 (905) 687-7888</p> <p>Great Lakes Pilotage Authority 202 Pitt Street, 2nd Floor P.O. Box 95 Cornwall, Ontario K6H 5R9</p> <p>Laurentian Pilotage Authority 555, René-Lévesque Blvd West, Suite 1501 Montreal, Quebec Canada H2Z 1B1 administration@apl.gc.ca</p> <p>Transport Canada Operations and Environmental Programs Place de Ville, 330 Sparks Street Ottawa, Ontario Canada K1A 0N5</p>	
--	--	--	--	--	---	--

					Robert Turner Manager, Navigation Safety and Radio Communications TURNERR@tc.gc.ca	
Chile 30.1.08	Servicio Hidrográfico y Oceanográfico de la Armada (SHOA) Tte.1° Juan Pablo Olivares Arancibia hidrografia@shoa.cl	Chile, SEPHC	Yes SHOA Sr. Director del SHOA, CN Cristian Soro Korn shoa@shoa.cl	No		
Colombia 17.03.08	DIMAR – CIOH Director Centro de Investigaciones CIOH jefcioh@dimar.mil.co	Colombia SEPHC and MACHC	Yes. Centro de Investigaciones Oceanográficas e Hidrográficas CIOH – DIMAR. The Dirección General Marítima, through CIOH, keep the cartography of river zone under its jurisdiction, in which there are international commercial maritime traffic activities. From this point till navigable ports in the river its competence of the Ministry of Transport and CORMAGDALENA	Yes. In Colombia’s particular case there are no standards for hydrographic surveys in rivers and lagoons. Through IHO they would have procedures and knowledge share about reduction reference (vertical datum) in rivers.	IHO	NIL
Cuba 6.2.08	Servicio Hidrográfico y Geodésico de la República de Cuba Cap. Corb. Ángel Acanda Reyes E-mail: onhg@enet.cu	Cuba, MAHC	NO. We have this kind of navigable waterways but not to cargo and personnel transport, just to very small boats, reason which	Yes, taking into account the work developed by our Organization, it will be possible countries may harmonize standards for all types of nautical	IHO, IMO, ICA, IOC	Even though, in our country, we don’t have this kind of navigable waters, we consider it is important to know the particularities of

			<p>they are not included in our nautical cartography.</p>	<p>cartography (paper or electronic) in this kind of navigable waterways.</p> <p>We consider that a more feasible way to achieve this goal is to involve all Member States in this important matter, either by sending information, or by financing countries which need to establish the security of navigation in these navigable waterways but, by its socio-economic development, keep low level of work and do not achieve the main objective: to guarantee the security of navigation in its internal waters, which will allow a higher environment and marine preservation.</p>		<p>this work, mainly in this kind of navigable waters, as our Hydrographic Service works in the production and edition of ENC, it would be very useful to know IHO and IEHG standards for this kind of areas.</p>
<p>Cyprus 27.12.07</p>	<p>Department of Lands and Surveys msavvides@dls.moi.gov.cy</p>	<p>Cyprus</p>	<p>There are only a few water reservoirs which are not navigable. For periods of the year the dams are hardly full.</p>	<p>We believe that in the case of Cyprus, the IHO has no significant role to play.</p>		

			<p>The water is used for drinking and irrigation. There are also some small rivers in Cyprus which have water during the winter time when it rains. Again the waters are not navigable</p> <p>Department of Lands and Surveys</p>			
<p>Denmark 11.12.07</p>	<p>Kort & Matrikelstyrelsen soe@kms.dk</p>	Denmark	No			
<p>Ecuador 12.2.08</p>	<p>INOCAR msantos@inocar.mil.ec</p>	Ecuador	<p>Yes INOCAR</p>	<p>Yes. As in open waters IHO may rule all that concerns inland waters, not only in order to maintain standards and facilitate the cooperation between members but also for the improvement of its activity.</p>		
<p>Estonia 13.12.07</p>	<p>Estonian Maritime Administration hnt@vta.ee</p>	Estonia	<p>Yes Estonian Maritime Administration , Valge 4, 11314, Tallinn, Estonia phone: +3726205600, fax: +3726205606, e-mail: hnt@vta.ee; www.vta.ee</p>	<p>IHO will be able to harmonize the navigational information (including charts and ENC) for sea and inland waters.</p>		

<p>Finland 28.1.08</p>	<p>Finnish Maritime Administration, Hydrographic Department juha.korhonen@fma.fi</p>	<p>Baltic Sea; BSHC, NHC, INT Region E</p>	<p>Inland lakes and rivers</p> <p>Finnish Maritime Administration, P.O. Box 171, FI-00181 HELSINKI, Finland Contact: Juha Korhonen, juha.korhonen@fma.fi</p> <p>Finnish Environment Institute (SYKE), P.O. Box 140, FI-00251 HELSINKI, Finland, Contact: Jari Hakala, jari.hakala@ymparisto.fi</p> <p>1. Finnish Maritime Administration (FMA) is responsible for hydrographic surveys and nautical charting of those lakes and rivers which have commercial traffic.</p> <p>2. Finnish Environment Institute (SYKE) is responsible for hydrographic surveys for other lake areas, mainly for environmental purposes.</p>	<p>NO: The FMA hydrographic surveys and nautical charts are done according to the same specifications as used for sea areas of Finland. These are mainly based on IHO specifications with some (more stringent) national specifications (in Finnish).</p>	<p>The PIANC have an Inland Navigation Commission, which may have some influence on this work. Please find more on www.pianc-aipcn.org/pianc/incom.php.</p>	
<p>France 4.2.08</p>	<p>France – SHOM Point of contact : Serge Allain</p>	<p>NSHC, EAHC, MBSHC,</p>	<p>For hydrography in the estuaries : local autonomous port</p>	<p>No, the absence of worldwide international regulations applicable to</p>	<p>Centre d'études techniques maritimes et fluviales web: cetmef.developpement-</p>	

	<p>email : dspre-rex@shom.fr</p>	<p>MACHC</p>	<p>authorities in inland waters : autonomous agencies in charge of management and exploitation of each river and canal networks</p> <p>For charting: in the estuaries : SHOM in inland waters : autonomous agencies in charge of management and exploitation of each river and canal networks</p> <p>Voies navigables de France : www.vnf.fr Compagnie nationale du Rhône : www.cnr.tm.fr</p> <p>The geographical limits of responsibilities are defined in French decrees for the creation of each agency. SHOM charting responsibilities apply from the sea up to the “maritime limit” defined individually for each waterway.</p>	<p>inland waters together with the heterogeneity of the organizations concerned and of the relevant national regulations (including navigational aids) would make IHO implication disputable, difficult and cumbersome. Unlike maritime hydrography, there is no unique point of contact for inland water issues in many countries (6 autonomous agencies share the responsibilities of rivers in France). It is therefore a real handicap for working and co-operation at the international level. However, it could be worthwhile for local lake and river survey teams to be aware of IHO standards and rules of procedures. France considers it is sufficient to carry out this action on a national basis, or at a bilateral or regional level in the case of</p>	<p>durable.gouv.fr</p> <p>Inland ENC Harmonization Group (IEHG) : http://ienc.openecdis.org/?q=no de/19</p> <p>Central commission for navigation on the Rhine: http://www.ccr-zkr.org/</p> <p>Inland Waterways International http://www.inlandwaterwaysinternational.org/</p> <p>European Barge Union : http://www.ebu-uenf.org/</p> <p>PIANC : http://www.pianc-aipcn.org/</p>	
--	---	---------------------	---	--	--	--

				international inland waters, without any specific IHO involvement.		
France 30.11.07	Voies navigables de France , France Camille CESSIEUX Voies navigables de France	France	Inland waterways in France Two organizations are involved. SHOM (Service Hydrographique et Océanographique de la Marine) and VNF (Voies navigables de France.) SHOM is the competent authority for hydrography and nautical cartography of sea and coastal water VNF is the competent authority for inland waterway. As a public corporation answerable to the Ministry of Ecology and Sustainable Development. VNF is in charge to the implementation of the EU RIS directive. VNF is responsible for managing, operating, modernising and developing a network of navigable waterways comprising 6,700 km of canals and developed	A recognition of the standards for Inland ENC's by IHO would help to ensure, that ECDIS applications on maritime vessels, which are using inland waterways, are able to use Inland ENC's.	The European Commission (EC) is preparing a binding regulation on Inland ECDIS for all the member states of the European Union (Contact: Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu) The Central Commission for Navigation on the Rhine (CCNR) has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine (Contact: Mr. Gernot Pauli, g.pauli@ccr-zkr.org) The Economic Commission for Europe of the United Nations (UN/ECE) has adopted the Inland ECDIS Standard as a recommendation for all European countries and the Russian Federation (Contact: Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org) The Danube Commission is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation (Contact: Mr. Petar	Within Europe there is a specific set of regulations for inland navigation, which is different from the respective regulations of IHO and IMO (e.g. technical regulations for inland vessels instead of SOLAS, European Code for Inland Waterways (CEVNI) instead of COLREG, Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (AND respectively ADNR and AND-D) instead of IMDG Code and BC Code, special regulations for crews on inland vessels instead of STCW). However, maritime certificates

			rivers, over 2,000 permanent structures and 40,000 hectares of waterside public land.		<p>Margic, secretariat@danubecom-intern.org) The International Sava River Basin Commission is also using the Inland ECDIS Standard for the river Sava (Contact: Mr. Sinisa Spegar, sspengar@savacommission.org) The Inland ENC Harmonization Group (IEHG) is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs</p> <p>(Contact: Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil Mr. Bernd Birkhuber, bernd.birkhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque, Albuquerque@dhn.mar.mil.br)</p>	are recognized in most areas to allow maritime vessels to use inland waterways. But there are also maritime certificates, which are not sufficient for European inland waterways. e.g. tank vessels for dangerous goods need an additional certificate, if they want to use European inland waterways and skippers need a special license, if they do not want to use a pilot.
Germany 11.2.08	German Federal Institute of Hydrology (BFG) Postfach 20 02 53 56002 Koblenz Germany	Areas of Germany The German inland waterways and waters are delimited by a defined borderline from the maritime waterways and coastal waters.	The federal waterways of Germany are subdivided by the law into inland waterways and maritime waterways. Furthermore, navigation law subclassifies the federal waterways according to their prevailing use in inland navigation routes and maritime navigation	The IHO has a significant role because: The inland ECDIS is becoming more and more relevant for the efficient utilization of the shallow inland waterways. To improve the utilization of the remaining underkeel	Deutsche Hydrographische Gesellschaft e.V. (German Hydrographic Society) Geschäftsstelle Dipl.-Ing. H.-Fr. Neumann Parkstraße 8 21682 Stade Contact: http://www.dhyg.de/joomla/inde	The German federal inland waterways have a total length of about 7,300 km. In terms of navigation law, they are divided into 6,500 Km of inland navigational routes and about 750 km of maritime

		<p>routes. This leads to the fact that some reaches of inland waterways are maritime navigation routes (e.g. the River Elbe upstream to Hamburg), because they are mainly used by sea-going ships.</p> <p>The Federal Waterways and Shipping Administration (Wasser- und Schifffahrtsverwaltung; WSV) is responsible for the administration of the waterways. They are subordinated to the Federal Ministry of Transport, Building and Urban Affairs (BMVBS).</p> <p>Nautical maps are produced by the WSV predominantly for its internal use (to ensure the safety and ease of navigation). Since 2003 the WSV has also produced inland ECDIS of about 1,800 km of the inland navigation routes.</p> <p>The Federal Maritime and Hydrographic Agency</p>	<p>clearance in Germany, we have supplemented the inland ECDIS in an selected area with depth information that can be related to the instantaneous water level in real time. The skipper can see the available channel depth in dependence on the actual draught of his ship. The IHO can help to standardize this method and achieve wider coverage in the neighbouring countries. More information of the electronic navigation-route information system (ARGO) based on the Inland ECDIS can be found at: http://www.elwis.de/RI S-Telematikprojekte/Telematikprojekte/argo/index.html</p> <p>The IHO can help to create awareness of the need of special standards for hydrographic surveys of inland waterways. This</p>	<p>Administration of waterways: Bundesministerium für Verkehr, Bau und Stadtentwicklung (Federal Ministry of Transport, Building and Urban Affairs) Robert-Schuman-Platz 1, 53175 Bonn E-Mail: poststelle@bmvbw.bund.de Internet http://www.bmvbs.de/</p> <p>Wasser- und Schifffahrtsdirektion Südwest Fachgruppe Telematik (Waterways and Shipping Administration South-West Telematics Unit) Postfach 310160 55062 Mainz E-Mail: wsd-sudwest@wsd-sw.wsv.de Internet www.wsd-suedwest.wsv.de</p> <p>Bundesamt für Seeschifffahrt und Hydrographie (BSH) (Federal Maritime and Hydrographic Agency) Neptunallee 5 18057 Rostock Germany Internet http://www.bsh.de/de/index.jsp</p> <p>Land surveying offices</p>	<p>navigational routes. More detailed information on the classification of waterways can be found at: http://www.wsv.de/wasserstrassen/gliederung_bundeswasserstrassen/index.html</p>
--	--	---	--	---	---

			<p>(Bundesamt für Seeschifffahrt und Hydrographie; BSH) is part of the WSV and is responsible for nautical cartography of maritime navigation routes (see explanation above).</p> <p>Other inland waters are managed by the 16 federal states (Bundesländer). Most lakes and reservoirs are not navigable or small and are therefore used only for recreational shipping.</p> <p>The largest lake, Lake Constance (536 km²), for instance is mapped only in official topographic charts. There is no official nautical chart available although the lake is used by numerous ferries. Maybe this is due to the fact that the right of ownership between Germany, Switzerland and Austria is not clear.</p> <p>The limit of the responsibility area of the BSH is the border of the maritime navigation</p>	<p>might be at the beginning the existing S-44 Publication, but also a working group could become established with the task to find out whether the existing standard is sufficient or needs specific supplementation.</p> <p>The content of Inland ECDIS – especially the navigable-depth information - has to be reliable and must be more accurate than that on coastal waters. This could be achieved by proposing to introduce a quality-management system, which makes sure that the cartographic products comply with the hydrographic standards.</p> <p>The standards for the competence of hydrographic surveyors might need to be adapted to the inland requirements. At the moment in Germany</p>	<p>responsible for Lake Constance</p> <p>Landesvermessungsamt Baden-Württemberg (Land Surveying Office of Baden-Württemberg) Büchsenstraße 54 70174 Stuttgart E-Mail: poststelle.vermbw@vermbw.bwl.de</p> <p>Landesamt für Vermessung und Geoinformation (Land Surveying Office of Bavaria) - Regionalabteilung Süd – Alexandrastr. 4 80538 München E-Mail: Poststelle@lvg.bayern.de</p> <p>The private company producing the “Lake Constance Navigational Chart”</p> <p>Internationale Bodensee + Boot-Nachrichten Druck- und Verlagshaus Hermann Daniel GmbH & Co KG, Grünewaldstraße 15, Postfach 10 02 64, D-72334 Balingen, Germany Email: ibn@ibn-online.de</p>	
--	--	--	---	--	---	--

			<p>routes, while the WSV produces nautical maps of the same area for its internal use and for pilots much more frequently than new editions of nautical charts are issued. The BSH utilizes data from the WSV for the nautical charts.</p> <p>Detailed information about the organizational structure and contacts in the Waterways and Shipping Administration can be found at http://www.wsv.de/Wir_ueber_uns/index.html.</p>	<p>there are no legally binding regulations in this matter.</p> <p>The IHO could help to raise awareness of the importance of official hydrography and nautical cartography at least for the most important lake (Lake Constance). In this context the land surveying offices of the federal states could be invited to participate. Alternatively, the private company ibn (address below) could be contacted to join in the activities regarding the international standards of the IHO.</p>		
Greece 10.2.08	HCMR, www.hcmr.gr elias@hcmr.gr	Greece, Attika	Yes. Hellenic Navy Hydrographic Service, www.hnhs.gr / Hellenic Military Geographical Service, www.gys.gr	Assist in the coordination and standardization of mapping services, incorporate maps in an international database, networking and better communication for improving services		
Iceland 27.12.07	Icelandic Coast Guard-Hydrographic	Iceland, NHC, NSHC	NO	YES. IHO should work closely with relevant organizations		

	Depart hilmar@lhg.is			to harmonize navigational roles, charting symbols and abbreviations		
Iran 12.02.08	Islamic Republic of Iran Ports and Shipping Organization Parizi@pso.ir; Falahi@pso.ir;	Iran RSAHC	Yes. PSO (Focal Point), with the contribution of National Cartographic Center (NCC) and National Geographical Organization(NGO) N.B. regarding contact information of other main bodies, this is to inform you, according to the Policy of our National Hydrographic Committee, any overseas correspondence conducts through Focal Point.	YES, due to laying of the International routes in some of inland waters such as: Khoure Musa and Shatt al arab (subject to CBC provisions), therefore IHO could play a significant role by supervising and supporting of CHARIS and HCIWWG on ENC production Data/INT Charts.	Irespective of PSO as the Focal Point, there are two main bodies that have influence on this issue called "NCC" and "NGO" .	Our present status indicates that hydrographic data gathered in digital format has been prepared by NCC from most important coastal areas of our regional waters. Meanwhile we have established 3VTS* Centers as follows: 1- Anzali Port (Caspian Sea area) 2- BIK Port (In the Persian Gulf) 3- First phase of Shahid Rajae port complex (in the Persian Gulf) * : All VTS Stations operate in the trial mode.

						In case of introducing ENC Charts successfully we plan to furnish all our VTS stations in the Persian Gulf with these charts.
Italy 13.2.08	<i>CDR Roberto CERVINO</i> iim.sre@marina.difesa.it	Italy MBSHC	Yes. I.I.M. and Local Authority River: Estuary of River Lake: Relevance of navigational purpose	Yes, because survey and representation are similar and safety of navigation are quite the same, in any case maintain the same system is recommendable	IMO	
Kenya 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	Survey of Kenya (Dept of Lands) Lake Victoria: Mr. Bowers Okelo: bnowino@yahoo.com	Yes, survey standards (S-44) and Charting/ Cartographic Standards (M-4)	N/A	N/A
Korea (Rep. of)	National Oceanographic Research Institute	Republic of Korea / East Asia	Yes. Ministry of Construction & Transportation and Local Government. Ministry of Construction & Transportation and Local Government: - General plan establishment or management for Inland of Korea Local Government: - Operational use under regional authority	IHO is an organization in charge of hydrography and charting for navigational safety of all vessels. In case of inland waters, all members states will conduct hydrographic surveys and make a plan using the standards IHO provided such as S-44, S-57, etc. Therefore, NORI thinks that IHO	European Community, PIANC, CCRN, UNECE, etc..	In order to survey in inland waters and publish its charts (ENC), some member states may establish a new national regulation guideline. Accordingly, IHO is requested to collect relative information from other member states that already have them and

				also takes a role to collect the information on inland of all members states and cooperate with relative international bodies.		distribute to member states requesting the information.
Malaysia 06.03.2008	National Hydrographic Center (NHC) rmnode@tm.net.my	Malaysia	YES NHC is national authority for hydrographic and nautical charting activities within the country's maritime area, including navigable rivers.	Yes, if the inland waters are navigable.	-	-
Malawi 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	Malawi Survey Dept (Lake Malawi & Shire River) D.O.C Gondwe: surveys@sdp.org.mw	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A
Mexico 28.2.08	Secretaría De Marina - Mexico	Mexico - MACHC	Yes. Secretaría de Marina.	Yes, advisory in planning and execution of hydrographic survey in inland waters.	N/A	N/A
Morocco	Morocco Royal Navy Division of Hydrography, Oceanography, and Cartography of the Royal Navy (DHOC) dhcmarine@yahoo.fr	Morocco Mediterranean / East Atlantic	Yes. DHOC	No.	None.	None.
Mozambique 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	INAHINA (Lake Malawi & Zambezi River) Humberto Mutevuie: mutevuie@inahina.gov.mz	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A

<p>Netherlands 7.2.08</p>	<p>Netherlands Hydrographic Office (NLHO) Ministry of Transport and Public Works (RWS) NLHO: info@hydro.nl NLRWS: René Visser, email to: rene.visser@rws.nl Ministry of Transport Public Works and Watermanagement, Centre of Transport and Navigation (DVS)</p>	<p>Netherlands</p>	<p>NLHO: NSHC region (no main Inland waters in Dutch Antilles (MACHC region)). RWS: Inland Navigable waters with CEMT class IV; Va,b; VIa,b,c. Charting of SOLAS navigable waters: responsibility NLHO Charting of further inland waters: responsibility of The Ministry of Transport and Public Works Rijkswaterstaat (=NLRWS) Surveying and maintaining of all waterways except North Sea: responsibility of NLRWS plus Regional authorities (like harbours and provinces) Surveying North Sea: responsibility NLHO Contact NLRWS: René Visser, email to: rene.visser@rws.nl Ministry of Transport Public Works and Watermanagement waterstaat</p>	<p>HCIWWG could be useful in establishing uniformity in products and distribution of products for ships using both inland and SOLAS ENC's. HCIWWG might support the merge of as many inland ECDIS features into the future S-100 Hydro Register as possible and practical to ease SOLAS navigation on inland waterways.</p>	<p>Danube Commission, Capt. Petar Margić, email to: petar.margic@danubecom-intern.org CCNR, Mr Gernot Pauli, email to: g.pauli@ccr-zkr.org EU, Mrs Astrid Schlewing, email to: Astrid.Schlewing@ec.europa.eu RIS- Platform, IEHG, Mr Bernd Birkhuber, Mr Tony Niles, email to: bernd.birkhuber@bmvit.gv.at/ Anthony.R.Niles@erdc.usace.army.mil Inland ECDIS expert group: Mr Bernd Birkhuber, email to: bernd.birkhuber@bmvit.gv.a</p>	<p>Find attached status information on Inland ENC's coverage</p>
-------------------------------	--	--------------------	--	---	--	--

		<p>Centre of Transport and Navigation (DVS) SOLAS vessels are mostly confined to the sea ports. However on the River Scheldt they travel up to Antwerp (about 90 km inland). On the Rhine SOLAS vessels may travel about 80 km inland before having to comply to inland navigation regulations including those with regard to Inland ECDIS. These waters are however also navigated by inland vessels that have to comply with the inland navigation regulation including those with regard to Inland ECDIS. Dutch HO produces paper charts and ENC's of (most of) the inland waterways that are navigated by SOLAS vessels. These are mostly based on surveys and information from The Ministry of Transport and Public Works and local harbour authorities. The Ministry of Transport and Public surveys and has begun to produce inland ENC's for all major inland</p>		
--	--	--	--	--

			waterways including those navigated by SOLAS vessels. Mainly for the pilots additional ENC's with detailed bathymetry are produced for Rotterdam by the Port of Rotterdam. On the River Scheldt the pilots are supplied by similar detailed ENC's by the Ministry of Transport and Public Works in cooperation with the Belgium waterway authority			
Nigeria 8.2.08	Nigerian Navy Hydrographic Office nnho_nnhydrographi coffice@yahoo.com		<p>YES</p> <p>a. Nigerian Navy Hydrographic Office</p> <p>Email: nnho_nnhydrographicoffi ce@yahoo.com</p> <p>b. Nigerian Ports Authority Hydro/Dredging Dept No. 26/28 Marina Lagos</p> <p>c. National Inland Waterways Authority Adankolo Juntion Lokoja</p>	YES. By providing technical guidelines for Hydrography and Nautical Cartography in Inland Waters towards observance and maintenance of Standards. Also by providing technical training/ support in capacity building and any other way the IHO deems fit.	NIL	<p>Nigeria's Niger Delta Region and the 2 major rivers of Niger and</p> <p>Benue in the country present an enormous challenge in Hydrography and Nautical cartography to the Nation. Nigeria therefore sees this Working Group as an impetus towards facing this challenge. In view of the above, it is requested that the following</p>

			<p>Kogi State, Nigeria.</p> <p>Nigerian Navy Hydrographic Office- No limit within Nigeria</p> <p>Nigeria ports Authority- port Areas and Approaches</p> <p>National Inland waterways Authority – Inland waters except areas covered by Port Authority</p>		<p>organizations in charge of Hydrography and Nautical Cartography in Nigeria be co-opted as associate members of the Working Group. The contact persons are as follows:</p> <p>a. Mr OLumide Olugbenga Omotosho Hydro/Dredging Dept. Nigerian Ports Authority No. 26/28 Marina Lagos. Email: holuyde2002@yahoo.com</p> <p>b. Mr Denise A Osanwuta National Inland Waterways Authority Adankolo Juntion Lokoja Kogi State Nigeria. Email: daosanwuta@yahoo.com</p>
--	--	--	---	--	--

Norway 7.2.08	Norwegian Hydrographic Service kjell.olsen@statkart.no	Norway NHC, NSHC	In river estuaries: NHS. In inland lakes The Norwegian Water Resources and Energy Directorate (NVE) nve@nve.no	No	None	NO
Pakistan 01.03.2008	PAKISTAN	RSAHC	Yes Ministry of Port and Shipping, Government of Pakistan URL: http://www.pakistan.gov.pk/ministries/index.js Director (Ports & Shipping) Phone no: +9251 9202049 e.mail: director@mops.gov.pk	No. Inland waterways are not developed for water transportation. Even, if developed, significant scope of the same is not envisaged because of geographical limitations with respect to suitable connection to sea.	Not applicable	Nil
Peru 8.2.08	Dirección de Hidrografía y Navegación rsablich@dhn.mil.pe	Peru CHRPSO	Yes. The Directorate of Hydrography and Navigation (DHN) is the national organ in charge of navigable rivers and lakes hydrography and nautical cartography in Peru. There are other organizations which have other responsibilities related to rivers, lakes and internal waters in general, as for example	We strongly believe that IHO may have a significant duty taking into account that can't be left aside "safety of Navigation" aspect at fluvial environment or lakes and in navigable inland waters for which Hydrographic Services of some Member States have direct responsibilities, thence the interest this subject has a discussion space	It must be considered that some international organs have made important developments with respect to the norms and specifications concerning electronic charts for rivers and inland waters (IENC), as it is the Inland Electronic Chart Harmonization Group (IEHG), which has produced norms such as "Code Harmonization Guide" which is the landmark of Fluvial ENC product specification contents.	Taking into account the agreements of the VII Meeting of the South East Pacific Hydrographic Commission (SEPHC), and the coordination of the International Hydrographic Organization (IHO) through the Capacity Building Committee (CBC),

			<p>the Instituto Geográfico Nacional (IGN), which produces small scale cartography of areas where rivers born (Peruvian Amazon) and lakes, but these works do not have bathymetric information. The same way, the Dirección del Transporte Acuático del Ministerio de transportes del Peru have the responsibility of area ports of rivers maintenance.</p>	<p>inside IHO which the objective to establish standards and technical specification for fluvial environment and inland waters in general once this is the natural forum to share experiences and get a better scientific knowledge about rivers and inland waters as well as to evaluate the different characteristics and variable which affect navigation and to achieve a greater effectiveness in methodologies nowadays in use in fluvial hydrographic survey and to improve cartographic overture and the production and maintenance capacity of fluvial navigation charts, including inland electronic charts (IENC), establishing as a medium term goal to achieve standards in this kind of work by the promulgation of IHO international norms and technical specification for inland waters.</p>	<p>Web page:www.iehg.org/</p>	<p>and the Directorate of Hydrography and Navigation (DHN), the 1st International Workshop on Hydrographic Surveys, from Nov 14th to 16th 2007, in Ikitos, Peru, at the Amazon river margin, northwest Peruvian jungle, which is the main Peruvian Amazon fluvial port, with 35 representatives from countries as such Argentina, Brazil, Chile, Colombia, Ecuador, United States, Mozambique, Panama, Peru, Uruguay, and Venezuela, and from the discussed topics it was possible take a clear vision about the general characteristic, the fluvial hydraulic, monitoring critical</p>
--	--	--	---	--	--	---

						areas with the use of satellite images, as well as update techniques of hydrographic surveys employing ENC and radar in an integrated mode, which has replaced the manual conventional work. At the same time, development of multibeam sounding and its employment in rivers hydrographic survey was assessed in a practical way.
Poland 20.02.08	Hydrographic Office of the Polish Navy bhmw@mw.mil.pl	POLAND / BALTIC SEA	YES Ministry of Infrastructure Department of Maritime Transport and Inland Navigation 08 Warszawa ul. Chalubinskiego 4/6 AND Phone: +48 22 385 56 40 Fax: +48 22 385 56 66	Yes, harmonization of aids to navigation at inland waters and sea areas, charts,	IMO	NONE
Portugal	Portuguese Hydrographic Office (IPHT) <martins.pinheiro@	Portugal Continental Portugal, Azores and Madeira	Yes. IPHT. Rua das Trinas, 49 1249-093, Lisboa, Portugal	In line with the IHO Mission and Objectives, IHO must be involved with the production of	International Maritime Organization, International Association of Lighthouses Authorities, and European	None.

