10TH WEND COMMITTEE MEETING
Monaco, 11 & 14 am September 2006

FINAL MINUTES

Notes: 1) Paragraph numbering is the same as in the agenda (Annex D)
2) A list of acronyms used in this report is provided at Annex A
3) A list of actions agreed at WEND10 is provided at Annex E
4) A Record of Discussion for the 2nd ECDIS Stakeholders Forum is provided at Annex I
4) All documents referred to in these minutes are available from the WEND page of the IHO website (www.iho.shom.fr > Committees > WEND > List of WEND10 Documents)
5) Names of contributors are written in full the first time they appear in these minutes. Then, only the surname is shown.

1. Opening and Administrative Arrangements

Docs: *WEND10-1A* *List of documents*
WEND10-1B *List of Participants*
WEND10-1C *Membership of WEND*

RAdm. Ken Barbor (IHB) welcomed participants to Monaco. The Chair of WEND Committee (Capt. Abri Kampfer, South Africa) opened the meeting, and welcomed both members and observers. He noted that there were more in attendance than any previous WEND meeting. Having WEND10 and the two RENC Steering Committee meetings this week, plus the ECDIS Stakeholders Forum, were contributing factors. In particular, the Chair mentioned that during this WEND meeting, there was a need to look at progress made since the last meeting but also how to accelerate momentum.

The WEND Secretary (Mr. Michel Huet, IHB) reviewed the List of Documents (see Annex B), noting that several new documents had been recently received, which did not meet the deadlines specified in the "Guidelines for the Submission of Reports and Proposals for Consideration by WEND", as available from the IHO website.

2. Approval of Agenda

Docs: *WEND10-2A* *Agenda*

The Agenda was approved without change (see Annex D).

3. Matters arising from minutes of the 9th WEND Meeting

Docs: *WEND10-3A* *Minutes of the 9th WEND Meeting*
WEND10-3B *List of Actions arising from the 9h WEND Meeting*
WEND10-3C *Terms of Reference for the WEND Committee*
WEND10-3D *WEND Principles*

Minutes to WEND9 were accepted without change. IHB (Huet) provided a brief review of the List of Actions from WEND9, noting that most of them had been completed. Chair made brief mention of the WEND Terms of Reference and Principles, but these were not discussed.

4. Review of other IHO activities dealing with ECDIS, pertinent to WEND

Docs: *WEND10-4A* *Status of Electronic Charting Issues before IMO (IHB)*
WEND10-4B *ENC/RNC Catalogue and List of Required Backup Paper Charts (IHB)*

WEND10-4C IHO Data Protection Scheme S-63 (IHB)

4.1 Status of Electronic Charting Issues before IMO

IHB (Barbor) gave a brief overview of electronic charting issues currently being considered by IMO (see WEND10-4A). This included the revision of the IMO ECDIS Performance Standards, the IHO On-line Catalogue of Official Charts, ECDIS carriage requirements, and e-Navigation strategy.

Mr. Frode Klepsvik (Norway) commented that IMO will further discuss mandatory ECDIS carriage requirements at NAV 53 and NAV54. He added that ENC coverage is a major issue that IHO needs to address. VAdm Maratos (IHB) provided further insight on IMO matters. He reiterated that the main issue for IHO is coverage and availability of ENCs. In particular, there will be mandatory carriage of ECDIS for:

- High Speed Craft (HSC) beginning in 2008.
- all SOLAS vessels as early as 2010-2012.

IHB (Maratos) further mentioned that the assumption by IMO is that "sufficient" ENC coverage will be in place by these dates. He said that IMO has asked IHO to report on progress of ENC coverage and availability next year (at NAV53). In this regard, Mr. Tony Pharaoh (IHB) indicated that IHB is working on a comprehensive, online Catalogue of Available Official Charts. It will include RNCs, ENCs, and paper charts.

IHB (Barbor) indicated that recommended changes to the ECDIS Performance Standards were approved at NAV52 and will be voted on adoption at MSC82 this fall. A WG was established at NAV52 (chaired by Mr. Frode Klepsvik, Norway) on Differences between Raster and ENC data. He also mentioned that IMO, IHO and IALA are partners (main actors) on e-Navigation.

Mr. Horst Hecht (Germany), Chair of the WEND Task Group, stated that the WEND TG recognizes the crucial importance of completing ENC coverage. He emphasized that IHO needs the full commitment of MS in order to complete this task. Ing. Général Gilles Bessero (France) inferred that the important issue of providing adequate ENC-coverage would be discussed in detail later on and wondered what would be the specific contribution of IHO to the e-navigation effort. WEND Chair responded that this would be done in two ways:

1) clear statement as to what is needed and when;
2) adherence to the WEND principles.

IHB (Barbor) explained that this is also done through bilateral agreements and Regional Hydrographic Commissions (RHCs). RAdm Rao (India) mentioned that there is reluctance by some MS to accept that they cannot complete the task themselves, and to ask for assistance. Mr. Richard Carpenter (UK) made the distinction between the rights of MS and their responsibilities towards meeting the needs of the user community; it is the latter we should concentrate on. Germany (Hecht) endorses the view of the UK, that meeting the needs of the user community is the problem that WEND must help to solve. He added that progress has been slow toward meeting deadlines. He felt that, should IHO be unable to achieve the objectives set by IMO, then it may no longer be seen as the "competent organization" for ENC production, coverage and availability.

Chair asked for proposals on how to deal with this issue. Capt. Rod Nairn (Australia) pointed out that the main challenge for MS is obtaining the necessary commitment from their national governments. He said that the HOs already know what the problem is, but IHO could be helpful in providing information / justification that could be used to convince MS governments. Norway (Klepsvik) felt that it would not be appropriate for IHB to communicate with National Government directly. This is appropriately done through the HO.

Capt. Joe Collins (UK) commented on the importance of mandatory ECDIS carriage at IMO. In this regard, IMO has asked IHO to provide information which shows that sufficient coverage was being accomplished so that mandatory carriage can occur. Norway (Klepsvik) remarked that realistically,

"full" ENC coverage will never be achieved since there are always areas that need improved charting information. Germany (Hecht) wondered who/how it will be decided what is "sufficient ENC coverage" (e.g., IMO or IHO)? Also, what constitutes adequate ENC coverage for major shipping routes? Norway (Klepsvik) felt that this should be addressed at the next International Hydrographic Conference (IHC) in May 2007. Chair suggested that perhaps this topic should be referred to the WEND TG. IHB (Barbor) mentioned that this task has been looked at before, and is difficult to determine. Netherlands (Wormgoor) proposed to amend S-55 accordingly after the identification of "sufficient coverage of areas and routes".

Germany (Hecht) pointed out the need to keep two things separate:

1) IMO decides on what constitutes mandatory ECDIS carriage requirements;
2) IHO decides on what is sufficient ENC coverage (areas and routes).

In regard to the WEND TG, he added that it can help to decide:

a) what is existing coverage?
b) what are the prospects for improving?

Mr. George Arts (ICCL) brought up three topics:

1) He also wondered how the IHO will decide what "sufficient ENC coverage" is. Also, even with the IHO WEND Principles, what if there are a significant number of IHO MS that have not produced ENCs? He noted that there is a new sense of urgency.

2) Regarding the IHO Online Chart Catalogue, he stated that it is important to also make it known to user groups how ENC data can be obtained.

3) He asked how were the three shipping routes selected that were used for the Formal Shipping Assessment (FSA) Study)? Norway (Klepsvik) responded that due to limited time and availability, the FSA Study group decided to base the study on a few well-known shipping routes.

The following was agreed:

> ***ACTION:***
> *1. Using the DnV study as a basis,* ***WEND TG*** *to:*
> *a) Identify the main shipping routes for all SOLAS vessels (including HSC)*
> *b) Determine where gaps in ENC coverage exist for all navigational purposes (scale ranges)*
> *Upon completion, a report is to be submitted for consideration by WEND.*

4.2 IHO Online Chart Catalogue

It was agreed that the presentation on the online chart catalogue (see WEND10-4B) by Mr. Anthony Pharaoh (IHB) would be made during the ECDIS Stakeholders Forum.

4.3 Data Protection Scheme (S-63)

IHB (Barbor) introduced the paper on the IHO S-63 Data Protection Scheme (see WEND10-4C). A new IHO Technical Resolution A3.12 (ENC Encryption) on the matter was submitted to MS (IHO CL 31/2006 refers). He mentioned that it was only a few votes shy of being approved by MS, and thus the proposal was not formally adopted.

India (Rao) stated it is not entirely clear if ENC encryption is mandatory. If so, must S-63 be used? Germany (Hecht) responded that based on the WEND Principles, S-63 should be used. Norway (Klepsvik) stated that IHO can not make this mandatory, only a recommendation. Mr. Robert Sandvik (Chair, DPSWG) confirmed that S-63 is the recommended security scheme for ENC data. HOs can choose to use or not use S-63.

The Chair stressed the need to review the revised technical resolution wording. The meeting supported IHB suggestion that the first two paragraphs that were initially proposed to MS be retained in TR A3.12 as follows:

1. It is resolved that the IHO Data Protection Scheme, as described in Publication S-63, is the IHO recommended security scheme for ENCs.
2. It is further resolved that the IHB, as IHO Secretariat, will act as Scheme Administrator for S-63.

As for the third paragraph, it was agreed that it would be more appropriate as a revision of WEND Principle 2.11. As reflected in WEND10-4C, two potential wordings were discussed. After discussion, it was agreed that revised wording would be:

2.11 Member States should work together so that the IHO Data Protection Scheme (S-63) is used for ENC distribution to end users, to ensure data integrity, to safeguard national copyright in ENC data, to protect the mariner from falsified products, and to ensure traceability.

> ***ACTION:***
> 2. ***IHB*** *to draft a CL proposing a new TR A3.12 (ENC Encryption), and the revision of TR K2.19 (WEND Principles).*

During the discussion two related issues were raised:
1) Mr. Tor Svanes (CIRM) questioned the use of the term "falsified products"? He also wondered if the benefit of encryption was more for HOs than for the mariner.
2) Lt. Burak INAN (Turkey) suggested that a distinction needs to be made between leisure craft and SOLAS vessels. Germany (Hecht) responded that leisure craft policies are handled nationally.

