20th Transfer Standard Maintenance and Application Development Working Group (TSMAD) Minutes.
3 to 7 May 2010 (Rostock, Germany)

Chairman: Barrie Greenslade (UKHO)
Vice Chairman: Jean-Luc Deniel (SHOM)
Secretary: Tony Pharaoh (IHB)

Annexes:
> Annex A – List of Documents
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1. Introduction and Welcome.

Dr. Mathias Jonas welcomed members to the combined TSMAD / DIPWG meeting and to Rostock. He noted that this was a very important gathering and proposed that many important technologies such as the sextant, Harrison's chronometer and others, had been developed for maritime use. The IHOs data standards development efforts have also been at the forefront of their field and the TSMAD and DIPWG groups need to ensure this continuation of effort. Compulsory ECDIS requirement is an important milestone which is driving the need for hydrographic data to which the IHO must respond.

2. Approval of Agenda.

The TSMAD agenda (TSMAD20/DIPWG2 2A) was approved without amendment. The Chairman reminded the meeting that papers should be submitted in time before the meeting so that members were able read them and prepare responses if required. Papers should be submitted at least 6 weeks prior to the meeting.

3A Minutes of the 19th TSMAD meeting.

The minutes to the 19th TSMAD meeting were accepted without comment.

3B Status of Actions for TSMAD

The Chairman went through the list of TSMAD actions, which are listed below;

Agenda	Ref	Action	Member/ Status
4.1	18/10	TSMAD to amend S100 maintenance section based on the proposal and to prepare new procedures for the registry (outlining who/how changes to S-100 are approved). There is also need to look at the proposed Technical Resolution.	BG/JP Completed
4.1	18/9	Notification of the publication of S-100 is to be sent out to MS via CL. Document to be included on the IHO web site.	BG/TP Completed
4.1.1		Develop a paper outlining how multiple Layers of S-100 compliant Auxiliary Navigational Information can be integrated with S-101 ENC data. The paper is for circulation to TSMAD members and OEM's for report back by the next TSMAD (2010 - Rostock) meeting. *(See paper TSMAD20/DIPWG2 18A)*	BG Completed
4.3	8/14	TSMAD members are to review old proposals that were not accepted for inclusion, or were not considered at previous meetings and resubmitted them if they are still deemed to be relevant.	All Ongoing
4.3	18/26	The list of topmarks provided by Jepesson needs to be reviewed for duplicate entries and included in the registry. *It was concluded that these could go into the registry as is.*	JP/TM Completed
4.3	18/41	Set up WIKI / CMS for providing information about the GII – registry and S-100.	TP Ongoing

4.3.1		A new edition of S-58 needs to be produce to fix this problem related to errors being generated by the removal of linear depth areas.	GU Completed
4.4	18/53	Present the concept of using a grid reference system in S-101 to the next Stakeholders meeting.	BG/TM Closed
4.5	18/04	Open a tidal discussion item on the S-100 WIKI and invite TWLWG members to participate.	TM Closed
It was noted that the TWLWG had formed a task group to look into creating a tidal data product specification and this item was therefore closed.			
4.5	18/39	Concerning S-52 content that should be in S-100. Send email requesting the DIPWG chair to review S-52 documents in order to determine what parts of the publication should be moved into the S-101 product specification. See paper TSMAD20/DIPWG2 16.3A	BG Completed
4.5	18/40	TSMAD to develop a paper for the Rostock meeting highlighting the need for closer cooperation between WGs and outlining some of the issues related to the inclusion and subsequent portrayal of new features in S-101. Following discussion at this meeting, a report is to be compiled for consideration by the HSSC2 meeting.	BG/JLD Completed Ongoing
4.5	18/48	Include the recommendations produced by the Display Scales sub working group in the draft S-101 product specification document.	RF/JP Ongoing
4.5	18/49	Include a discussion item on "*support file formats*" at the next stakeholders forum meeting - for further discussion and feedback. (What do stakeholders want in terms of services, data formats and products). *See Stakeholders Outcomes Report See paper TSMAD20-11.2A*	BG Completed
4.5.1		Present the proposed "*phased implementation plan*" to the next Stakeholders forum for feedback. The results of this discussion are to be reported to the next TSMAD meeting. *See Stakeholders Outcomes Report*	BG Completed
4.5.2		Propose the following questions to the stakeholder forum meeting; - is there still a need for a cell size limit – e.g. 5MB ? - should the feature and portrayal catalogues be available for download from the IHO site or distributed with an update CD ? Concerning the Data Quality section of the S-101 product specification. JP to outline the issues concerning data quality and send these to BG. BG to discuss these with the DQWG chairman, with respect to the future development of this WG.	BG/JP Completed
4.5.3		Present the following topic at the next Stakeholder's workshop; *"how best to integrate a mechanism that will enable mariners to determine what changes have been made to an ENC"* Conclusions of this discussion to be reported to TSMAD20 meeting.	BG Completed
4.5.4		IHB to investigate the possibility of providing funding for the S-57 to S-101 (Phase 1) ENC conversion software application.	TP Completed
4.7.1		IHB to publish and distribute a new version of S-65 when the proposed changes have been circulated to TSMAD members, for approval, and agreed. All comments are to the sent to IHB.	IHB Completed
4.8.2		Slaves with more than one master. An Encoding Bulletin is to be developed to advise that slave objects may not have more than one master object. Draft EB tabled at a Sub-WG meeting during TSMAD20. Final draft approved for publication by TSMAD at TSMAD20. A new test is to be prepared for S-58 - based on the EB	JW Completed GU Completed
4.9.1		Provide assistance with getting the UN-DOULAS Product Specification for maritime boundaries document aligned with the S-100 product specification template.	BG/RS/TP Completed
5.1		FAQ is to be developed to provide advice on how to encode	JW

		mangrove areas when digitizing from a paper chart. Draft FAQB tabled at a Sub-WG meeting during TSMAD20. Final draft approved for publication by TSMAD at TSMAD20.	Completed

4A Minutes of the 1st DIPWG meeting.