	<p>hidrografico.pt></p>	<p>Archipelagos</p>	<p>Tel: +351 210 943 000 Fax: +351 210 943 299</p>	<p>standards for hydrographic data and provision of hydrographic services in inland waters. Inland ECDIS is recommended by a long list of standardization bodies worldwide and until now, IHO has just been kept closely informed about these activities. Since we are discussing issues like safety of navigation, digital products, that can readable by identical systems, ECDIS when they are used at sea and Inland ECDIS when they are used at waterways, updating activities, it seems advisable that worldwide formats, standards and tools should be harmonized in order to create an exchange set of products that can be used by a widespread kind of users and also then can be read by a widespread kind of equipments.</p>	<p>Commission.</p>	
--	----------------------------	---------------------	---	--	--------------------	--

				In order to avoid same errors and mistakes, it will be beneficial for all if we share and learn with the experience gained with S-57 and production of ENC's.		
Qatar 14.1.08	Hydrographic Section of the UPDA Mr. Vladan Jankovic vladan@up.org.qa	Qatar	None			
Serbia 30.4.08	Directorate for Inland Waterways "Plovput" Dr Jasna Muskatirovic (jmuskatirovic@plovput.co.yu)	Republic of SERBIA	YES – international waterways on rivers Danube, Sava, and Tisza Directorate for Inland Waterways "Plovput" Francuska 9, 11000 Belgrade SERBIA	S-57 standard is partially used on inland waterways and its synchronization with Inland ECDIS standard (Inland Harmonization Group) would be of great importance for further cooperation between IHO and countries with inland navigation	Danube Commission (President: Mr. Milovan Bozinovic; secretariat@danubecom-intern.org; http://www.danubecom-intern.org/) International Sava River Basin Commission (Dejan Komatina; dkomatina@savacommission.org; http://www.savacommission.org/) United Nations – Economic Commission for Europe (UN/ECE) (http://www.unece.org/trans/welcome.html) Inland ENC Harmonization Group	

<p>Slovenia 14.2.08</p>	<p>MINISTRY OF TRANSPORT OF THE REPUBLIC OF SLOVENIA, MARITIME DIRECTORATE igor.karnicnik@geod-is.si</p>	<p>Slovenia MBSHC (region F)</p>	<p>Yes. None</p>	<p>Yes, IHO should prepare standards, recommendations, give guidance for hydrographic works on inland waters and/or other legislation regarding inland waters, similar as it is regarding sea hydrography (for instance: which water levels should be used, what kind of equipment to be used for surveys, etc)</p>	<p>N/A</p>	<p>N/A</p>
<p>Spain</p>	<p>IHM <ihmesp@fn.mde.es ></p>	<p>Spain F, G</p>	<p>No. The Guadalquivir, as access to Sevilla port, is the only one river, from the international navigation point of view which is charted. It is done with the same standards used for the others nautical charts.</p>	<p>No.</p>	<p>Unknown.</p>	<p>Those inland waters, navigable rivers, lakes, close seas, which need to be charted for the use of maritime traffic would be done with the same IHO standards already exists to the production of nautical cartography. I do not consider it will be necessary that IHO be involved with developments, due its kind of use, once the possible vessels</p>

						which will use these rivers or lakes will not get out these zones, just have interest at national level.
South Africa 30.1.08	SA Navy Hydrographic Office hydrosan@iafrica.com	South Africa SAIHC	Yes, of particular interest in the region is the Great Lakes of Africa and some navigable rivers. INAHINA (Lake Malawi & Zambezi River) Humberto Mutevuie: mutevuie@inahina.gov.mz Malawi Survey Dept (Lake Malawi & Shire River) D.O.C Gondwe: surveys@sdp.org.mw Tanzania Dept of Lands (Lake Tanganjika, Lake Malawi/Nyasa & Lake Victoria) Ignatious K. NHNYETE: nhnyete@tanzaniaports.com Survey of Kenya (Dept of Lands) Lake Victoria: Mr. Bowers Okelo: bnowino@yahoo.com Angola (ZAIRE/Congo	Yes, survey standards (S-44) AND Charting/Cartographic Standards (M-4)	N/A	N/A

			River) Mr. Costa NETO: neto.francisco@netangola.com Shared borders			
Suriname 18.02.08	Maritime Authority Suriname info@mas.sr or bmahabier@mas.sr	Suriname, MACHC	Yes, 888 Paramaribo Suriname info@mas.sr	Yes, standardization of navigable waters	PIANC, IMO, IALA,	
Sweden 8.12.08	Swedish Maritime Adm, Hydrographic Office ake.magnusson@sjofartsverket.se	Sweden	Yes, The most important are: Lake Vänern, Lake Mälaren, Lake Vättern, Lake Hjälmaren Trollhätte Canal and Göta Canal Swedish Maritime Administration (see above)	IHO has the same role for these waters as for the coastal waters of Sweden		
Switzerland 22.11.07	Department of the Environment, Transport, Energy and Communications DETEC; Federal Office of Transport FOT, Switzerland Max Bühler max.buehler@bav.admin.ch	Switzerland	River Rhine from Rheinfelden – Basle (km 149.10 – 170.00) The “Rheinschiffahrtsdirekti on Basel” (after 1st January 2008: Swiss Rhine Ports) is responsible for the data, which is related to traffic regulation (e.g. notice marks, buoys and beacons, anchorage areas	A recognition of the standards for Inland ENCs by IHO would help to ensure, that ECDIS applications on maritime vessels, which are using inland waterways, are able to use Inland ENCs.	The Central Commission for Navigation on the Rhine (CCNR) has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine (Contact: Mr. Gernot Pauli, g.pauli@ccr-zkr.org) The European Commission (EC) is preparing a binding regulation on Inland ECDIS for all the member states of the European Union (Contact: Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu) The Economic Commission for	Within Europe there is a specific set of regulations for inland navigation, which is different from the respective regulations of IHO and IMO (e.g. technical regulations for inland vessels instead of SOLAS, European Code for Inland Waterways

			<p>and berths, restricted areas,...) and all the other data (geographical data including depth information)</p>		<p>Europe of the United Nations (UN/ECE) has adopted the Inland ECDIS Standard as a recommendation for all European countries and the Russian Federation (Contact: Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org) The Danube Commission is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation (Contact: Mr. Petar Margic, secretariat@danubecom-intern.org) The International Sava River Basin Commission is also using the Inland ECDIS Standard for the river Sava (Contact: Mr. Sinisa Spegar, sspegar@savacommission.org) The Inland ENC Harmonization Group (IEHG) is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs</p> <p>(Contact: Mr. Anthony Niles, Anthony.r.niles@erdc.usace.</p>	<p>(CEVNI) instead of COLREG, Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADNR on the River Rhine, ADN-D on the Danube and ADN) instead of IMDG Code and BC Code, special regulations for crews on inland vessels instead of STCW). However, maritime certificates are recognized in most areas to allow maritime vessels to use inland waterways. But there are also maritime certificates, which are not sufficient for European inland waterways. e.g. tank vessels for dangerous goods need an additional</p>
--	--	--	---	--	---	---

					army.mil, Mr. Bernd Birkhuber, bernd.birkhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque, Albuquerque@dhn.mar.mil.br)	certificate, if they want to use European inland waterways and skippers need a special license, if they do not want to use a pilot.
Tanzania 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	Tanzania Dept of Lands (Lake Tanganjika, Lake Malawi/Nyasa & Lake Victoria) Ignatious K. NHNYETE: nhnyete@tanzaniaports.com	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A
Tunisia 9.2.08	Tunisian Naval Hydrographic and Oceanographic Center sho@defense.tn - sho@email.ati.tn	Tunisia	Yes Tunisian Naval Hydrographic and Oceanographic Center BP 01 - 7011 - La Pêcheurie - Bizerte-Tunisia Tel : 00 216 72 510 570 - Fax : 00 216 72 510 777 - Email : sho@defense.tn None	We believe that the IHO's activities should extend to cover all navigable waters, and this may be materialized by updating the IHO SP44 publication with standards applicable to inland waters	International Maritime Organization (IMO)	None
Turkey 8.2.08	Turkish Navy, Office of Navigation, Hydrography and Oceanography	Turkey, MBSHC	Organization responsible for surveying: General Directorate of State Hydraulics Works	No, there are only a couple of navigable lakes in Turkey, which are used only by local boats.	--	--

	info@shodb.gov.tr		(etudplan@dsi.gov.tr) Organization responsible for charting: Turkish Navy, Office of Navigation, Hydrography and Oceanography GDSHW is responsible for surveying lakes and other inland waterways, which are not many, for purposes other than charting. TN-ONHO is responsible for charting inland waterways where applicable.			
United Kingdom 19.11.07	UK Hydrographic Office	United Kingdom	MCA- Maritime and Coastguard Agency Captain Joe Collins Email Joe.Collins@mcga.gov.uk	Within the UK we do not have an extensive network of large navigable inland waterways as do our European counterparts. However I do believe the IHO have a role to play in ensuring Inland ENC's do not develop in isolation. With the development of the S-100 registry we have an extensible tool to assist in the development of IENC.	Inland Waterways Advisory Council (IWAC) Email iwac@iwac.gsi.gov.uk Web www.iwac.org.uk Association of Inland Navigation Authorities Email info@aina.org.uk Web www.aina.org.uk	
Ukraine 14.1.08	State Hydrographic Service of Ukraine office@dudg.kiev.ua;	Ukraine, MBSHC (BASWG)	Yes. State Hydrographic Service of Ukraine -	Due to its ability to implement the unique modern requirements in	-	-

	Attn: Mr. Mykola Golodov	Black Sea	<p>Tel./Fax: +38 044 467 60 77; E-mail: office@dudg.kiev.ua; Ukrvodshlyah DP - Tel.: +38 044 462 55 51</p> <p>State Hydrographic Service of Ukraine: the Black Sea, the Sea of Azov, the Danube River from Reni Port to the Mouth, the Pivdennyi Buh River - Buz'ko-Dniprovs'kyi Firth Ukrvodshlyah DP: all other river waterways</p>	the field of hydrography and cartography in inland waterways		
USA 22.2.08	U.S. Army Corps of Engineers and NOAA Office of Coast Survey Anthony.R.Niles@usace.army.mil and Steven.Barnum@noaa.gov	USA	<p>Yes United States Army Corps of Engineers, Contact: Anthony Niles, Anthony.R.Niles@usace.army.mil and NOAA Office of Coast Survey Contact: Steven.Barnum@noaa.gov</p> <p>Hydrography for most inland waterways are the responsibility of the U.S. Army Corps of Engineers. However, NOAA is responsible for the nautical charts in all US waters as well as hydrography for</p>	<p>Moderate to high role: European, U.S., Russian, and Brazilian electronic charts seek to follow IHO data and display standards; see http://www.openeddis.org/ & http://ienc.openeddis.org/. However, the U.S. feels it is extremely important to ensure consistency of format and data between the inland waterways and the coastal waters, and as the internationally recognized authority on hydrography and</p>	Inland ENC Harmonization Group	Information exchange on hydrography for inland waters through a recognized forum is also sought

			<p>several large rivers (e.g. Colombia River, Delaware River), the Gulf and Atlantic Intercoastal Waterways, and the Mississippi River up to Baton Rouge, Louisiana.</p>	<p>charting, the IHO is the logical body to assume this responsibility.</p>		
--	--	--	--	---	--	--

Note: In the case of France, the Chair Group, for “IHO role”, considered only the IHO representative response.

2. General observations on the replies

The Chair Group has done the following processing and interpretations to the replies.

Q#5: The replies were divided into three categories:

1. IHO has significant importance on inland waters
2. IHO importance on inland waters is similar as for sea areas
3. IHO does not have importance on inland waters

Q#6: International bodies

Appendix II lists the international organizations the responses appointed as relevant bodies in the matter.

2.1 Navigable Inland Waters

In Fig 2 there is a map showing the replies which indicated the existence of navigable inland waters.

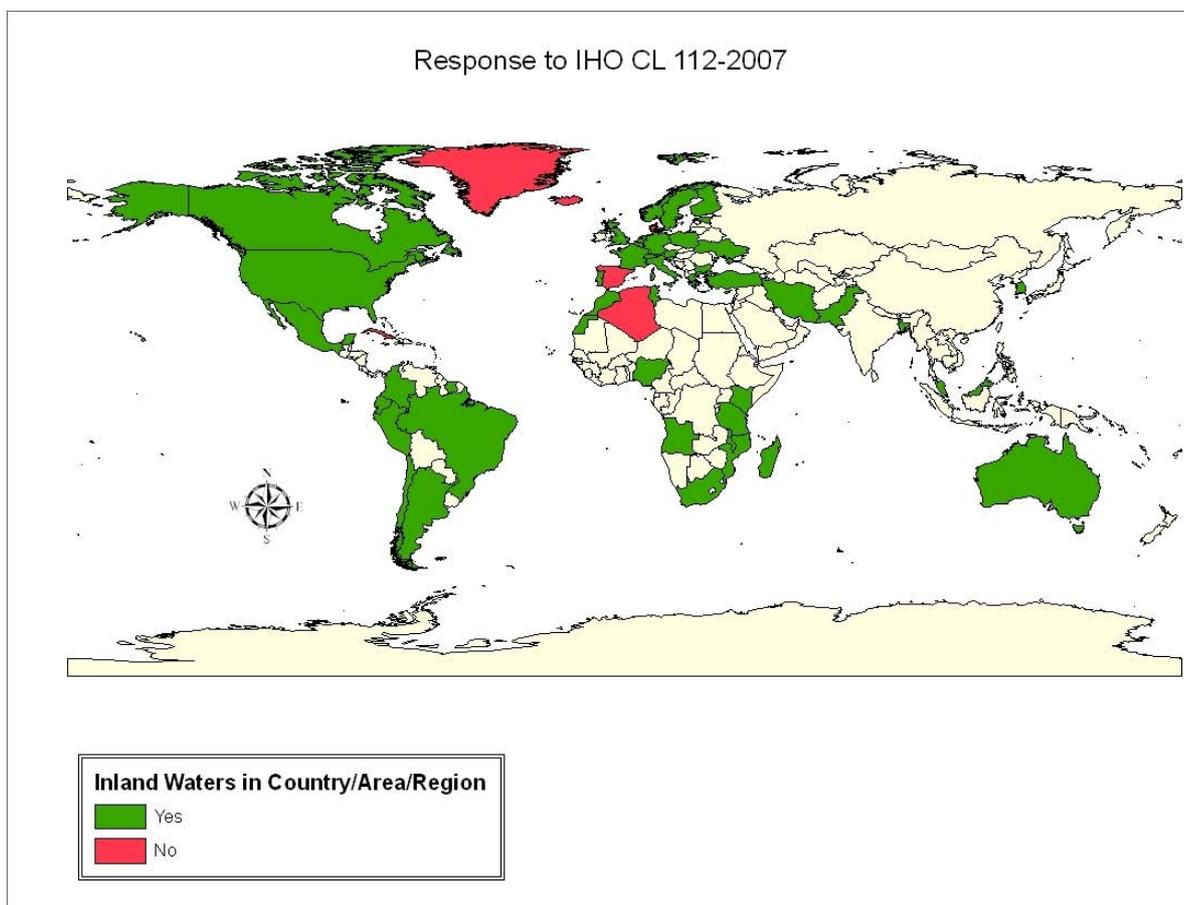


Fig. 2. Status of replies by country.

The following table gives the number of reported inland water types⁴.

⁴ As interpreted by the Working Group

Type of navigable inland waters	Number of replies	Remarks
Lakes	7	
Rivers	16	
Reservoirs	1	
Canals	2	
Harbours	1	
Inland waterways	3	

Below are some observations on the replies⁵:

- It can be noticed that some of the replies did not specify the name of their navigable inland waters.
- Responsibility of navigable inland waters in 8 countries is the same as for sea areas. There are different or additional organizations in 13 countries.
- There were 26 reported cases where inland water areas are navigable and 5 cases where they are not navigable. The rest of the replies did not indicate this information.
- There were reported in 3 cases where inland water areas are used for SOLAS shipping.
- Environmental characteristics and/or the nature of the waterway employment are different worldwide.

In Appendix I there is the List of navigable inland waters and waterways that were reported.

2.2 IHO Significance

Significant IHO influence was seen by 36 countries. 8 countries saw that IHO does not have a significant importance (See Fig. 3 below).

The replies were divided into three categories:

1. IHO has significant importance on navigable inland waters
2. IHO importance on navigable inland waters is similar as for sea areas
3. IHO does not have importance on navigable inland waters

⁵ As interpreted by the Working Group

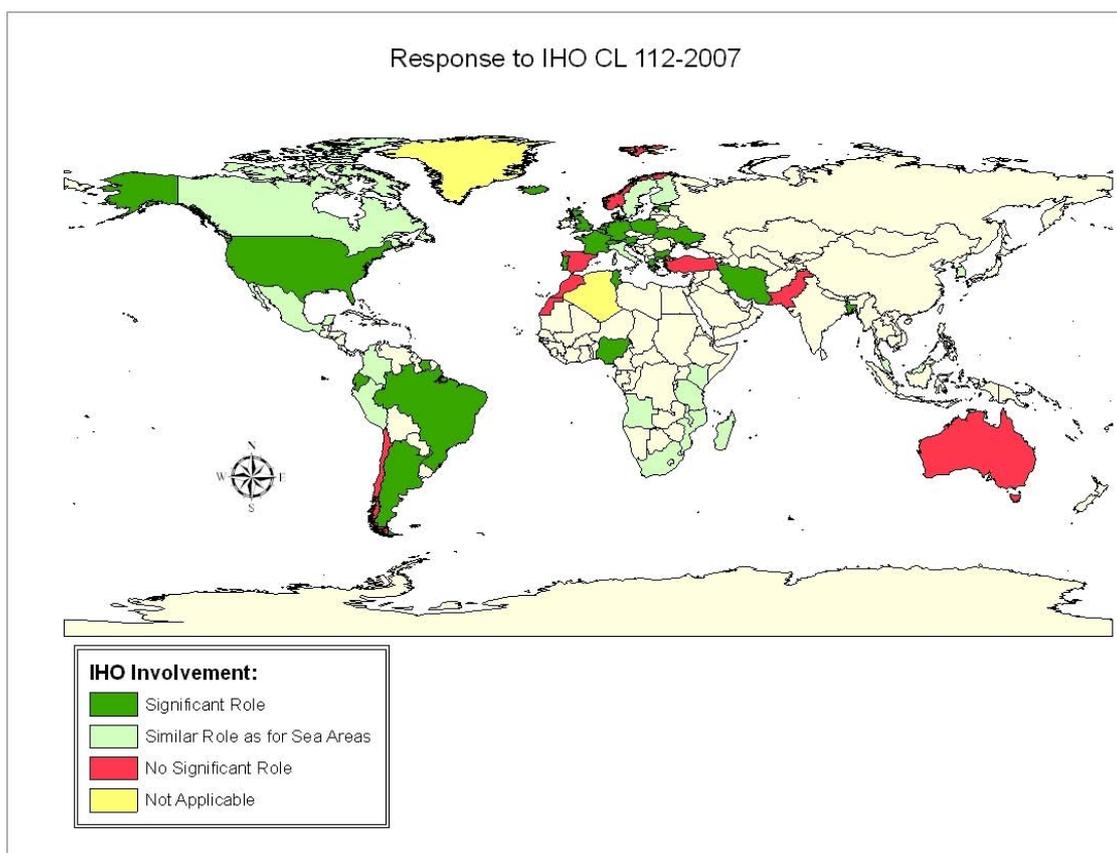


Fig. 3. Status of replies by country

Detailed opinions on the type of IHO influence were given as follows⁶:

Opinion	# of references	Remarks
IHO to provide/maintain Standards for Inland Cartographic Standards, ENC's and Survey standards	5	
Systematisation and standardisation of data acquiring and dissemination	2	
IHO to promote to use the same standards as for coastal areas (M-4, S-44)	13	
IHO to foster uniformity of products and distribution both for SOLAS and inland navigation	4	
IHO to study if special inland extensions or supplements to S-44 are needed	3	
IHO to propose a Quality Management System	1	
IHO standards for competence of hydrographic surveyors need to be adapted for inland requirements	1	
Harmonisation of navigational information for sea and navigable inland waters	1	
IHO to raise awareness of the importance of official hydrography and nautical cartography on navigable inland waters	1	

⁶ As interpreted by the Working Group

Guarantee safety of navigation on navigable inland waters	1	
IHO recognition of Inland ENCs	3	
IHO to be as a forum to change opinions and scientific knowledge on navigable inland waters	1	
IHO to develop better methods for inland hydrography	2	
IHO to assist coordination and standardisation with relevant organizations/mapping agencies	2	
IHO to provide training/support in capacity building	1	
IHO to standardize the method for instantaneous water level presentation on inland ECDIS	1	
Inland ENCs not to be developed in isolation	2	
IHO to supervise and support inland charting projects	1	
IHO to compare national pricing policies and to give guidance on them	1	
Development of S-100 registry	1	

Some observations on the opinions above:

- some of the replies indicate that the same specifications (M-4, S-44) are in use or could be used also for navigable inland waters. Some proposed that these specifications may need some extensions, supplements, or adaptations for navigable inland waters.
- IHO has a role to ensure uniformity between sea areas and navigable inland waters and produce/maintain standards for navigable inland waters.
- there are many proposals for IHO tasks regarding navigable inland waters (raise awareness, training, capacity building, water level specifications, supervising projects, guidance on pricing policies, etc.). Not all of these may be feasible to the IHO.

2.3 International Organizations

Altogether 35 International organizations were listed. The list and contact information on these is in [Annex E](#).

3. Main Conclusions

- The IHO is already somewhat involved in the matter of hydrography and cartography in navigable inland waters, whether it is by the responsibility that some of its members already hold, or by the nautical traffic that crosses the naval areas and coast zones, which need harmonization of documents to ensure the safety of navigation.
- There are unmet hydrographic and nautical cartographic needs in navigable inland waters, specifically hydrographic and cartographic standards, harmonization of information at coastal / navigable inland waters interface area, cooperation between responsible organizations, particularly in the interface with maritime areas where the traffic is the same.
- It is not advisable to have only one standard for hydrographic survey and for nautical cartography for all waterways, whether it is due to environmental characteristics, the nature of the waterway employment, or the heterogeneity of the organizations concerned and of the relevant national regulations.
- From all listed international organizations, the IEHG appears to have a special role in the subject.

Appendix I to Annex D to HCIWWG Report

**LIST OF INTERNATIONAL NAVIGABLE INLAND WATERS
AND WATERWAYS INFORMED**

Region / RHC	Water/ waterway	SOLAS traffic	Remarks
Africa; SAICH	Congo river Shrine river Zambezi river Lakes Malawi, Victoria, Tanganjika	NA*	- Data source: SAICH - Lake and river
Africa; EACH	Nigeria navigable inland waters	Yes for some of them	- Data source: Nigeria - Lagoon, rivers, and creeks
Europe NSHC, EAHC, MBSHC	Those listed at http://www.unece.org/trans/conv/ventn/agn.pdf	Yes for part of them	- Data source: Austria; - Rivers
Europe NSHC	Netherlands inland water	Yes	- Data source: Netherlands - Canals, Harbours
Europe; BSHC	Estonian navigable inland waters	NA	- Data source: Estonia - Lakes and rivers
Europe; BSHC; NSHC	Finnish navigable inland waters Sweden navigable inland waters	Yes	- Data source: Finland, Sweden - Lakes, rivers, and canals
North America; USCHC	Canadian navigable inland waters	Yes	- Data source: Canada - Lakes
South America; MACHC, SEPHC, SWAtHC	Amazon River and affluents Orinoco River Paraguay-Paraná Waterway Uruguay River Río de la Plata Brazil's navigable inland waters	Yes	- Data source: Argentina, Brazil, Peru - Lagoon and rivers

* NA – Not available

Appendix II to Annex D to HCIWWG Report
--

DRAFT LIST OF INTERNATIONAL ORGANIZATIONS

Organization	Role	Contact information	Remarks
African Union (AU)			
Algoma Central		63 Church Street, Suite 600 St. Catharines, Ontario L2R 3C4 (905) 687-7888	
Association of Inland Navigation Authorities		Email info@aina.org.uk Web www.aina.org.uk	
Canada Steamship Lines		759 Square Victoria Montreal, Quebec Canada, H2Y 2K3 e-mail: ships@cslmtl.com	
Canadian Shipowners Association		350 Sparks Street, Suite 705 Ottawa, ON, Canada K1R 7S8 Bruce Bowie Vice-President, Operations bowie@shipowners.ca	
CARP (Río de la Plata Administrative Commission)	Administration of the waterway	Embajador Daniel OLMOS (Argentina) Contralmirante (R) José BELLO GANDRA (Uruguay) Isla Martín García, Casa N° 102 Provincia de Buenos Aires República Argentina Teléfono: +(54)(11) 4728 0013 E-mail: carp.sec.tec@netizen.com.ar	
CARU (River Uruguay Administrative Commission)	Administration of the waterway	REPUBLICA ARGENTINA: C.C.34 C.P.3280 - (Colón Entre Ríos - R.A.) Telefonos: +598-722-5400/5500 /// Telefax: +598-722-6786 REPUBLICA ORIENTAL DEL URUGUAY: Av. Costanera Norte S/N. Paysandú .C.C 57097 - R.O.U / REPUBLICA ARGENTINA: C.C. 34 C.P. 3280 - (Colón Entre Ríos - R.A.) E-mail: mailto:caru@caru.org.uy	
Central Commission for Navigation on the Rhine (CCNR)	has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine	http://www.ccr-zkr.org/ Mr. Gernot Pauli, g.pauli@ccr-zkr.org	

Organization	Role	Contact information	Remarks
Chamber of Marine Commerce		350 Sparks Street Suite 700 Ottawa, Ontario K1R 7S8 Raymond Johnston President rjohnston@cmc-ccm.com	
CHI (Paraguay-Paraná Waterway Committee) (instead of CHI (Paraguay River Waterway Committee))	Administration of the waterway	SECRETARIA EJECUTIVA DEL CIH Secretario Ejecutivo: Lic. Roberto BARATTA Hipólito Yrigoyen 250 - 11° Piso Oficina 1111- Buenos Aires Teléfono (+54-11) 4349-8788/5297 Fax: (+54-11) 4349-6527 E-mail: rbarat@minplan.gov.ar	
Danube Commission	is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation	Mr. Petar Margic, secretariat@danubecom-intern.org	
Economic Commission for Europe of the United Nations (UN/ECE)	has adopted the Inland ECDIS Standard as a recommendation for all European countries and the Russian Federation	Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org	
Economic Community of West African States (ECOWAS)			
European Barge Union		http://www.ebu-uenf.org	
Great Lakes Pilotage Authority		202 Pitt Street, 2nd Floor P.O. Box 95 Cornwall, Ontario K6H 5R9	
International Cartographic Association (ICA)		http://www.icaci.org	
International Hydrographic Organization (IHO)		www.iho.int	
International Maritime Organization (IMO)		www.imo.org	

Organization	Role	Contact information	Remarks
Inland ENC Harmonization Group (IEHG)	is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs	http://ienc.openecdis.org/?q=node/19 Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil, Mr. Bernd Birkhuber, bernd.birkhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque, Albuquerque@dhn.mar.mil.br	
Inland Waterways International		http://www.inlandwaterwaysinternational.org/	
International Sava River Basin Commission	is also using the Inland ECDIS Standard for the river Sava	Mr. Sinisa Spegar, sspegar@savacommission.org	
Internationale Bodensee + Boot-Nachrichten Druck- und Verlagshaus	The private company producing the "Lake Constance Navigational Chart"	Hermann Daniel GmbH & Co KG, Grünwaldstraße 15, Postfach 10 02 64, D-72334 Balingen, Germany Email: ibn@ibn-online.de	
IOC			
Laurentian Pilotage Authority		555, René-Lévesque Blvd West, Suite 1501 Montreal, Quebec Canada H2Z 1B1 administration@apl.gc.ca	
PIANC Inland Navigation Commission	may have some influence to this work	http://www.pianc-aipcn.org/ www.pianc-aipcn.org/pianc/incom.php	
The European Union through the RIS-directive	The European Commission (EC) , an institution of the European Union, is preparing a binding regulation on Inland ECDIS for all the member states of the European Union	Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu	
Upper Lakes Shipping		49 Jackes Avenue, Toronto, Ontario, Canada M4T 1E2 Bernie Johnson VP Marine Projects bjohnson@upperlakes.com	

Annex E to HCIWWG Report

**DRAFT REPORT ON SEMINAR/WORKSHOP ON INLAND HYDROGRAPHY
AND ELECTRONIC CHARTING**

**PART I
SEMINAR/WORKSHOP ON INLAND ELECTRONIC CHARTING
Punta del Este, Uruguay
27 November – 1 December 2006
Summary Report**

Background

This was the first Seminar/Workshop held in South America dealing with Inland Electronic Charting.