5. Report on status: ECDIS and ENC standards/specifications
Docs: *WEND10-5A Status of IHO Publications on ECDIS (IHB)*

IHB (Huet) provided a brief review. He mentioned in particular that the likely adoption by MSC82 (December 2006) of revised IMO Performance Standards for ECDIS, would result in a major revision of S-52 to be restructured so as to focus on ENC display aspects.

5.1 Minimum requirements for official ENCs
Docs: *WEND10-5.1A Minimum requirements for official ENCs (WEND TG)*

The WEND TG Chair (Hecht) explained that the purpose of this paper was to explain what constitutes "official" ENCs". Also, to clarify two issues:
1) If "official" ENCs must have a security scheme to establish authenticity and protection against falsification?
2) if HOs must make ENCs available to be usable on *all* ECDISes, i.e. not only in an SENC proprietary format (exclusive rights)?

ICCL (Arts) pointed out that an ECDIS must read an S-57 ENC, and that a SENC format is an additional option. Norway (Klepsvik) commented that type-approved ECDIS must be able to read ENCs. India (Rao) pointed out that at this time, India does not issue un-encrypted ENC data.

5.1.1 Definition of an ENC.

Germany (Hecht) felt that there should be a new/more clear definition as to what "official" actually should mean as it pertains to ENC data and that this was a matter for WEND to consider. He wondered if IHO liaise with IMO about this matter?

Capt. Paul Beggs (ICCL) stated that according to definition contained in the IMO ECDIS Performance Standard, an ENC is "official," and thus cannot be "unofficial." Germany (Hecht) agreed but felt that IHO should come up with a list of criteria for "what is an ENC". Mr. Erwin WORMGOOR (Netherlands) wondered if this is really a problem that requires attention at this time? ICCL (Arts) pointed out that IHO may be trying to come up with a technical solution to an administrative problem. He felt that the burden of proof lies within the process which the maritime community uses to ensure that ENC data is certified as being properly supplied. Mr. Michael Bergmann (RTCA) pointed out that in the aviation field, there are certified/approved suppliers of aviation maps and notice-to-airmen.

Norway (Klepsvik) stated that it was still not clear as to what WEND should consider or resolve, i.e. based on the WEND TG paper. He felt there are too many unanswered issues, and that the WEND TG should resubmit at the next WEND meeting. Australia (Nairn) volunteered to come up with a draft definition that could be considered later on during the WEND10 meeting. This was agreed. UK (Carpenter), USA (RAdm Christian Andreasen) and Germany (Hecht) offered to assist Australia.

Australia (Nairn) later introduced the outcome of this ad hoc group. The following clarification was proposed:

a. The distribution of ENC must have a suitable method of authentication to confirm its source and integrity,
b. The governmental responsibility for ENC includes the same level of liability applicable to other navigational products and services issued by or on the authority of the respective issuing government, and
c. ENC must be made universally available in an IHO recognized non-proprietary format.

He explained that the proposed clarification was to link ENC distribution to the intent of the ENC definition contained in the IMO ECDIS Performance Standards. Norway (Klepsvik) asked if this was primarily for IHO, e.g., WEND or Conference, or for IMO. Germany (Hecht) felt that it should be primarily associated with WEND. France (Bessero) agreed and felt that it also pertained to IHO MS. Norway (Klepsvik) expressed concern about paragraph (b) as it pertains to liability. Australia (Nairn) stated that the overall goal of this resolution was clarification about ENCs, and not to be regarded as something "new", e.g. liability. Both USA (Andreasen) and Netherlands (WORMGOOR) also expressed concerns about the mention of "liability". Changes were made to paragraph (b), as follows, that Norway (Klepsvik) accepted.

b. The governmental responsibility for ENC is the same as that applicable to other navigational products and services issued by or on the authority of the respective issuing government.

IHB (Barbor) explained how this clarification could become included with the WEND Principles. Germany (Hecht) stressed that this was not intended to become something new, but to clearly establish a link to SOLAS Chapter 5, Regulations 2 & 9.

5.1.2 Use of the terms "official" and "un-official"

There was some additional discussion about the use of the terms "official" and "un-official" in describing ENCs. ICCL (Beggs) stated that by definition an ENC is already "official". There is no such thing as an "un-official ENC". Australia (Nairn) felt that this clarification should be made as well. Germany (Hecht) and Norway (Klepsvik) agreed, and felt that this is an ambiguity that must be clarified. As a result, the following additional paragraph (d) was agreed:

d. The term ENC must not be qualified in any way to refer to any product that is not government authorised.

The meeting adopted the WEND Resolution, as at Annex F, and agreed on the following two actions proposed by the Chair:

> ***ACTIONS:***
> 3. *Based on the resolution agreed to at WEND10 (see Annex F),* ***IHB*** *to draft a CL regarding clarifications on ENC distribution, government responsibility, availability, and use of the term "official" with ENC.*
> 4. ***IHB*** *to investigate if there should be an IHO trademark associated with ENCs.*

6. Regional reports on progress and plans of RENCs and projects

Docs: *WEND10-6A Compendium of RHC Chairs' Reports (IHB)*
WEND10-6B Primar Stavanger Status Report
WEND10-6C IC-ENC Status Report
WEND10-6E MACHC Report (USA-NOAA)
WEND10-INF1 Questionnaire for Chairmen of RHCs on ENC Production, Consistency and Distribution: Replies to WEND Letters 1/2006 & 2/2006
WEND10-INF2 National Reports (Australia, Finland and USA-NGA)

IHB (Barbor) provided an overview on the status of ENC production, coverage and availability (see WEND10-6A). In some cases, there are some differences of interpretation as to S-57 data being produced, but not available as an ENC. CIRM (Svanes) pointed out that C-Map does not have any exclusive agreements with any HO on the distribution of "official" ENC data.

Norway (Klepsvik) briefly explained the current status of Primar-Stavanger (see WEND10-6B). The rate of coverage and use continues to increase. There should be sufficient ENC coverage for the HOs of this region by 2010. ICCL (Arts) asked for more specifics as to the number of ships using ENCs from P-S. No clear answer was provided.

Mr. Graham Saundercock (IC-ENC) highlighted some key points of the report by IC-ENC (see WEND10-6C). ICCL (Arts) asked about the number of ships using ENCs from IC-ENC. Answer: high 100s.

Ms. Meg Danley (USA-NOAA) provided a brief overview of the MACHC report (see WEND10-6E).

With a view to improving the ENC coverage worldwide, the following action was agreed:

> ***ACTION:***
> 5. ***IHB*** *to draft a letter to relevant RHCs (those regions with insufficient ENC coverage) regarding the importance of achieving ENC coverage. Specifically:*
> *- devise a small-scale ENC schema*
> *- develop an ENC production plan to achieve adequate coverage of priority routes*

7. Reports by the WEND Task Group

Docs: *WEND10-7A Summary of Task Group Activities (WEND TG Chair)*
WEND10-7B Status of Small Scale ENC Production (WEND TG)

WEND10-7C Some reflections on the current status of ENC distribution (IC-ENC)
WEND10-7D IHO Work Programme 2008-2012 (WEND TG Chair)

The WEND TG Chair (Hecht) provided an overview of WEND TG activities over the past year (see WEND10-7A). Norway (Klepsvik) commented that the basic problems remain the same, particularly as it relates to quality management. This is a big challenge within the IHO community. France (Bessero) remarked that two important issues have become evident:

1) the WEND principles may need to be changed if MS are not adhering to them.
2) the existing situation of two RENCs in the same region differs from the initial WEND scheme and should be assessed with relation to its impact on building the WEND database.

India (Rao) pointed out that WEND Principles are "recommendations" to be followed, not mandatory. He does not see the need to establish a RENC just because there are WEND principles. A MS should not be forced to join a RENC. IHO should establish standards to be followed, but not require a specific mechanism to be established in all regions, e.g. a RENC. Germany (Hecht) replied that establishing a RENC is not a requirement but a way to achieve the agreed objectives listed in the WEND Principles that were adopted by IHO. Norway (Klepsvik) felt that most MS are following WEND Principles. While development has not occurred as originally envisioned, the two RENCs have been instrumental in achieving integrity, quality assurance, and distribution of ENCs worldwide.

USA-NOAA (Danley) inquired as to members of the WEND TG. Germany (Hecht) replied that it is UK, France and Germany, but that other counties could join. However, the TG is purposely kept small and also comprises representatives from existing RENCs. However, it may be useful to have RHCs become more involved. ICCL (Arts) offered to assist in the work the WEND TG.

Primar- Stavanger (Sandvik) asked if the WEND TG could help harmonize the various means of ENC distribution that exist between the two RENCs? Germany responded that the primary role of the TG is to help achieve the WEND Principles, but that this could be considered.

UK (Carpenter) reviewed the status of small-scale ENC production (see WEND10-7B). Germany (Hecht) suggested that the RHCs should be asked to take on more responsibility to achieve WEND objectives.

IC-ENC (Saundercock) gave a brief summary of the paper "Some Reflections on the Current Status of ENC Distribution" (see WEND10-7C). In particular, the paper addressed the basic constructs and implications of S-63 Encryption. USA-NGA wondered what would be the impact of encryption on the availability of metadata (Section 4.1 of WEND10-7C). ICCL (Arts) complemented IC-ENC about the utility of this paper. Australia (Nairn) concurred, and felt it was a very good primer.

Primar-Stavanger (Sandvik) however felt that the paper was somewhat biased in its description of the distribution models. P-S uses an approach based on S-63, but it is different than what is described in the paper. It also needs be harmonized in terms of common licensing principles. USA-NGA (Andreasen) suggested that P-S (Sandvik) "redline" the paper as to where these possible differences occur.