See DIPWG2 Minutes.

4B Status of DIPWG1 Actions from Ottawa, Canada, 4-8 May 2009 TSMAD20/DIPWG2-04B

See DIPWG2 Minutes.

4.1A Possible alternative colours (other than orange) for Mariner Objects (TSMAD20/DIPWG2-04.1A) – DIPWG.

See DIPWG2 Minutes

5A HSSC Actions for TSMAD

AGENDA ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	STATUS
3	Product Specification for Digital Paper Charts	HSSC1/1	**IHB/TSMAD Chair** to remove Task A.9 "*Develop S-57 to paper chart functionality and Print-on-Demand (POD) file transfer guidelines*" from the TSMAD Work Plan.	Completed
6.1	MEP Product Specification	HSSC1/7	**IHB/TSMAD Chair** to remove Work Item D "*Develop Marine Environment Protection Programme based on S-100*" from the TSMAD Work Plan.	Completed
6.1	UN-DOALOS Product Specification	HSSC1/9	**TSMAD** to continue assisting UN-DOALOS in the development of an S-100 compliant product specification for a Law of the Sea feature code directory.	See below
In progress; to be reported to HSSC2.				
6.1	UN-DOALOS Product Specification	HSSC1/10	**TSMAD Chair** to inform the Secretary of ABLOS of the ongoing development of an S-100 compliant product specification on a Law of the Sea feature code directory.	Ongoing - See below
BG reported that a significant amount of work had been carried out on this by TR and BG. A copy of the draft document will be sent to RS and the ABLOS secretary on completion.				
6.1	Geospatial Information Infrastructure (GII)	HSSC1/13	**TSMAD** to develop as a high priority work item detailed operational processes and business rules for S-100 register management and report to HSSC2.	In progress; to be reported to HSSC2. Ongoing - See below
TSMAD Chair and Capt Robert Ward have been working on this document. The document will be published as an IHO M-X document when completed.				
6.1	Auxiliary Informational Layer Integration	HSSC1/16	**IHB/TSMAD Chair** to add to the TSMAD Work Plan the following medium priority Work Item: "*Develop an S-10X product specification for 'Auxiliary Informational Layer Integration'*".	Complete
6.1	Grid referencing system for S-100	HSSC1/17	**IHB/TSMAD Chair** to add to the TSMAD Work Plan the following low priority Work Item: "*Investigate a suitable grid referencing system for S-100*"	Complete

5B HSSC Actions for DIPWG

See DIPWG2 Minutes

6.1A   CSPCWG

Jeff Wootton (JW) (AHO) reported that since the TSMAD 19 meeting, Ed 3.007 of S-4 was published, and included revisions to the ZOC table, revisions to clauses concerning Radio Position-Fixing Stations, Marine Services and Signal Stations. A new edition of S-11 Part A was also published.

Other issues of relevance included;   the addition of TSMAD and DIPWG chairs to the CSPCWG correspondence list for issues relating to new or revised symbology; and the establishment of separate distinctions for the terms "foul area" and "foul ground."

Concerning the use of AIS as Aids to Navigation, JW reported that this had been discussed within the IHB and it was agreed the issue needs to be monitored very carefully. CSPCWG had produced some Virtual AIS symbols (examples only) which were included in the report. CSPCWG agreed that a new S-4 section for Virtual AIS Aids to Navigation needs to be drafted and the IHB are to provide the CSPCWG with a summary of the outcomes of the IALA meeting that took place in January 2010.

Other issues reported on included: the removal of INT1 Section U concerning Small Craft symbols; the simplification of the symbology for complex lights with oscillating sectors; development of new paper chart symbol for floating wind turbines; the development of guidelines (new Section S-4 – B-600) concerning the maintenance of nautical charting products; and issues concerning the exchange of paper chart data.

The meeting endorsed the report and agreed to discuss the current guidance on the depiction of AIS information on ENC under agenda item 20.2A

6.2A   EUWG

Richard Coombes (RC) (UKHO) reported that the recommendations contained in the paper on T&P notices submitted to HSSC1 were accepted, and had been included in a new edition (1.2) of S-65. He also noted that some information contained in Appendix 1 of S-52 will be included in S-65. It will also be necessary to improve the guidance for OEMs and Distributors. BG expressed concern that S-65 was becoming a dumping ground for content that should be included in S-57, but it was not possible to make changes to S-57 because of its frozen status. RF agreed, and noted that users of the standard had to consult a wide number of documents to find the information that they required. JW proposed that the Use of the Object Catalogue (UOC) document should be unfrozen so that this type of information could be included.