There were two main components:

Seminar presentations on the scope of Inland/River Electronic Chart-related activities that are occurring in South America, and elsewhere in the world.

A Workshop on the tools/procedures that can be used to produce Inland ENC data in accordance with IHO S-57 data standards.

It was primarily organized and conducted by:

Otto Duarte Volker (Cledir S.A, Montevideo, Uruguay)

Eric Rottmann (SevenCs, Hamburg, Germany)

Lee Alexander, University of New Hampshire, USA

Objectives

Seminar - Increase the level of knowledge about the challenges and opportunities associated with the production, distribution and use of Inland ENCs, worldwide. An associated objective was to encourage South American participation in international standards development/implementation (i.e., Europe - North America - Russian Federation Inland ENC Harmonization Group).

Workshop – Provide practical information and give hands-on experience on the use of SevenCs tools required for Inland ENC data production, validation, protection, and distribution in accordance with IHO standards.

Participants

Twenty-four (24) persons attended including representatives from hydrographic offices, inland waterway transportation agencies, port authorities, and inland/river shipping companies. Four South American countries were represented (Argentina, Brazil, Paraguay, and Uruguay) with additional persons from Germany, United Kingdom, and USA.

Presentations

SevenCs Overview

Inland ECDIS in the View of the UKHO

Overview of Inland ENC Production/Coverage/Use

Europe

North America

Russian Federation

South America

Inland ENC Standards Development and Implementation

Encoding Guide

Product Specification

Feature Catalogue

Use of the Open ECDIS Forum (OEF)

Alignment with IHO S-57 --> S-100

Inland ENC Harmonization Group (IEHG)

Terms of Reference

Membership/Participants

Inland ENC Register

Benefits of South American Participation

Challenges and Opportunities (a Discussion Session)

- technical (e.g., changing water levels, aids-to-navigation, security schemes, etc.)
- production/distribution, river information services

Topics for Further Consideration

During the week-long Seminar/Workshop, several topics were raised that warrant further consideration.

1. In the past, some Hydrographic Offices (HOs) -- and thus IHO -- have avoided dealing with Inland/River ENC's saying it was not their responsibility. Due to the fact that the IHO S-57 standard was "frozen" and could not be altered to deal with additional inland navigation requirements was another complicating factor. But, this has been overcome by the development of an "Inland ENC Encoding Guide" by the European - North American - Russian Federation Inland ENC Harmonization Group (IEHG) that is closely based on IHO S-57. As such there are very few differences between "maritime" and Inland ENC's.
2. Not all countries that have Inland/River shipping have a hydrographic office or belong to IHO. This is particularly true in Europe on the Rhine and Danube Rivers (e.g., Austria). But, those that do (e.g., Argentina and Brazil) have a responsibility to ensure safe navigation for both coastal/maritime and for inland/river navigation.
3. In terms of the responsibility to provide hydrographic services within a nation, it would appear that there are two main categories, each with two sub-categories:
 - 1) Have a National HO and are an IHO Member State
 - a) responsible for only maritime/SOLAS navigation (e.g., Australia and Singapore)
 - b) responsible for both maritime/SOLAS and Inland/River navigation (e.g., Argentina and Brazil)

- 2) Have an Inland River/Waterway Administration, but are not an IHO MS
 - a) responsible only for non-SOLAS inland/river navigation (e.g., Austria)
 - b) responsible for both maritime/SOLAS and inland/river vessel navigation (Paraguay?)

Obviously, there are some nations that do not currently have an HO or belong to IHO (e.g., Panama). Also, there are some nations that do not appear to fit any general category (e.g., USA)

4. Clearly, IHO should be involved where SOLAS vessels are conducting international transits on inland rivers, waterways and lakes. For instance:
 - Rio Parana - Paraguay (Argentina, Paraguay, and Bolivia)
 - Rio Parana - Tiete (Argentina, Paraguay, and Brazil)
 - Rio Uruguay (Argentina and Uruguay).
 - Rio Amazon (Brazil and Peru)

However, it is less clear if this applies for non-SOLAS vessels (e.g., barges and towboats).

Follow-on Actions

1. Compile a list of major river system/waterways in South America. Ideally, the listing would include the following information:
 - Country
 - River System
 - Responsible Government Agency
 - Length of Navigational Waterway (km)
 - Extent of Inland ENC Coverage
 - Planned
 - Completed
2. Facilitate South America joining the Europe – North America –Russian Federation Inland ENC Harmonization Group (IEHG). Initially, this could include Argentina, Brazil and Uruguay.
3. Investigate the benefit of holding the 2007 Annual Meeting of IEHG in Rio de Janeiro in conjunction with the 2007 Meeting of the MesoAmerican – Caribbean Sea Hydrographic Commission Meeting (Sep – Oct 2007).

Prepared by:

Dr. Lee Alexander
Center for Coastal and Ocean Mapping – Joint Hydrographic Center
University of New Hampshire

Otto Duarte Volker
Cledir S.A.
Montevideo, Uruguay

PART II
FLUVIAL HYDROGRAPHIC SURVEY WORKSHOP
Iquitos, Peru
14 - 16 November 2007

Organized by: Peru and Ecuador; also, by IHO CBC and East Pacific Hydrographic Commission (EPHC)

Hosted by: Peruvian Hydrographic Service for Navigation of the Amazon River

Attendees: ~ 36 persons

<u>Countries</u>	<u>Companies</u>	<u>Academia</u>
Argentina	<i>CARIS</i> (Canada)	Univ. of New Hampshire (USA)
Brazil	<i>Atlas Electroniks</i> (Germany)	
Chile	<i>Hypack</i> (USA)	
Colombia	<i>Cledir</i> (Uruguay)	
Ecuador	<i>Jeppesen Marine/C-Map</i> (Germany)	
Mozambique	<i>Reson</i> (USA)	
Panama		
Peru		
Uruguay		
USA		
Venezuela		

Purpose of Workshop:

To discuss the challenges and opportunities associated with the conduct of hydrographic surveys in dynamic river (i.e., fluvial) systems -- particularly those in South America. This included various types of equipment/systems that can be used, appropriate process/procedures, and resulting type of products/services.

Presentations:

A number of topics were covered including:

- General characteristics of Amazon River
- Present techniques used by Peru DHN to survey dynamic fluvial systems
- Monitoring the Amazon River with satellite images
- Production/use of Inland ENC's in Europe, North and South America
- Inland ENC Harmonization Group (IEHG)
- Future IHO Digital Geospatial Data Standard (IHO S-100)
- New IHO Working Group on Hydrography and Cartography for Inland Waters

In addition, presentations were provided by private companies who provide equipment and software for conducting hydrographic surveys and associated data products.

Technical Visits:

The Workshop included two technical visits.

- 1) Visit to the headquarters of the Peruvian DHN office in Iquitos, Peru responsible for hydrography on the Amazon River (Servicio de Hidrografia y Navegacion de la Amazona – SEHINAV). Of primary interest was both the tools and process used by

SEHINAV to collect and process hydrographic survey data on very dynamic river system such as the Amazon River.

- 2) An underway period onboard the Peruvian Hydrographic Survey Vessel *BAP Stiglich*. The 4-hour transit included both the Port of Iquitos and a 25KM portion of the Amazon River. During this time, a heavy rain event provided Workshop participants the opportunity to observe first-hand how quickly the water level and current flow can change on the Amazon River. During this time, it was also very interesting to see the dynamic nature of the river bank in terms of rapid erosion and deposition.

Post-Workshop Task Group – IHO Hydrographic Survey Publications

Chair: CDR Jose Gianella (Peru)

Participants: Argentina, Brazil, Colombia, Ecuador, Peru, and Uruguay

Technical Coordinator: Dr. Lee Alexander, Univ. of New Hampshire

Purpose: Review two IHO publications and their use for conducting fluvial hydrographic surveys:

IHO Standards for Hydrographic Surveys (S-44)
Manual on Hydrography (M-13)

Primary Question: How suitable are these IHO publications as a means of guidance/standards for conducting hydrographic surveys on dynamic river/fluvial systems?

1. What is (is not) relevant?
2. What needs to be modified?
3. What needs to be added?

Second Question: What are recommended “best practices” specific to river/fluvial systems?

1. Equipment
2. Techniques
3. Budget/personnel

Intended Outcomes:

- 1) A written report will be submitted to IHO Hydrography and Cartography of Inland Water Work Group (HCIWWG).
- 2) Recommendations to IHB regarding changes/additions to S-44 and M-13 to accommodate river/fluvial hydrographic surveys.

Reported by:
Dr. Lee Alexander, University of New Hampshire
18 February 2007

PART III
FLUVIAL HYDROGRAPHIC SURVEY WORKSHOP
Iquitos, Peru
14 - 16 November 2007

16 November 2007

Post-Workshop Task Group Session on Suitability of IHO Publications on Hydrographic Surveying for Fluvial Navigation

- Chair: CDR Jose Gianella (Peru)
- Participants: Argentina, Brazil, Colombia, Ecuador, Peru, and Uruguay
- Technical Coordinator: Dr. Lee Alexander, Univ. of New Hampshire
- Purpose: Review two IHO publications and their use for conducting fluvial hydrographic surveys:

IHO Standards for Hydrographic Surveys (S-44)
Manual on Hydrography (M-13)

Primary Question: How suitable are these IHO publications as a means of guidance/standards for conducting hydrographic surveys on dynamic river/fluvial systems?

1. What is (is not) relevant?
2. What needs to be modified?
3. What needs to be added?

Second Question: What are recommended “best practices” specific to river/fluvial systems?

1. Equipment
2. Techniques
3. Budget/personnel

Intended Outcomes:

- 1) A written report will be submitted to IHO Hydrography and Cartography of Inland Water Work Group (HCIWWG).
- 2) Recommendations to IHB regarding changes/additions to S-44 and M-13 to accommodate river/fluvial hydrographic surveys.

Establishment of a new IHO WG on Hydro and Carto for Inland Waters

- Decision 19 and 22 at 17th IHC in Monaco
- Mention IHO CL 62/2007 of 10 July 2007

Two IHO Publications:

IHO Standards for Hydrographic Surveys (S-44)
Manual on Hydrography (M-13)

M-13

<u>Chap</u>	<u>Maritime</u>	<u>Fluvial</u>
1	Principles of Hydro Survey	
2	Positioning	
3	Depth Determination	very dynamic
4	Seafloor Classification and Object Detect	not really relevant
5	Water levels and flow	very important
6	Topographic Survey	instead, use satellite imagery
7	Practice of Hydro Survey	

Chapter 1 – Principles

1. Brazil is following the 3rd edition rather than the 4th edition approach in which IENCs are going to be produced at 1: 100 000 scale. This is OK for passage planning but not so for approach.
2. Argentina HO surveys the navigation channel for the Rio Plata River. For the rest of the river, there is a private company that performs the survey. However, they give the data to the HO to be produced as charts.
3. Ecuador believes that 1:12 500 scale is necessary for berths and ports.
4. All participants agree that single beam survey that shows the location and depth of the river channel is more important than MBES survey of the entire river.

Chapter 2 – Positioning

1. DGPS is a suitable positioning system for surveying South American. However, RTK may be needed for certain critical/dangerous passages (e.g., areas of rapid currents, shifting depth areas, shoal waters, etc.).

Chapter 3 – Depth

1. Single beam is the preferred method of depth determination in terms of cost, time to conduct, and required accuracy. However, adequate control is needed (e.g., quality control, equipment/performance checks, track planning, etc.). Sidescan sonar (SS) or Multibeam Echosounder (MBES) is needed for classifying hazards or obstructions.
2. Bar checks are more useful than sound speed profiles. Special cases would be freshwater vs. salt water gradient.
3. Motion sensors are not needed for single beam surveys.

Chapter 4 – Seafloor classification

1. Not really relevant for rivers as it is for maritime.

Chapter 5 – Water Levels

1. Water levels should be determined with a similar approach to determining tidal/water levels (e.g., statistical reductions). Should be able to use the existing statistical approach for water levels.

Appendix I Page 274

2. Water levels zones can vary depending on the slope of the river. In some cases, a zone can extend over 100KM. The reduction needs to be practical.
3. Determining water levels in rivers is more difficult than for tidal maritime areas. Brazil uses a practical table to interpolate (linear) between WL stations.
 - In the future, there should be more WL stations so there will be less interpolation.
4. Fluctuations in WL is one of the most challenging problems associated with surveying in South American rivers.

Chapter 6. - Topographic Surveying

1. The use of topographic maps is less important than using recent aerial/satellite imagery.
 - satellite imagery is the future!

Chapter 7 – Hydro Practice

1. Practical means:
 - [Note: there are some additional notes that LA is looking for....]
2. Advanced survey methods (MBES and RTK) are not necessary practical (i.e., in terms of cost, time, training, resources, etc.).
3. Knowing the exact location of the river bank is useless if it is constantly changing.
4. Chile believes that hydro surveys need to be accurate. But, it is the river morphology that will determine what level of accuracy is needed. Argentina agrees and pointed out that rocky areas are more critical and need more effort.

S-44

- do same way as for M-13

Chap	Maritime	Fluvial
1	Classification	
2		
etc.		

[Note: did not have sufficient time remaining to discuss; will do via e-mail correspondence]

REPRODUCTION OF RELEVANT PARTS OF IHO PUBLICATIONS

M-3 – Resolutions of the International Hydrographic Organization (version dated July 2007)

T1.3 ESTABLISHMENT OF REGIONAL HYDROGRAPHIC COMMISSIONS (RHC)

- 1.- It is resolved that the IHB shall encourage Member States having common regional interests in data collecting or nautical charting to form Regional Hydrographic Commissions (RHC) to cooperate in the undertaking of surveys and other projects. As part of IHO, the RHC shall complement the work of the Bureau.
- 2.- RHCs are intended to provide, in pursuance of the resolutions and recommendations of the IHO, regional co-ordination with regard to nautical information, hydrographic surveys, production of nautical charts and documents, training, technical cooperation and hydrographic capacity building projects. They (RHC) should enable the exchange of information and consultation between the hydrographic services concerned. Geographically adjacent RHCs should liaise with each other.
- 3.- RHCs shall be properly constituted and have activities in line with the objectives of the IHO as described in Article II of the Convention on the IHO and in accordance with the approved IHO Work Programme. Geographical areas of the RHC will normally coincide with INT chart regions, modified as appropriate to meet regional requirements and special circumstances. There are special provisions for Region M (Antarctica) because of its special status.
- 4.- RHC membership may include full members, associate members, and observers, all willing to contribute to the safety of navigation in the fields of hydrography, nautical charting, nautical information or navigational warnings in the region concerned. The roles of full members, associated members and observers will be defined by each RHC. Full membership is reserved for IHO Member States within the region who sign the statutes of the RHC.

Associate membership is available to other IHO Members States or States of the region who are non-IHO members, both being signatories of the statutes of the RHC.

Other States and International Organizations active in the region concerned may be invited by the RHC to participate as observers.

The invitation procedures should be established by each RHC.

- 5.- The working languages used by the RHC shall be agreed upon by their members and designated to ensure the best communication between participants. The reports and IHO documents relating to RHC activities shall be in at least one of the official languages of the IHO. For correspondence with the Bureau, one of the official languages of the IHO shall be used.
- 6.- A representative of the Bureau shall be invited to attend meetings of RHCs.
- 6bis.- RHCs shall assess regularly the hydrographic capacity and requirements within their region.

- 7.- Chairs of RHCs shall report to the I.H. Conference on RHC activities, hydrographic capacity and requirements within their region, future plans and the agreed key targets that support RHC tasks detailed in the IHO Work Programme. The Chairs of RHCs shall also submit an annual report to the IHB indicating progress made against the agreed key targets in the IHO Work Programme for general dissemination. Between sessions of the IHC, reports of studies or other activities, which may be considered of general interest to all IHO Member States, shall be sent by Chairs of RHCs to the Bureau for general dissemination.

- 8.- The following structure is to be used for National Reports made to those RHCs that wish to receive such reports:

**STRUCTURE FOR NATIONAL REPORTS TO
REGIONAL HYDROGRAPHIC COMMISSIONS**

Executive summary

1. Hydrographic Office / Service: General, including updates for the IHO Yearbook e.g. reorganization
2. Surveys: Coverage of new surveys.
New technologies and /or equipment
New ships
Problems encountered
3. New charts & updates: ENC's
ENC Distribution method
RNC's
INT charts
National paper charts
Other charts, e.g. for pleasure craft
Problems encountered
4. New publications & updates: New Publications
Updated publications
Means of delivery, e.g. paper, digital
Problems encountered
5. MSI Existing infrastructure for transmission
New infrastructure in accordance with GMDSS Master Plan
Problems encountered
6. S-55 Latest update (Tables)
7. Capacity Building Offer of and/or demand for Capacity Building
Training received, needed, offered
Status of national, bilateral, multilateral or regional development projects with hydrographic component. (In progress, planned, under evaluation or study)
Definition of bids to IHOCBC
8. Oceanographic activities General
GEBCO/IBC's activities
Tide gauge network
New equipment
Problems encountered
9. Other activities Participation in IHO Working Groups
Meteorological data collection
Geospatial studies
Disaster prevention
Environmental protection
Astronomical observations
Magnetic/Gravity surveys
International
Etc.
10. Conclusions

A3.4 HYDROGRAPHIC OFFICE ARRANGEMENTS FOR THE EXCHANGE AND REPRODUCTION OF NAUTICAL PRODUCTS

Note: "Products" within the context of this TR includes nautical charts and documents in analogue or digital format.

1. Noting that:
 - 1.1 Hydrographic Offices have a need to exchange products in the interest of safety and efficiency of navigation,
 - 1.2 Member States have rights to the products of their Hydrographic Offices under national and international law,
 - 1.3 Hydrographic Offices should cooperate to meet the needs of their customers by ensuring appropriate availability of adequate and up-to-date products,
 - 1.4 Hydrographic Offices should avoid creating products where another Hydrographic Office has charting responsibility for the waters concerned and already offers up-to-date products adequate for customers' requirements,
 - 1.5 Originating and reproducing Hydrographic Offices should seek to maintain good liaison, including the use of bilateral arrangements where appropriate, the following procedures are recommended:
 2. Hydrographic Offices should make use of internationally standardized products such as International (INT) Charts and Electronic Navigational Charts (ENC) of other Hydrographic Offices where these products meet their customers' needs and are kept up-to-date. INT charts should be adopted in accordance with the 'Regulations of the IHO International (INT) Charts'. The use of ENC should be governed by the principles of the Worldwide Electronic Navigational Chart Data Base (WEND).
 3. If no internationally standardized product is available, and national products are agreed to be adequate for national and international navigation, these should be used.
 4. Where internationally standardized products are not available, and where national products do not meet the requirements of its customers, any Hydrographic Office may compile new products to satisfy those needs, provided that it obtains the agreement and cooperation of all Hydrographic Offices whose agreement is required.
 5. Hydrographic Offices may establish bilateral arrangements covering the exchange and reproduction of products, and other issues of mutual interest. These bilateral arrangements should meet the legal requirements regarding the reproduction of works and may include technical, financial or other terms and conditions including acknowledgement, in the published products, of all Hydrographic Offices whose material has been utilized in those products.
 6. Until bilateral arrangements are in place, or where it is mutually agreed that the procedures above are not appropriate or economical, Hydrographic Offices may operate according to other procedures mutually agreed between them.
 7. In order to facilitate the negotiation of bilateral arrangements, the parties may agree to seek the assistance of the International Hydrographic Bureau.

8. In circumstances where differences arise between Member States concerning bilateral arrangements, it is recommended that they consider agreeing to the use of alternative dispute resolution procedures in order to attempt to resolve those differences.

See also A1.18.

P-6 - Report of Proceedings, XVII International Hydrographic Conference

Extract of Vol. 1, Page 101

PRO 20 - ESTABLISHMENT OF A WORKING GROUP ON HYDROGRAPHY AND CARTOGRAPHY OF INLAND WATERS

EXPLANATORY NOTE

The vision, the mission, and objectives for IHO approved by the 3rd EIHC do not restrict IHO activities to ocean and coastal areas. On the contrary, its scope should be generic, and include all navigable waters.

Until these days, for any reasons (don't expressed necessity, heterogeneous areas with specifics treatments, etc.), IHO just have had take care of maritime areas.

Inland navigation is increasing and taking an increasing importance around the world, both in vessel transits or tonnage transport.

Vessels movements cruising more than one country are increasing and requiring facilities and support for their sailing, which includes a minimum standard of navigation security information.

In 2003 a group of countries established an independent Inland Electronic Charts Harmonization Group (IEHG - www.ccr-zkr.org; www.unece.org) and some of them have actively participated in WEND and CHRIS meetings.

Today, hydrographic and nautical cartographic standards for inland navigable waters constitutes a gap on IHO duties.

Extract of Vol. 1, Pages 154-156

PRO 20 - ESTABLISHMENT OF A WORKING GROUP ON HYDROGRAPHY AND CARTOGRAPHY OF INLAND WATERS (CONF.17/G/02 Add.1)

Rear Admiral DI VINCENZO (Argentina), introducing the proposal, said that the inland navigable waters were gaining in significance worldwide, and there was a need for international hydrographic and cartographic standards for those waters. IHO should establish a working group on the subject, which should take account of other work being done elsewhere.

The PRESIDENT OF THE DIRECTING COMMITTEE said a letter about the proposal had been received from a representative of Austria currently serving as one of the Chairmen of the Inland ENC Harmonization Group (IEHG). The aim of the IEHG was to develop and maintain a harmonized standard for inland electronic navigational charts based on IHO standards. The letter indicated that the IEHG had good relations with CHRIS, and was concerned that IEHG might overlap with the proposed group.

The PRESIDENT recalled that when dealing with proposal 15, on the Terms of Reference of the ISPWG, the question of inland waterways had been raised by the delegation of the United States, which had agreed to postpone further discussion until proposal 20 was taken up.

Dr. MUSKATIROVIC (Serbia) supported the proposal, which was of great importance for countries with inland waterways. Those countries should play a full part in the work of IHO and work closely with IHO standards. In support of the position of Austria, she suggested that instead of setting up a new body, IHO should find a way of coordinating and guiding the work of existing groups.

Captain WARD (Australia), speaking as the Chairman of CHRIS, supported the proposal. The sponsors of the proposal had highlighted the need to coordinate the charting of inland and estuarine waterways with that of the high seas. CHRIS was already collaborating successfully with organizations such as the IEHG, through its relevant technical working groups. The proposal to establish an IHO working group was therefore timely. The group should decide what role IHO should play in relation to inland waters, and should preferably report to CHRIS. It would be important to establish a deadline for reporting. The proposal included Terms of Reference for the group. If the group was to report to CHRIS, the proposed Terms of Reference should be refined within the structure of CHRIS.

IGA BESSERO (France) urged caution in extending the scope of IHO activities. Doing so might have far-reaching consequences. There was no international regulatory body for inland waterways equivalent to IMO for the high seas. Most inland waterways were regulated nationally or through bilateral agreements. Moreover, IHO might not possess the necessary capacities. In France, for example, the national hydrographic service was not responsible for inland waterways. It would be preferable to respond to countries having specific needs in relation to inland waterways, without taking full responsibility for them, especially bearing in mind that IHO had not yet met all the challenges in the maritime sphere. The implications of inland navigation should be considered by the ISPWG, and a decision on the proposal should be postponed until the EIHC in 2009.

Captain CAVALHEIRO (Brazil) said that Brazil was sponsoring the proposal because of the need to coordinate the growing number of bilateral agreements relating to inland waterways, as well as the technical aspects of their hydrography and cartography. The new Convention stated that all Member States of the United Nations were eligible for membership of the IHO. That would include non coastal states and IHO ought to be in a position to support hydrographic and cartographic capacity building in those countries. He supported the proposals that the working group should report to CHRIS and that the outcome should be submitted to the EIHC in 2009.

Captain IBARRA (Chile) agreed. He supported the proposal.

Dr. ESTIRI (Islamic Republic of Iran) agreed that IHO should consider its attitude towards developing standards for inland waterways. He suggested setting up a small study group to discuss the proposal in detail and make a report.

Professor EHLERS (Germany) supported the view that IHO should take a cautious approach to the question of inland waterways. The proposal before Conference had been submitted at a late stage, and there had been little opportunity to reflect and comment on its implications or to discuss the matter with the national organizations responsible. Until now IHO had concentrated on maritime safety, and to extend its remit to inland waterways would alter its character. The problems of inland water traffic might best be solved on a regional basis among the countries concerned, as in the Central Commission for the Rhine, rather than at the global level. Member States would have to make a positive decision if they wished the Organization to take on new responsibilities of that kind. He therefore was in favour of setting up a working group on the question, to undertake a preliminary investigation of the situation to identify the problems involved and how and by whom they were currently resolved. It would then decide whether coordination through IHO would improve matters and add value to the Organization. It was essential to avoid duplication of work and conflict with existing organizations. The Working Group should report to the 2009 EIHC, which should consider how best to proceed.

Captain SUAREZ (Venezuela) supported the proposal by Argentina. Although many countries such as hers had national bodies responsible for inland waterways, the time had come to develop and maintain international standards.

Admiral ABRAMOV (Russian Federation) acknowledged the importance of the proposal and mentioned the problem of worldwide electronic chart coverage. His country had a national body with specific responsibility for its vast expanses of inland waterways. However, he agreed with the

delegations of France and Germany that caution was needed in expanding the scope of IHO's activities. The question should be referred to a future Conference.

Captain PEREYRA (Uruguay), supporting the proposal, said that, in essence, the mission of IHO extended to all navigable waters. Most countries already had adequate regulations and authorities responsible for inland navigation, but some did not. Guidelines were needed, in particular, for passage from maritime to inland waters, to avoid misinterpretation of charts. Moreover, maritime Electronic Navigational Charts (ENCs) would not contain all the necessary data to cover inland waters. However, the deadline proposed for the working group might be too short.

Rear Admiral ANDREASEN (United States of America) mentioned the constant pressure for increased ENC coverage and the need to harmonize maritime spatial data. Steps should be taken to incorporate the inland ENCs developed by the Inland ENC Harmonization Group (IEHG) into IHO's S-100 standards, and indeed to accommodate IEHG itself within the group to be established. Member States should be encouraged to include in their delegations to the IHC authorities responsible for inland waterways. Non-IHO Member States, such as those in the Great Lakes region in Africa, had navigation problems that could be dealt with only by IHO.

Rear Admiral ZEGARRA (Peru) supported the proposal. His country had an authority for the hydrography and cartography of inland waters. However, there was a need to develop international standards and capacities in the matter.

Captain KAMPFER (South Africa) supported the proposal. It was high time attention was given to inland navigation. The African continent, for example, had a vast network of inland waters and navigable rivers that were poorly surveyed and had witnessed serious accidents and considerable loss of life.