Following a lengthy discussion, Chair suggested that this may be a good task for the WEND TG to look into. ICCL (Arts) wondered why the "world-wide" (W in WEND) view seems to be overlooked. Currently, the two RENCs seem be have different approaches.

The WEND TG Chair (Hecht) discussed the submissions to the IHO Work Programme that need to be considered by WEND (see WEND10-7D). Norway (Klepsvik) stated that the IHO Work Program cannot make mandatory obligations for MS. It should only include actions that can be achieved by the IHO as organization. Australia (Nairn) expressed disappointment that WEND seems to be unwilling to change its ways of doing things to achieve common objectives. IHO needs to look at alternatives on how MS can be provided the resources to overcome current lack of progress.

As a result of discussions, some changes were made to the wording of the various tasks originally submitted as WEND10-7D. The agreed WEND submissions to the IHO Work Programme are contained in Annex F.

The following actions were agreed:

> ***ACTIONS:***
> 6. ***RENCs*** *to report back to WEND on how to harmonize the various means of ENC distribution that exist between the two RENCs.*
> 7. ***RENCs*** *to report back to WEND on issues raised in the paper: "Some Reflections on the Current Status of ENC Distribution" (WEND10-7C).*
> 8. ***IHB*** *to include the work items agreed by WEND10 (see Annex G) into the draft IHO Work Programme 2008-2012.*

In regard to an analysis of e-navigation issues, IHB (Maratos) explained how IMO is dealing with this topic, and that IHB is involved. A report on this activity will be provided for CHRIS to consider.

8. Relationship with Industry

Docs: *WEND10-8A 2nd ECDIS Stakeholders' Forum – Programme*

WEND Chair noted the informative and productive two-days that occurred with the ESF2. A record of discussions for this event is provided at Annex I. This includes a list of actions agreed at ESF2 (see Appendix 3 of Annex I).

9. Future of WEND in new IHO Structure

Docs: *WEND10-9A SPWG Discussions of new Committee Structure (IHB)*

Germany (Hecht) remarked that the original task of WEND to complete world-wide ENC coverage has not been achieved yet. SPWG has proposed to disband WEND, and assigned this responsibility to the Council. Although the Council seems to be the appropriate body, there need to be some recommendation on how the work of WEND would continue until the amended Convention enters into force. The IRCC will be established already in 2009 and appears to be appropriate to take on the work of WEND until the Council is established. Norway (Klepsvik) responded that new terms of reference for IRCC would include considerations regarding WEND. The Chair commented that the new structure would enable the establishment of a sub-committee that continues WEND activities.

IHB (Barbor) mentioned the date 2008 that is listed throughout the document, i.e. WEND10-9A, should be changed to 2009.

10. Any other Business

10.1 Action Items from ESF2

No further WEND action is required beyond what was already identified during the ESF2 meeting (see Appendix 3 of Annex I).

10.2 Frode Klepsvik (Norway) recommended that the proposal on the "Principles and Set of Procedures for Making Changes to IHO Standards", as contained in IHO Circular letter 58/2003, be re-considered at the 17th IHC in 2007. Also, CHRIS will be asked to endorse this as well. This was agreed.

ACTION:

*9. **IHB** to seek CHRIS endorsement and draft a proposal for IHC17 on the "Principles and Set of Procedures for Making Changes to IHO Standards" (see Annex H to CHRIS15 minutes forwarded with IHO CL 58/2003 – also attached to these minutes as Annex H).*

11. Summary of Action Items identified during meeting

The meeting reviewed all actions identified at WEND10 (see list at Annex E).

Regarding Action 5 (**IHB** to draft a letter to relevant RHCs …), Germany (Hecht) felt that this should not be just for small-scale, but should be more comprehensive. There is also an urgent need to achieve ENC coverage for certain routes needed for ECDIS carriage requirements. It was agreed that IHB letter to RHCs would address known gaps in coverage requesting RHC Chairs to take action to provide route coverage for high-speed craft (urgent need), then all other SOLAS vessels, and asking about current status.

12. **Date and place of next meeting**.

ICCL (Arts) suggested that consideration be given to a location that has shipping interests. He also mentioned that IMO is looking to IHO to complete ENC coverage, and would expect that WEND would want to meet next year. Norway felt that next year's IHC is the "superior" IHO meeting and this matter can be addressed at that time. There was consensus that no WEND meeting was needed in 2007.

Japan (Dr. Arata SENGOKU) invited WEND to meet in Tokyo some time after April 2008 (WEND11). Germany (Hecht) supported this proposal, and suggested that an ECDIS Stakeholders Forum could also be held in conjunction with WEND11. This would also meet the suggestion by ICCL (Arts) regarding a major shipping port.

LIST OF ACRONYMS

CHRIS	Committee on Hydrographic Requirements for Information Systems (IHO)
CL	Circular Letter (IHO)
ECDIS	Electronic Chart Display and Information System
ECS	Electronic Chart System
ENC	Electronic Navigational Chart
HO	Hydrographic Office
ICCL	International Council of Cruise Liners
IC-ENC	International Centre for ENCs
IEC	International Electrotechnical Commission
IHB	International Hydrographic Bureau (IHO)
IHC	International Hydrographic Conference (IHO)
IHO	International Hydrographic Organization
IMO	International Maritime Organization
MACHC	Meso-American and Caribbean Sea Hydrographic Commission (IHO)
MS	Member State
MSC	Maritime Safety Committee (IMO)
NAV	Sub-committee on Navigation (IMO)
NOAA	National Oceanic and Atmospheric Administration (USA)
RENC	Regional ENC Coordinating Centre (IHO)
RHC	Regional Hydrographic Commission (IHO)
RTCA	Radio Technical Commission for Aeronautics
S-57	IHO Transfer Standard for Digital Hydrographic Data
SENC	System ENC
SOLAS	Safety of Life at Sea Convention (IMO)
SPWG	Strategic Planning Working Group (IHO)
TG	Task Group
TOR	Terms of Reference
WEND	Worldwide Electronic Navigational Chart Data Base (IHO)

Annex B to WEND10 Minutes

10th WEND COMMITTEE MEETING
IHB, Monaco, 11 & 14am September 2006

LIST OF DOCUMENTS

WEND10-1A rev.5	List of documents
WEND10-1B rev.12	List of participants
WEND10-1C	Membership of WEND
WEND10-2A rev.4	Agenda
WEND10-3A	Minutes of the 9th WEND Committee Meeting
WEND10-3B	List of actions arising from the 9th WEND Meeting
WEND10-3C	Terms of reference for the WEND Committee
WEND10-3D	WEND principles
WEND10-4A	Status of Electronic Charting Issues before IMO (IHB)
WEND10-4B	ENC/RNC Catalogue and List of Required Backup Paper Charts (IHB)
WEND10-4C	IHO Data Protection Scheme S-63 (IHB)
WEND10-5A	Status of IHO publications on ECDIS (IHB)
WEND10-5.1A	Minimum requirements for official ENCs (WEND TG)
WEND10-6A	Compendium of RHC Chairs' Reports (IHB)
WEND10-6B	Primar-Stavanger Status Report
WEND10-6C	IC-ENC Status Report
WEND10-6E	MACHC Report
WEND10-7A	Summary of Task Group Activities (WEND TG Chair)
WEND10-7B	Status of Small Scale ENC Production (WEND TG)
WEND10-7C	Some reflections on the current status of ENC distribution (IC-ENC)
WEND10-7D	IHO Work Programme 2008-2012 (WEND TG Chair)
WEND10-8A rev.5	2nd ECDIS Stakeholders' Forum – Programme
WEND10-9A	SPWG Discussions of new Committee Structure (IHB)
WEND10-INF1 rev.1	Questionnaire for Chairmen of RHCs on ENC Production, Consistency and Distribution: Replies to WEND Letters 1/2006 & 2/2006
WEND10-INF2	National Reports (Australia, Finland and USA-NGA)

Annex C to WEND10 Minutes

10th WEND COMMITTEE MEETING
IHB, Monaco, 11 & 14am September 2006

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Annex D to WEND10 Minutes

10th WEND COMMITTEE MEETING
IHB, Monaco, 11 & 14am September 2006

AGENDA

1. Opening and administrative arrangements
   - Docs: *WEND10-1A* *List of documents*
   - *WEND10-1B* *List of Participants*
   - *WEND10-1C* *Membership of WEND*

2. Approval of agenda
   - Docs: *WEND10-2A* *Agenda*

3. Matters arising from minutes of the 9th WEND Meeting
   - Docs: *WEND10-3A* *Minutes of the 9th WEND Meeting*
   - *WEND10-3B* *List of Actions arising from the 9h WEND Meeting*
   - *WEND10-3C* *Terms of Reference for the WEND Committee*
   - *WEND10-3D* *WEND Principles*

4. Review of other IHO activities dealing with ECDIS, pertinent to WEND
   - Docs: *WEND10-4A* *Status of Electronic Charting Issues before IMO (IHB)*
   - *WEND10-4B* *ENC/RNC Catalogue and List of Required Backup Paper Charts (IHB)*
   - *WEND10-4C* *IHO Data Protection Scheme S-63 (IHB)*

5. Report on status: ECDIS and ENC standards/specifications
   - Docs: *WEND10-5A* *Status of IHO Publications on ECDIS (IHB)*

   5.2 Minimum requirements for official ENCs
   - Docs: *WEND10-5.1A* *Minimum requirements for official ENCs (WEND TG)*

6. Regional reports on progress and plans of RENCs and projects
   - Docs: *WEND10-6A* *Compendium of RHC Chairs' Reports (IHB)*
   - *WEND10-6B* *Primar Stavanger Status Report*
   - *WEND10-6C* *IC-ENC Status Report*
   - *WEND10-6E* *MACHC Report*
   - *WEND10-INF1* *Questionnaire for Chairmen of RHCs on ENC Production, Consistency and Distribution: Replies to WEND Letters 1/2006 & 2/2006*
   - *WEND10-INF2* *National Reports (Australia, Finland and USA-NGA)*

7. Reports by the WEND Task Group
   - Docs: *WEND10-7A* *Summary of Task Group Activities (WEND TG Chair)*
   - *WEND10-7B* *Status of Small Scale ENC Production (WEND TG)*
   - *WEND10-7C* *Some reflections on the current status of ENC distribution (IC-ENC)*
   - *WEND10-7D* *IHO Work Programme 2008-2012 (WEND TG Chair)*

8. Relationship with Industry
   - Docs: *WEND10-8A* *2nd ECDIS Stakeholders' Forum – Programme*

9. Future of WEND in new IHO Structure
   - Docs: *WEND10-9A* *SPWG Discussions of new Committee Structure (IHB)*

10. Any other Business

11. Summary of Action Items identified during meeting

12. Date and place of next meeting.

Annex E to WEND10 Minutes

ACTIONS FROM THE 10TH WEND MEETING

1. Using the DnV study as a basis, **WEND TG** to:
   1) Identify the main shipping routes for all SOLAS vessels (including HSC)
   2) Determine where gaps in ENC coverage exist for all navigational purposes (scale ranges)
   Upon completion, a report is to be submitted for consideration by WEND.