6.3A   DQWG

BG noted that he had received a late report from the DQWG however it was too late to include as a meeting document, but would be included as an INFO paper.

7.1A   IALA Feb 2009 Meeting

No report was provided (see also Agenda item 20).

7.2A   ISO 19117

BG reported that ISO 19117 is presently at the Committee Draft stage and an editing committee will be held at the Southampton ISO/TC211 meeting 24 – 28 May This should result in a Draft International Standard being released in June 2010. The intention is for the Final Draft IS to be released in June 2011 and the International Standard in December 2011.

7.3A   IEC Standards

JP reported that ECS standard 62376 is still under development. IEC 61174 has been completed.

8.1A   S-100 Portrayal Model Presentation

See DIPWG Minutes.

8.2A   S-100 Symbol Model Presentation

See DIPWG2 Minutes.

8.3A   XML Portrayal Package

See DIPWG2 Minutes.

9A   Port ECDIS

A presentation on Port ECDIS using Port ENC's and other gridded datasets covering Hamburg harbour was provided by Dieter Seeveld (DS) (project manager). This is an EU funded project that commenced in 2006. It is based on S-57 Ed 3.1 and includes modifications to the S-57 ZOC classifications. DS also noted that it had been necessary to make provision for a higher level of accuracy S-44 category identifier as some port surveys are of a very high accuracy. The Port ENC specification also makes provision for a gridded bathymetry layer known as the bENC. The data specification used for this is based on the Bathymetric Attributed Grid (BAG). The PENC Data and SW viewer will be made available on the IHO web site.

10A   S-101 Draft 0.1 Standard

JP reported that work had continued on the S-101 document since the last meeting and as a result of the S-101 stakeholders meeting some additional changes and additions will be required. She invited meeting members to review the document and provide comments and feedback to her within 6 weeks of the conclusion of the meeting.

10B   S-57 to S-101 Crosswalk

JP provided an overview of the cross mapping between sections of the S-57 and S-100 documents. There are certain sections where there is no direct mapping possible. She noted that the document was just for information and could be used as an aid to members who will be reviewing the S-101 document.

10C   Outcomes on S-101 Stakeholders Meeting

JP provided an outline of the discussions, and highlighted the following issues that were of particular relevance to the meeting;

Phased implementation of S-101 ENC. The stakeholders meeting noted that there would have to be a smooth transition from S-57 to S-101 data, however there also needs to be a "wow" factor (improved functionality) for mariners to move to S-101 ECDIS systems.

Scalable and scale independent data, It was agreed that more testing needed to be carried out in order to get a better understanding of what the advantages and disadvantages might be. Some of the meeting members expressed concern that there may be unforeseen issues regarding distribution and updating.

The implementation of a "Standard Mode" (S-mode), for ECDIS (i.e. a generic mode for pilots and for training). The stakeholders felt that there is a need to get more feedback from OEMs. HP confirmed that introducing an S mode is technically possibly, but questioned how users would differentiate between systems. Both JP and HP proposed that this may effect ECDIS type approval which may have an impact for DIPWG.

On the subject of ENC specific portrayal, HA proposed that xml be used for the exchange of catalogues (feature portrayal catalogues) and it was concluded that it may be necessary to simplify the conditional symbology by changing the data model (e.g. lights and master slave relationships). There is a need for a simple update mechanism to; include, delete or update symbols. Updates could get to the user either via IHO distribution or delivered via OEM.

HP recommended that it would be a good idea to encode some alarm generating triggers in the data (e.g. via an additional attribute or via the catalogue).

Richard Coombes enquired how S-63 could be improved to benefit service providers and end users, and questioned whether it would be better to scrap S-63 and start again. The question was also raised whether the IHO should remain as scheme administrators and the meeting concluded that it should.

Delivery of updates – HP proposed using binary differencing in order to reduce file sizes of updates. CH noted that this is the method used for DNCs. The meeting agree that this needs further investigation.

Nautical publications – It was decided that this type of information will establish its own S-100 based product specification. For this separate data product 8211 encoding should be used where possible. Harmonization will be necessary to ensure that duplicate features in two different product specifications are not encoded differently (e.g. pilot boarding place in an ENC and nautical publications overlay).

Data Quality – CATZOCs BG outlined Jeppesens (red green yellow) proposed solution, and proposed that there is also a need to have an indication of data quality. He noted that the DQWG were looking into this but TSMAD also needs to feed their comments into this work.

TIDAL – It was proposed that already for S-57 there would be a need to introduce an overlay product that would display tidal levels. Konstantin Ivanov (KI) noted that, technically this would require the production of a gridded or triangulated overlay dataset.

HP reported that Finland have submitted a paper to TWLWG proposing that ECDIS should analyse the existing bathymetric data to see if sufficient detail exists within the dataset and if sufficient, it would generate a grid that could be used for generating a dynamic tidal display.

ISO 8211 data structure - BG proposed that the upgraded 8211 structure is new to manufacturers and may cause problems. He requested HB and HA to have review the structure during the meeting and report back if they identified any problems.