Rear Admiral MONCRIEFF (United Kingdom) acknowledged the importance of the question while urging caution in establishing a working group to deal with it. It was important to recognize the interests of non-IHO Member States and those of regulatory national bodies for inland waterways, also bearing in mind the existing common charting standards for waters linked to the high seas and navigable by seagoing vessels, for example, the ongoing work under the European "Lorelei" project. All those aspects should first be examined, and only then should IHO identify a possible role for itself and decide whether a working group was needed and what form it should take. The Terms of Reference of any such group should take full account of the work of the IEHG.

Captain NAIRN (Australia) said that the level of IHO involvement in inland waterways clearly needed careful consideration. He was in favour of setting up the proposed working group to study the question and report to CHRIS, which was the most appropriate body to finalize the Terms of Reference and supervise the work.

Captain CAVALHEIRO (Brazil) agreed. As for safety of navigation, many countries needed the support of the IHO Capacity Building Committee, which had a mandate, among other things, to encourage countries to establish national hydrographic committees.

Commander KLEPSVIK (Norway) said that nothing in the Convention or its amendments precluded the extension of IHO's activities to inland navigation. The concerns of Germany and France, which he shared, about the implications of expanding IHO's work into that area, could be met by confining the Terms of Reference of the working group to those in paragraph (a), and requesting it to report to the 4th EIHC in 2009. At that point, the Terms of Reference could be further developed.

Mr. BIANCO (Observer for Malta) commented that the term "inland waters" covered all waters within the national baseline.

The PRESIDENT said that some inland waters formed the boundary between two countries, and were therefore international.

Summing up the discussion, he said it was generally agreed that the proposal dealt with a question of policy, and was of exceptional importance. It should be taken forward, although with a degree of caution. The most appropriate forum to deal with it was the CHRIS Committee, which should submit a set of recommendations to IHC, possibly the 4th EIHC. He suggested that the proposal should be left pending and that a drafting group should revise the proposed Terms of Reference in the light of the discussion, and submit new wording to the Conference at a subsequent session.

Extract of Vol. 1, Pag. 101

DECISION No. 19 (PRO 20) - ESTABLISHMENT OF A WORKING GROUP ON HYDROGRAPHY AND CARTOGRAPHY OF INLAND WATERS

The Conference approved to ask CHRIS to establish a Working Group on Hydrography and Cartography of Inland Waters, to set its Terms of Reference and Rules of Procedure noting the guidelines below and to report on its work to the 4th EIHC in 2009.

- The purpose of the Working Group will be to analyze and recommend the level and nature of IHO involvement in the Hydrography and Cartography of Inland Waterways.
- The Working Group should involve all relevant non-IHO international bodies in its deliberations, including the IEHG.

FUTURE GENERAL REGULATION, APPROVED AT THE XVIIth IHC

Regional Hydrographic Commissions

ARTICLE 8

- (a) Regional Hydrographic Commissions (hereinafter RHCs) are bodies, established by Member States and recognized by the Assembly to improve coordination, enhance exchange of information and foster training and technical assistance.
 - (b) RHCs recognized by the Assembly are listed in the Annex to these General Regulations.
 - (c) RHCs shall be established by an agreement of their members.
 - (d) RHCs membership may include full members and associate members, both willing to contribute to the objectives of the Organization.
 - (e) Full membership is reserved for Member States within the region.
 - (f) Associate membership is available to:
 - (i) other Members States; and
 - (ii) States of the region who are not Member States.
 - (g) Other States and international organizations active in the region concerned may be invited by the RHC to participate as observers.
 - (h) RHCs shall assess regularly the hydrographic capacity and requirements within their region.
-

Annex G to HCIWWG Report

PROPOSED TECHNICAL RESOLUTION**Recognizing that:**

- a. under the Convention on the International Hydrographic Organization (IHO), Article II, an object of the Organization is to seek the greatest possible uniformity in nautical charts and publications;
- b. under the amendments to the Convention, agreed by the 3rd Extraordinary International Hydrographic Conference (EIHC) and now awaiting formal ratification by the required majority of Member States, Article II has been expanded to include: *the widest possible use of hydrography, and the widest possible use of IHO standards*. These amendments place no geographical limits on the application of hydrography or its associated standards;
- c. the IHO is already involved in hydrography and cartography of navigable inland waters, both through the responsibility that some of its members already hold, and by the fact that considerable nautical traffic passes from the sea to navigable inland waters and vice versa. This calls for the harmonization of hydrographic and cartographic information and services provided to navigators to assist the safety of navigation and protection of the environment;
- d. the IHO is recognized by the United Nations General Assembly and the United Nations International Maritime Organization (IMO) as the technical authority for issues concerning hydrography and nautical cartography;
- e. the responsibility for hydrography and nautical cartography for navigable inland waters in States is often divided among different organizations, not all of them having representation in the IHO, and that the limits of responsibility among these organizations may differ according to the legislation in each State;

Acknowledging that:

- a. IHO has an extensive set of specifications for hydrography and nautical cartography developed for sea and coastal areas, but used widely also on navigable inland waters; however;
- b. these IHO specifications for hydrographic survey and nautical cartography are currently not sufficient for application to all navigable inland waters and do not cover all hydrographic and nautical cartographic needs in navigable inland waters;
- c. extended regional specifications for hydrographic survey and for nautical cartography for navigable inland waters are needed to take into account a variety of environmental characteristics and the different nature of circumstances, use and traffic in each waterway; and
- d. these extended regional specifications should be as far as possible consistent with the IHO specifications;

- e. there are other bodies, such as the Inland Electronic Navigational Chart Harmonization Group (IEHG), which has already published format and data specifications for inland electronic nautical cartography;
- f. no recognized organization other than the IHO is in a position to foster harmonization between hydrography and cartography in maritime areas and the corresponding activities in navigable inland waters.

The IHO Resolves:

A 1.xx HYDROGRAPHY AND CARTOGRAPHY OF NAVIGABLE INLAND WATERS

1. Relevant Regional Hydrographic Commissions (RHC), through appropriate liaison bodies, are invited to:
 - a. encourage the consistent use of hydrographic and nautical cartographic standards and mutual cooperation for the enhancement of navigation safety in navigable inland waters within and between regions;
 - b. encourage the identification of needs for developing additional regional extensions to IHO specifications to cater for navigable inland waters and foster these developments together with other relevant organizations;
 - c. encourage liaison with relevant IHO bodies (International Hydrographic Bureau (IHB), Hydrographic Services & Standards Committee (HSSC)) to ensure that any extensions to IHO specifications for navigable inland waters are consistent with IHO specifications and are as far as possible harmonised between other regional extensions;
 - d. encourage liaison, when appropriate, with other bodies working with inland hydrographic and nautical specifications, especially with the Inland Electronic Navigational Chart Harmonisation Working Group (IEHG), to ensure consistency and harmonisation as far as feasible with their specifications;
 - e. encourage cooperation and mutual assistance between relevant authorities, even from different regions but with common interests, particularly for the safety of navigation in navigable inland waters, with the purpose of mutual support and the establishment of instructions and guidance for hydrographic survey and the production of nautical charts (see also Resolution A3.4);
 - f. Monitor the development and use of hydrographic and cartographic standards on navigable inland waters, and report as necessary to the Inter-Regional Coordination Committee (IRCC).
 2. Where the responsibility for hydrography and nautical cartography of maritime and navigable inland waters is divided among different organizations, Member States are encouraged to create National Hydrographic Committees. (See also Resolution T1.3).
-

REPORT OF THE MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG)

(CONF.EX4/REP.03)

Submitted by:	Chairman, MSDIWG
Chairman:	Mr John PEPPER (UK)
Vice Chair:	Ms Maureen KENNY (USA)
Secretary:	not filled
Membership:	
IHO:	Argentina, Australia , Brazil, Canada, Denmark, Estonia, Finland, France, Germany, Italy, Japan, Korea (Rep of), Latvia, Nigeria, Netherlands, Norway, Slovenia , Spain, Singapore, Sweden, UK, USA, IHB
Non-IHO:	University of Melbourne, Australia; SeaZone Solutions , UK

Members in bold type are participating members

1. Background

- 1.1 In November 2005, the IHO hosted a Seminar in Rostock, Germany entitled “*The Role of Hydrographic Services with regard to Geospatial Data and Planning Infrastructure*”. The seminar recognised formally that hydrographic data was not only important in support of Safety of Life at Sea but also to Defence and the wider environment.
- 1.2 The XVIIth International Hydrographic Conference, in May 2007, considered the development of national and marine spatial data infrastructures and directed that the Committee on Hydrographic Requirements for Information Systems (CHRIS) establish a Marine Spatial Data Infrastructure Working Group (MSDIWG), the purpose of which would be to analyse and recommend the nature and level of the IHO role in assisting Member States to support their NSDI through development of and/or aligning with the Marine Spatial Data communities in the development of an MSDI. The MSDIWG was duly constituted at the 19th meeting of CHRIS with the Terms of Reference as set out in **Annex A**. A list of members of the MSDIWG is shown at **Annex B**.
- 1.3 A position paper (see: **Annex C**) was provided to IHO in June 2007 identifying how the Hydrographic Office community might engage in the development of Marine Spatial Data Infrastructure (MSDI). The role of IHO can be considered to impart knowledge, provide guidance and standards to practitioners and inform Government and other stakeholders on hydrographic matters. The IHO’s awareness of the continuing need to encourage the wide use of hydrographic information underpins the need to develop best practice in the creation and support of the marine components of National Spatial Data Infrastructures (NSDI).
- 1.4 Regional Spatial Data Infrastructures are emerging. For example, in the European Union, the Infrastructure for Spatial Information in Europe (INSPIRE) Directive becomes effective in May 2009. It requires all EU Member States to develop interoperability between their datasets (for example, the land and sea interface at the coast line); harmonise data and metadata standards, develop network services and encourage the re-use/sharing of public sector information.

1.5 HO may wish to establish a role for themselves and the information that they are responsible for in the development and management of NSDI programmes. At the same time, it must be recognised that this can only be done on the basis of the structure of the individual National Administration and that this will differ from country to country.

2. MSDIWG 2008 Objectives

2.1 The MSDIWG sets the following objectives:

- a) to undertake an audit of IHO Member States to establish their level of knowledge and understanding regarding the benefit of supporting national SDI initiatives and their capability of supporting the development of Marine SDI,
- b) to analyse the results of the audit and confirm the requirements for an IHO SDI Guidance document,
- c) to provide a preliminary IHO SDI Guide framework for Member States incorporating a step by step approach to SDI,
- d) to provide a report and recommendations to CHRIS20 for subsequent consideration by the 4th EIHC, and
- e) to recommend (if necessary) an extension to the life of the WG in the light of results and/or progress achieved in the 2008 work programme.

3. What is a Spatial Data Infrastructure (SDI)?

3.1 SDI is a term used to summarise a range of concepts, processes, relationships and physical entities that, taken together, provide for integrated management of spatial data and information. The term covers the processes that integrate technology, policies, criteria, standards and people necessary to promote geospatial data use throughout all levels of Government. It covers the base or structure of practices and relationships among data producers and users that facilitates data sharing and use. It covers the set of actions and new ways of accessing, sharing and using geographic data that enable far more comprehensive analysis at all levels of government, the commercial and not-for-profit sectors and academia. It also describes the hardware, software and system components necessary to support these processes (see also: Annex C).

3.2 Marine SDI is the component of NSDI that encompasses marine geographic and business information in its broadest sense covering sea areas, inland navigable and non-navigable waters. This would typically include seabed topography, geology, marine infrastructure (e.g. bathymetry, wrecks, offshore installations, pipelines and cables etc.), administrative and legal boundaries, areas of conservation, marine habitats and oceanography.

4. The MSDIWG Data Collection Programme

Method

4.1 The MSDIWG undertook a programme of data collection. A workshop was held at IHB Monaco in February 2008 where a data collection programme was devised. The purpose of this work was to obtain information for analysis in order to recommend the level and nature of the IHO role in assisting Member States in support of their NSDI.

- 4.2 A Maturity Matrix approach was developed, looking at five cluster categories of NSDI/MSDI:
- Category 1 - Strategy and policy
 - Category 2 - Communications and people
 - Category 3 - Data management
 - Category 4 - Data frameworks and standards
 - Category 5 - Data dissemination
- 4.3 Five maturity levels for each category were devised (from 1 = *basic* to 5 = *optimized*), thereby enabling potential respondents to indicate both their present (2008) level for each category and the level they aspired to be at by 2011 in terms of status of MSDI in each Member State and the level of Hydrographic Office involvement (if any).
- 4.4 Three further qualitative questions were developed to gather additional information covering the following topics:
- activities and plans to achieve these aspirations
 - perceived barriers to achieving the aspirations or in making progress
 - how the IHO could assist in either overcoming the barriers or putting plans into action
- 4.5 The Maturity Matrix and accompanying questionnaire was circulated to Member States by Circular Letter 41/2008 in April 2008 (See: **Annex D**).
- 4.6 An excellent response from 43 States was achieved (54% response rate). The breakdown of responses was:
- Europe - 17
 - Africa - 3
 - Asia - 8
 - Central/South America - 8
 - Oceania - 3
 - USA & Canada - 2
- 4.7 Two responses were incomplete as far as the matrix was concerned and were discarded from that part of the analysis.
- 4.8 A detailed analysis of the responses was undertaken during July 2008 by the UKHO Market Research Team in conjunction with members of the MSDIWG. Analysis of the Maturity Matrix was numbers-based while the non-matrix questions comprising open-ended answers were grouped, and a set of generic phrases developed against which to standardise the responses.
- 4.9 Initial research findings were circulated amongst MSDIWG members in August prior to the presentation of all detailed quantitative and qualitative responses at a meeting of the MSDIWG on 10 and 11 September 2008.
- 4.10 Discussions at the meeting centred on the research findings and suggestions for an IHO role and its supporting activities going forward were formulated at the meeting.

5. Overview of Results

Maturity Matrix (Question 1)

5.1 From the maturity matrix, the following was identified:

- The average current (2008) maturity status was found to be at level 3 (3 = *defined and standardized*) on the maturity matrix with aspirations to move to level 4 (4 = *managed*) by 2011 through a range of planned activities.
- This overall average, however, hides some significant variations in maturity levels, most significantly:
 - The majority of States are at levels 1 to 3 in four of the five categories (*strategy and policy; data management; data frameworks/standards and data dissemination*).
 - The most significant development up to 2011 will be on *data management, data standards / frameworks, and data dissemination* categories.
 - There is a gap in current status between “developed” and “emerging/developing” nations¹, significantly on *people and communications, data dissemination and MSDI strategy / policy* categories.
 - The gap between “developed” and “emerging/developing” nations is anticipated to reduce on *people and communications and data dissemination* but widen on *MSDI strategy / policy* over the coming 3 years.
 - Grouped on a regional basis, Northern Europe and the other developed States (Australia, Japan, New Zealand, USA) are more mature across all categories of the matrix, followed by Eastern Europe, Southern Europe / North Africa, Central/South America, and Asia. Eastern Europe, in particular, will make rapid progress to 2011 in all categories (See **Annex E**).

Response to qualitative questions (Questions 2-4)

5.2 The following key points were identified from the responses:

5.2.1 SDI Policy

- Few respondents stated they have no MSDI / NSDI policy or strategy.²
- Several respondents stated that MSDI is or will be a part of the NSDI in their State.
- The majority of respondents have set up or are setting up committees or a designated authority to develop policy/strategy. As part of this process partnerships with bodies/authorities including data owners and users are already formed or forming.
- Development of an MSDI database is a key activity. About a third of the States have some sort of MSDI system/database underway with major activities relating to digitisation and integration.

¹ MSDIWG used the United Nations classifications for “developed” and “developing” nations and in the grouping of States regionally to ensure consistency of approach

² There is an element of confusion in the narratives from some Member States. MSDIWG are cautious of the level of understanding of MSDI/NSDI from some responses

- Most respondents are either already working within or looking to work within international or national standards, (such as S-57/S-100, ISO 19100 / 19115 / TC211).
- In Europe, the INSPIRE Directive is an important driver for the creation of an NSDI/MSDI. INSPIRE is helping to prioritise themes and work packages.
- Although currently limited, data dissemination is planned to be primarily via the web, through new portal developments and the use of web mapping services (WMS) and web feature services (WFS).

5.2.2 Barriers to progress

- The main barriers were described as *resources, funding and other policy priorities*.
- About half the respondents indicated that there are no barriers. However, “no barriers” does not mean it will happen or happen quickly!
- No agreed national or common spatial data policy or framework.
- MSDI is subordinate to NSDI strategies and policies. Visibility of marine matters is low.
- No responsibility for / or responsible MSDI expert, so focal point needs to be designated.
- Barriers between agencies: historical, political, bureaucratic, and national versus ‘local’ conflicts.
- Different departments involved have different priorities. Co-operation and co-ordination between stakeholders to be developed.
- Data held by different organizations and at different levels.
- The need for harmonisation and interoperability; decisions need to be made on vertical datum and format issues.
- Copyright, IPR, Digital Rights Management (DRM), licensing and cost of data, “free” data, etc.
- Basic geographic data with no legal obligations versus navigational geographic data with legal implications.
- Policy issues regarding distributing digital data via the internet.

Defining the IHO Role (See: **Annexes F & G**)

- 5.3 Identifying the barriers to progress helps define the role the IHO can play in assisting States to “close the capability gap” in the development and delivery of their MSDI. The IHO role should therefore acknowledge that:

- 25% of the respondents across the five categories indicated that they did not require any assistance³.
- Many respondents requested assistance in the form of training or as published guidelines or procedures. Online e-training is a cost-effective training methodology and face-to-face instructor-pupil training is arguably the best but expensive.
- Requests for knowledge and experience sharing related to MSDI strategies and implementation activities. This could take the form of workgroups or via the web to help spread best practice. This notion was more popular in Europe than formal training. Less developed nations suggested that developed States should share (transfer) their knowledge and experience or could provide mentoring facilitated by the IHO.
- Assistance should be concentrated on the “emerging / developing” States and take the form of knowledge transfer in relation to:
 - developing and delivering an MSDI strategy and policies;
 - the benefits of MSDI and ‘pitfall’ avoidance;
 - helping States to obtain funding through business case development;
 - relevant standards and frameworks;
 - lists of organizations and personnel, and their related expertise who are competent/expert in this area of knowledge;
 - ‘training’ on technical issues such as data management (building the database and metadata records) and information dissemination (through development of web-based systems).

6. Conclusions

6.1 The MSDIWG drew the following conclusions.

6.1.1 The data gathering served its purpose in measuring the current status and future aspirations for MSDI within Member States and providing headline information to enable the MSDIWG to understand the issues involved.

6.1.2 The analysis provided clear evidence that there is a need for assistance in helping to develop the roles of hydrographic offices in MSDI/ NSDI which in turn enables the IHO to define its role and the possible help it can give to Member States as they work towards involvement in a fully optimised MSDI.

6.1.3 Training and knowledge transfer is required mainly in data management, MSDI framework development, data standards and dissemination. IHO should be encouraged to develop and disseminate guidelines and procedures in these areas.

6.1.4 Capacity and capability across the HO community will be improved through increased resources, funding and policy development.

6.1.5 Member States in Southern Europe/ North Africa, Asia, Africa, Central and South America will benefit most from IHO assistance.

6.1.6 The work undertaken has provided valuable information about those Member States who responded. Concerns remain as to how non-responding Member States understand and / or participate in MSDI/ NSDI development in their respective States.

³ This represents Member States already at a relatively high maturity level in MSDI/NSDI initiatives (e.g. Europe; Australia, USA, Canada)

7. Recommendations

7.1 Based on the information received and the conclusions drawn, the MSDIWG recommends that:

7.1.1 The IHO develops its SDI policy towards Member States through engagement with SDI stakeholder groups, participation in group discussion at RHC level to strengthen understanding and knowledge of the role of hydrography in MSDI and provides feedback to Member States. Relevant regional bodies involved in SDI include:

<i>Europe</i>	<i>European Spatial Data Information Network (ESDIN)</i>
<i>Asia Pacific</i>	<i>Permanent Committee for GIS in Asia Pacific (PCGIAP)</i>
<i>USA</i>	<i>Federal Geospatial Data Committee (FGDC)</i>
<i>Canada</i>	<i>Geoconnections Canada</i>
<i>Africa</i>	<i>Committee for Developing Information – GI Sub Committee (CODI-Geo)</i>
<i>Americas</i>	<i>Permanent Committee on SDI for the Americas (PCIDEA)</i>
<i>Caribbean</i>	<i>Regional SDI Coordination Body (in preparation)</i>

7.1.2 IHO develops, through the MSDIWG, a definitive and practical publication to assist IHO Member States to be better prepared to develop and / or join MSDI at their national or regional level. This will take the form of an SDI Guide and include information on:

- *What is SDI and specifically what is an MSDI?*
- *Why SDI's are required (the drivers)*
- *Why HO spatial information can support SDI*
- *Key components of a MSDI*
- *Which data are relevant to MSDI*
- *How to engage with extant or emerging SDI's at the National, Regional or Global level*
- *Developing interoperability at the organizational level*
- *Examples of best practice to draw on (EU INSPIRE, US GCDI, Canada GeoConnections)*

7.1.3 IHO develops and supports SDI capacity building (e.g. in-country practical training and advice) to provide the necessary skills, knowledge and understanding of key components of SDI as described above. This should be developed to meet identified needs and be integrated into the IHO capacity building process, as other priorities allow.

7.1.4 IHO considers the development of a web-based facility to encourage knowledge transfer, best practice and online guidance and training material. This is a longer term objective to make information available on the IHO website pertaining to developments in MSDI across the World, contact points, how to get help, lists of experts, web links and reference material.

7.1.5 MSDI should be a standing agenda item at meetings of Regional Hydrographic Commissions in order to monitor and report progress in Member States' MSDI engagement and development. MSDIWG will provide benchmarks against which reporting might be measured.

- 7.1.6 IHO adopts a formal resolution on MSDI reflecting in general terms the role and involvement of IHO in supporting Member States' roles in MSDI. A draft resolution is contained in **Annex H**.

8. Endorsement by CHRIS

The MSDIWG reported to CHRIS at its 20th meeting in November 2008. The CHRIS endorsed the MSDIWG report, subject to some minor amendments which have been incorporated into this report. The CHRIS agreed that the MSDIWG should continue its work to complete a definitive and practical publication (MSDIWG Recommendation 7.1.2) to assist IHO Member States in contributing to MSDI at their national or regional level and to submit the document to the Hydrographic Services and Standards Committee (HSSC) at its inaugural meeting in late 2009.

9. Actions Required of 4th EIHC

The 4th EIHC is invited to:

- a. Note this Report
- b. Endorse the recommendations of the MSDIWG
- c. Adopt the Resolution shown at Annex H

Annexes:

A. CHRIS Terms of Reference for MSDIWG	E. Summary Graphs of Responses
B. Composition of the MSDIWG	F. HO Role in MSDI
C. SDI Report to IHO (June 2007)	G. Inputs to IHO SDI Guide (Specimen)
D. CL41/2008 – Request for Information on Status of MSDI	H. Proposed Draft Technical Resolution

ANNEX A to MSDI WG Report

MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG)

Terms of Reference

1. Objective

Identify the Hydrographic Community inputs to National Spatial Data Infrastructures (NSDI).

2. Authority

This Working Group (WG) is a subsidiary of the IHO CHRIS. Its work is subject to IHO CHRIS approval.

3. Procedures

The WG should:

- a) Identify, in line with the objectives, mission and vision of the IHO, the level and nature of the IHO's role in assisting Member States (M/S) in their support of NSDI.
- b) Liaise, as appropriate, with other relevant technical bodies such as the IOC, and the World Data Centers in Oceanography, Bathymetry and Marine Geophysics.
- c) Propose any Technical and/or Administrative Resolutions that may be required to reflect IHO involvement in the support of NSDI.
- d) Identify actions and procedures that the IHO might take to contribute to the development of National Spatial Data Infrastructure (NSDI) and / or MSDI in support of Member States.
- e) Determine any actions that the IHO and individual M/S might take to forge links with other bodies (e.g. OGC, ISO TC211, IOC) to ensure M/S are best placed to meet the developing challenges associated with data management and governance.
- f) Identify and recommend possible solutions to any significant technical issues related to interoperability between maritime and land based inputs to NSDI, and in particular:
 - 1) Datum issues.
 - 2) S-100 interoperability with NSDI.
 - 3) S-100 interoperability with oceanographic, marine biological, geological and geophysical data structures.
- g) Identify any IHO capacity building requirements.
- h) The WG should work by correspondence, and use group meetings, workshops or symposia only if required.
- i) Submit a report and recommendations to CHRIS/20 in 2008 for subsequent consideration at the 4th Extraordinary International Hydrographic Conference in 2009.

4. Composition and Chairmanship

- a) The WG shall comprise representatives of Member States, Expert Contributors and Accredited NGO Observers, all of whom have expressed their willingness to participate.
 - b) Member States, Expert Contributors and Accredited NGO Observers may indicate their willingness to participate at any time. A membership list shall be maintained and confirmed annually.
 - c) Expert Contributor membership is open to entities and organizations that can provide a relevant and constructive contribution to the work of the WG.
 - d) The Chair and Vice-Chair shall be a representative of a Member State. The election of the Chair and Vice-Chair should normally be decided at the first meeting after each ordinary session of the Conference (Conference to be replaced by Assembly when the revised IHO Convention enters into force) and, in such case, shall be determined by vote of the Member States present and voting.
 - e) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented. In the event that votes are required between meetings or in the absence of meetings, including for elections of the Chair and Vice Chair, this shall be achieved through a postal ballot of those M/S on the current membership list.
 - f) If a secretary is required it should normally be drawn from a member of the WG.
 - g) If the Chair is unable to carry out the duties of the office, the Vice-Chair shall act as the Chair with the same powers and duties.
 - h) Expert Contributors shall seek approval of membership from the Chairman.
 - i) Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agrees that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
 - j) All members shall inform the Chairman in advance of their intention to attend any meetings of the WG.
 - k) In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.
-

ANNEX B to MSDIWG Report

**MARINE SPATIAL DATA INFRASTRUCTURE WORKING GROUP (MSDIWG)
Membership List**

IHO MS	Name	Email
Australia	Mr Gordon HOMES	Gordon.homes@defence.gov.au
Denmark	Mr Thomas RAVN	thrav@kms.dk
Estonia	Mr Peeter VÄLING	Peeter.Valing@vta.ee
France	Ms Caroline TEXIER	caroline.texier@shom.fr
Finland	Mr Rainer MUSTANIEMI	rainer.mustaniemi@fma.fi
Netherlands	Ms Ellen VOS	em.vos@mindef.nl
Nigeria	Capt Adamini MUSTAPHA	nnho_nnhydrographicoffice@yahoo.com
Norway	Mr Tore HAYE	sksk@statkart.no
Slovenia	Mr Igor KARNICNIK	igor.karnicnik@geod-is.si
Sweden	Mr Patrik WIBERG	patrik.wiberg@sjofartsverket.se
UK	Mr John PEPPER (Chair)	john.pepper@UKHO.gov.uk
USA	Ms Maureen KENNY (Vice Chair)	Maureen.Kenny@noaa.gov
IHB	Ing en Chef Michel HUET	mhuet@ihb.mc
	Mr Joon Ho JIN	pak@ihb.mc
Expert Contributor(s)		
SeaZone [UK]	Dr. Mike OSBORNE	mike.osborne@seazone.com
UKHO [UK]	Mr Ian STOCK	Ian.Stock@UKHO.gov.uk

ANNEX C to MSDIWG Report

MARINE SDI AND THE INTERNATIONAL HYDROGRAPHIC COMMUNITY

By Dr Mike Osborne (SeaZone) and John Pepper (UK Hydrographic Office)

Background

The International Hydrographic Organization (IHO) represents the member interests of the National Hydrographic Offices and the hydrographic community across the World. The IHO has focussed successfully on the primary role of its membership, to ensure the development and sustainability of standards associated with the capture, management and use of hydrographic data in support of UN Convention for Safety of Life at Sea (SOLAS). It does this through the publication of “official” navigational charts and supporting publications.

In November 2005, the IHO hosted a Seminar in Rostock, Germany entitled “The Role of Hydrographic Services with regard to Geospatial Data and Planning Infrastructure”. The seminar recognised formally that hydrographic data was not only important in support of Safety of Life at Sea but also to Defence and the wider Environment.