2. **IHB** to draft a CL proposing a new TR A3.12 (ENC Encryption), and the revision of TR K2.19 (WEND Principles).

3. Based on the resolution agreed to at WEND10 (see Annex F), **IHB** to draft a CL regarding clarifications on ENC distribution, government responsibility, availability, and use of the term "official" with ENC.

4. **IHB** to investigate if there should be an IHO trademark associated with ENCs.

5. **IHB** to draft a letter to relevant RHCs (those regions with insufficient ENC coverage) regarding the importance of achieving ENC coverage. Specifically:
   - devise a small-scale ENC schema
   - develop an ENC production plan to achieve adequate coverage of priority routes

6. **RENCs** to report back to WEND on how to harmonize the various means of ENC distribution that exist between the two RENCs.

7. **RENCs** to report back to WEND on issues raised in the paper: "Some Reflections on the Current Status of ENC Distribution" (WEND10-7C).

8. **IHB** to include the work items agreed by WEND10 (see Annex G) into the draft IHO Work Programme 2008-2012.

9. **IHB** to seek CHRIS endorsement and draft a proposal for IHC17 on the "Principles and Set of Procedures for Making Changes to IHO Standards" (see Annex H to CHRIS15 minutes forwarded with IHO CL 58/2003 – also attached to WEND10 minutes as Annex H).

Annex F to WEND10 Minutes

WEND10 Resolution

The IHO WEND committee

Recognizes the definition of ENC in IMO resolution A.817(19), and

Recognizing that ENC is intended for the purpose of providing safety of navigation data in accordance with Regulations 2 and 9 of SOLAS Chapter V,

Adopts the following additional clarification:

a. The distribution of ENC must have a suitable method of authentication to confirm it's source and integrity,

b. The governmental responsibility for ENC is the same as that applicable to other navigational products and services issued by or on the authority of the respective issuing government,

c. ENC must be made universally available in an IHO recognized non-proprietary format, and

d. The term ENC must not be qualified in any way to refer to any product that is not government authorised.

……

For information:

IMO Resolution A.817(19)

2.2 Electronic navigational chart (ENC) means the database, standardized as to content, structure and format, issued for use with ECDIS on the authority of government-authorized hydrographic offices. The ENC contains all the chart information necessary for safe navigation, and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions) which may be considered necessary for safe navigation.

WEND submissions to the IHO Work Programme 2008-2012

1.1.17 RHCs to work for completing adequate ENC coverage for HSC by 1 July 2008

- Strongly encourage MS to make available ENCs as required.
- IHB to facilitate bilateral/multilateral cooperation, or assistance through CBC.
- RHCs to audit the state of completion and to report to WEND/IRCC.

1.1.18 RHCs to work for completing adequate ENC coverage for all other types of vessels by 31 December 2010

- Strongly encourage MS to make available ENCs as necessary.
- IHB to facilitate bilateral/multilateral cooperation, or assistance through CBC.
- RHCs to audit the state of completion and to report to WEND/IRCC.

1.1.19 RHCs to work for completing adequate ENC coverage schemes by 31 December 2008

- Strongly encourage MS to develop national ENC coverage scheme.
- IHB to facilitate bilateral/multilateral cooperation, or assistance through CBC.
- RHCs to audit the state of completion and to report to WEND/IRCC.

3.3.7 RHCs to work for ensuring ENC consistency to achieve a common level of IHO data quality by end of 2010

- Strongly encourage MS to work together on achieving ENC consistency across national boundaries.
- RHCs to audit the state of consistency in their regions and to report to WEND/IRCC.

PRINCIPLES AND PROCEDURES FOR MAKING CHANGES TO IHO TECHNICAL STANDARDS ADMINISTERED BY CHRIS

(as approved by the 13th CHRIS Meeting, Athens, Greece, 17-19 September 2001 and amended at the 15th CHRIS Meeting, IHB, Monaco 10-13 June 2003)

Principles

Improvements to standards and systems can only occur by change. However, change can lead to problems such as incompatibility between systems, high updating costs, market monopoly, dissatisfied users, or increased risk to safety of navigation. These principles have been developed to avoid these circumstances.

A. Any proposed changes to existing standards should be technically assessed and commercially evaluated before approval.

B. Assessment should involve all relevant parties including IMO, maritime administrations, manufacturers, distributors, users, etc.

C. Changes should be "backwards compatible", or the existing version must be supported for a specified time.

D. If changes are required for the basis of product enhancement rather than for safety of navigation, then the previously approved system must be allowed to continue to be used at sea for a sufficient time to allow changes to be implemented on board.

E. If not already specified by IMO, the timeline for making changes should be defined.

F. In exceptional cases (e.g., is dangerous for safety of navigation), it may be necessary to make immediate changes to shipborne systems.

G. All interested parties should be encouraged to "continuously improve" IHO technical standards. All rejected proposals should therefore have a proper explanation.

H. Principles of a quality management system should be followed.

Procedures

These procedures are recommended to ensure that any proposed changes are properly assessed and implemented. The procedures should be simple to encourage their use.

1. All parties may submit a "change proposal" to IHB for logging and processing.

2. The "change proposal" must contain a justification for the change, a recommended action list and a proposed time frame for implementation. This should adhere to the “Instructions for Submission of Proposals to CHRIS and CHRIS subsidiary bodies”.

3. The IHB forwards the "change proposal" to CHRIS for evaluation and decision.

4. CHRIS will either reject or accept the proposal. If accepted, CHRIS will involve all the relevant bodies in assessing the proposal and planning any subsequent work. If rejected, it will be returned to the originator with the reasons.

5. Accepted proposals will be assigned to the CHRIS work program. Depending on the urgency, it may be for immediate action or deferred until a later date.

6. Following approval, a “progress report” should be issued after each milestone. At the end of the process" a change note" should be issued to relevant bodies providing a summary of changes, documents affected, a recommended action list, and the timetable for implementation.

7. Relevant bodies include representation from maritime administrations, or manufacturers, distributors and users. In particular, liaison with professional organizations (e.g., CIRM, IALA, ICS, etc.) is encouraged.

2nd ECDIS STAKEHOLDERS' FORUM (ESF2)
IHB, Monaco, 12-13 September 2006

RECORD OF DISCUSSION

Notes: 1) A list of actions agreed at ESF2 is provided at Appendix 3
2) Names of contributors are written in full the first time they appear in these minutes. Then, only the surname is shown.

Welcome/Introduction

RAdm Ken Barbor (IHB) welcomed participants to the IHB. He expressed the importance of this type of meeting between IHO and stakeholders involved in ECDIS. In his view, "stakeholders" is a purposely broad category that includes: HOs, other organizations, equipment manufacturers, software developers, maritime administrations, type-approval authorities, data distributors, academia, and maritime user community.

Mr. Horst Hecht (BSH, Germany) served as Chair for the meeting. He noted that attendance at this meeting at IHB is the largest ever (approximately 80 persons). See List of Participants at Appendix 1.

1. IHO STRUCTURE / DECISION MAKING PROCESS

The Chair briefly explained that IHO is an inter-governmental, consultative organization that was established in 1921. Comprised of approximately 80 member states, it deals with the provision of hydrographic products and services primarily for safety-of-navigation. There are three primary instruments:

1) IHB, Secretariat of IHO
2) IHO Conference (every 5 years)
3) IHO Convention

He mentioned that IHO is in the process of changing the Convention in order to streamline decision making capability. The new Convention establishes a new structure for IHO, including a Director General and streamlined committee structure. He pointed out that IHO is a consultative organization that has no enforcement power. It works by consensus, and decision-making can be rather slow. IHO welcomes the participation of Non-Governmental International Organizations (NGIOs) in its committees and working groups.

Purpose of this Forum

IHO has experienced a dramatic paradigm shift from the paper chart age to today's technology-driven ECDIS age. IHO has embarked on a far-reaching, technologically challenging new data standard where IHO needs the active involvement of industry in order to develop the tools required to produce and use ENC data required for ECDIS.

- Given that technology is rapidly evolving, the IHO and industry need to be partners.
- HOs need industry and industry needs HOs. We are mutually dependent on one another. It is important to listen to one another: thoughts, visions and demands.
- We need to remember those who speak English as a second language.

Mr. Mike Rambaut (CIRM) suggested two additional topics for discussion:

1. How can stakeholders get ECDIS to be a mandatory carriage at IMO, and, how to get acceptance?

2. *e-Navigation* - The world has moved on, e.g. there will be an *e-Navigation* meeting at IALA next week)

Mr. Mohammad Al Zaibak (NDI) suggested that ENC data piracy be discussed as well.

2. ENC COVERAGE, AVAILABILITY AND CONSISTENCY

2.1 Presentation on "*On-line Chart Catalogue: Current Status and Future Developments*" by Mr.Tony Pharaoh (IHB).

This was done at the request of IMO to IHO. IHO will give an update at NAV53. Final completion is planned for 2008. It is intended to meet the needs of all ECDIS Stakeholders.