11.1A   S-101 Catalogue File and Discovery Metadata

JP noted that this was discussed at the Stakeholders meeting where it was proposed that the following should be considered for discovery metadata:

• A way to digitally check for the correct Feature Catalogue and Portrayal Catalogue versions
• A metadata construct that would enable the mariner and others (e.g. port state control) to establish which notice to mariners corrections had been applied to an ENC.

The metadata mapping meeting (Monday evening) report back;
JP reported that there was a requirement for two separate metadata tables – one for discovery metadata and one for catalogue metadata. The S-101 WG would configure the tables to include these two metadata types.

KI stated that there was a need for discovery metadata that will allow the users to see if there is sufficient coverage for their intended voyage.   This type of discovery metadata would be required from the RENC's and should be made available so that the appropriate authorities (such as port state control) will be able to determine what cells are available (including updates) and compare this with what cells are on board a vessel. It was noted this will have an impact on the Data Certification and Supply Chain Working Group.

HB supported this, and proposed that data producers should produce a coverage catalogue that will allow metadata to be downloaded by port state authorities and others, in a standard format. EK proposed that for auditing purposes, two metadata files will be required, - one from the data producer and one from the vessel. – The port inspector will then easily be able to see if the vessel has the latest ENCs and updates. MB stated that data service providers know what data has been distributed to a vessel and will know what updates are needed and can be part of the data chain certification.

HB proposed that TSMAD should decide what the content of the catalogue file should be, and should not pre-empt how it should be used. Perhaps the catalogue could be a standalone product – so that it could also be used for other products and probably should belong to the supply chain and certification work.

Should the additional fields in the S-101 metadata description be included in the S-100 metadata description? As S-100 contains discovery metadata, it was agreed that these fields should not be included in the discovery metadata as this would make it incompatible with other 19115 metadata.

11.2A   S-101 Support File Formats

JP outlined some of the issues relating to support files and their management with regard to their inclusion in S- 101. She reviewed the discussion that took place during the S-101 Stakeholders meeting.

The Stakeholders meeting agreed that if file size is not an issue, specific support files could be supplied for each cell. In order to ensure duplicate support files are removed when an associated feature is deleted, the ECDIS must search for duplicate files and delete them. S-101 does not need to specify the implementation; merely that redundant files are deleted. It was also agreed that a list of key support files, which can be updated as technology evolves, should be included in the standard.

Furthermore it was concluded that the list of specified formats should not be open and there should be a standard list specified. RF proposed that before audio and video files types are specified, use cases should be established. It was agreed that there was a use case for audio but not for video.

It was concluded that support files should not be duplicated, and they should not be included (embedded) in the ENC data file. There needs to be a mechanism for version control.

12A   A 3-D Nautical GIS Targeting Cognitive Off-loading and Decision Making

Thomas Porathe introduced the paper on 3-D Nautical GIS which demonstrated how the use of 3D GIS can improve visual perception and situation awareness which can result in safer navigation. This is achieved by adding the following three major features to existing chart systems:
-   an egocentric view which enables geographical data to be viewed from a bridge perspective and thereby removing the need to carry out mental rotations;
-   a seaways view, which displays traffic separated fairways and individual track lines.
-   "nogo" area polygons displaying warning areas for waters too shallow for the individual ship to navigate in the current tidal situation.

The meeting agreed that the presentation introduced some interesting concepts and proposed to repeat this presentation at upcoming HSSC2 meeting in October..

13A   CATZOC, Simplified Symbols and Colour Palettes

See DIPWG2 Minutes.

14A   Development of a Combined INT1 / ECDIS Chart 1

See DIPWG Minutes.

14B   INT1 to S-52 symbol Mapping (Excel file)

See DIPWG2 Minutes.

15A   Nautical Publication Symbology

See DIPWG2 Minutes.

16.1A   S-101 Scale Independent (SI) and Scale Dependent (SD) Data

JP reported that the issue of SI and SD ENC data had been discussed at the S-101 Stakeholders forum and the meeting recommended that TSMAD should further investigate this concept to make sure that it is beneficial for the mariner.   Furthermore if this is to be implemented, it should be done at an earlier phase in the migration process. It was proposed that this should be implemented during phase 2 of the transition.

MB noted that there is great value in having normalised databases so that there was no redundant data, however splitting up the data, although not a problem in itself, may have significant implications for distribution and updating.

HP said that data producers need to ensure that the process must be followed very strictly by HO as this approach assumes that a producer HO has a database from which scale dependant and scale independent layers can be generated.

The meeting concluded that for Phase 2, TSMAD need to develop two SD and SI datasets. Tests need to be carried out to investigate the concept of multiple geometries in a single cell and to see if updates can be applied safely. EM stated that the single most important outcome must be data consistency. This would make things easier for the manufacturer and a better product for the user. If this opens the door for further inconsistency it should not be accepted.

HP noted that automatic generalization within the ECDIS would solve the problem of duplicate geometries. MJ noted that it is not be possible to replace cartographic simplification by the ECDIS smoothing routine and he did not agree with this approach.

HB proposed that the determination of whether SI and SD layers would be feasible, would largely depend on whether certain features which have important relationships with other features, could be split into separate cells. It was concluded that there is a need for thorough testing which should be concluded within the next 8 months.