The hydrographic community has a reputation based on quality and professionalism. It has built up a store of experience and expertise that is relevant when considering wider use of hydrographic data. The role of IHO is to impart knowledge, provide guidance and standards to practitioners and inform Government and other stakeholders on hydrographic matters. The change in the IHO’s constitution to embrace the need to encourage wider use of hydrographic information represents an opportunity for the IHO to use this wealth of knowledge and experience to underpin the development of best practice in the creation marine components of NSDI.

Regional SDI’s are emerging. For example, in the European Union, legislation is being formulated to create an Infrastructure for Spatial Information in Europe (INSPIRE) to develop interoperability between datasets (e.g. land and sea interface at the coast line), harmonise data and metadata standards, develop network services and encourage the re-use / sharing of public sector information. The EU Directive will be announced in late 2006.

HO’s may wish to establish a role for themselves and the information they are responsible for in the development and management of National Spatial Data Infrastructure (NSDI) programmes. The IHO recognises that this can only be done on the basis of the structure of the individual National Administration and that this will differ from country to country.

What is a SDI?

A Spatial Data Infrastructure is a term used to summarise a range of concepts, processes, relationships and physical entities that, taken together, provide for integrated management of spatial data and information. The term covers the processes that integrate technology, policies, criteria, standards and people necessary to promote geospatial data sharing throughout all levels of Government. It covers the base or structure of practices and relationships among data producers and users that facilitates data sharing and use. It covers the set of actions and new ways of accessing, sharing and using geographic data that enable far more comprehensive analysis at all levels of government, the commercial and not-for-profit sectors and academia. It also describes the hardware, software and system components necessary to support these processes.

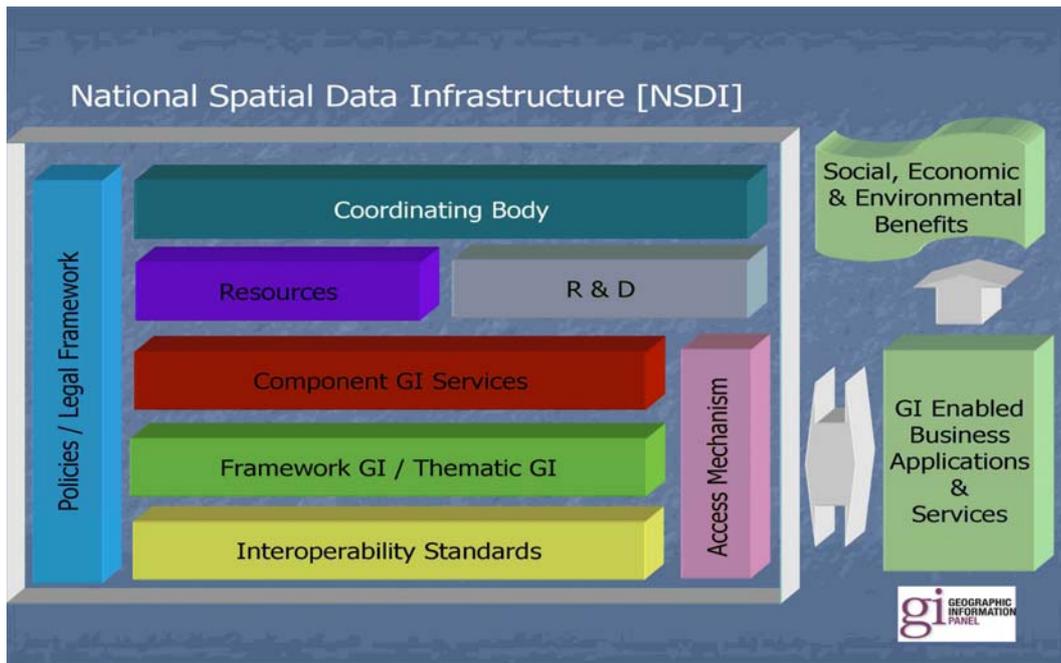


Figure 1 Components of the UK NSDI (Source: UK GI Panel, Oct 2006)

Marine SDI

Marine Spatial Data Infrastructure (MSDI) is the component of NSDI that encompasses marine geographic and business information in its widest sense. This would typically include seabed topography, geology, marine infrastructure (e.g. wrecks, offshore installations, pipelines and cables etc); administrative and legal boundaries, areas of conservation and marine habitats and oceanography.

What constitutes a SDI?

SDI is a framework comprising the following key components:

Policy

Above all there needs to be a policy to create information that is interoperable. This is often linked to a nation's or organization's strategy for geographic information.

People & Organizations

There needs to be willingness and practical co-operation between the various organizations that create, share and use information to implement the overall policy.

Enablers

Enablers are essential building blocks in the development of NSDI's providing the framework for data acquisition, management and updating. Examples include:

- Standards: Standards for geographic information are being created internationally (ISO19xxx, OGC) and in many areas sectoral standards reference these standards (e.g. S-100).
- Geodetic Reference System: the horizontal and vertical datum to which geospatial information (content) is referenced and the coordinate transformations between systems.

- Metadata: at its simplest metadata is ‘data about data’ and describes the characteristics of a dataset (i.e. content, value and limitations).

Content

Content (data) is at the core of SDI and should be application-neutral thereby ensuring that it meets the needs of the widest user base. Users should have immediate and easy access to up to date, accurate and appropriate information that is linked to other information in a way that reflects how it exists in the real world. Content can be described in the following illustration:

- Reference Information: Geographic features that are used as a locational reference for application information or are used in geographic analysis by a majority of users. Reference information is formed of base and associated reference information.
- Application Information: Any business-oriented information that requires connectivity through a geographic reference of some kind (such as a building, field, road or user defined feature such as a property parcel) to enable the end-user to analyse and interpret the integrated information from different sources.

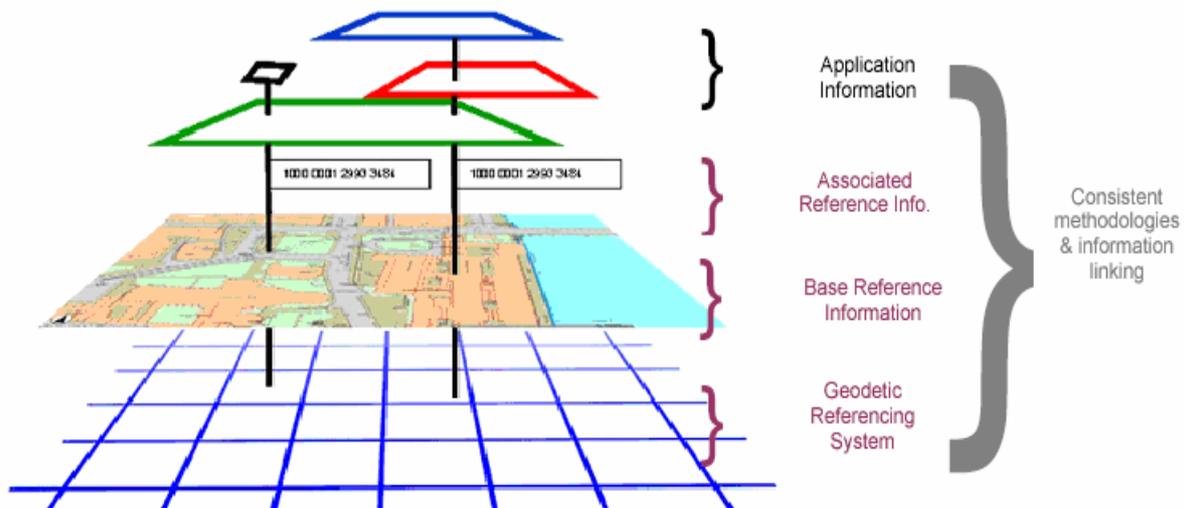


Figure 2 Layers of content within a NSDI (Source: DNF, 2004)

The role of the HO in supporting NSDI

Hydrographic Offices wishing to, or being invited by their National Governments, to be involved in the development and management of National SDI should consider the following questions:

- Does the structure of the national SDI allow for a comprehensive marine SDI (MSDI), a MSDI that excludes hydrographic information or only a specialised hydrographic SDI (HSDI)?
- Does the NSDI allow for a HO to become responsible for or partner in their national MSDI and its incorporation into the NSDI?
- Does the type of data provided by HO's support NSDI and / or MSDI?
- Does the HO collect data purely for the safety of navigation or does it meet the needs of a wider user community?

- Does the quality and usability of existing spatial databases within the framework of the NSDI include access to metadata?
- What are the requirements for quality assurance of data outside of its use in support of SOLAS?
- Does the establishment of user requirements for supply of hydrographic information impact on any necessary restrictions on data access?
- Does the financial, administrative and technical requirements and / or national policy on cost recovery impact on the establishment and maintenance of the infrastructure?

Recommendations

The IHO accepts that the development and management of SDI rests with the Member States and that the role of national HO's within NSDI will be for that country to define. However, the IHO is keen to raise awareness of the benefit of supporting MSDI's and NSDI's across its membership.

The IHO offers to examine the needs of members and provide capacity building support to requests from Member States. IHO will also determine its role within the framework of an evolving global SDI (GSDI).

The IHO has an opportunity to take on a wider remit as part of its role in representing the hydrographic community and to ensure that its members interests are represented in the creation of MSDI's and NSDI's.

The IHO asks the conference to endorse the establishment of a task group independent of existing IHO working groups (as this topic is multi-faceted) to review, inform and assist those working groups and to forge links with other bodies (e.g. OGC, ISO TC211, IOC) so that IHO interests are represented.

ANNEX D to MSDIWG Report

INTERNATIONAL HYDROGRAPHIC
ORGANIZATION



ORGANISATION HYDROGRAPHIQUE
INTERNATIONALE

IHB File No. S3/8151/MSDIWG

CIRCULAR LETTER 41/2008
25 April 2008

**IHO Marine Spatial Data Infrastructure Working Group
- Request for Information –**

- References:
- 17th IHC Decision 22 – *Establishment of a Working Group on Marine Spatial Data Infrastructure Development*
 - IHB Circular Letter 122/2007 dated 18 December 2007 – *Report on the 19th CHRIS Meeting*

This Circular Letter seeks Member States' input by 6 June 2008

Dear Hydrographer,

The 17th International Hydrographic Conference directed that the CHRIS establish a Marine Spatial Data Infrastructure Working Group (MSDIWG) to analyze and recommend the level and nature of the IHO role in assisting Member States in support of their national Spatial Data Infrastructure (NSDI). The MSDIWG is tasked with submitting a report with recommendations to CHRIS/20 in November 2008 for subsequent consideration at the 4th Extraordinary International Hydrographic Conference in 2009.

National Spatial Data Infrastructure is the term used to cover a range of concepts, processes, relationships and physical entities that, taken together, provide for integrated management of spatial data and information. The term covers:

- the processes that integrate technology, policies, criteria, standards, and the people necessary to promote geospatial data sharing throughout all levels of government;
- the structure of practices and relationships among data producers and users that facilitates data sharing and use;
- the defining of actions and ways of accessing, sharing and using geographic data that enable far more comprehensive analysis at all levels of government, commercial, not-for-profit sectors and academia; and
- a description of the hardware, software and system components necessary to support these processes.

In order to complete its task, the MSDIWG is requesting information on the current status of MSDI in each Member State and also on aspirations for the future. Responses should be submitted using the questionnaire at Annex A to this Circular Letter. The questionnaire should be returned to the IHB (info@ihb.mc) by **6 June 2008**.

On behalf of the Directing Committee
Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Robert Ward', with a stylized flourish at the end.

Captain Robert WARD
Director

Annex A: MSDIWG Questionnaire on Marine Spatial Data Infrastructures

MARINE SPATIAL DATA INFRASTRUCTURE (MSDI) SURVEY

QUESTIONNAIRE and SELF ASSESSMENT SHEETS

(to be returned to the IHB by 6 June 2008
E-mail: info@ihb.mc - Fax: +377 93 10 81 40)

Note: The boxes will expand as you type your answers

Member State:

Contact Details:

Name	<input type="text"/>
Position / Job title / Role	<input type="text"/>
Organization	<input type="text"/>
Address	<input type="text"/>
Telephone contact	<input type="text"/>
E-mail contact	<input type="text"/>

- Please complete the Self Assessment/Completion Sheets overleaf **before** answering the following questions.

Covering Notes on filling in the Self Completion/Assessment Sheets are provided in Appendix 1 to Annex A.

Explanatory information designed to assist you to identify the appropriate Level of activity are provided in Appendix 2 to Annex A.

- That activities and plans do you have / will you be putting in place to develop an MSDI over the next 3 years?" *Write in against each attribute*

SDI Strategy & Policy	<input type="text"/>
People & Communication	<input type="text"/>
Data Management	<input type="text"/>
Data Framework / Standards	<input type="text"/>
Data Dissemination	<input type="text"/>

- What do you consider to be the main barriers to either achieving where you want to be in 3 years time or in making progress in developing your MSDI? *Write in against each attribute*

SDI Strategy & Policy	<input type="text"/>
People & Communication	<input type="text"/>
Data Management	<input type="text"/>
Data Framework / Standards	<input type="text"/>
Data Dissemination	<input type="text"/>

4. What assistance could the IHO offer to enable you to reach your goals for NSDI and MSDI over the next 3 years and beyond? *Write in against each attribute*

SDI Strategy & Policy

People & Communication

Data Management

Data Framework / Standards

Data Dissemination



IHO Spatial Data Infrastructure (SDI) Self Assessment/Completion Sheet 1

STATUS IN 2008

Highlight or circle the most appropriate description in each category:

Category	Status Description				
	Level 1	Level 2	Level 3	Level 4	Level 5
Spatial Data Strategy / Policy	No NSDI Policy or MSDI Strategy exists.	Either NSDI Policy or MSDI strategy in development.	Both NSDI Policy and MSDI Strategy in development.	NSDI Policy published but MSDI Strategy not fully developed OR NSDI Policy not fully developed but MSDI Strategy in place.	NSDI Policy published and MSDI Strategy in place.
People / Communicating	We don't know who (or there is no one) to talk to about MSDI or SDI.	We know who to talk to but are not involved	We are communicating with others but there is no formal structure in place or the structure is in the process of development.	. We are participating in the national committee structure.	We are the key player in the national committee for NSDI or MSDI.
Data Management	Data available only in analogue (paper) format	. S-57 and / or raster format data held. No other digital data held. Paper or file-based storage.	S57 and / or digital hydrographic survey data in database, but not logical or standardised, OR if logical and standardised it is not complete. Data can be copied.	Database is complete, held by theme with metadata, and supporting all product outputs. Data responsibilities identified as unique inside HO only	Database is part of NSDI with no replication of the database. Data responsibilities identified as unique outside of HO at National level.
Data Frameworks / Standards	No knowledge of relevant standards or framework	Relevant standards understood but not used.	Relevant standards are understood; some frameworks available and used to a limited extent.	Relevant standards are understood and partially used.	Fully compliant with all relevant standards.

<p>Data Dissemination</p>	<p>Data is distributed in analogue (paper) only.</p>	<p>Data is distributed in analogue only. Digital data is available but for use only within the HO.</p>	<p>The HO produces and distributes digital data via selected off-line (eg CD) media.</p>	<p>Digital data available via internet based methods, but for limited user groups and with limited functionality.</p>	<p>All data fully available in digital format; it is fully searchable, describable and system downloadable through standardised interfaces.</p>
--------------------------------------	--	--	--	---	---



IHO Spatial Data Infrastructure (SDI) Self Completion/Assessment Sheet 2

STATUS IN 2011

Highlight or circle the most appropriate description in each category:

Category	Status Description				
	Level 1	Level 2	Level 3	Level 4	Level 5
Spatial Data Strategy / Policy	No NSDI Policy or MSDI Strategy exists.	Either NSDI Policy or MSDI strategy in development.	Both NSDI Policy and MSDI Strategy in development.	NSDI Policy published but MSDI Strategy not fully developed OR NSDI Policy not fully developed but MSDI Strategy in place.	NSDI Policy published and MSDI Strategy in place.
People / Communicating	We don't know who (or there is no one) to talk to about MSDI or SDI.	We know who to talk to but are not involved	We are communicating with others but there is no formal structure in place or the structure is in the process of development.	. We are participating in the national committee structure.	We are the key player in the national committee for NSDI or MSDI.
Data Management	Data available only in analogue (paper) format	. S-57 and / or raster format data held. No other digital data held. Paper or file-based storage.	S57 and / or digital hydrographic survey data in database, but not logical or standardised, OR if logical and standardised it is not complete. Data can be copied.	Database is complete, held by theme with metadata, and supporting all product outputs. Data responsibilities identified as unique inside HO only	Database is part of NSDI with no replication of the database. Data responsibilities identified as unique outside of HO at National level.
Data Frameworks / Standards	No knowledge of relevant standards or framework	Relevant standards understood but not used.	Relevant standards are understood; some frameworks available and used to a limited extent.	Relevant standards are understood and partially used.	Fully compliant with all relevant standards.

<p>Data Dissemination</p>	<p>Data is distributed in analogue (paper) only.</p>	<p>Data is distributed in analogue only. Digital data is available but for use only within the HO.</p>	<p>The HO produces and distributes digital data via selected off-line (eg CD) media.</p>	<p>Digital data available via internet based methods, but for limited user groups and with limited functionality.</p>	<p>All data fully available in digital format; it is fully searchable, describable and system downloadable through standardised interfaces.</p>
--------------------------------------	--	--	--	---	---

NOTES

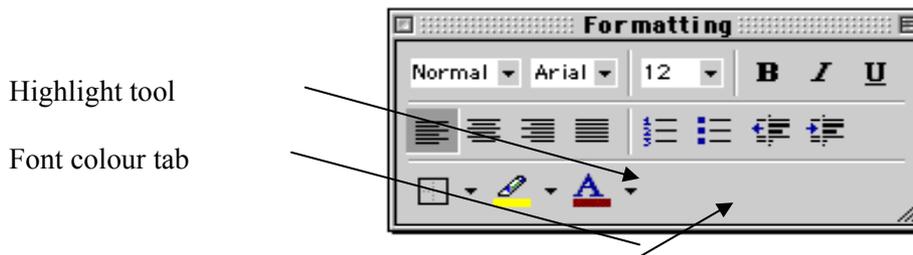
The Self Assessment Sheet and Questionnaire are intended to be completed on a PC and then submitted by e-mail.

Alternatively, the completed questionnaire can be submitted by fax; in which case print the MSDI Self Assessment Sheets before you complete it, but complete the questionnaire online before printing it.

On the SDI Self Completion/Assessment Sheet ...

1 For each of the five subjects, highlight the description that best describes your organization's current and likely status in three years time.

Highlight the appropriate descriptions using either the highlighting tool or the font colour tool.



Alternatively, circle the relevant descriptions.

2. Complete one table for your current status (2008) and another for your likely status in three years time (2011).

Appendix 2 to Annex A

Explanatory information on Level 1-5 for each activity / element on the IHO Self Completion/Assessment Sheet, designed to help you select the levels appropriate to your organization.

SPATIAL DATA STRATEGY / POLICY

Level 1 No NSDI Policy or MSDI Strategy exists

Description: There are no plans to develop either NSDI or MSDI strategies or policies. Little or no level of understanding of SDI requirements exists in the Hydrographic Office. No leadership and / or ownership identified at all.

Level 2 Either NSDI Policy OR MSDI Strategy in development

Description: Some effort made to commence the process of defining requirements for either NSDI or MSDI. Leadership and / or ownership identified but formal processes not yet in place. Some communications made but a limited level of understanding in place in the Hydrographic Office (HO).

Level 3 Both NSDI Policy and MSDI Strategy in development

Description: Formal processes and documentation of requirements in place and active engagement with stakeholders made. Work on framework underway but some distance from completion. Level of understanding growing with stakeholder buy-in assured. HO aware and / or participating.

Level 4 NSDI Policy published but MSDI Strategy not fully developed OR NSDI Policy not fully developed but MSDI Strategy in place

Description: Formal processes in place and documentation complete for one element of the requirement (either NSDI or MSDI) supported by leadership. Stakeholders fully engaged with level of understanding allowing implementation of areas completed. Work continues with established level of understanding of requirements and confirmed participation within the HO.

Level 5 NSDI Policy published and MSDI Strategy in place

Description: Formal processes in place and documentation complete for both NSDI and MSDI. MSDI and NSDI may or may not be up and running across sectors. Attention now on putting processes in place and/or obtaining feedback from stakeholders necessary to improve performance, depending on status. The HO is fully engaged and participating in the improvements programme.

PEOPLE / COMMUNICATING

Level 1 We don't know who (or there is no one) to talk to about MSDI or SDI.

Description: The HO is not involved in SDI development and is not aware of any SDI initiatives in the country.

Level 2 We know who to talk to but are not involved.

Description: The HO is not involved in SDI development but is aware of SDI initiatives in the country and knows who is involved.

Level 3 We are communicating with others but there is no formal structure in place or the structure is in the process of development.

Description: The HO is talking with partners about SDI developments but no concrete initiatives have yet been taken in the country. There are no formal projects or co-operative arrangements in place.

Level 4 We are participating in the national committee structure.

Description: The HO is part of an ongoing SDI initiative in the country but is not a leading partner.

Level 5 We are the key player in the national committee for NSDI or MSDI.

Description: The HO is playing a leading role in an ongoing SDI initiative in the country. The HO is either managing the project or are central to the initiative due to either technical competence or control of content resources

DATA MANAGEMENT

Level 1 Data available only in analogue (paper) format.

Description: All data is held in paper format. If there is any digital data, it is held by the HO in raster format.

Level 2 S-57 and / or raster format data held. No other digital data held. Paper or file-based storage.

Description: The only digital data available is held by the HO in S-57 and/or raster format. There is no data stored in a database but only on paper form or file-based.

Level 3 S57 and / or digital hydrographic survey data in database but not logical and standardised, OR if logical and standardised is not complete. Data can be copied.

Description: Part of the data is stored in databases but can overlap and is neither necessarily unique nor exhaustive. Mutations in the data are processed on multiple locations within the HO. Not all the data is stored together with the corresponding metadata.

Not all the products are produced from databases.

Level 4 Database is complete, held by theme with metadata, and supporting all product outputs. Data responsibilities identified as unique inside HO only.

Description: Within the HO, the data is entirely stored together with the corresponding metadata, in only one place (except for backups) and do not overlap. The responsibilities for the data are clearly identified with respect to each data theme.

Outside the HO the same data might be stored by other organizations as well.

All products are produced from the databases.

Level 5 Database is part of NSDI with no replication of the database. Data responsibilities identified as unique outside of HO at National level.

Description: The databases of the HO are part of the NSDI. The data (and the corresponding metadata) are unique within the NSDI. The HO is responsible for the contributions to the NSDI.

All products produced by the HO are produced from its own databases or from the databases of other organizations within the NSDI.

DATA FRAMEWORKS / STANDARDS

Overview: Do you have a framework for the use of common standards, datums and guidelines (rules + policies) for interoperability between agencies providing spatial data within your country?

Components:

- Common horizontal and vertical datums within your country or easy ways for conversion between several datums.
- Common base data and/or common encoding of spatial data in databases of different agencies.
- Common format for data exchange or easy ways for converting data from/to different common formats.
- Use of international standards for data encoding/access/exchange like International Standards Organization (ISO) 19xxx series and Open Geospatial Consortium (OGC), Web Mapping Services (WMS), Web Feature Services (WFS), Geographic Mark-up Language (GML) etc.

Level 1 No knowledge of relevant standards or framework.

Description: No such framework has even been considered with no idea about such standards. Every agency is doing something on their own, no cooperation between agencies. Different horizontal and/or vertical datums used for land and marine data. Marine data can't be combined with other national spatial data sources.

Level 2 Relevant standards understood but not used.

Description: Heard about common standards, some discussion of creating something similar to common spatial data framework has also taken place, but no real actions or such work done. So far, hydrographic data cannot be combined with other national spatial data sources.

Level 3 Relevant standards are understood; some framework available and used to a limited extent.

Description : Common standards accepted and somewhat used by some agencies, different datum issues solved (at least by conversion). Existing databases for reference data available, but not yet accessible by standardized way. Still different data encodings in different agencies and no coordination in this field. A lot of extra work for each case needed (by the end user) in order to combine marine data with other national spatial data sources.

Level 4 Relevant standards are understood and partially used.

Description: Most agencies use common standards for spatial data access, datum issues solved, base data easily available and most of it also interoperable through common encoding and use of OGC standards (WMS, WFS services working in many agencies). Some extra work for each case needed (by client) in order to combine marine data with other national spatial data sources.

Level 5 Fully compliant with all relevant standards.

Description: All agencies providing spatial data are using international standards for data querying/accessing. Data are interoperable because of common encoding used and base data availability. Data is available directly or by automated conversion in common national datums. It is possible seamlessly to create a new map using OGC and similar standards from different source data (including hydrographic data) so that it can be displayed and / or downloaded using for example standard GIS platforms.

DATA DISSEMINATION**Level 1 Data in analogue (paper) format only.**

Description: The HO distributes only analogue information (eg paper charts). Digital data NOT available.

Level 2 Data is distributed in analogue form only. Digital data available but for use only within the HO.

Description: The HO uses digital production methods internally. But all products for external use are analogue; no digital data is distributed to other users.

Level 3 The HO produces and distributes some digital data via selected off-line media.

Description: The HO produces and distributes digital data for selected purposes via offline media, e.g. raster or S57 data via CDs.

Level 4 Digital data available via internet-based methods, but for limited user groups and with limited functionality.

Description: The HO offers net-based distribution, but with limited functionality, not fully searchable, describable and system downloadable and for limited user groups.

Level 5 ALL data fully available in digital format; it is and searchable, describable and system downloadable through standardized interface.