Discussion

Mr. Gert Büttgenbach (7Cs) felt that ship owners would also like to know what paper charts would be replaced by new ENCs. Ideally, this could be added to the Catalogue as well. VAdm Alexandros Maratos (IHB) explained what is being planned in terms of ENCs, RNCs and globally-available paper charts. At this time there are not plans to show what paper charts will be replaced by ENCs. Mr. Frode Klepsvik (Norway) pointed out that it is coastal states who decide what the "appropriate" portfolio of paper charts is. The Chair summarized that this index tool is intended to show the worldwide coverage and availability of ENCs, RNCs, along with paper charts. Radm Chris Andreasen (USA-NGA) mentioned that he experienced the same issue as to what paper charts have been replaced by DNCs.

The Chair asked if this IHO catalogue should be expanded to satisfy the requirements of others besides IMO. IHB (Maratos) responded that current plans are to meet IMO requirements. Dr. Lee Alexander (Univ. of NH) asked that a written description of the Catalogue design/process be provided with the ESF2 proceedings. IHB (Maratos) explained that this was described in an IHO submission to NAV (NAV 52/6/1 - see Appendix4).

IHB (Maratos) added that the decision as to what charts should be displayed using this Catalogue is an administrative process. It depends on who is interested (IMO, MS, users, mariners, etc.). As to chart carriage requirements in national waters, the authoritative source is the national maritime safety agency.

Mr. George Arts (Marine Press of Canada) pointed out that the challenge for IHO will be the process of keeping the Catalogue up-to-date. If wrong or old information is provided, this will create many problems for users. Once you start something, it must be kept up-to-date. The Chair summarized that HOs who are not members of a RENC must supply this info to IHO for inclusion into the On-Line Catalogue.

The Chair pointed out that there are different interpretations as to what constitutes adequate ENC "coverage":

- shipping route coverage – Baltic and western Europe is fine, but less so in open-sea and the rest of the world.
- carriage requirements – in some (but not all) national waters, improved coverage must be accomplished in order for IMO to adopt mandatory ECDIS carriage.
- availability – in some cases, there are ENCs that have been produced but are not available for use.

Capt. Joe Collins (MCA-UK) pointed out that "adequate" route coverage means having all scale ranges, i.e. navigational purposes, available.

2.2 ENC Coverage vs. Availability

The increased ENC production that has occurred during the past few years does not always mean there is improved ENC availability. To illustrate the current situation, Capt. Paul Beggs (Princess Cruises) provided a graphic example of a cruise ship that wants to make cruise around South America, and another example in southeast Alaska. Currently-available ENCs shows many gaps in coverage. Some HOs have completed ENC production, but the ENCs are not currently available for use.

Mr. Michael Bergmann (Jeppesen Marine) pointed out that one cannot operate ECDIS equipment as "ECDIS" without ENCs, and that ENCs are needed for the entire voyage. Shifting from ENCs to paper charts for a part of the voyage is not acceptable. If/when ECDIS becomes mandatory, it may drive the completion of ENC coverage. In the interim, there is a need to link ENC data to other types of electronic chart data. However, using different forms of data does impact data protection schemes.

Mr.Yiorgos Palierakis (Kelvin Hughes) felt that there is an increasing willingness by mariners to use ENCs. He suggested that there is need to define priorities for key shipping routes. Marine Press of Canada (Arts) agreed, and stressed that each country must take responsibility for producing what is needed. Adequate route coverage means for the entire shipping route, not just a portion.

Ms. Barbara Bond (IIC) pointed out an example in the Antarctic whereby funding was the main constraint for HOs to achieve chart production and coverage. She suggested that IHO needs to look into other mechanisms for obtaining funding to achieve ENC production in international waters. Norway (Klepsvik) agreed, and mentioned the three routes that were in the formal safety assessment that was prepared at IMO for high-speed crafts. He said that IMO will also have to make a risk assessment regarding the ENC coverage that is to be achieved by 2010. This would apply to all vessels.

The Chair summarized:

- IHO needs to complete route coverage. Since ENC coverage for all routes cannot be accomplished by 2010, it will be necessary to prioritize.
- IHO needs to look at alternatives solutions to obtaining funding, such as bilateral/multilateral arrangements between HOs.
- IHO may need to help convince some MS governments about the importance of completing ENC production/coverage.
- it would be valuable if stakeholders could provide any pertinent information regarding routes and their priority for coverage to the Task Group.

2.3 ENC Consistency

Kelvin Hughes (Palierakis) asked if progress had been made in implementing the recommendations of the IC-ENC consistency presentation made at the ESF last year. Mr. Richard Fowle (IC-ENC) felt that it will take some time to resolve inconsistencies on ENCs that have already been produced by different HOs. Mr. Rune Johnsen (Primar-Stavanger) agreed, and believed that every nation must retain responsibility for their own data.

7Cs (Büttgenbach) pointed out that there are many aspects to "consistency". A good example is inconsistent application of SCAMIN by neighbouring HOs. This is really more a viewing control than it is altering the information content. In order to make ENCs more popular, RENCs should be given the right to "harmonize" ENC data. Currently, this is not permitted.

Mr. Richard Carpenter (UKHO) believed that SCAMIN is a safety-related aspect that should be performed by an HO. Once it is changed, it could bring on aspects of legal liability. 7Cs (Büttgenbach) responded that there is operational tool for SCAMIN that could be implemented into ECDIS that enables a mariner to easily go to ENC compilation scale. The goal is consistent ENC display across national borders.

Capt. Rod Nairn (Australia) suggested that what is really needed is a continuous improvement process associated with a quality management system that HOs adopt. RENC feedback on inconsistencies is good, but it is the HOs who must be responsible for making changes.

The Chair summarized: IHO needs to encourage HOs to use SCAMIN for providing a clear display, but to harmonize the way SCAMIN is used with neighbouring HOs. There is also a need to coordinate with RENCs.

Another aspect of ENC inconsistency is the use of different sources of data that are used to produce the ENC. Univ. of NH (Alexander) pointed out that inconsistencies occur when some ENCs are produced by digitizing paper charts while others are produced from new hydrographic survey data, e.g. from multi-beam hydrographic surveys. Jeppesen Marine (Bergmann) stated there are two issues:

1) confusion (uncertainty) on what is right if two ENCs show things differently;
2) trust or confidence in the use of the product.

7Cs (Büttgenbach) suggested that there may be a need to highlight the inconsistencies. This applies to different scales of ENCs, and whereby you could highlight the "edges" where an ENC ends, e.g. the cell boundary. This already occurs with paper charts, perhaps this should be done for ENCs in ECDIS as well. Univ. of NH (Alexander) and IHB (Pharaoh) mentioned that this matter had been previously raised, and could be considered again, by TSMAD. Mr. Gwil Roberts (IIC) stated that there are also inconsistencies for ENC production that occur between various HOs.

The Chair summarized:

1) Responsibility for application of SCAMIN remains with HOs. Guidance is needed to HOs on how to use SCAMIN. Developing this guidance is a task for CHRIS.
2) Until universal consistency is achieved, highlighting borders between adjacent cells could be a way to warn users of possible inconsistencies. CHRIS should determine appropriate ways.

These action items for CHRIS were agreed.

3. ENC DISTRIBUTION, LICENSING AND PRICING

3.1 Presentation on the results of a "*Survey on the use of ECDIS, conducted with various shipowners*" by Igor Karnicnik, Slovenian HO.

Main issues addressed in the presentation: number of / coverage, pricing, licensing permits, legislation / regulation, distribution, and too many acronyms.

Discussion

CIRM (Rambaut) asked if mariners knew the difference between ECDIS and ECS equipment. (Answer: usually not). MCA-UK (Collins) asked if there were questions pertaining to training of the mariners in using ECDIS? (Answer: no). Mr. Jim McGaughran (USA-NGA) asked if there were questions on advantages. (Answer: not directly). The Chair wondered if the findings of this study relating to ENC distribution were similar to other studies. (Answer: yes). Mr. Tor Svanes (C-Map Norway) asked if the 25% response was an indication of the number of ECDIS users for the total number of vessels (Answer: yes).

Mr. Mohammad Al Zaibak (NDI) suggested that another study could be made to ask those who do not use ECDIS as to why not? Princess Cruises (Beggs) pointed out that it is not the ship's crew but the ship owner/manager who decides.

The Chair suggested that Slovenia (Karnicnik) might renew this study, based on today's improved ENC coverage and use, and invited him to consider the suggestions by the meeting.

3.2 Presentation on "*Pay Per Use*" by George Arts, Marine Press of Canada

Part 1 - George Arts read a letter from Maersk Shipping (11 Sep 2006), for consideration by the IHO WEND10 and ESF2 meetings (see Appendix 5).

The Chair summarized some of the issues raised:

- Technical problem of ever changing standards;
- Pricing (price reduction and greater flexibility);
- Very slow uptake of ENCs by SOLAS vessels;
- Because of price, ships may use smaller scale ENCs when larger scale is available;
- Also, they are using proprietary data (e.g., C-Map and Transas).

Mr. Peter Mantel (Transas Marine) explained that Maersk has installed ECDIS equipment onboard over 200 vessels. It was Maersk that informed Transas they wished to use TX-97 data rather than ENCs. Their reasons were due too low route coverage, high cost and poor quality of ENCs. Use of ECDIS to replace paper charts is not a major factor to Maersk. There is complete worldwide coverage of unofficial EC chart data (Transas and C-Map). Why not work together to provide official and unofficial data?

Mr. Ole Berg (T-Kartor) pointed out that shipowners always complain about cost. He invited suppliers and HOs to work together to find a solution based on a joint, common interest.

Kelvin Hughes (Palierakis) commented on several topics related to cost of ENC data. There seems to be a trend that some shipping companies who formerly used ENCs, now no longer do. Apparently, this is due to the cost of the ENC cell data. In the IHO community there are two camps: 1) provide ENC data free-of-charge, 2) maximize the profit from the sale of ENCs. Perhaps IHO can improve ENC use if it does not charge for the data. Also, copyright and access make the process very difficult. It needs to be simpler in the supply chain. More flexibility would be useful.