The following issues need to be considered;
- How will distribution work?
- How will updates work?
- Sometimes an update will affect both SI and SD data – are they packaged together and released simultaneously? What happens if the end user only gets updates to the SI data and not the SD data?
- Would TSMAD consider multiple SI cells grouped by different themes? E.g. An SI cell that contains only TSS information and a SI cell that contains Aids to Navigation. These would have to be related in some way.
- Can the same association cover two different datasets? What features should be included for Scale Independent content?
- Can the perceived benefits be achieved in another way?

16.1B   US position against SI and SD data

JP presented the US position paper on SI an SD datasets and recommended that TSMAD needs to prove that this concept will work and will result in significant benefits for data producers, ECDIS manufacturers, mariners and data distributors.

16.2A   A Proposal for Improving & Standardising the ECDIS/ECS Pick Report

See DIPWG Minutes.

16.3A   Incorporation of Selected Sections of S-52 into S-101

See DIPWG Minutes.

16.4A   S-101 Unknown Mandatory Attributes

JP reported that mandatory attributes with an "unknown" value encoded were causing an unacceptable number of "?" on the ECDIS display, and requested the meeting consider how this could be reduced for S-101 datasets.

JLD reminded that meeting that the "?" would also be displayed as the result of a lack of an appropriate symbol. There are many default symbols that include a question mark. These symbols will be display when a mandatory attribute e.g. colour is not populated. By adapting these default symbols, there would be far fewer question marks"?" being displayed on an ECDIS. A systematic revision of the default symbols which is aimed to reduce the combinations of the default object symbols containing a question mark was proposed.

It was also proposed that some mandatory attributes could be eliminated if they are not used for portrayal. (For example, Beacon's require a Colour however the S-52 lookup table does not use the Colour attribute as part of the portrayal mechanism).

16.5A   S-101 Consistency

RF noted that over several years of using S-57, a number of issues concerning ENC consistency have been identified that need to be dealt with in S-101. These include;

Compilation Scale versus display scale – TSMAD had already accepted to use radar ranges and this did not need further work. HB said that TSMAD needs to use a better name for describing "display scale". JW proposed that the term used in the encoding guide – "optimum display scale for the data" would be better. This is distinct from compilation scale, which relates to the application of SCAMIN.

BG stated that scale for which the dataset is designed for is based on the CSCALE however a new definition is needed to describe the scale which is the trigger for moving from one scale usage band to the next.   He questioned whether further guidance is needed on the use of M_CSCL area objects. JP proposed that this will no longer be needed considering the 13 scale bands being proposed.

JW said that Australia make extensive use of M_CSCL and would like to keep this as it makes provision for multiple scales within one cell and asked how the OEMS felt about this? KI reported that they would prefer that there was one scale per cell and would like the standards to provide clear guidance on this. HP reported that their systems display the over-scale prison bars when smaller scale M_CSCL areas are displayed. This does not enhance the users experience.

HE said that according to the new loading strategy proposal (presented at TSMAD18/DIPWG1) CSCL and M_CSCL are not used for display. CSCL and M_CSCL are only used as indicators of the scale of the source

RF proposed that if M_CSCL is going to be retained, its use should be limited to a range. HB proposed that it would be preferable to have only one CSCALE - the one that is specified in the header. If it is to be used for S-101 there must be limiting guidelines. The meeting agreed that this needs further testing.

USAGE Band Assignment – it was agreed that usage bands will only be used in the catalogue discovery metadata and there was no need for further discussion.

SCAMIN - It was agreed to refine the guidance provided in S-65 and include this in S-101. SCAMIN will cover display within the range of the proposed 13 display scales.

Data Inconsistencies across usage bands – It was agreed that it should be up to individual HOs to ensure that the data within their region is consistent. Perhaps this should be coordinated within RHCs.

Contour Intervals – It was agreed that there should be a standard (specified) set of contour (whole number) intervals. There is a need to also take high density contour intervals into consideration. It was concluded that this could not be mandated, however some guidance (as per S-4) should be provided. TSMAD should consider mandating that a few base contours should be included in each dataset. It was agreed that further guidance could be an issue for discussion within RHC meetings.

Inconsistent depiction and misalignment of data of different compilation scale at cell boundaries - It was agreed that this should not be included in the S-101 Product Specification. HB proposed that perhaps a cell break line could be included so that the user could see why there is for example mismatching contours.

Inconsistent depiction of data within a cell – it was decided that no further discussion was required on this issue.

Holes in data coverage – it was agreed that TSMAD cannot mandate that there should not be holes in seamless data and this is an issue for resolution at RHC meetings.

Use of CATZOC in M_QUAL - JW noted that M_QUAL is mandatory and questioned whether it should be for certain conditions (e.g. for very small scales, where there is often no data). There need to be criteria set for this.

Strengthening Encoding Rules in the S-57 Use of the Object Catalogue (UOC) - The meeting agreed that the UOC left too many issues open for speculation and should be more prescriptive.

17A   Bathymetric Product Specification

Wade ladner (WL) introduced the paper and provided a brief history of the NAVO Open Navigation Surface project and the CHS S-10X project. He noted that the work carried out by the USA and Canada had been rationalised into a single proposed standard for bathymetry. See discussion on sections 18B, 18C and 18D below.