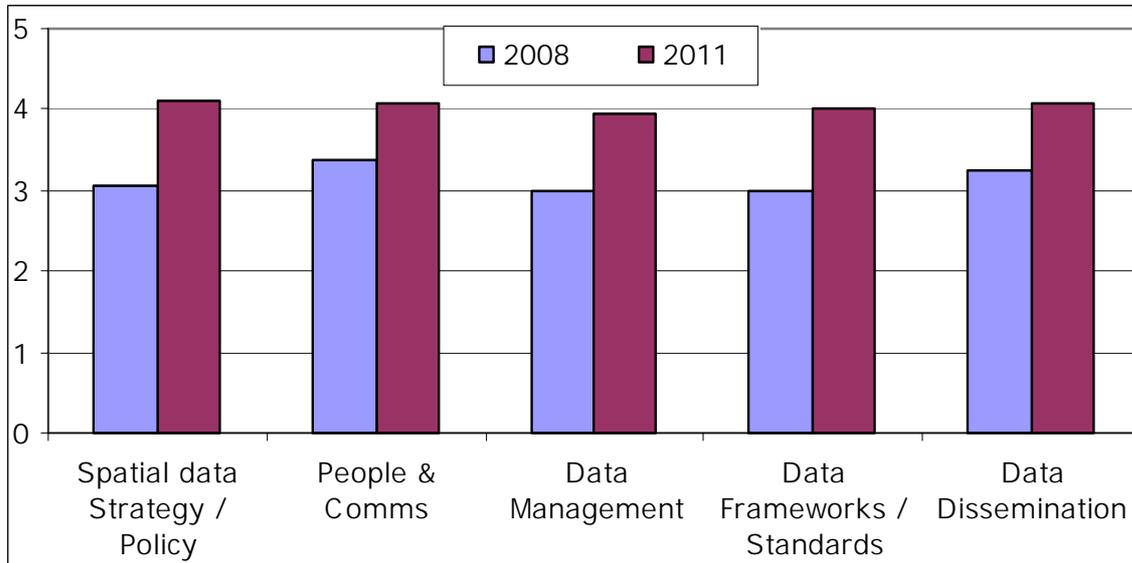
Description: The HO distributes data through national or international SDIs to all potential users with full functionality

Note: In this category, terms & conditions may apply (e.g. licensing costs for data, third party data agreements) to some or all of the above levels

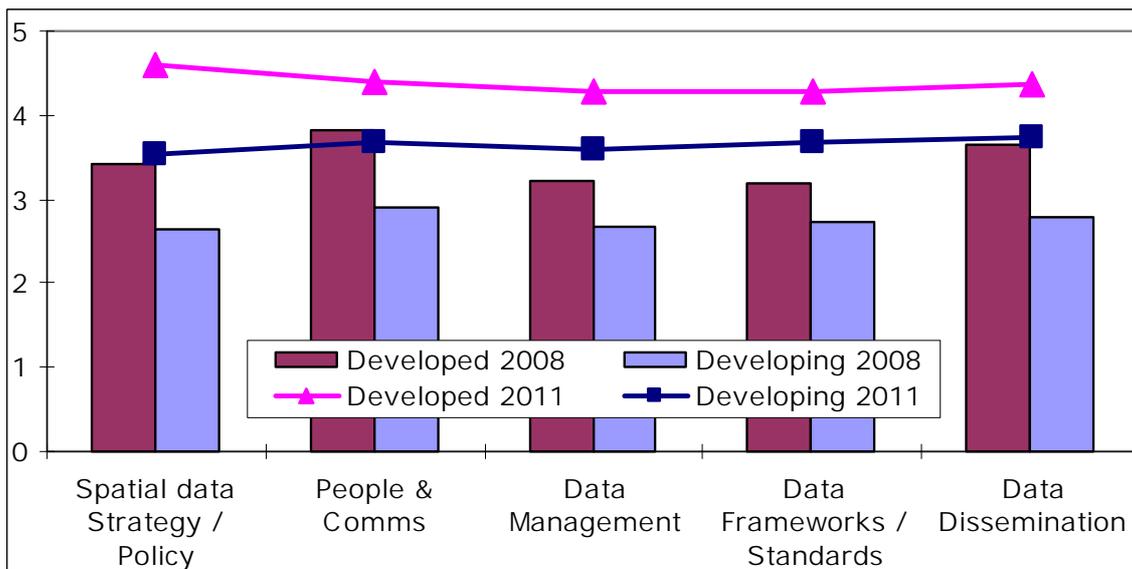
ANNEX E to MSDIWG Report

RESPONSES - SUMMARY GRAPHS

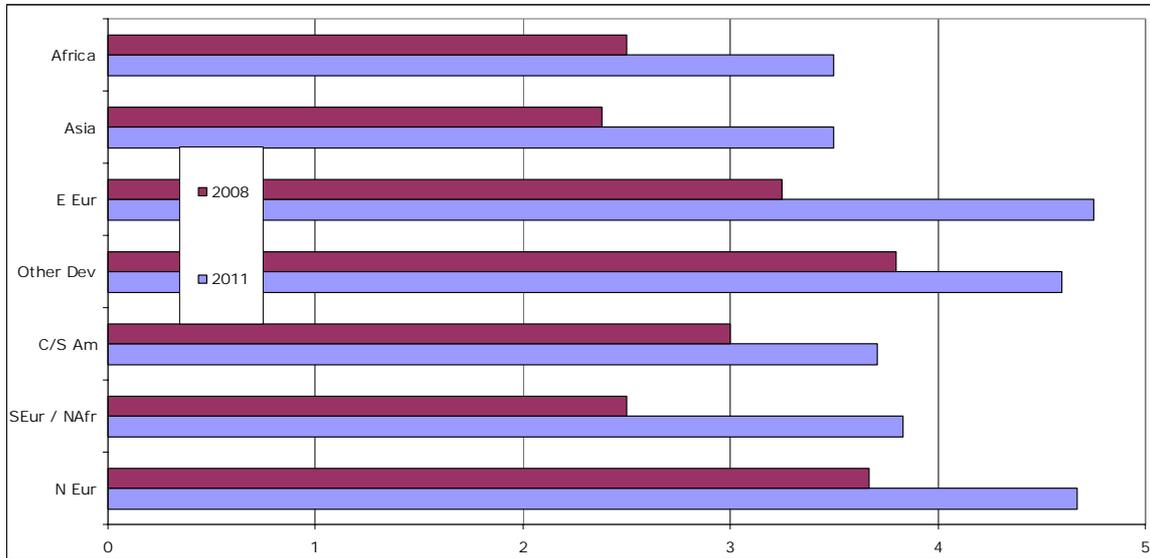
**MSDI Matrix scores
2008 and 2011 for all respondents**



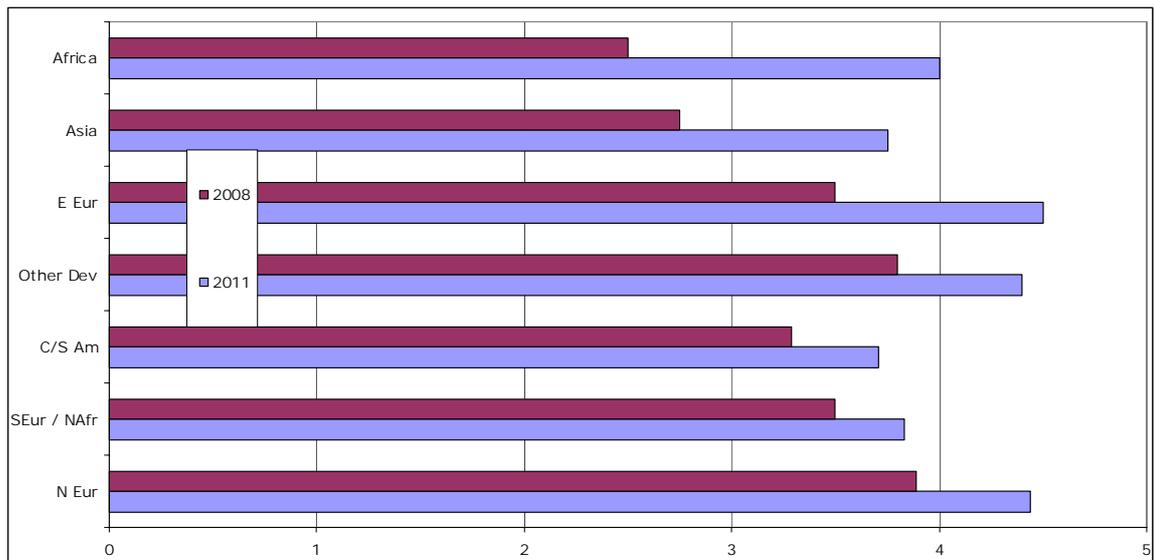
**Developed and Developing Nations compared
[2008 and 2011]**



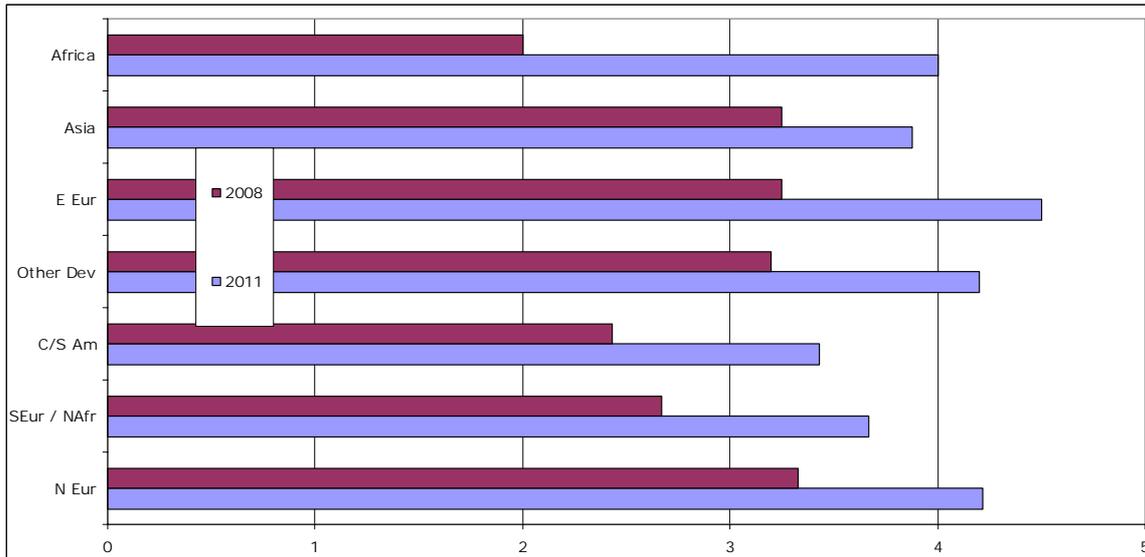
**Regional analysis – Spatial Data Strategy / Policy
[2008 and 2011]**



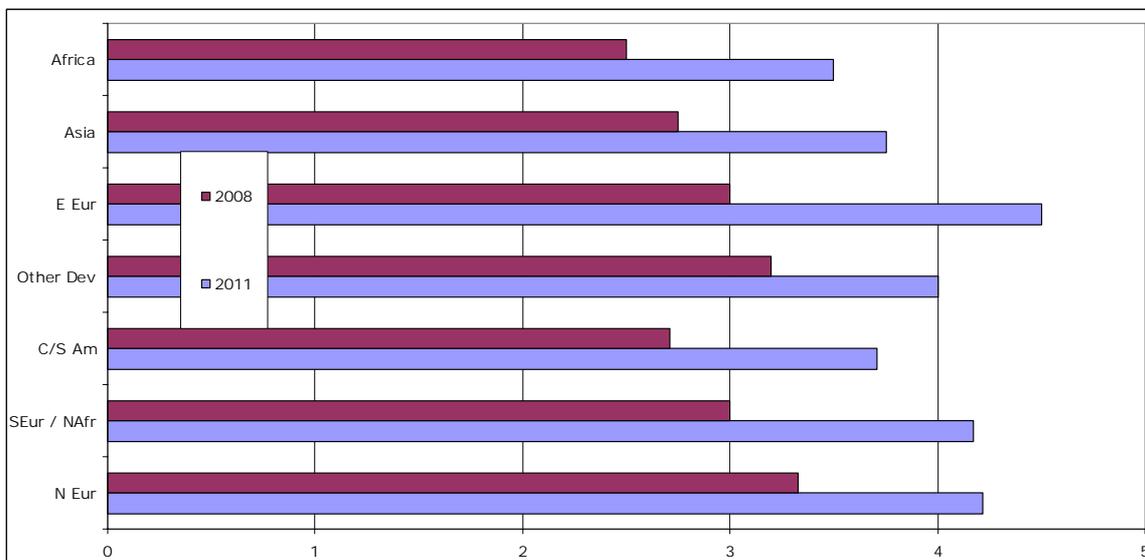
**Regional analysis – People & Communications
[2008 and 2011]**



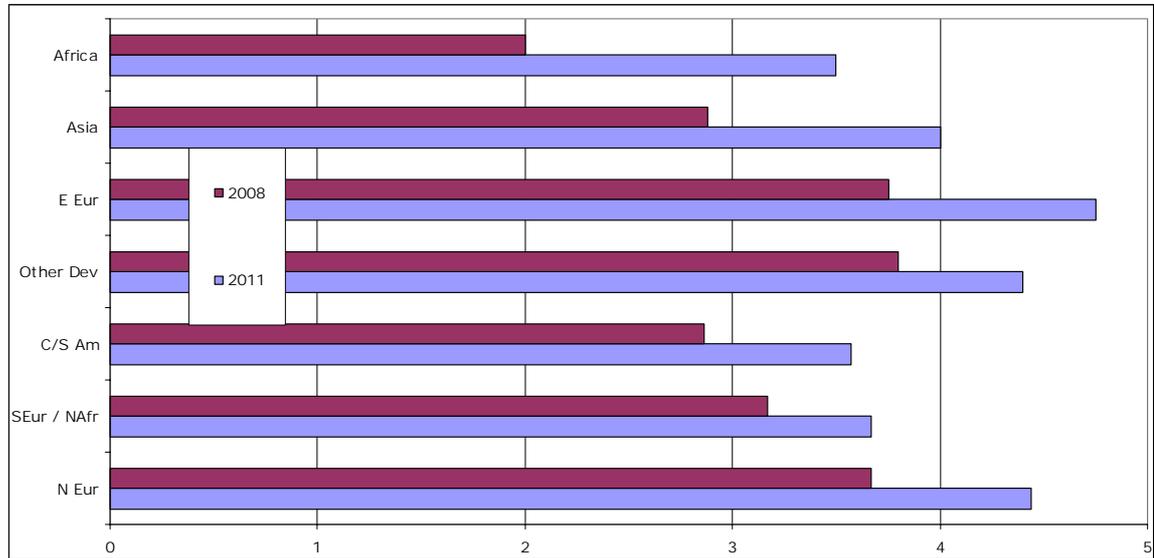
**Regional analysis – Data Management
[2008 and 2011]**



**Regional analysis – Frameworks and Standards
[2008 and 2011]**



**Regional analysis – Data Dissemination
[2008 and 2011]**



List of responding Member States

- | | |
|-------------|------------------|
| Argentina | Australia |
| Brazil | Canada |
| Chile | Colombia |
| Croatia | Cuba |
| Cyprus | Denmark |
| Ecuador | Estonia |
| Finland | France |
| Germany | Greece |
| Guatemala | Iceland |
| India | Italy |
| Japan | Korea |
| Latvia | Myanmar |
| Netherlands | New Zealand |
| Nigeria | Norway |
| Pakistan | Papua New Guinea |
| Peru | Portugal |
| Qatar | S Africa |
| Singapore | Slovenia |
| Spain | Sri Lanka |
| Sweden | Tunisia |
| Turkey | UK |
| USA | |

ANNEX F to MSDIWG Report

THE HYDROGRAPHIC OFFICE ROLE IN MSDI

The following tables were generated by Working Group members in meeting breakout sessions and are designed to provide initial thoughts that would underpin future activities and guidance for the IHO and / or for Member States for development of MSDI corporate objectives.

Table 1: Steps required to develop MSDI

Steps HOs should take to have an SDI presence	Resources Required
1) Identify responsible person to lead SDI initiative. Stimulus may be internal ('an SDI champion') or external (e.g. national directive)	MSDI portal
2) Prepare white paper including introduction to MSDI, benefits to HO, list of stakeholders and outline plan (roadmap)	Marine SDI Guidelines incl. templates for stakeholder/road maps
3) Decision to proceed (or not) including scope, depth and timescale. Add to corporate and objectives, join national SDI and represent at regional hydrographic commission	Powerpoint template to help present case, worked examples, MSDI pilot/model
4) Develop strategic plan <ul style="list-style-type: none"> 4.1 Situational audit (where are we) 4.2 Vision (where are we going, when) 4.3 Gap analysis 4.4 Set strategic objectives 4.5 Detailed action plan (incl. costs) 4.6 Risk analysis 	Template plan? Points on what to look for. Must cater for HOs at Level 1 or 2 by having intermediate (small) steps
5) Plan implementation	Guidelines, Specifications
6) Review and Feedback to IHO	

Table 2: Opportunities and benefits of MSDI

Opportunities	Benefits	Best Practice Guidance
Embrace wider base / Develop new products and services	Stimulate additional resources and funding	<i>Engage - respond - communicate</i>
Encourage enlightened / robust data management (metadata)	Efficiency savings (capture / correct once, use many times)	<i>Adopt common standards / best practice</i>
Realise inherent value / benefit in data	Increased market exposure	<i>Identify / respond to user needs</i>
Pride / prestige of being part of SDI community	Reduces isolation	<i>Get involved</i>
Reduce replication and encourage coordination	Effectiveness, efficiency, better use of public money	<i>Community based approach</i>
Better information leading improved decision making	Improved security, cost savings, reduce risk	<i>End user engagement</i>

Table 3: Overcoming barriers and obstacles at all levels

Barriers	Recommended Action
Government Policy	Communicate and collaborate to develop policies together
Ethos / culture	Training; communication - selling the benefits
Funding	Business Case through defining value and benefit of "joined up" approach
Trust in other Govt Agencies	Mutual respect through working together
Resources	Demonstrate efficiency savings to achieve increased resources
Business Model	Demonstrate benefits of more inclusive approach
Objectives counter to SDI	Identify opportunities and benefits of SDI
Security (release / granularity)	Demonstrate the benefit of release at appropriate resolution; define level of real risk
Knowledge (market/tech/ etc)	Training and capacity building
Value and benefit of SDI	Efficiency savings and more effective way of doing things
Data management practices	Knowledge transfer; training and confidence building

ANNEX G to MSDIWG Report

INPUTS TO IHO MARINE SDI GUIDANCE DOCUMENT (AN EXAMPLE)

1. Content

Foreword

- Why this is important – IHO President

Glossary of TermsIntroduction

- What is this document
- Purpose and target
- Role of the IHO

What is Marine SDI

- What is a Spatial Data Infrastructure (and what it isn't)
- Local, National, Regional, International and Sectoral
- Objectives for an SDI
- Policy, Components, Principles governing SDI creation
- Marine SDI (including data content)

Opportunities and Benefits of an SDI

- Policy, See Table
- Who can use it
- What does SDI support
- HO as a provider and a user (trust?)

Getting Involved (*Guidance starts here*)

- Champion, stakeholders (internal and external)
- Engage, respond, communicate
- Allowing others to get involved with you
- Regional initiatives/legislation
- Role of Regional Hydrographic Commissions

Policy (*can be used as template for HO policy or being mandated*)Planning your involvement in SDI

- Identifying champion
- Prepare white paper (ref to template)
- Scope, depth and timescale (Business Case)

Developing your SDI Plan

- Audit
- Vision
- Gap Analysis
- Objective Setting
- Action Plan
- Risk Analysis

Carrying the Plan Forward

- Knowledge
- Training
- Support

Reviewing Progress

- Monitoring
- Feedback to IHO

Where to Get Help

- Guides (best practice templates)
- IHO Portal (Forum, Blog)
- Seminars, Workshops/ Roadshows
- Specific Training Sessions
- e-Training material
- List of experts
- Pilot / Links to example SDIs (see Ian Stock's table)

Acknowledgements

- IHO MSDIWG members and constitution [testimonials]

Annexes

- Data content in detail
- Example Stakeholder Map
- Example Road Map
- White Paper Template
- Plan Template
- Powerpoint Template
- Process diagrams [e.g. data specifications; metadata; data management]

Decision points

- Why MSDI? (What is in it for the HO?)
- What is it all about?
- Getting started (basic steps within your HO; appoint a champion, HO business plan, decision steps)
- Data steps? (see below)
- Technology steps (analogue to digital, WMS/WFS)?
- People (getting the right people involved)?
- Policies (internal, national and regional)?
- Legal framework (copyright, ownership, liability, custodianship)?
- Institutional arrangements (between HOs and other national institutions)
- Training (what is needed, by whom and when)?
- Connecting MSDI to the NSDI?

- Links to existing SDI's (best practices)?
- Standards (data, technology, metadata)?
- Data management (maintenance)?
- Harmonisation of data sets (national and regional)?
- Remember the barriers!

2. Components explored

2.1 Data: Illustrative steps to establishing full MSDI capability

- Identify what data you hold.
- Assign metadata – at the very minimum to include a Minimum Bounding Rectangle in Lat, Log to provide the geospatial reference.
- Make the metadata searchable through some search engine, internally at least.
- Include the search engine capability on the organization's web page.
- Establish a licensing regime supported and underpinned where applicable by government policy.
- If you have not already done so, capture data sets in digital form, e.g. scan manuscript documents into TIFF, GeoTIFF, JPEG etc ensuring that the scan density is such that the user community can use it without resorting to the hard copy to resolve readability.
- Capture data as close to source scale/ resolution as possible [i.e. not at product scale]
- Where possible use optical character recognition to capture the data in vector format. This requires rigorous checking and validation.
- Where OCR is not an option, e.g. hand-drawn soundings, vector capture will require double digitization to ensure the quality and completeness of data capture.
- Update the metadata search facility to identify raster or vector data availability.
- Facilitate download of data sets as flat files.
- Facilitate automated search and download of data sets via web mapping services.
- Develop a seamless validated database of vector data using international standards, e.g. S-57 or S-100 feature data dictionary or data model.
- Where security of data is an issue, develop an acceptable level at which data can be made available either in-country or internationally. This may involve data thinning or gridding to a level where data may be declassified.
- Facilitate automated search and download of data via web feature services.

2.2 What data are relevant to MSDI?

Hydrographic Office data which **may** be part of an MSDI relates to any navigational or other⁴ water body:

- source data (e.g. dense data)
- product data (e.g. ENC data, digital nautical publications)
- Metadata (data about data)

Types of hydrographic data (by theme) **may** include:

- Bathymetry
- Coastline
- Tidal data (heights and streams)
- Oceanographic data, e.g. sound velocity, salinity, temperature, currents.
- Aids to Navigations, e.g. lights, landmarks, buoys.
- Maritime information and regulations, e.g. administrative limits, traffic separation schemes
- Obstructions and wrecks
- Geographical names, e.g. sea names, undersea feature names, charted coastal names
- Seafloor type (e.g. sand, rocks, mud)
- Constructions/infrastructure at sea (e.g. wind farms, oil platforms, submarine cables)
- Shoreline constructions/infrastructures (e.g. tide gauges, jetties) *where not part of Land Mapping SDI input*

Other data issues to consider:

- Data ownership: Spatial description in one single database (feature custodian database); enabling different attributes in other databases.
- Raster or vector data? Vector data topology to be described in terms of points, lines, polygons.
- Coordinates (e.g. xyz)
- WGS-84 datum.
- Vertical Datum.
- Time [t] as a vector element.
- Conformance to standards: S-57, S-100, ISO 19100 series, OGC standards.

⁴ This remit will depend on the constitution of the individual HO

2.3 Training and knowledge transfer

Tools and techniques for each of 5 categories

Tools/techniques	MSDI policy and strategy	People and Communications	Data Management	Data frameworks and standards	Data dissemination
Portal / including blog site	Yes	Yes	Yes	Yes	Yes
Seminars and workshops / road shows	Yes	Yes		Yes	
Specific training sessions			Yes		Yes
Guides – best practice and templates	Yes		Yes	Yes	Yes
E-training sessions			Yes		Yes
Links to experts / organizations [inc; RHC] / best practice HO sites	Yes	Yes	Yes	Yes	Yes

Where to start?

- ❖ Develop guides and templates – use existing information from mature HO's [via short guides from their full-blown documents]
- ❖ Produce synopses of other 'driver' documents, eg INSPIRE
- ❖ Build lists of experts (individuals and organizations) and their expertise
- ❖ Build lists of relevant standards and frameworks and state (simply) their relevance and application
- ❖ Build portal and populate with guides and lists
- ❖ Design seminars and workshops

Find out HO community requirements – based on feedback at seminars and via research, and existing within Hydrographic Commission – for specific training courses and help topics

What should be in guides or on portal?

Benefits of (to overcome barriers, especially funding and politics)

- ❖ an MSDI strategy
 - ❖ sharing and co-operating
-

ANNEX H to MSDIWG Report

**PROPOSED DRAFT TECHNICAL RESOLUTION
MARINE SPATIAL DATA INFRASTRUCTURE (MSDI)**

Recognising that:

1. The Vision of the IHO is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment;
2. The IHO has developed standards and specifications in areas of nautical cartography, hydrography and geospatial data management that have been accepted and implemented on a world-wide basis;
3. National and/or Regional legislative processes are increasingly mandating IHO Member States' public sector information providers to engage in greater interoperability at the organizational and technical level;
4. IHO publication M2 provides guidance on how a national hydrographic service can be established, how to define individual national requirements, how to decide upon the necessary resource levels and describes the benefits which accrue in respect of many aspects of national development.

Acknowledging that:

1. In relation to the development of EU legislation concerning SDI, the IHO is recognised by the European Commission as a Spatial Data Interest Community (SDIC);
2. It is appropriate for IHO to define its role in MSDI activity.

The IHO resolves:

A1.xx Marine Spatial Data Infrastructure (MSDI) Policy

1. The IHO will support Member States in the identification, development and implementation of an appropriate role in national Spatial Data Infrastructure (SDI) and MSDI initiatives. This will be achieved through:
 - The development and maintenance of a Special Publication that will provide a definitive procedural guide to establishing the role of the national hydrographic authority in MSDI.
 - MSDI capacity building comprising knowledge transfer and training to Member States.
 - Providing web-based information to encourage knowledge transfer, best practice and availability of online guidance and training material.
 - Formalising relations between IHO and other SDI stakeholder groups and through actively participating in these groups to strengthen understanding and knowledge of the role of hydrography in MSDI.

2. IHO Regional Hydrographic Commissions are encouraged to monitor and report progress in Member States' MSDI engagement and development as a means of benchmarking the role of the national hydrographic authority in MSDI.

REPORT BY THE IHB ON PROGRESS TOWARDS RATIFICATION OF THE PROTOCOL OF AMENDMENTS TO THE CONVENTION ON THE IHO

(CONF.EX4/REP.04)

Decision No 2 of the 3rd Extraordinary International Hydrographic Conference (EIHC) in April 2005 approved a Protocol of Amendments to the IHO Convention and

“ ... requested the Government of His Serene Highness the Prince of Monaco to inform the Member States and the President of the Directing Committee of the date of entry into force of the amendments ”.

In June 2005, the Directing Committee passed to the Department of the External Relations of Monaco (DER) the Protocol of Amendments to the IHO Convention for circulation to Member States in accordance with the Decision of the Conference. In July 2005 the DER of Monaco sent the Protocol of Amendments for ratification to Member States through diplomatic channels.

Decision No 23 of the XVIIth IHC in May 2007 highlighted the low number of Member States who had ratified the Protocol of Amendments and considering the

“ ... great significance of the Protocol of Amendments to the IHO Convention as an indispensable pre-requisite for the modernization of the IHO:

- *Strongly encouraged the Contracting Parties to undertake all steps necessary to approve the Protocol as soon as possible; and*
- *Instructed the President of the IHB Directing Committee to inform the Contracting Parties via diplomatic channels about this resolution and to invite them to consider the entry into force of the Protocol as a matter of priority.”*

At the request of the Directing Committee, the DER of Monaco reminded Member States in June 2007 through diplomatic channels on the need to approve the Protocol of Amendments as soon as possible, in accordance with Decision No 23 of the XVIIth IHC. A further reminder was sent in May 2008 to those Member States who had still not ratified the Protocol.

In the four years since the approval of the Protocol of Amendments, the DER of Monaco has informed the Directing Committee that the following twenty-three (23) Member States have indicated their approval of the Protocol of Amendments:

Australia, Cuba, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Japan, Korea (Democratic People’s Republic of), Korea (Republic of), Latvia, Mexico, Morocco, Netherlands, Norway, Pakistan, Qatar, Spain, Sweden, Tunisia and United Kingdom.

The approvals received per year are as follows:

Year	Number of Approvals
2005	2
2006	9
2007	7
2008	2
2009	3

Considering that thirty-one (31) more approvals are needed before the Protocol of Amendments can come into effect, the Directing Committee urges those Member States who have not yet ratified the Protocol of Amendments to accelerate their internal procedures for such approval. The Directing Committee stands ready to provide any support that may be requested.

STATUS REPORT ON ENC COVERAGE

Submitted by the IHB

(CONF.EX4/REP.05 rev.2)

Introduction

1. The IHO at its seventeenth International Hydrographic Conference in May 2007 adopted two resolutions which concluded that:

... IHO Member States should adhere and comply with the IHO's World-wide Electronic Navigational Database (WEND) Principles, which provide technical details and procedures, in order to achieve adequate coverage, availability, consistency and quality of ENC's by 2010;

(XVIIth IHC Decision 20)

and

... The IHO strongly supports the efforts by IMO to introduce mandatory carriage requirements for ECDIS, emphasizing that a significant coverage of ENC's is already in place and will be further improved by 2010, as indicated in the DNV report (NAV 53/INF.3) and supported by IHO assessments ...

(XVIIth IHC Decision 21)

2. In June 2008 the IMO Sub Committee on Safety of Navigation (NAV) agreed that the mandatory carriage of ECDIS should be extended beyond High Speed Craft to include various other classes of vessel and recommended an implementation timetable to the IMO Maritime Safety Committee (MSC) for consideration and adoption. MSC first considered the recommendation in December 2008 and will finalise its consideration in June 2009 during the same week as the 4th EIHC convenes. The availability of *sufficient ENC coverage* continues to be a significant factor in the decisions being taken by IMO regarding ECDIS carriage requirements.
3. During its 11th meeting in September 2008, the WEND Committee agreed on a set of *Guidelines for the Implementation of the WEND Principles* and invited IHO Member States to consider and apply these Guidelines to ensure the timely provision of adequate ENC services (IHO CL 82/2008).
4. In 2005 the IMO began to consider the concept of "e-Navigation" which has subsequently been defined as

.... the harmonized collection, integration, exchange, presentation and analysis of marine information onboard and ashore by electronic means to enhance berth to berth navigation and related services for safety and security at sea and protection of the marine environment.
5. It is obvious that electronic charts and publications will be a fundamental information layer in e-Navigation. The successful implementation of ECDIS is a logical step in any developments towards the implementation of the e-Navigation concept.