Princess Cruises (Beggs) mentioned that 18 of 19 ships are fitted with ECDIS. However, only 16 are using ENCs, and only 3 are using subscription ENCs on a very limited portfolio. For some ports, they purposely use paper charts rather than ENCs due to cost. Marine Press of Canada (Arts) believes that ENCs should not be seen as data, but instead, a service.

Part 2 – "*Increasing use/sales of Official ENCs: Proposing Pay for Use Model*" by George Arts, Marine Press of Canada.

Questions:

- Kelvin Hughes (Palierakis) asked about the additional cost of *ARCS* raster data in this model. Also, if the use of official ENCs is mandatory.
- 7Cs (Büttgenbach) asked if it is possible to purchase ENCs for more than a year. The two RENCs responded that this is being considered.
- NDI (Al Zaibak) asked if the price calculations were based on one year (Answer: yes).
- Princess Cruises (Beggs) asked what pricing option was used in Canada. (Answer: none).

3.3 Presentation on "*Dynamic Licensing of ENCs*" by Tor Svanes, C-Map Norway

The Chair noted that the main differences to the Marine Press of Canada's approach are:

1) charging pay for use on a tri-monthly rather than a daily basis
2) SENC direct distribution rather than just ENC (combines both official and unofficial data)
3) Does not need adjustments to the current service options available from RENCs.

Questions:

Princess Cruises (Beggs) asked how soon it could be made available. (Answer: 1-2 months). The Chair asked if this requires a change to ENC prices (Answer: no).
7Cs (Büttgenbach) asked several questions:

- Is SENC distribution allowed by all HOs? (Answer: most yes; but, Japan not at this time; not certain about Canada).
- Do RENCs allow SENC distribution? IC-ENC: yes with conditions; Primar-Stavanger: has to be approved by a notified body (type-approval authority).
- Does DnV approve SENC distribution? (Answer: yes).
- Is it possible to get shorter time frame? (Answer: minimum is 3 months).

Marine Press of Canada (Arts) pointed out that neither models require a change in policy for current ENC price payments to HOs. The Chair wondered if either approach would require changes to IHO standards or HO/RENC ENC pricing policy? IC-ENC (Saundercock) pointed out the RENCs currently work on a wholesale pricing policy. Could this be accommodated into the Marine Press of Canada approach? (Answer: most likely, yes). MCA-UK (Collins) asked how this compares to use of unofficial EC data ($US 5000/year for a world portfolio of CM93 data)?

The Chair asked if Service Providers have additional demands that IHO should consider? Transas Marine (Ivanov) responded that there are no clear rules related to the implementation of S-63 security scheme. It is difficult to install both the Primar-Stavanger and non-encrypted ENC data in the same ECDIS equipment.

Jeppesen Marine (Bergmann) suggested there are other issues that need to be resolved:

1) complexity of royalty structure (pricing and fees);
2) amount of custom information that has to be provided to HOs (the reporting system).

7Cs (Büttgenbach) remarked that, currently, there is no requirement that paper chart distributors report to an HO or RENC on who is using their data. Jeppesen Marine (Bergmann) noted that some of the information required appear to be in conflict with privacy requirements and a deterrent to users. One the other hand, RENCs are concerned about copyright and licensing. Norway (Klepsvik) made the point that some maritime administrations require information about what vessels carry in regard to shipboard equipment and documentation.

Kelvin Hughes (Palierakis) still felt that HOs issuing ENC data at no cost is another option.

The Chair summarized: the big surprise is that while the cost to the end user would be lower, it would not require a change in ENC pricing by the HOs. More flexible licensing is the key. Licensing bodies should also review their current information requirements in terms of maintaining privacy.

4. ECDIS MIGRATION PROBLEMS (S-57/S-100, PRESLIB, S-63)

4.1 Presentation on "*Future IHO S-100*", by Dr. Lee Alexander, Univ. of NH, USA

Discussion

The Chair was skeptical on whether it would be possible to keep stability forever. The recent need to develop an IHO S-57 e3.1.1 (to meet IMO's PSSA and ASL requirements) is a good example. The year 2012 is really not that far away. IHO needs to think about how the current system should evolve.

Jeppesen Marine (Bergmann) was happy to see the differentiation between data and products. Combination of flexibility and stability is a benefit for end-users. USA-NGA (Andreasen) felt it might be best to separate a "producer standard" vs. "product standard". It is often difficult for users to transition to new products.

Norway (Klepsvik) fully supported S-100 but also believed that stability is crucial. This will be particularly important in regard to the implementation of mandatory ECDIS carriage. Most HOs already have difficulty keeping up with IHO standards. IMO wants stability as well.

USA-NGA (Andreasen) felt that it is important to convey to IMO that electronic charts are constantly evolving, but that S-57 ENCs will continue to be used. 7Cs (Büttgenbach) wondered if IHO is really prepared for the changes that S-100 will bring. IHO S-63 (Security Scheme) may soon be outdated since it is bound to S-57 and ISO 8211. USA-NGA (Andreasen) concurred, and felt that a "digital water mark" would be recognized as a better approach than encryption.

The Chair expressed concern about the stability implications of the migration from S-57 to S-100 to S-101 (future ENC Product Specification). 7Cs (Büttgenbach) expressed the view that the core of the new process will be the IHO registry. ECDIS systems can continue to receive S-57 data (content) but in a new encapsulation that is based on S-100. Ultimately, it will be industry that decides how to use the new data content, as converted into new products and services. Quite possibly, future products will be SENCs rather than ENCs (ENC based on a "producer standard," and SENCs based on a product specification).

The Chair expressed concern about what is the link between S-100 and distribution / control. 7Cs (Büttgenbach) said that S-63 is an add-on to S-57. It deals with how to control data distribution. How it will be handled in S-100 is not known at this time. Jeppesen Marine (Bergmann) felt that what is occurring is a "mind shift." New methods of ensuring data integrity are continuing to evolve. It is not useful to believe that there is a best or permanent scheme. USA-NGA (Andreasen) pointed out that there is a difference between data control (protection) and authentication (verification).

The Chair summarized: elements of stability are a part of S-100 which should ensure "upward compatibility." This should not adversely affect ECDIS carriage requirements. Ideally, the ECDIS user will not even notice a change. 7Cs (Büttgenbach) concurred, and believed there would be a smooth transition.

Univ. of NH (Alexander) recommended that WEND ask CHRIS for this confirmation that S-100 will not affect the recently revised IMO ECDIS Performance Standards or future ECDIS carriage. IHB (Maratos) suggested that this topic be considered at the next CHRIS meeting (CHRIS18). UK-MCA (Collins) suggested that IHO update the Info Paper on S-100. 7Cs (Büttgenbach) believed that the real challenges are data presentation and data distribution.

The Chair concluded: we need an impact study of the impact of S-101 on ECDIS. IHO needs to make an informed decision about the when and how. A migration strategy is needed. We need confirmation from CHRIS that S-57 ENCs will not become obsolete, and to inform MS accordingly.

4.2 Presentation on "*Implementation of the IHO Data Protection Scheme S-63*" by Robert Sandvik, Primar-Stavanger (also Chair of DPSWG)

Discussion

The Chair expressed some concern about "old" ECDIS installations and how they are being upgraded to full S-63 compliance. He also wondered how S-63 in the revised ECDIS PS would be handled by IEC TC80.

CIRM (Rambaut) explained that the initial work of IEC TC80/WG7 is editorial. It is intended to identify what are the changes that IMO made (mostly minor changes). The intent is to convene a WG that is already familiar with 61174 and the IEC standards process. Having available the S-63 test dataset is key.

Primar-Stavanger (Sandvik) indicated that this should be available next year. CIRM (Rambaut) clarified that the current version of IEC 61174 does not deal with S-63, since no mention of an ENC Security Scheme (S-63) was in the previous IMO ECDIS Performance Standards.

7Cs (Büttgenbach) said that S-63 was an accident. He did not believe that S-63 really serves the user, and causes more problems than it solves. It is more than a data protection standard, it also involves data packaging. It is a rather limited, restrictive standard and not an industry standard. However, there is an S-63x initiative by Industry to deal with additional commercial aspects. S-63x is on top of S-63 and does not alter the standard itself. Jeppesen Marine (Bergmann) fully supported 7Cs' comments. He said that industry needs to have the ability to build S-63x. But, it is not clear if it would impact on existing, type-approved ECDIS.

CIRM (Rambaut) and Univ. of NH (Alexander) explained that IEC 61174 deals with the minimum requirements called for in the IMO Performance Standards. It is IEC TC80's job not to interfere or add additional requirements to what IMO calls for. The next edition of IEC 61174 will only specify tests that are required in the recently revised IMO ECDIS Performance Standards.

The Chair summarized: Industry needs to contact IEC to ensure that use of S-63x will not be restricted.

Primar-Stavanger (Sandvik) asked two questions:

1) Do you believe that full implementation of S-63 e.1.1 will be helpful?
2) Is the timeframe appropriate?

Answer: Technically, S-63 e1.1 can be implemented by data servers, but current ECDIS equipment / users may have difficulty. Software developments cannot be forced on OEMs or users.

Transas Marine (Ivanov) asked if S-63 can be used for the inclusion of private data protection that may be included with the ENC. (Answer: This is possible).

CIRM (Rambaut) pointed out that unlike most shipboard navigation equipment, ECDIS is primarily based on software. Making can cause problems. Currently, IMO does not have a mechanism to deal with software changes to required SOLAS equipment.

The Chair suggested it might be necessary for IHO to communicate IMO this concern.