18A   Integration of Multiple Layers of S-100 compliant Auxiliary Navigational Information

WL provided some background information about the requirement for auxiliary navigational information which took into account the papers presented at agenda items 18B and 18C. He noted that much of this work comes out of the Open Navigational Surface (ONS) which was developed for high resolution bathymetry surfaces that derived from hydrographic surveys. At the TSMAD 18 meeting the CHS also proposed a high resolution grid. After further discussion the two grid specification were harmonised resulting in the revised S-102 specification.

LP reported that this paper was submitted in response to TSMAD 19 action to develop a paper outlining how multiple Layers of S-100 compliant Auxiliary Navigational Information should be integrated with S-101 ENC data in an ECDIS. An S-10x Auxiliary Navigational Information product will be an official hydrographic product intended for use in conjunction with ENC's within ECDIS, and is intended to meet IMO/SOLAS chart carriage requirements.

18B   Proposed Specification for Auxiliary Information Layer Integration for use with ENC - S.10x

The meeting supported the proposal that this S-10x document should be part of the S-100 standard, and it was concluded that it should be included in the S-100 product specification template section.

18C   Proposed Bathymetric Surface Product Specification S-102

LP provided a brief overview of the S-102 product specification which was first presented at the TSMAD 18 meeting. Comments from that meeting had been taken into account in the new version of the document and the document has also been aligned with the S.10x Auxiliary Information Layer Integration document, as well as the 19129 and 19123 ISO standards

The meeting agreed that S-102 was accepted as a draft product specification document, but needed wider circulation for feedback.

19A   Product Specification for Maritime Boundaries

BG reported that Robert Sandev from the UN DOALOS had not been able to make it to the meeting due to travel restrictions however RS and TR and BG had done a significant amount of work on the Maritime Boundary product specification document. GML examples will be created. There will be some new features for inclusion in the registry. A copy of the document is to be made available at the TSMAD21 meeting.

20.1A   IALA Feb 2009 Meeting

No discussion on this agenda item.

20.2A   Virtual Aids to Navigation from an ENC perspective

TR questioned whether there is a need to encode AIS on aids to navigation (e.g. on buoys) and if so, was this for inclusion in S-57 or S-101? If it was decided that provision should be made for their inclusion in S-57 ENC's then a decision needs to be made on how this will be included in the S-57 documents.

It was agreed that it is not necessary to make provision for this in S-57, (other than using INFORM) but provision should be made for their full implementation in S-101.

Virtual AtoNs. - Is there a need to encode permanent Virtual AIS? JW said that he had been requested by his maritime authority to request TSMAD to make provision for permanent Virtual AIS and proposed that TSMAD should use the NEWOBJ for this. It was noted that the SYMIND attribute would have to point to an existing S-52 symbol and could not be used for the development of a new symbol.

MJ reminded the meeting that there have already been virtual aids encoded in ENCs since their inception (e.g. administrative areas like traffic separation schemes coded by means of areas and lines) and proposed that the encoding of virtual aids could be done using existing area feature classes and disseminated more effectively as chart updates compared to AIS transmission which is nominally not interfaced to ECDIS onboard devices. Moreover AIS channel capacity is already fully occupied in some regional areas with dense AIS Class A and Class B traffic and virtual AtoN would further add to this capacity overload.

It was agreed that only permanent virtual AtoN would be considered. Independent from the method of transmission and reception of the message, NEWOBJ is to be used with an existing position circle and magenta circle for symbolization symbol. It was decided to call this Virtual Aids to Navigation rather than AIS aid to Navigation as other mechanisms for transmission may also be used. It was agreed that OBJNAM should be used for encoding the text.

JW noted that, at the last CSPCWG meeting that took place at the IHB, this issue was discussed and Captain Ward had informed the meeting that IALA were to meet in January 2010 to discuss the issue of AIS and their potential application for „virtual AtoN.‟ The IHO should therefore have some proposals on how they should be symbolized.

TP cautioned that Encoding Bulletins were intended for issues of consistency and should not be used for new features or issues that may affect safety of navigation. MH informed the meeting that, although virtual AIS have been implemented for various areas, they have not yet been sanctioned by IMO.

21.1A   Foul Ground / Foul Area Encoding & Symbology

See DIPWG2 minutes.

21.2A   Paper Chart Symbol Changes Considered by the CSPCWG

See DIPWG2 minutes.

22A   Corrections to ECDIS Chart 1

See DIPWG2 minutes.

23A   Assorted S-101 Issues (the Dirty Dozen)

It was decided that there was not sufficient time to review this document during the meeting, and members were asked to review the paper and send all comments to JP.

23B   S-101 Strategic Implementation Plan

JP provided an overview of the phased strategic implementation plan. The present status is that S-100 was published in Jan 2010 and the S-101 ENC Product Specification (Phase 1 – excluding the data model and the portrayal model) is about 90% complete. Sections that still need more work and testing include the SI / SD concepts and loading strategies. The S-101 sub- WG expect to publish a complete first edition of S-101 including the data model and the portrayal in 2012.

Some additional issues that will need to be addressed include – the need to produce (and distribute) test data. There is also a need to carry out a mapping between S-101 and S-57 ENC features and to develop an S-57 to S-100 data converter.

The IHO will also need to consider what the implication for IEC tests and type approval will be and how these will affect the IMO performance specifications. IEC has the ECDIS standard IEC 61174 maintenance on its work plan for 2011/2012 (?). [official stability period until 2012].