General

6. This paper reports on a number of recurring issues related to the introduction of ENCs:
- coverage
 - consistency and quality
 - availability/distribution

Data Sources

7. Information about the coverage and availability of charts and ENCs has been obtained from the catalogues of PRIMAR, IC-ENC, UKHO and NGA. Any change made to this publicly available information after 1 May 2009 is not reflected in this paper.

ENC Coverage

8. The IMO, at its 54th meeting of NAV in 2008, accepted a proposal from the International Chamber of Shipping, and supported by the IHO, for the following definition of *sufficient ENC coverage* to be used in relation to considering mandatory carriage requirements for ECDIS:

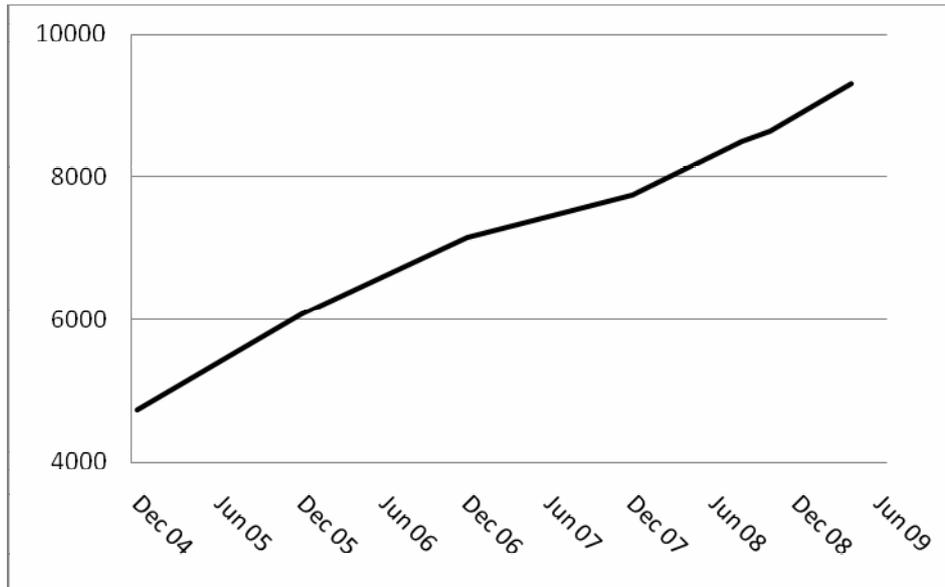
Sufficient ENC availability is defined as being equivalent to the best available paper chart coverage of either a Hydrographic Office providing global coverage or the Hydrographic Office of the Coastal State.

In other words, this means that where there is a paper chart published to support international voyages there should be a corresponding ENC.

9. The IHB has been regularly monitoring the level of ENC coverage that is commercially available to mariners and reporting this to IMO NAV and MSC. Following the same methodology adopted by the WEND Task Group in 2008, the IHB's latest analysis has compared existing paper charts, principally those in the Admiralty (UKHO) global chart series, with corresponding ENCs that are published and available through commercial outlets. For large scale chart coverage, the world's busiest 800 ports (based on Lloyd's tonnage statistics) have been used as the baseline for comparison.
10. The results of the latest IHB global ENC coverage comparison are shown in the following table:

Comparison of ENCs with corresponding paper charts		
	May 2008	May 2009
Small scale ENCs (planning charts)	>90%	~100%
Medium scale ENCs (coastal charts)	60%	77%
Large scale ENCs (top 800 ports)	65%	84%

11. The latest figures confirm that there is currently a significant availability of ENCs across the globe - about 9300 cells. The rate of increase is in line with the earlier forecasts reported to IMO. Many areas of the world, including the major trading routes and ports, and vulnerable and complex areas are already comprehensively covered by ENCs.



12. In addition to the 9,300 ENC cells published already, some States have produced ENC cells but, for various reasons, these have not yet been made available to the public.
13. The IHB has conducted a State by State assessment of ENC coverage in order to identify those States for which additional production effort or assistance may be required. This is shown in Annex A.
14. **Bi-lateral Production Programs.** Bi-lateral production and assistance programs have undoubtedly played a key part in the overall increase in the number of ENCs available. A number of States have, or intend, to produce ENCs on behalf of other States. This can be seen in the information in the tables in Annex A. States that are assisting other States in this way include Australia, France, Netherlands, New Zealand, South Africa, UK, and USA. As can also be seen from the information in Annex A, a most significant contribution to the current global coverage of ENCs has been made through the Admiralty Vector Chart Service (AVCS) production program of the UK. This program has resulted in the production of ENCs for ports and sea areas that would otherwise probably not be covered by ENCs before 2010.
15. **Gaps in coverage.** Close study of the information in Annex A shows that there are a number of areas for which ENCs are unavailable to support international voyages. These include:
 - some States in the Caribbean frequented by cruise ships
 - sections of the coast of South America
 - the coast of China and some sections of the coastline in East Asia
 - sections of the coast of Africa
 - numerous small Island States in the Pacific
16. Coordinated plans are required for the production of ENCs where they have not been produced or are not planned for production in the near future. However, recent experience with the consistency and quality of some published ENCs appears to indicate that it is counter-productive to simply encourage States to produce and maintain ENCs before they have the experience and facilities to do so. This means that for ENC production, bi-lateral cooperation should be combined with capacity building.
17. It is worth noting that some areas with gaps in ENC coverage are also poorly covered with paper charts. A collective effort of capacity building and assistance in handling MSI, survey and charting responsibilities in these areas is also required.

Possible Discussion Topic:

What measures are needed to ensure that there are no significant gaps in ENC coverage by 2010?

ENC Consistency and Quality

18. While the coverage and availability of ENCs appear to be generally good, the increasing availability and use of ENCs have exposed a number of shortcomings that need to be considered. These shortcomings principally relate to the consistency between the data content of ENCs and the corresponding up-to-date published paper charts of the same area. In some other cases, the quality of the encoding of the data in ENCs is poor. These production shortcomings have implications for navigation safety as well as the credibility of national HOs and the IHO as an organization.
19. **Data consistency.** Differences are now being reported by mariners concerning information shown in ENCs and the information shown on the corresponding paper charts. This is leading to confusion over which data is the most up to date and which form of the chart should be relied upon, either for normal navigation or when paper charts are used as a backup arrangement for ECDIS. There may be a number of causes for these inconsistencies including HOs that operate separate paper chart and ENCs production processes, or, in some cases, paper charts produced by one State and the corresponding ENCs produced by another. Some examples of the differences were provided by the IHB at WEND 11 in Tokyo in 2008. The IHB will provide further illustrative examples at the 4EIHC.
20. **Managing consistency.** Some States are not coordinating Notices to Mariners for paper charts with the publication of updates for ENCs. In addition, some States are issuing Temporary and Preliminary Notices for ENCs in the local language only, despite the default language for ENCs being English.

Possible Discussion Topic:

What measures are required to ensure that all ENC producers achieve consistency between the data content of ENCs and the corresponding paper charts?

ENC Availability

21. IHO Resolutions and references indicate that the preferred model for ENC distribution is via a RENC. This is to ensure harmonization and the widest distribution and availability of the data to mariners via integrated service providers. However a number of States do not distribute their ENCs in this way, preferring to distribute ENCs directly to end-users, thus by-passing both the RENCs and the providers of integrated ENC services. There is also a number of States who by-pass RENCs and supply directly to the providers of integrated ENC services through commercial distribution agreements. In some cases, these States only have distribution agreements with one or a few of the recognised integrated service providers. This means that ENCs are only available to particular service providers and therefore do not get the widest possible distribution. In addition, ENCs that are not subject to checking by a RENC do not benefit from the holistic harmonization checks and feedback that RENCs can provide.
22. When the ENCs of a Coastal State are produced on its behalf by another State or a commercial company, it is still the responsibility of the Coastal State, as part of its SOLAS V/9 obligations, to ensure that the ENCs are made as widely available as possible.
23. States who are full members of a RENC are listed in Annex A.

Possible Discussion Topics:

Why are a number of MS choosing to ignore RENC distribution? What should be done about this?
Is the WEND concept still valid?

Proposals for Consideration by the Conference

24. In order to address the issues raised in this paper, Delegates may wish to consider the draft Resolutions shown at Annex B.

Action requested of the Conference

25. The Conference is invited to take note of the information provided, and the proposed Conference Resolutions at Annex B and take action as it considers appropriate.
-

ANNEX A

ENC DISTRIBUTION AVAILABILITY

1. The following tables provide a State-by-State assessment of ENC coverage. The assessments are subjective and are meant to be indicative only. The assessments have been based on an overall comparison of existing paper charts for an area and the current availability of ENCs as reflected on publicly available internet sites up to 1 May 2009.

MEMBER STATES

Coastal State	Have ENC's been released that cover <u>International voyages</u> ? None or very limited coverage Gaps exist in ENC coverage Good/Relatively few if any gaps	ENC Producer Nation(s)	Remarks	Member of a RENC?
Algeria	Good or relatively few if any gaps	GB	mostly AVCS ENC's	
Argentina	None or very limited coverage	AR		YES
Australia	Gaps exist in ENC coverage	AU, GB	includes some AVCS ENC's	YES
Bahrain	Good/Relatively few if any gaps	BH		YES
Bangladesh	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Belgium	Good/Relatively few if any gaps	BE		YES
Brazil	Gaps exist in ENC coverage	BR		YES
Canada	Good/Relatively few if any gaps	CA		
Chile	Good/Relatively few if any gaps	CL		YES
China	None or very limited coverage	---		
China (Hong Kong)	Good/Relatively few if any gaps	C2		
Colombia	None or very limited coverage	---		YES
Congo (Dem. Rep. of)	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Croatia	Good/Relatively few if any gaps	HR		
Cuba	None or very limited coverage	---		YES
Cyprus	Good/Relatively few if any gaps	GB		
Denmark	Good/Relatively few if any gaps	DK		YES
Denmark (Greenland)	None or very limited coverage			
Dominican Rep.	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Ecuador	None or very limited coverage	---		YES
Egypt	Good/Relatively few if any gaps	GB		
Estonia	Good/Relatively few if any gaps	EE		YES
Fiji	Gaps exist in ENC coverage	GB	includes some AVCS ENC's	
Finland	Good/Relatively few if any gaps	FI		YES
France	Good/Relatively few if any gaps	FR		YES
Germany	Good/Relatively few if any gaps	DE		YES
Greece	Good/Relatively few if any gaps	GR		YES
Guatemala	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	

Coastal State	Have ENC's been released that cover <u>International voyages</u> ? None or very limited coverage Gaps exist in ENC coverage Good/Relatively few if any gaps	ENC Producer Nation(s)	Remarks	Member of a RENC?
Iceland	Good/Relatively few if any gaps	IS		YES
India	Good/Relatively few if any gaps	IN	mostly AVCS ENC's	YES
Indonesia	None or very limited coverage	ID, GB	mostly AVCS ENC's	YES
Ireland	Good/Relatively few if any gaps	GB		
Islamic Rep. of Iran	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Italy	Good/Relatively few if any gaps	IT		
Jamaica	Good/Relatively few if any gaps	GB		
Japan	Good/Relatively few if any gaps	JP		
Korea (DPR of)	Good/Relatively few if any gaps	KR		
Korea (Rep. of)	Good/Relatively few if any gaps	KR		
Kuwait	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Latvia	Good/Relatively few if any gaps	LV		YES
Malaysia	Gaps exist in ENC coverage	MY, MS, GB	mostly AVCS ENC's	
Mauritius	Good/Relatively few if any gaps	GB		
Mexico	Gaps exist in ENC coverage	GB	includes some AVCS ENC's	YES
Monaco	Good/Relatively few if any gaps	FR		
Morocco	Good/Relatively few if any gaps	ES, GB	mostly AVCS ENC's	
Mozambique	Gaps exist in ENC coverage	PT, GB		YES
Myanmar	None or very limited coverage	GB	mostly AVCS ENC's	
Netherlands	Good/Relatively few if any gaps	NL		YES
Netherlands (Antilles)	Good/Relatively few if any gaps			
Netherlands (Aruba)	Gaps exist in ENC coverage			
New Zealand	Gaps exist in ENC coverage	NZ	includes some AVCS ENC's	YES
Nigeria	Gaps exist in ENC coverage	GB		
Norway	Good/Relatively few if any gaps	NO		YES
Norway (Svalbard)	Gaps exist in ENC coverage			
Oman	Good/Relatively few if any gaps	GB		
Pakistan	Gaps exist in ENC coverage	PK		YES

Coastal State	Have ENC's been released that cover <u>International voyages</u> ? None or very limited coverage Gaps exist in ENC coverage Good/Relatively few if any gaps	ENC Producer Nation(s)	Remarks	Member of a RENC?
Papua New Guinea	Gaps exist in ENC coverage	AU		
Peru	Good/Relatively few if any gaps	PE		YES
Philippines	Gaps exist in ENC coverage	GB	includes some AVCS ENC's	YES
Poland	Good/Relatively few if any gaps	PL		YES
Portugal	Good/Relatively few if any gaps	PT		YES
Qatar	Good/Relatively few if any gaps	GB		
Romania	None or very limited coverage			
Russian Federation	Good/Relatively few if any gaps	RU		YES
Saudi Arabia	Good/Relatively few if any gaps	GB		
Serbia	---	---	see Montenegro	
Singapore	Good/Relatively few if any gaps	SG		
Slovenia	Good/Relatively few if any gaps	HR, GB	includes some AVCS ENC's	
South Africa (Rep. of)	Good/Relatively few if any gaps	ZA		YES
Spain	Good/Relatively few if any gaps	ES		YES
Sri Lanka	Good/Relatively few if any gaps	GB, IN	includes some AVCS ENC's	
Suriname	None or very limited coverage	GB	mostly AVCS ENC's	
Sweden	Good/Relatively few if any gaps	SE		YES
Syrian Arab Republic	Good/Relatively few if any gaps	GB, FR	mostly AVCS ENC's	
Thailand	None or very limited coverage	---		
Tonga	None or very limited coverage	GB	Includes some AVCS ENC's	
Trinidad & Tobago	Gaps exist in ENC coverage	GB	includes some AVCS ENC's	
Tunisia	None or very limited coverage	IT, FR		
Turkey	Good/Relatively few if any gaps	TR		YES
Ukraine	Good/Relatively few if any gaps	UA		
United Arab Emirates	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
UK	Good/Relatively few if any gaps	GB		YES
USA	Good/Relatively few if any gaps	US		
Uruguay	None or very limited coverage	AR, GB	mostly AVCS ENC's	

Coastal State	Have ENC's been released that cover <u>International voyages</u> ? None or very limited coverage Gaps exist in ENC coverage Good/Relatively few if any gaps	ENC Producer Nation(s)	Remarks	Member of a RENC?
Venezuela	None or very limited coverage	---		YES

OTHER

Country Name	Have ENC's been released that cover <u>International voyages</u> ? None or very limited coverage Gaps exist in ENC coverage Good/Relatively few if any gaps	ENC Producer Nation(s)	Remarks	Member of a RENC?
Malacca and Singapore Straits (Indonesia, Japan, Malaysia and Singapore)	Good/Relatively few if any gaps			
East Asia Hydrographic Commission (EAHC)	Good/Relatively few if any gaps			

Non-Member States

Country Name	Have ENC's been released that cover <u>International voyages</u> ? None or very limited coverage Gaps exist in ENC coverage Good/Relatively few if any gaps	ENC Producer Nation(s)	Remarks	Member of a RENC?
Albania	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Angola	Gaps exist in ENC coverage	GB, PT	mostly AVCS ENC's	
Anguilla	Good/Relatively few if any gaps	GB		
Antigua and Barbuda	Good/Relatively few if any gaps	GB		
Bahamas	Good/Relatively few if any gaps	GB		
Barbados	Good/Relatively few if any gaps	GB		
Belize	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Benin	Gaps exist in ENC coverage	GB	includes some AVCS ENC's	
Bermuda	Good/Relatively few if any gaps	GB		
British Virgin Islands	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Brunei Darussalam	Good/Relatively few if any gaps	GB		
Bulgaria	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Cambodia	None or very limited coverage	---		
Cameroon	Gaps exist in ENC coverage	FR, GB	includes some AVCS ENC's	
Cape Verde	None or very limited coverage	GB, PT, FR	mostly AVCS ENC's	
The Cayman Islands	Good/Relatively few if any gaps	GB		
Comoros	None or very limited coverage	FR		
Congo (Rep. of)	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Cook Islands	None or very limited coverage	NZ		
Costa-Rica	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Côte d'Ivoire	Good/Relatively few if any gaps	FR, GB	includes some AVCS ENC's	
Djibouti	Good/Relatively few if any gaps	FR		
Dominica	Good/Relatively few if any gaps	FR, GB		
El Salvador	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Equatorial Guinea	Gaps exist in ENC coverage	FR, GB		
Eritrea	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Gabon	Good/Relatively few if any gaps	FR, GB	includes some AVCS ENC's	

Country Name	Have ENC's been released that cover <u>International voyages</u> ? None or very limited coverage Gaps exist in ENC coverage Good/Relatively few if any gaps	ENC Producer Nation(s)	Remarks	Member of a RENC?
Gambia	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Georgia	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Ghana	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Grenada	Gaps exist in ENC coverage	GB		
Guinea	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Guinea-Bissau	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Guyana	Good/Relatively few if any gaps	GB		
Haiti	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Honduras	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Iraq	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Israel	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Kenya	None or very limited coverage	GB		
Kiribati	None or very limited coverage	GB	mostly AVCS ENC's	
Lebanon	Good/Relatively few if any gaps	FR, GB		
Liberia	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Libyan Arab Jamahiriya	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Lithuania	Gaps exist in ENC coverage	GB, RU	mostly AVCS ENC's	
Madagascar	None or very limited coverage	FR, GB	includes some AVCS ENC's	
Maldives	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Malta	Good/Relatively few if any gaps	GB		
Marshall Islands	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Mauritania	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Micronesia (Federated States of)	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Montenegro	Good/Relatively few if any gaps	HR, GB	includes some AVCS ENC's	
Montserrat	Gaps exist in ENC coverage	FR, GB		
Namibia	Good/Relatively few if any gaps	ZA		
Nauru	None or very limited coverage	GB		
Nicaragua	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	

Country Name	Have ENC's been released that cover <u>International voyages</u> ? None or very limited coverage Gaps exist in ENC coverage Good/Relatively few if any gaps	ENC Producer Nation(s)	Remarks	Member of a RENC?
Niue	None or very limited coverage	---		
Palau	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Panama	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Saint Kitts and Nevis	Gaps exist in ENC coverage	GB		
Saint Lucia	Good/Relatively few if any gaps	FR, GB		
Saint Vincent and the Grenadines	None or very limited coverage	GB		
Samoa	None or very limited coverage	NZ		
Sao Tome and Principe	None or very limited coverage	FR, GB	includes some AVCS ENC's	
Senegal	Gaps exist in ENC coverage	FR, GB		
Seychelles	None or very limited coverage	GB	includes some AVCS ENC's	
Sierra Leone	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Solomon Islands	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Somalia	None or very limited coverage	GB	includes some AVCS ENC's	
Sudan	Good/Relatively few if any gaps	GB	mostly AVCS ENC's	
Tanzania	None or very limited coverage	GB		
Togo	Good/Relatively few if any gaps	GB	includes some AVCS ENC's	
Tokelau	None or very limited coverage	NZ		
Turks & Caicos Islands	Good/Relatively few if any gaps	GB		
Tuvalu	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Vanuatu	Gaps exist in ENC coverage	GB	mostly AVCS ENC's	
Vietnam	None or very limited coverage	GB	mostly AVCS ENC's	
Yemen	Good/Relatively few if any gaps	FR, GB	includes some AVCS ENC's	

PROPOSED CONFERENCE RESOLUTIONS

ENC Coverage

1. It is **resolved** that Member States that will not have ENC coverage in place to support international voyages and trade by 2010, in accordance with the Resolution (Decision 20) of the XVII International Hydrographic Conference, should inform the International Hydrographic Bureau and the Chair of the relevant Regional Hydrographic Commission as soon as possible, and not later than 1 August 2009, so that appropriate remedial plans can be identified and put into place to achieve the target.

ENC Consistency and Quality

2. It is **resolved** that Member States put in place all necessary measures to ensure consistency of content between ENCs and the corresponding paper charts, including close liaison and cooperation with other Member States concerned where ENCs or paper charts are being produced on their behalf.

ENC Validation and Distribution

3. It is **resolved** that paragraph 1.3 of the WEND principles be amended as follows:
 - 1.3 Member States ~~are encouraged to~~ should distribute their ENCs through a RENC in order to share in common experience and reduce expenditure, and to ensure the greatest possible standardization, consistency, reliability and availability of ENCs.

APPENDIX II

**INFORMATION DOCUMENTS SUBMITTED TO THE
4th EXTRAORDINARY INTERNATIONAL HYDROGRAPHIC
CONFERENCE**

**INFORMATION DOCUMENTS SUBMITTED TO THE 4th EXTRAORDINARY
INTERNATIONAL HYDROGRAPHIC CONFERENCE**

CONTENTS

Item	Page
STATUS REPORT ON S-100– IHO GEOSPATIAL STANDARD FOR MARINE DATA AND INFORMATION (CONF.EX4/INFODOC.1)	355
RENC IMPLEMENTATION: THE WAY FORWARD (CONF.EX4/INFODOC.2)	361
LEISURE AND SMALL FISHING BOATS - USE OF OFFICIAL ELECTRONIC CHARTS (CONF.EX4/INFODOC.3)	369
UK COMMENT ON CONF.EX4/REP.05 - STATUS REPORT ON ENC COVERAGE (CONF.EX4/INFODOC.4)	373

STATUS REPORT ON S-100 – IHO GEOSPATIAL STANDARD FOR MARINE DATA AND INFORMATION

**Submitted by IHB
(CONF.EX4/INFODOC.1)**

Introduction

1. This paper provides a brief report of progress concerning the development and introduction of S-100.
2. S-100 is the new Hydrographic Geospatial Standard for Marine Data and Information. It was introduced into the IHO Work Programme in 2001 and has been developed by the Transfer Standards Maintenance and Applications Development (TSMAD) Working Group. Member States have been informed of the progress of S-100 and its potential impact through a number of Circular Letters. The last update was provided in CL69/06. Brief background notes about S-100 are included at Annex A. The IHB has posted an extensive and updated overview of S-100 on the IHO website at http://www.iho-ohi.net/mtg_docs/com_wg/TSMAD/TSMAD_Misc/S-100_InfoPaper_rev3-Apr09.pdf.

S-100 - Progress

3. A draft edition of S-100 has now been completed and was circulated for formal stakeholder feedback in May 2009, in accordance with the process described in Resolution A1.21 – *Principles and Procedures for Making Changes to IHO Technical Standards and Specifications*. Subject to satisfactory feedback from stakeholders, the Hydrographic Services and Standards Committee will consider S-100 at its inaugural meeting in October 2009, with a view to recommending to Member States that S-100 becomes an effective IHO standard with effect from 1 January 2010.

IHO S-100 Registry

4. S-100 is being compiled and maintained through an IHO online Registry which is described in the overview paper on the IHO website. This Registry is modelled on those used for similar ISO standards. A key element in the Registry concept is that each register domain is administered by subject matter experts from the relevant competent authority. The IHO will own or manage only the details in those parts of the Registry that support official hydrographic products and services or complement the purposes of the IHO, or that support activities of Member States. This approach has been welcomed by non-IHO organizations and stakeholders, many of whom appear eager to embrace S-100.

IHO Resource Implications

5. The Committee on Hydrographic Requirements for Information Systems (CHRIS) - now HSSC - has been made aware that the full operation of the IHO S-100 Registry (part of the overall IHO Geospatial Information Infrastructure (GII)) may require additional or revised resources, such as dedicated database administration, and Registry and Register Manager(s). This may be achieved through the re-allocation of IHB resources, assistance from MS or through additional dedicated or contracted staff. However, the GII, and in particular the S-100 Registry, is still in its infancy - where relatively little administration or management workload is involved.

6. The IHB will be monitoring the resource implications of the introduction of the HSSC and the IRCC and will be reporting annually and at the IHC in 2012. The management and operation of the GII form a part of the new arrangements for the HSSC. Any particular requirements for the operation of the GII will be included in the IHB assessment and its reports. In the meantime, the management and operation of the IHO Registry are being managed through the existing resources of the IHB and the Chairman of TSMAD with the support of his sponsoring organization – the UKHO.
-

NOTES ABOUT S-100

General

1. S-100 is intended to provide a contemporary hydrographic geospatial data standard that supports a wide variety of hydrographic-related digital data sources, and is fully aligned with mainstream international geospatial standards, in particular the ISO 19100 series of geographic standards.
2. S-100 is arguably the most important new technical development of the IHO. Industry Stakeholders have been involved throughout its development so far and are being encouraged to continue to be involved. The standard has been developed to enable and encourage the widest possible use of hydrographic and hydrographically-related data by users for non charting purposes. The S-100 development and maintenance process is specifically aimed at allowing direct input from non-IHO stakeholders, thereby increasing the likelihood that those stakeholders will maximise their use of hydrographic data.

Impact of S-100 on the IHO S-57 ENC Product Specification

3. S-100 is intended to support next-generation requirements for the use of hydrographic data. ENC data conforming to S-57 Edition 3.1 will continue to be a requirement for type approved, IMO-compliant ECDIS for the foreseeable future - even after S-100 and any subordinate ECDIS-related product specifications, such as S-101, have come into force. As a consequence, S-100 will have a minimal direct impact on hydrographic offices and the production of ENC data for many years to come.

Limitations of S-57

4. S-100 is required to overcome the fact that S-57 has not been widely used for any other application except ENCs. S-57 has a number of limitations that prevent it being used by the wider community in applications, products and services. These limitations include:
 - It has an inflexible maintenance regime. Any addition of new features and attributes to the solitary catalogue for new products would require new editions of the standard. This would have serious consequences for the ENC product specification and ECDIS manufacturers.
 - As presently structured, S-57 cannot support future requirements (e.g. gridded bathymetry, or time-varying information). This will have an impact in the longer term on ECDIS and e-Navigation.
 - Embedding the data model within the encapsulation (i.e. file format) restricts the flexibility and capability of using a wider range of transfer mechanisms.
 - S-57 is regarded by some as a limited standard focused exclusively on the production and exchange of ENC data.

Benefits of S-100

5. S-100 will provide various benefits, including:
 - Using ISO-developed components and terminology will help ensure that S-100 and future extensions are in the mainstream of the geospatial information industry. This should also help to encourage greater use and lower costs in implementing S-100 not only for hydrographic information but for all types of marine data in both hydrographic and other applications of geospatial applications (for example, marine GIS).
 - Conformance with the ISO 19100 series of geographic standards will maximize the use of commercial-off-the-shelf (COTS) software applications and development.
 - There will be greater compatibility with web-based services for acquiring, processing, analysing, accessing, and presenting data.
 - New components of S-100 will not be developed in isolation from the rest of the geospatial information technology community.
 - Any new requirements can be incorporated within the established framework of ISO based standards.
 - Rather than being regarded as simply a standard for hydrography, S-100 will be interoperable with other ISO standards and profiles such as NATO DIGEST.
 - There are many national standards bodies that will take full advantage of S-100 being aligned with ISO standards.
 - Compatible hydrographic data will be available to more than just hydrographic offices and ECDIS equipment.
 - It will enable hydrographic offices to use compatible sources of geospatial data, for example combining topography and hydrography to create a coastal zone map.