Jeppesen Marine (Bergmann) explained that this issue occurs in the aviation industry, and that old versions of standards have to be supported as long as they are in use. However, aircraft can be more easily upgraded every time a plane lands. Also, if there are no benefits to an upgrade, then it is not done. It is a pull, not a push matter that the end-user decides is needed. 7Cs (Büttgenbach) pointed out that the design of ECDIS includes both hardware and software modules. These modules could be changed or upgraded. Ideally, it would be possible to test only the modules. This is something that IEC should consider.

CIRM (Rambaut) responded that there is a difference between specifying what appropriate tests are and what/how type-approval is performed by test houses. The Chair felt that eventually, it will be possible to perform upgrading at sea or in port.

The Chair summarized: There is not such thing as a compulsory upgrade of ECDIS software. It is up to the customer to request upgrades. Therefore, the old structure must be supported as long as they exist. As a consequence, this may delay the implementation of S-63. Currently, IMO does not have a

mechanism to deal with software changes to required SOLAS equipment. He reiterated it might be necessary for IHO to communicate IMO this concern.

5. COMMUNITY INVOLVEMENT AND DISCUSSION FORUMS

Presentation on "*Open ECDIS Forum*", by Dr. Lee Alexander, Univ. of NH, USA

Discussion

The Chair mentioned he received an e-mail from Chair of CHRIS (Capt. Robert Ward, Australia), asking: "Does the IHO have a need for the OEF?"

He said there are three basic options:

- Keep
- Abandon
- Enhance

Mr. Bernd Birklhuber (Ministry of Transport, Austria) stated that Inland ENC HG extensively uses the OEF. RAdm Ken Barbor (IHB) noted that there are a number of other IHO discussion forums that do not deal with ECDIS. Perhaps the OEF could become a sub-set of other discussion forums.

The Chair asked if OEF should belong to IHO? 7Cs (Büttgenbach) pointed out that it was created before the IHO website, and believed the OEF maintain some independence. There are functions that it performs best.

The Chair summarized that the OEF:

1) Should continue to exist, for the time being;
2) Should be kept at UNH;
3) Should keep its current functionalities.

The Chair asked for other suggestions to improve community involvement.

IIC (Roberts) felt that the ECDIS Stakeholders Forum (ESF) is an effective means of communication, and should be continued. It is best when held in conjunction with other IHO committees and WGs. Perhaps a short questionnaire (survey) could be done before the next meeting identifying topics for discussion. Possibly, the OEF would be able to perform this function. Jeppesen Marine (Bergmann) agreed that both the OEF and ESF are effective means to facilitate information flow and cooperation. He also believed that end users (mariners) would benefit if they were to attend, and vice versa. 7Cs (Büttgenbach) suggested that more articles in publications would be good. Working with the press means one can reach more persons.

The Chair stated that IHB should make increased effort to invite shipping companies and other maritime user groups to the next ESF.

Marine Press of Canada (Arts) felt that shipping companies may not believe there is much to be gained by attending, due to either disinterest or frustration in ECDIS-related matters. The letter from Maersk Shipping illustrates this fact. Also, some of the discussion topics are rather technical and may not be of interest to mariners. He also reiterate his suggestion to "abandon" S-63 and go to a simpler security scheme system. The Chair responded that changing the course, again, would cause many problems.

The Chair asked for advice on time/location of the next ESF.

Marine Press of Canada (Arts) suggested that it be held at location with many shipping companies (Rotterdam, Hamburg, etc.). IHB (Huet) mentioned that CHRIS17 would be meeting Nov 2007 in Rotterdam, Netherlands, in conjunction with EuroPort 2007. Meeting agreed that the next ESF should be held back-to-back with CHRIS17.

6. ANY OTHER BUSINESS / MATTERS ARISING

Mike Rambaut (CIRM) read a brief statement on what is "e-Navigation"[1]. He then provided further explanation about how ECDIS fits in to this larger scheme. For instance, AIS and radar can be displayed on ECDIS. AIS is also communication link between shore-based and shipboard systems. A shore-based AIS broadcast can provide tidal information to ECDIS that can be displayed in real-time. It can also provide information on the status of Aids-to-Navigation, e.g. buoys. There is also the increasing use of satellite and broadband digital communications. Similar to S-101, it will be several years before there is full implementation of e-Navigation. Since it involves ECDIS, it would be good if IHO were to become involved as well.

The Chair agreed, and mentioned that this has been discussed at WEND and referred to CHRIS for further study.

6.1 Presentation on "*Inland ENCs Status*" by Bernd Birklhuber, Chair IEHG

Discussion

The Chair noted with some envy the progress of Inland ENC standards development and production. He was also pleased to see that the Inland ENC Harmonization Group is aligning with future IHO S-100 standards and organizational structure.

7. FOLLOW-ON ACTIONS ARISING FROM ESF2

The Chair briefly reviewed a list of follow-on actions to be accomplished as a result of ESF2 (see Appendix 3). During the discussion, there was some refinement/consolidation and an additional three items were added. Most actions are to be accomplished by IHB with some by the two RENCs and/or licensing bodies.

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[1] e-navigation is the collection, integration and display of maritime information onboard and ashore by electronic means to enhance berth-to berth navigation and related services, safety and security and protection of the marine environment.

Appendix 1 to ESF2 Record of Discussion

2nd ECDIS STAKEHOLDERS' FORUM
12-13 September 2006, IHB, Monaco

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Appendix 2 of ESF2 Record of Discussion

2nd ECDIS STAKEHOLDERS' FORUM (ESF2)
IHB, Monaco, 12-13 September 2006

PROGRAMME

DAY ONE – Tuesday 12 September 2006

0900 **Domestics / Introduction**

0915 **Briefing - IHO Structure / Decision Making Process**

0930 **The Issues**:

- **ENC Coverage, Availability and Consistency**
  - overview brief / explanation
    Presentation "Worldwide Chart Coverage: Current Status and Future Developments", by Tony Pharaoh, IHB

1000
  - open forum / discussion / conclusion / recommendations

1045 **Coffee Break**

1115 - **ENC Coverage, Availability and Consistency (Cont.)**
  - overview brief / explanation

1145
  - open forum / discussion / conclusion / recommendations

1230 **Lunch**

1415 - **ENC Distribution, Licensing and Pricing**
  - overview brief / problems
    Presentation of the results of a "Survey on the use of ECDIS, conducted with various shipowners", by Igor Karnicnik, Slovenian HO
    Presentation on "Pay Per Use", by George Arts, Marine Press of Canada

1445
  - open forum / discussion / conclusion / recommendations

1530 **Coffee Break**

1600 • **ENC Distribution, Licensing and Pricing (Cont.)**

- overview brief / problems
  Presentation on "Dynamic Licensing of ENCs", by Tor Svanes, C-Map Norway

1630 - open forum / discussion / conclusion / recommendations

1715 **Summarise Day 1**

1800 **Evening Function**

DAY TWO – Wednesday 13 September 2006

0900 • **ECDIS Migration Problems (S-57/S-100, PresLib, S-63)**

- overview brief / problems
  Presentation on "Future IHO S-100", by Lee Alexander, UNH, USA

1000 - Open forum / discussion / conclusion / recommendations

1045 **Coffee Break**

1115 • **ECDIS Migration Problems (S-57/S-100, PresLib, S-63) (Cont.)**

- overview brief / problems
  Presentation on "Implementation of the IHO Data Protection Scheme S-63", by Robert Sandvik, Primar-Stavanger

1145 - open forum / discussion / conclusion / recommendations

1230 **Lunch**

1415 • **Community Involvement and Discussion Forums**

- overview brief / problems
  Presentation on "Open ECDIS Forum", by Lee Alexander, UNH, USA

1445 - open forum / discussion / conclusion / recommendations

1530 **Coffee Break**

1600 • **Any other Business / Matters Arising**

- explanation / briefing / options
  Presentation on "Inland ENCs Status", by Bernd Birklhuber, Chair of IEHG

1630 - open forum / discussion / conclusion / recommendations

1700 **Review of Meeting**

1715 **Close Meeting**

Appendix 3 of ESF2 Record of Discussion

2nd ECDIS STAKEHOLDERS' FORUM (ESF2)
IHB, Monaco, 12-13 September 2006

FOLLOW-ON ACTIONS BY IHO

1. IHB to include in the Minutes of ESF2 a written description of the ENC World Catalogue design/process.

2. WEND TG to identify which are the key shipping routes for ENC coverage.

3. IHB to look into alternatives ways to obtaining funding, such as bilateral/multilateral arrangements between HOs.

4. IHB to provide information as needed to those MS governments who may be unaware of the importance/urgency of completing ENC production/coverage.

5. IHB to invite CHRIS to provide guidance to HOs on the use of SCAMIN for providing for a clear display.

6. IHB to invite CHRIS to determine appropriate ways to warn users of possible inconsistencies, e.g. in highlighting borders between adjacent ENC cells, until universal consistency is achieved.

7. The two RENCs to conduct a study of the level of ENC use onboard SOLAS vessels and report back to WEND on the findings.

8. Noting that lowering the cost to the end user does not require a change in ENC pricing by HOs, licensing bodies to examine alternative licensing conditions and arrangements with a goal toward more flexibility and report back to WEND.

9. Licensing bodies to review and report back to WEND their current information requirements for maintaining privacy.

10. IHB to invite CHRIS to update the IHO Information Paper on S-57 Ed.4, taking into account the current development of S-100.

11. **IHB** to seek CHRIS endorsement and draft a proposal for IHC17 on the "Principles and Set of Procedures for Making Changes to IHO Standards" (see Annex H to CHRIS15 minutes forwarded with IHO CL 58/2003 – also attached to WEND10 minutes as Annex H).

12. IHB to invite CHRIS to conduct a study of the impact of S-101 (future ENC Product Spec) on all ECDIS Stakeholders.

13. IHB to invite IEC to confirm that the customization of S-63 (i.e., S-63X) will not be restricted or cause a problem in ECDIS.

14. IHB to invite IEC to communicate with IMO regarding the need to develop a mechanism to deal with software changes to required SOLAS equipment.