What mechanism should be used for outreach? EM proposed that the stakeholders meeting proved to be a good forum for exchanging ideas with industry and users. BG noted that the first industry meeting introduced blue sky proposals; the second put some meat on the proposals and the next meeting should demonstrate test data sets and test applications. There are two distinct types of users – those users who want improvements to the existing product and those who want new products. TSMAD needs to ensure that the new S-101 product makes it worthwhile for users to upgrade their system by making provision for the inclusion of new functionality (such as Nautical Publications overlays).

MB proposed that what their users want is safe and efficient navigation. Efficiency is becoming increasingly more important considering that is driven by the rising costs of fuel and the need for carbon reduction.

BG asked the OEMs whether they would demonstrate that their systems could use S-101 data if S-101 test data sets were made available. HP responded that they would be prepared to do this provided that there was not a big difference between the S-57 and S-100 data. The data needs to be reasonably close to the final version of the product specification as they would not like to be going through too many iterations of changing their software. MB reported that they have already started planning their new version the dKART tools and ECDIS kernel to accept S-101 data.

An issue that was also highlighted was that IMO SOLAS Chapter V [No reference in SOLAS – only in ECDIS-PS (MSC.232((82))]makes reference to S-57 which may need to be changed to S-101.

24.1A   Management of Encoding Bulletins (EBs)

Management of Encoding Bulletins.   Jean-Luc gave a presentation on the present state of the ENC EBs and stressed that the intention of EBs are to provide clarification on the encoding guidance in S-57 to promote consistent encoding, and not promulgate navigationally significant information. The process for submitting, accepting and posting EBs needs to be better understood and documented by TSMAD. This could be described in a process diagram. It was proposed that a requirement for an EB should be sent to the Chair and Vice-Chair of TSMAD using a standard form which should be made available through the IHO web site. If the issue is determined to be not navigationally significant, then the proposal will be sent to the S-57 Maintenance Sub-Working Group coordinator (formerly EB Sub-Working Group coordinator). The sub-working group should also consider if there is safety to navigation implications and if they disagree with the initial assessment, forward it back to the TSMAD Chair with recommendations. Otherwise the Sub-WG should develop the EB and forward it to the IHB for publication. If the Sub WG cannot reach consensus, then the EB needs to be submitted to the next TSMAD WG for discussion and a decision.

If the issue is determined to be navigationally significant, the IHB Technical Director and the S-57 Maintenance Sub-WG are to be notified.

Discussion about EXPSOU = 2 on Dredged Areas – JW provided an overview and background information about the compilation of the revised EB27 which was concerned with how best to provide guidance on how the mariner can be informed of shoal depths in dredged areas.

The revised EB, proposes a revision of DRVAL1 and DRVAL2 for the depth areas, or encoding isolated soundings (EXPSOU=2) as obstructions. It was proposed that the encoding practice probably has its origins in paper charts. (S-4 states that shoal soundings may be inserted in dredged areas by exception).

MB informed the meeting that an additional function had been added to the dKart software that will flag all soundings with EXPSOU = 2.

Additional draft Encoding Bulletins were also submitted to the meeting for approval. These included revisions of EBs 24, 25 and 29 to align with S-57 Supplement No. 2 and S-52 Presentation Library Maintenance Document No. 7; new EB 34 (FAQ 34) addressing circumstances of the use of FOIDs to identify multiple parts of a single feature in an ENC cell; new EB 35 (FAQ 35) clarifying existence of only one structure (master) object for any equipment (slave) objects; and new FAQ 36 clarifying guidance for the encoding of mangroves in light of revised S-4 Specifications. The meeting approved the publication of these EBs/FAQs.

24.2A   S-58 (discussion on tests 1768, 1769, 1770 and 1796)

S-58 Sub Working Group report – RF reported on the discussions of the (Tuesday) S-58 sub-WG meeting and noted that all the proposed changes that were discussed were approved. It was also agreed that a new edition of S-58 should be produced for submission to HSSC2 for approval. It was noted that the paper must be submitted by the 07 September 2010 at the latest.

The issue of ECDIS systems going through the validation tests, RC presented some metrics on how long it was taking to load ENCs and what the impact of carrying out the validation tests was having.

BG noted that the IHB will be issuing a CL asking OEMs to not do validation check during ENC loading as this was slowing down ENC load time and was also generating large error reports that were of no significance to the mariner.

24.3A S-100 Generic Product Specification Template

No paper was submitted – see agenda item 18B..

Any Other Business

Issues raised by Japan (SK) on virtual AIS aids to navigation – SK presented a graphic showing virtual AIS aids to navigation presentation proposed for paper charts and proposed that TSMAD will need to consider the ISO/TC211 - 19119 Services standard. He noted that consideration will also have to be given to situations where an AIS signal is not received by an EDCIS. He also questioned how an AtoN would be symbolized under these circumstances?

HP – proposed that there needs to be an additional symbol to indicate that the AIS signal is not available, and this needs further investigation.

Discussion on "un-freezing" the S-57 UOC: It was agreed that this should be a TSMAD recommendation to HSSC2.

Date and Place of next meeting

Lynn Patterson invited TSMAD to hold its next meeting in Sidney, Vancouver Island, Canada between the 29th of November and the 3rd of December 2010. TP informed the meeting the Mr. Yong HUH (Korea, KORI), had invited TSMAD to host the 22 TSMAD meeting in Korea (April / May 2011).