S-101 – ENC Product Specification

6. TSMAD has begun work on S-101 – the next generation ENC Product Specification. S-101 is based on S-100. Improvements that S-101 could provide include such things as “plug and play” updating of data, symbology and software enhancements as well as the more efficient use of additional data created under S-100.
7. The development of S-101 is being undertaken over several years, and is providing a very useful test-bed for the S-100 standard itself. A wide range of stakeholders are involved in the development of S-101, including hydrographic offices, ENC software producers, ECDIS manufacturers, mariners, and other maritime users. As a consequence of the extensive development process, S-101 can not come into force before at least 2012 and even then, the standard would sit alongside the existing S-57 Edition 3.1 Product Specification for some time. It is intended that any ECDIS which are upgraded or manufactured to use S-101 ENCs must continue to be able to use S-57 Edition 3.1 ENCs as well. For Hydrographic Offices, it is envisaged that the incentive to move to S-101 will be driven by user demand for the additional functionality offered, not through the imposition of mandatory requirements.

Other S-100-based Products

8. In addition to S-101, the Standardisation of Nautical Publications WG has begun populating Registers in the S-100 Registry to enable a future S-100-based Product Specification for nautical publications such as Sailing Directions. The Inland ENC Harmonization Group (IEHG) is the owner of an Inland ENC register. The International Ice Charting Working Group (IICWG) of the World Meteorological Organization (WMO) is the owner of a Sea Ice Reporting Register.

Entry into Force of New Standards

9. The development, implementation and transition into force of S-100, S-101 or any other S-100-based IHO specifications will follow the IHO governance model for technical standards detailed in IHO Resolution A1.21 - *Principles and Procedures for Making Changes to IHO Technical Standards and Specifications*.
-

RENC IMPLEMENTATION: THE WAY FORWARD

Submitted by the PRIMAR Advisory Committee¹
(CONF.EX4/INFODOC.2)

Introduction

The IHB Status Report on ENC coverage (CONF.EX4/REP.05) notes that a number of IHO Member States do not distribute their ENCs via RENCs although this is the distribution model included in the WEND principles. The drawbacks of this situation are explained in the IHB report:

- ENCs which are not distributed through a RENC do not benefit from the holistic harmonization checks and feedback that RENCs can provide;
- ENCs which are not distributed through a RENC are only available to particular service providers and do not get the widest possible distribution.

This paper proposes a framework to implement effectively the RENC component of the WEND principles.

Background

Although the IHO reaffirmed its commitment to the WEND Principles at the 17th International Hydrographic Conference, the progress in the implementation of RENCs has been slow:

- (i) less than half of IHO Member States apply the WEND Principles through RENC membership;
- (ii) only two RENCs have been formally established: PRIMAR² operated by the Norwegian Hydrographic Service (NHS) and IC-ENC³ operated by the UK Hydrographic Office (UKHO)⁴;
- (iii) both existing RENCs solicit HO's independently for providing world-wide coverage as opposed to the region-based WEND model;
- (iv) both RENCs get data from spotted sources around the world without robust regional alignment. This leads to a very limited direct leverage on ensuring cross-border consistency, with very few exceptions such as the Baltic Sea (7 out of the 8 Member States of the Baltic Sea Hydrographic Commission are PRIMAR members) or Central and South America (11 out of the 17 Member States of either the South-East Pacific Hydrographic Commission, the Meso American & Caribbean Sea Hydrographic Commission or the South West Atlantic Hydrographic Commission are IC-ENC members);

¹ The PRIMAR Advisory Committee is composed of representatives from the following IHO Member States: Croatia, Denmark, Estonia, Finland, France, Greece, Latvia, Mozambique, Norway, Poland, Russia, Sweden.

² <http://www.primar.org/>

³ <http://www.ic-enc.org/>

⁴ Additionally, an Australian regional RENC was established in 2005 in association with IC-ENC. Another regional arrangement worth mentioning is the production of small scale ENCs of the South China Sea under the aegis of the East Asia Hydrographic Commission.

- (v) both RENCs are more or less duplicating activities and devoting more energy trying to convince IHO Member States to join their respective distribution network rather than cooperating on the development of quality insurance tools and integrated services;
- (vi) the provision of integrated services requires not only agreement between the two RENCs but also agreement with individual HOs who are acting as distribution outlet for their own ENC's on one hand, or through distribution agreement with individual ENC producers who do not wish to join a RENC on the other hand ;
- (vii) because of the various distribution agreements, including exclusive distribution agreements between individual HOs and private distributors, there is a lack of clear cut specification for the official⁵ part of the integrated ENC services to be operated under the authority of IHO Member States as opposed to the downstream segment (user services) open to competition.

Considering that:

- (i) most IHO Member States [do not wish to / cannot] invest in building up RENCs,
- (ii) [Some / most] IHO Member States are standing on the side line because of the fragmented situation in Europe,

and noting however that the issue of consistency and overlap can only be addressed adequately at the regional level through the effective involvement and commitments of the Regional Hydrographic Commissions (RHCs),

it seems necessary to align the two existing RENCs and to facilitate participation of non-RENC members before the mandatory carriage requirement of ECDIS makes its full effect. Within this timescale (2012), it is probably not realistic to count on the establishment of additional full-fledged RENCs.

The way forward for RENC implementation

Based on this background IHO Member States are invited to consider the following framework:

1. IHO Member States reaffirm their commitment to implement fully the WEND Principles⁶ and the associated IHO Guidelines⁷ through agreeing the proposed resolutions attached to the IHB Status Report on ENC coverage (CONF.EX4/REP.05);
2. IC-ENC and PRIMAR members agree to form a joint dual and virtual RENC structure hereafter designated the "European RENC", by:
 - 2.1. merging their ENC holdings in a joint encrypted database from which user service providers are invited to develop value added end-user services,
 - 2.2. defining core RENC functions (including encryption) which will be used by all members and by all user service providers,

⁵ As defined by Regulation 9 of SOLAS Chapter V.

⁶ See IHO Technical Resolution K 2.19.

⁷ See IHO Circular Letter 82/2008.

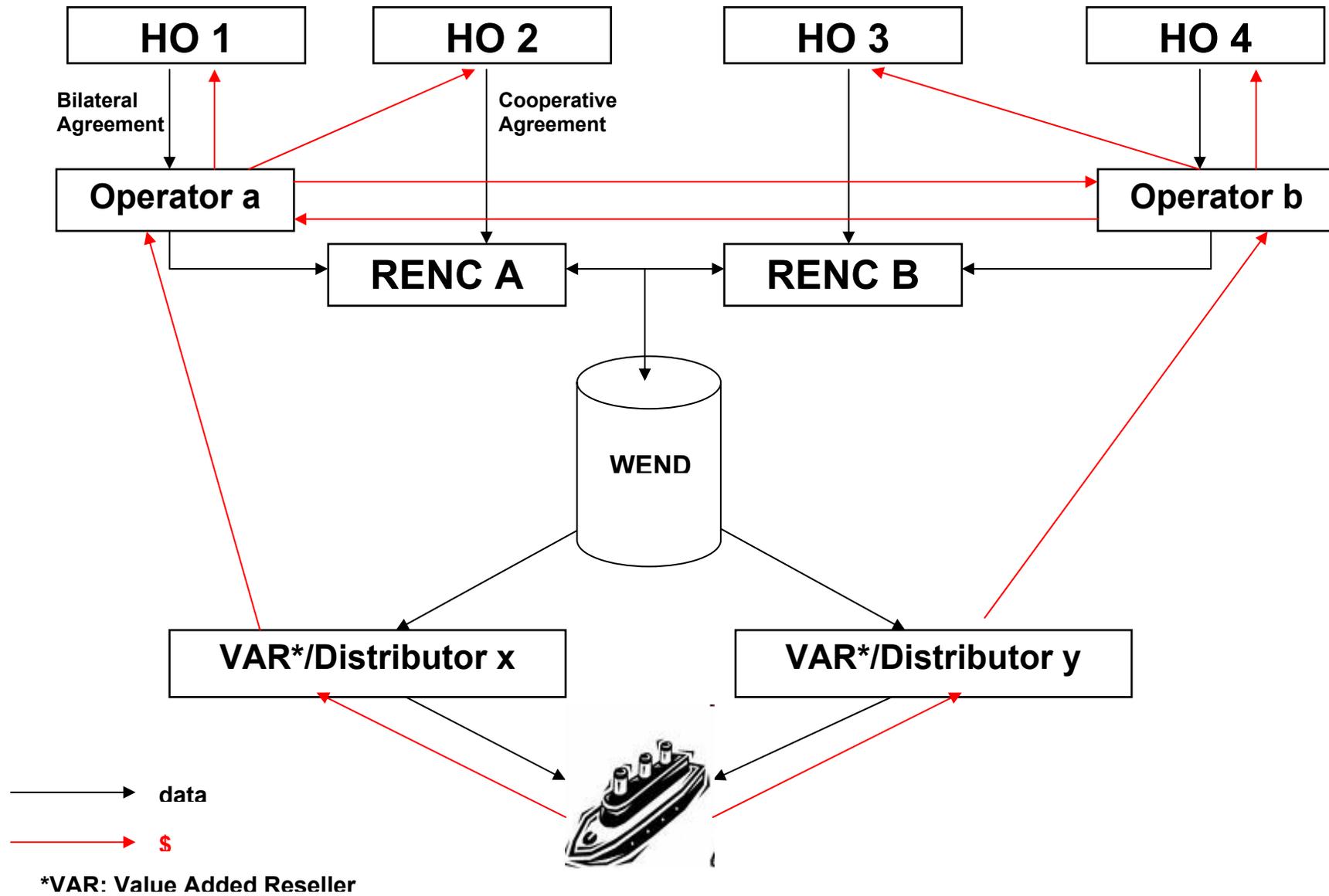
- 2.3. defining optional RENC functions which will be offered to the interested members and/or user service providers either:
 - 2.3.1. to meet national requirements defined by official bodies,
 - 2.3.2. to facilitate the provision of innovative and competitive end-user services,
- 2.4. offering similar conditions to HOs and user service providers through both PRIMAR and IC-ENC for the core functions,
- 2.5. addressing jointly technical and administrative issues in support of RHCs and other IHO organs;
3. IHO Member States that have a bilateral distribution arrangement with a RENC operator agree to make their ENC's available through the joint database;
4. IHO Member States that produce ENC's on behalf of another Coastal State make these ENC's available through the joint database unless an explicit and qualified objection is raised by the Coastal State not to do so;
5. IHO Member States that are not yet member of a RENC agree, as a transition phase, to join the European RENC as a full member or through a bilateral agreement with one of the two operators⁸;
6. IC-ENC and PRIMAR offer their assistance to any IHO Member State or group of IHO Member States wishing to set up a separate RENC at a later stage;
7. New RENCs should be established, if possible, in alignment with RHCs (i.e.: ideally all the members of a given RHC should cooperate within the same RENC) and should operate as additional regional nodes of a RENC-to-RENC worldwide network.

The principles of RENC-to-RENC cooperation are described in the attached Annex A. A preliminary list of RENC functions is given in the attached Annex B.

Action requested of the Conference

The Conference is invited to take note of the proposed framework and take action as it considers appropriate.

⁸ Their rights and obligations may be different from those associated with full RENC membership.



RENC FUNCTIONS

0. Definition of RENCs (extract from IHO Technical Resolution K2.19)

RENCs are organizational entities where IHO members have established co-operation amongst each other to guarantee a world-wide consistent level of high quality data, and for bringing about co-ordinated services with official ENC and updates to them.

1. Core RENC functions

- a) integrate ENCs issued by or on the authority of Government, authorized Hydrographic Offices (HOs) or other relevant government institutions (ENC producers) into a single ENC database.
- b) assist ENC producers in the harmonized implementation of IHO standards, including the timely provision of updates (ER).
- c) assist ENC producers in data quality control and validation through an independent quality assurance process to ensure that the integrated ENC database meet relevant IHO standards.
- d) detect consistency, cross-border and overlap issues and assist ENC producers in solving them.
- e) ensure the integrity of the original ENC data through to the end-users in accordance with the IHO S-63 data protection scheme.
- f) provide to governmental and intergovernmental authorities ENC data and their updates for navigational purposes.
- g) contribute to promoting the appropriate use of ECDIS.
- h) provide to the ENC distribution network a one-stop 24/7 interface to access ENC data and their updates for navigational purposes.
- i) provide to ENC producers, service providers and end-users an interactive web catalogue displaying ENC availability.
- j) operate a quality assurance system.
- k) provide support to Original Equipment Manufacturers (OEMs) in connection with ENC data and implementation of the IHO S-63 data protection scheme.
- l) operate a financial system for the invoice of distributors, the compilation of sales reports, the reception and distribution of payments.

2. Optional RENC functions

- a) provide to governmental and intergovernmental authorities ENC data for non-navigational purposes.
- b) provide to ENC producers service solutions and framework to co-operate in the management and provision of ENCs and related maritime geospatial data.

- c) consider capacity building support to achieve adequate global ENC coverage.
 - d) provide to the commercial sector access to ENC data for non-navigational purposes.
 - e) provide to governmental and intergovernmental authorities ENC derived products (Web Map Services, Maritime Spatial Data Infrastructure).
 - f) assist ENC producers in promoting the widest use of ENC data.
-

LEISURE AND SMALL FISHING BOATS – USE OF OFFICIAL ELECTRONIC CHARTS

Submitted by the PRIMAR Advisory Committee¹
(CONF.EX4/INFODOC.3)

Background

After more than twenty years of efforts, the maritime community today is in a position to utilize the technological achievements in electronic navigation that guarantee, not only increased safety in navigation, but as well improved operational efficiency.

Following IMO regulations all vessels may use, instead of paper charts, electronic charts provided that they comply with the requirements set by regulation V/19 of the SOLAS convention. One of the key rules for the **Electronic Chart Display and Information System (ECDIS)** to be considered as the functional equivalent for paper charts, is the use of **Electronic Navigational Charts (ENCs)** produced by the Hydrographic Offices (HOs).

According to SOLAS Chapter V Regulation 19 Paragraph 2, IMO states:

“2.1 All ships irrespective of size shall have:

2.1.4: nautical charts and nautical publication to plan and display the ship's route for the intended voyage and to plot and monitor positions throughout the voyage; an electronic chart display and information system (ECDIS) may be accepted as meeting the chart carriage requirements of this subparagraph,”

During the 85th session (Dec 2008) of IMO's Maritime Safety Committee (MSC), the proposal to make mandatory the carriage of ECDIS on SOLAS vessels from 2012 was approved. The proposal contained amendments to SOLAS regulation V/19 to make the carriage of ECDIS under SOLAS chapter V Safety of Navigation mandatory as proposed by NAV 54.

Throughout the last couple of years the HOs made a considerable effort to accelerate the production of ENCs, which constitute the fuel for ECDIS, towards the goal of obtaining a worldwide coverage. This endeavour was attended by a considerable cost, not only in man-power but in funds as well.

As presented in WEND 11 (Tokyo Sep 2008) the ENC coverage for June 2008, based on the analysis undertaken by the WEND TG is as follows:

Chart Scale	% ENC Coverage compared to corresponding paper chart coverage for top 800 ports and routes between them
Small Scale (planning)	94 %
Medium Scale (coastal approach)	68 %
Large Scale (ports)	65 %

The coverage keeps growing and it is estimated that by the end of 2010 it would be completed for all major trading routes.

¹ The PRIMAR Advisory Committee is composed of representatives from the following IHO Member States: Croatia, Denmark, Estonia, Finland, France, Greece, Latvia, Mozambique, Norway, Poland, Russia, Sweden.

It is agreed that the enhancement of ENC coverage in order to meet the mandatory ECDIS carriage requirements will remain for years, the main focus of many HOs as well as ENC data quality, migration to S-101 ENC and the extensive data collection for the future NP3 product etc. For these very reasons, the consideration of the needs of the leisure crafts should for the time being remain a secondary priority for the IHO.

However, a considerable piece of the shipping market includes the leisure and the fishing boats, which unfortunately cannot easily follow up the utilization of ECDIS and ENCs. The main reason is that ECDIS, having functionalities that are essential for professional mariners, require extended space to be installed and a prohibitive budget. As a consequence, yachters and fishermen still use conventional nautical charts or small electronic navigational aids such as GPS plotters, palmtop devices, or in the best case laptops with cheap software capable of displaying various types of unofficial electronic charts.

In addition, it is worth noting that the new RTCM's ECS standard (10900.4) gives HOs good opportunities to promote ENCs especially when considering type approved ECSs class A as primary aid of navigation on non-SOLAS vessels.

Today there is a variety of electronic charts, Raster and Vector, that are designed to suit the needs of this market. However, the ENCs are only used by very few leisure boat users due to the lack of the available charting software having the capability to load and display encrypted ENCs.

Moreover, it should not be neglected that the leisure boat community face some other key issues in reference to the use of the ENCs:

- Excluding main ports, lack of ENCs of small ports and marinas.
- Lack of information concerning available facilities in small ports and marinas like power, oil, telephone, food, supplies, etc. On the contrary, this information is provided from producers of non official electronic chart systems.

Appreciating some of the major benefits of the ENCs:

- developed based on international standards,
- being official products of the HOs,
- kept up-to-date continuously,
- provide functionality that guarantees safe navigation,

we strongly believe that the leisure boats mariners should be given the opportunity to navigate with ENCs. Towards this view, we should look closer to the drawbacks mentioned above, trying to eliminate them to the best of one's ability.

Concluding, we would like to share these views in order to know:

- whether it is necessary to propose the establishment of an ad hoc Working Group, coordinated by HSSC but not limited to IHO MS, which will investigate in detail the leisure boats and small fishing vessels needs and propose actions that will promote ENCs to this market,
- or if it is more appropriate, due to the current low priority in the IHO work program, to consider these issues primarily at a national level and to investigate the possibility of using the existing mechanisms and bodies such as the Licensing Forum.

More specifically, points that might need to be assessed are:

- The registration of small ports and marinas, worldwide, that are of main interest to the yachters with the corresponding ENC not being available yet. This list could be forwarded to the HOs with the incitement to consider the development of the appropriate ENCs.
- The registration of lacking information of marinas facilities and the design of the appropriate layers that could be available to the mariners as additional layers to the ENCs.
- The investigation of the interest of the manufacturers of leisure boats electronic equipment, in the design and construction of small devices with ECDIS functionality being capable of loading and displaying encrypted ENCs.
- The investigation of alternative options based on official services such as the provision to the manufacturers of S-57 updated data from HOs and the following harmonization of distribution procedures and pricing policies among HOs.

Furthermore, and if there is agreement to promote effectively the use of ENCs in the leisure boat and small fishing boat market, suggestions could be made to the RENCs to consider a special pricing policy in order to make the ENCs more affordable.

Action requested of the Conference

The Conference is invited to take note of the information provided on the use of ENCs (or ENC updated data) in the leisure boat and small fishing vessel market and to suggest a way forward with two options:

- creation of an ad hoc working group under HSSC;
 - use of existing bodies and forums, questions to be tackled at the national level, and information sharing among HOs and RHCs as appropriate.
-

UK COMMENT ON CONF.EX4/REP.05 - STATUS REPORT ON ENC COVERAGE

Submitted by UK
(CONF.EX4/INFODOC.4)

Executive Summary:

The UK recognises the significant advances made over the last year by many Member States (MS) in the provision of ENC coverage in support of IHO's commitment to IMO. The UK is grateful to those MS whose assistance and support has enabled it to create ENCs for many regions that would otherwise not be covered; thereby improving overall ENC availability. Nevertheless a great deal of work remains to be undertaken, especially with regard to consistency and updating issues. This paper provides additional information and comment that may assist the discussion of the IHB Status Report (CONF.EX4/REP.05).

ENC Coverage

Over the last two years, the UK has worked closely with many MS and others to increase the number of ENCs in support of the IHO's commitment to IMO to provide adequate ENC coverage by 2010. In mid 2008 the UK launched a new integrated ENC service (AVCS) to provide tangible evidence to IMO of the IHO's progress in ENC production in support of a mandatory carriage requirement for ECDIS. The service combines ENCs from as many sources as possible (both from nations that are RENC members and from those that prefer to distribute their data independently). The service is supplemented by new ENCs produced by UK, as facilitated through appropriate agreements with the States concerned.

UK global ENC production: The UK has produced ENCs for many areas where it has no formal SOLAS obligation; these include areas where it has historically held primary charting responsibility, for example Commonwealth nations that do not have a developed hydrographic capability. The UK has also been mindful of the need for ENC coverage of the waters of those nations that are not members of the IHO, especially where these intersect key shipping routes. UK production effort has been focussed on filling gaps in existing coverage, especially at smaller scales, along the routes most heavily used and on major ports (as identified by Lloyds tonnage statistics) and their approaches.

Annex A of the IHB ENC Status Report gives an indication of the extent of UK production. In total the UK has produced approximately 1000 ENCs covering the waters of about 100 coastal states. This is in addition to the 600 ENCs covering UK waters and Overseas Territories. A further 300 ENCs are currently in production. This additional ENC coverage has required a very significant investment in both staff resource and money. Annex A to the IHB report however does not give the full picture in all cases. Whilst the UK includes ENCs in its services (including AVCS), from the coastal states as listed, in some significant cases the ENCs have been produced by the coastal state themselves (not the UK) and these are also available in ENC services provided by others. It should also be noted that, for a number of the coastal states listed, the ENCs produced by the UK are small-scale infill to ensure that there is complete coverage for planning purposes (something that mariners have indicated is a high priority).

Interim coverage: The ENC coverage created by the UK for various coastal States is being provided on an interim basis and will be withdrawn when those States are in a position to issue and maintain their own ENCs. As well as producing coverage on behalf of coastal States, the UK is also working with a number of MS to assist them with their own production. Where new coverage becomes available the UK routinely 'clips back' its interim coverage in favour of the locally produced ENCs; all the time ensuring that continuity of coverage and service to the mariner is maintained. As a result,

the interim coverage is frequently changing, and in some areas has a relatively short life. It can only be maintained through close cooperation between producing HOs.

Bilateral cooperation: There is still a significant amount of work required to complete ENC coverage to the level expected by IMO and the shipping industry. Whilst there is a clear responsibility on all coastal States to ensure ENC availability for their waters, in advance of the mandatory carriage requirement for ECDIS, it is clear that many lack the resources to achieve this on their own. The UK encourages these States to work with IHO MS that already have an established capability to assist them in their task. The UK remains ready to play its part in providing assistance where this is requested.

ENC Consistency and Quality

The issues of quality and consistency outlined in the paper mirror much of the UK's experience in developing the AVCS service. There are two distinct types of issue affecting the mariner's use of ENCs; those of conformance to S-57 and the ENC product specification (a matter of validation) and those of the hydrographic content of the ENC (a matter of verification).

ENC Validation: If ENCs are to be loaded and used in ECDIS without problems, it is important for any validation issues to be resolved prior to the ENCs being supplied to the mariner. The UK therefore recognises the advantages of the independent validation checks that RENCs undertake. The UK wishes to see close co-operation between RENCs to ensure that similar levels of validation are employed. Where UK includes ENCs within its services from producer nations that are not a member of a RENC it undertakes validation checks, similar to those used by IC-ENC, on those ENCs..

ENC verification: To meet the needs of the Royal Navy the UK has been required to undertake a review of the navigational content of its Admiralty paper chart series against existing ENCs of a comparable scale. Where navigationally significant differences have been identified then the national paper charts have been consulted and where appropriate, action has been taken to update the Admiralty chart. Where the UK has been unable to resolve any significant differences, it has contacted the ENC producer to seek their advice. On a number of occasions, this has resulted in corrections being issued for the ENCs.

UK is fortunate to be a large office with a significant number of trained cartographers, however, even with this resource available, this comparison task has placed a considerable strain on the organization. UK believes the reduction in the number of inconsistencies between paper charts and ENCs is of significant benefit to mariners whose confidence in the chart and its producing authority is undermined by such differences. The UK has found that a good understanding of the generalisation processes employed and the local compilation policies used by HOs will assist in minimising such differences in the future.

Regional consistency: One major source of differences is where ENC producer nations do not take account of differences between their national charts (which they use as source) and any overlapping chart series (and their updates) from a neighbouring coastal State. Where nations have responsibility for different usage bands within the same area this can create considerable 'vertical consistency' problems.

Ultimately all consistency issues have to be resolved between neighbouring States however it is clear that the Regional Hydrographic Commissions have a significant role to play. The examples of the EAHC in co-operating to resolve differences in content of their small scale ENCs for their region and of the BSHC in implementing more rigorous consistency guidance within their region are good models for other RHCs to consider.

If MS work closely and co-operatively then ENC consistency issues can be overcome; the UK is committed to assisting the community in achieving this goal.

ENC Availability

The proposed change to WEND Principle 1.3 would appear to infringe MS' sovereign right to decide how the ENCs that they produce, are made available to the mariner. In some cases this decision may be made by a national authority other than the HO. The UK believes that the more important issue to be addressed is to ensure that all ENCs meet the expectations of the mariner with regard to standardization, consistency, reliability and availability. This is something that RENCs strive to achieve. Nations that for their own reasons prefer not to be a member of a RENC need to ensure that their ENCs meet these expectations and should make appropriate arrangements in this regard. The UK would support inclusion of wording to this effect within WEND Principle 1.3.

Training

Over the last 2 years the UK Marine Accident Investigation Board (MAIB) has investigated a number of incidents in UK waters that, at least to some extent, have involved the use of ECDIS. A common theme from all of these MAIB reports is not the ECDIS or ENCs themselves, but the lack of training of ships' officers in their use. In at least one case this was a direct cause of the grounding incident. Whilst the basic IMO approved model ECDIS training course contains elements related to ENCs there would appear to be a need to provide the mariner with a more detailed knowledge of ENC and its use in ECDIS. With this in mind, UKHO's training branch has assembled a prototype one-day course to widen the mariners' appreciation of ENCs. This has been presented to the Southampton port authority pilots as an expert user group and the feedback received has been very positive. UK is now looking to develop the course further and is considering the next steps in taking this forward through contact with other UK pilot authorities and maritime colleges.

Conclusion

- UK supports the analysis and thrust of the IHB report. Given the ENC production since the 2007 Conference and moreover since NAV54 in 2008, the IHO can have confidence that it will have adequate global coverage of main shipping routes and ports by 2010
 - The UK has always maintained that consistency in respect of validation, but more significantly also in terms of verification, would be the next hurdle. The experience, analysis and investigations undertaken by the UK bear this out. This was illustrated in part by the examples shown in the IHB presentation at WEND/11 in 2008. Both validation and verification issues remain real challenges to be addressed.
 - Whilst UK supports the first two proposed Conference resolutions within the IHB report it does not feel able to support the third. The WEND Principles are just that...Principles and not rules. The UK supports choice in how MS make their data available; changing the wording in WEND 1.3 to "should" implies a rule and this is inconsistent with the accepted operating procedures of the IHO. Acceptance of the change would set a precedent for enforcement that is not seen in any other area.
 - With mandatory carriage of ECDIS now a reality, training mariners to correctly understand and use ENCs in ECDIS is set to be a key issue for many shipping companies and users. HO's need to recognise that they have a role to play in this regard that is complementary to the IMO model training course currently available. The syllabus developed by the UK to meet this need offers an approach for consideration.
-

**EXHIBITORS AT THE 4th EXTRAORDINARY
INTERNATIONAL HYDROGRAPHIC CONFERENCE**

**LIST OF EXHIBITORS AT THE 4th EXTRAORDINARY INTERNATIONAL
HYDROGRAPHIC CONFERENCE**

Stand Code	Exhibitor	Country
17	Applanix Corporation	Canada
27	Applied Microsystems	Canada
20	ATLAS Hydrographic GmbH	Germany
14	CARIS BV	Netherlands
09	EIVA A/S	Denmark
15 & 16	ESRI	USA
18	Gardline Hydro	UK
06	HydroTeam (ATLIS, IVS-3D, L3Nautronix, SevenCs)	Netherlands
2	HYPACK, Inc.	USA
11	IXSEA	France
4	Jeppesen Marine	Norway
10	Knudsen Engineering Ltd	Canada
07 & 08	Kongsberg Maritime	Norway
13	L-3 Communications ELAC Nautik GmbH	Germany
21	Lorienne SA, Geomod	France
05	ODIM Brooke Ocean	Canada
23	Pelydryn	UK
25	Primar	Norway
24	Quality Positioning Services BV	Netherlands
26	R2Sonic	USA
19	Reed Business Geo	Netherlands
29	RESON	Denmark
31	SAIC	USA
32	SeaZone Solutions Ltd	UK
12	Teledyne-ODOM	USA
03	Teledyne-TSS	UK
01	UK Hydrographic Office	UK
22	UTEC Survey Inc	USA