15. IHB to inform CHRIS that WEND supports continued operation of the OEF, for the time being.

16. IHB to conduct, possibly via the OEF, a survey in advance of the next ESF to obtain topics for discussion.

17. IHB to promote the next ESF via publications and public media, in an effort to increase stakeholders participation.

18. IHB to expand the invitation list for the next ECDIS Stakeholders Forum (ESF3) to include more end-user representatives.

SUB-COMMITTEE ON SAFETY OF NAVIGATION
52nd Session
Agenda item 6

NAV 52/6/1
28 April 2006
Original: ENGLISH

EVALUATION OF THE USE OF ECDIS AND ENC DEVELOPMENT

Development of a comprehensive online catalogue of available official charts

Submitted by the International Hydrographic Organization (IHO)

SUMMARY

Executive summary:	This document provides information regarding the development of the on line catalogue of ENC, RNC and paper charts used as backup.
Action to be taken:	Paragraph 4
Related documents:	MSC 78/24/3, MSC 78/24/17, MSC 78/24/18, NAV 50/19 paragraphs 18.31 to 18.37, NAV 51/19 Section 6.

Introduction

1 At its 50th session the Sub-committee held a preliminary discussion on documents MSC 78/24/2, MSC 78/24/17 and MSC 78/24/18 and established a Correspondence Group (CG) to report back to the 51st session. The CG, in its report, endorsed a proposal from the IHO that it should develop a comprehensive online catalogue of available official charts. The Sub-committee at its 51st session endorsed this proposal and prepared a first draft specification for the catalogue. It re-established the CG with revised TOR which included a review of this draft specification. The IHO consulted with its Member States and presented a draft report to the CG meeting held at the IHB from 20 – 22 February 2006 where it also demonstrated a possible prototype of the catalogue.

Online catalogue

2 Taking into account the comments from IHO Member States, the points raised during the debate at NAV 51 (NAV 51/19 paragraphs 6.29 to 6.33) and the discussions which took place during the CG meeting in February the IHO proposes the following:

.1 The catalogue should provide the mariner with the information as to the availability of chart coverage in as clear and simple a manner as possible;
.2 The catalogue should be primarily aimed at ENCs;
.3 RNCs should only be shown where ENCs are not available;
.4 The information at .2 and .3 to be provided as a graphical display showing chart and data limits. The following metadata to be provided as a text file linked to each chart:

ENCs

.1 Issuing authority (possibly on behalf of another Member State);
.2 Source producing Authority;
.3 Data format (e.g. S-57 Edition 3.1);
.4 Distribution method (e.g. issuing HO, RENC, free download);

.5 Allowance of SENC distribution: Yes / No;
.6 ENC cell identifier;
.7 Compilation scale / usage band;
.8 Co-ordinates of edges;
.9 Edition date; and
.10 No data area included.

RNCs

.1 Issuing authority (possibly on behalf of another Member State);
.2 Source producing Authority;
.3 Data format (e.g. HCRF);
.4 Update frequency;
.5 Distribution method (e.g. chart supplier);
.6 National Chart Number;
.7 International Chart Number;
.8 Title in National Language;
.9 Title in English Language;
.10 Co-ordinates of edges;
.11 Scale of main chart; and
.12 Titles of plans included.

.5 The paper chart catalogue will list those charts considered by the coastal State as meeting the appropriate portfolio requirement of SOLAS regulation V/19.2.1.5. NAV 51/19 paragraph 6.30 requires IMO Member States to provide the IHO with details of those charts which it considers as meeting the "appropriate portfolio" requirement. This paragraph also notes that "derived charts" produced by other States under bilateral agreements would also meet this requirement. Coastal States should therefore also inform the IHO of those States with which it has bilateral agreements to produce "derived charts". It would then be the responsibility of the State producing the "derived charts" to inform the IHO of those charts which are the equivalent of those designated by the coastal State as meeting the appropriate portfolio requirement. At paragraphs 6.31 and 6.32 of document NAV 51/19 it is acknowledged that the coastal State only has authority to specify chart carriage requirements under the port entry provisions and that for transiting ships it is the responsibility of the Flag State. However it is also stated that transiting ships should seek the advice of the coastal State and it is suggested that the appropriate portfolio of charts specified by the coastal State would provide this advice; and

.6 In order to make the catalogue as user friendly as possible coastal States with long coastlines may wish to divide their coastline into appropriate sections and provide the appropriate portfolio information for each section.

3 The IHO is currently working on the technical requirements for the catalogue and has established a group of experts from its Member States to assist in this and to prepare the implementation plan. The IHO will provide a further report to the 53rd Session of the Sub-committee.

Action requested of the Sub-committee

4 The Sub-committee is requested to:

.1 Note the information provided in this document;
.2 Provide comments or further guidance on the information provided; and
.3 Remind IMO Member States of the requirement to provide the IHO with information regarding the "appropriate portfolio" information as set out in paragraph 2.5 above including details of States with which it has a bilateral agreement to produce "derived charts".

MAERSK LINE

ECDIS AND THE FUTURE

IS IT RELIABLE – VIABLE – USABLE – PAYABLE

Copenhagen / Rotterdam, 11th September 2006

To whom it may concern,

As a world class shipping owner and operator, Maersk Line are following the developments in the nautical sector with great care.
Amongst others the Hydrographic World is involved in a huge change process and followed by us as well.

For generations the sailors around the world have relied on paper based charts and publications as published by the various Hydrographic Offices.
This has been, and still is, a highly appreciated aspect in the navigational world of the modern sailor.

Times are changing however, and we are being challenged to focus our way of working and thinking to the more modern times and possibilities of this era: the electronic way.

At the moment the IHO is jointly busy developing the Electronic Navigational Chart system (ENC) in such a way to get the world covered to the same or a higher level as known in the paper chart world of today.

This process is already busy for some 15 years, and by the looks of it, it might take a while longer to reflect the same coverage as the paper charts.

Meanwhile the Hydrographic Offices have also found out that the financial consequences should be rushed into the next era as well, and pricing has been implemented accordingly.

There are a few issues which we as ship operators/managers wish to address during the WEND meeting this week in Monaco through our chart distributor Marine Press of Canada.

1. Technical issues

- the ever changing international standard of the official system
- the variety in formats of ECDIS systems
- the compatibility between the various products by the various HO's

The ever amending formats and standards make it necessary to update the ECDIS software (and sometimes the hardware) on board the vessels over and over again. Also conflicts between the different formats end up in huge problems for the navigator, who needs the correct chart at that time and has no time to start searching in the system that has gone wrong.
This usually ends up in a hard boot, and restart of the system/computer, hoping that it starts working properly again.

Can you imagine the navigating officers lying underneath the consoles, fiddling with a well hidden computer, steaming at a speed of 25 knots in the middle of the English Channel?
There goes the safety aspect of ENC's.
So far luckily no heavy accidents can be assigned to the use of ENC's, but that is simply due to the fact that a rare minority of the shipping world is relying solely on ENC's.

2. Financial issues

- Cost compare between the conventional paper based system and the electronic system
- Costs, and missing income for the Hydrographic Offices

On a run of a liner vessel we spend an average of US$ 2000, - per vessel per year (including wear and tear and trade changes) on paper charts.
Annual fee for the ARCS (not ENC's) licenses is about US$ 4500,-
Added up we spend some US$ 6500, - on charts, per ship, per year. (this is only applicable for the vessels carrying an ECDIS system)

If we follow the forthcoming legislation and change over to ENC's, the first indications show that we will be paying a rough US$ 40.000, - to US$ 50.000, - per ship per year, maybe even more.
THIS IS 6 TO 8 TIMES AS MUCH AS WHAT WE ARE PAYING NOW.

Just for your imagination: what will happen if all bakeries worldwide would increase the price of a loaf of bread by 600% just because they have added an ingredient to it: REBELION

So far the shipping world has not reacted in that way, our only reason for this modest behavior is that the system is not mandatory yet (and history teaches us that it won't change overnight) and most companies don't want to spend any more money than necessary to comply with legislation.

As a ship owner Maersk has recently terminated its licenses for the ARCS operated vessels and changed over to C-MAP and Transas.
This transition has cost the HO (read UKHO) a great loss in income, and the financial flow changes over to the private sector.
As far as we understand less then 1% of the SOLAS classed vessels carry ENC's, which does not contribute much to the cause either.

Costs for developing ENC's however continue to go on, but the necessary income remains missing, giving a good excuse for the HO's to postpone the mandatory implementation of ENC's.

Some remedy's to enlarge the amount of users:
- drop the price of ENC's and ARCS considerably
- flexibility with the issue of licenses and their terms of use

3. Safety issues

- is the use of ENC's safer compared to paper charts

In principle the electronic chart display should contribute to a better position awareness of the mariner.
That is, if you stick to the golden rule: navigate on the largest available scale chart. If however companies decide to minimize on the expense of ENC's, because they are so expensive, one of the first thoughts is to minimise on the amount of ENC's, and thus creating a false feeling of security.
And who will check the availability of a ENC at any moment on the less reliable companies, trying to save on expenses.

4. Market sharing

- Join forces with the knowledge in the public sector

As the development in the private sector is not really at rest it would be of great interest for all parties to join forces.
The private sector invests heavily in technology, and the HO's have the capacity, manpower and infrastructure to develop coverage of the oceans and its direct surrounding.

If a joint agreement is signed to share/purchase information from each other, still the necessary funds can be raised for the HO's to continue their development.

CONCLUSION

From our side we would like to convince the IHO that we are more than willing to support the development of the electronic chart era, but all must be in perspective with the market, but certainly not at any price.
The monopolistic attitude of the HO's cannot rest on their ancient thoughts if they want to contribute to the modern age.

Even in the old days the HO's relied on their distributors and their respective networks, so why not take the "new age" boys and their technologies in the arm and jointly conquer the world, again to everybody's benefit.

Hopefully the WEND meeting will result in a few firm statements which will help the further development of ENC, making the world safer, anyhow for the navigating seafarer.
In itself the ENC, official or un-official, is a magnificent tool and it would be a pity if the progress is being delayed any further then necessary.

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