TSMAD20 / DIPWG2 – List of Documents

Document Number		Document Title
TSMAD20/DIPWG2	0	Logistics for Rostock Meeting
TSMAD20/DIPWG2	1A rev8	List of Documents
TSMAD20/DIPWG2	1B rev1	List of Participants
TSMAD20/DIPWG2	2A rev9	Joint Agenda for TSMAD20 and DIPWG2
TSMAD20/DIPWG2	3A	Minutes of TSMAD19, Sydney, 2009
TSMAD20/DIPWG2	3B	Status of Actions from TSMAD19
TSMAD20/**DIPWG2**	4A	Minutes of DIPWG1, Ottawa, 2009
TSMAD20/**DIPWG2**	4.1A	Possible alternative colors (other than orange) for Mariner Objects
TSMAD20/**DIPWG2**	4B	Status of Actions from DIPWG1
TSMAD20/DIPWG2	5A	HSSC Actions for TSMAD
TSMAD20/**DIPWG2**	5B	HSSC Actions for DIPWG
TSMAD20/DIPWG2	6.1A	Report on CSPCWG activities [Wootton]
TSMAD20/DIPWG2	6.2A	Report on EUWG activities[Deniel]
TSMAD20/DIPWG2	6.3A	Report on DQWG activities [Greenslade]
TSMAD20/DIPWG2	7.1A	IALA Feb 2009 Meeting
TSMAD20/DIPWG2	7.2A	ISO 19117 [Greenslade]
TSMAD20/DIPWG2	7.3A	IEC
TSMAD20/**DIPWG2**	8.1A	S-100 Portrayal Model (.ppt)
TSMAD20/**DIPWG2**	8.2A	S-100 Symbol Model (.ppt)
TSMAD20/**DIPWG2**	8.3A	Portrayal Package (zip)
TSMAD20/DIPWG2	9A	Port ECDIS
TSMAD20/DIPWG2	10A	S-101 Draft 0.1 Standard
TSMAD20/DIPWG2	10B	S-57 to S-101 Crosswalk
TSMAD20/DIPWG2	10C	Outcomes of S-101 Stakeholders Meeting
TSMAD20/DIPWG2	11.1A	S-101 Catalogue File and Discovery Metadata
TSMAD20/DIPWG2	11.2A	S-101 Support File Formats
TSMAD20/DIPWG2	11.2B	Formatting and Management of ENC Support Files
TSMAD20/DIPWG2	12A	A 3-D Nautical GIS targeting Cognitive Off-loading and Decision Making
TSMAD20/DIPWG2	12B	3-D Nautical Navigation Presentation Slides
TSMAD20/**DIPWG2**	13A	CATZOC, Simplified Symbols and Colour Palettes
TSMAD20/**DIPWG2**	14A	Paper Chart and ECDIS (P/ECDIS) Chart 1
TSMAD20/**DIPWG2**	14B	INT1 to S-52 symbol Mapping
TSMAD20/**DIPWG2**	15A	Nautical Publication Symbology
TSMAD20/DIPWG2	16.1A	S-101 Scale Independent and Scale Dependent Data
TSMAD20/DIPWG2	16.1B	US position against SI and SD data [Powell]
TSMAD20/**DIPWG2**	16.2A	A Proposal for Improving & Standardising the ECDIS/ECS Pick Report [Coombes]
TSMAD20/**DIPWG2**	16.3A	S-101/S-52 Incorporation [Harmon]
TSMAD20/DIPWG2	16.4A	S-101Unknown Attributes
TSMAD20/DIPWG2	16.5A	Improving ENC Consistency through S-101 [Powell]
TSMAD20/DIPWG2	17A	Bathymetric Product Specification
TSMAD20/DIPWG2	18A	Requirements for the Integration of S-100 compliant Auxiliary Navigational Information with S-101 ENC data
TSMAD20/DIPWG2	18B	Proposed Specification for Auxiliary Information Layer Integration for use with ENC - S.10x
TSMAD20/DIPWG2	18C	Proposed Bathymetric Surface Product Specification - S.102
TSMAD20/DIPWG2	19A	Product Specification for Maritime Boundaries
TSMAD20/DIPWG2	20.1A	IALA Feb 2009 Meeting
TSMAD20/DIPWG2	20.2A	Virtual Aids to Navigation from an ENC perspective
TSMAD20/**DIPWG2**	21.1A	Foul Ground / Foul Area Encoding & Symbology
TSMAD20/**DIPWG2**	21.2A	Paper Chart Symbol Changes Considered by the CSPCWG

TSMAD20/**DIPWG2**	22A	Corrections to ECDIS Chart 1	
TSMAD20/DIPWG2	23A	Assorted S-101 Issues (the Dirty Dozen)	
TSMAD20/DIPWG2	23B	S-101 Strategic Planning Discussion (.ppt)	
TSMAD20/DIPWG2	24.1A	Encoding Bulletins	
TSMAD20/DIPWG2	24.2A	S-58 (discussion on tests 1768, 1769, 1770 and 1796)	
TSMAD20/DIPWG2	24.3A	S-100 Generic Product Specification Template	
TSMAD20/DIPWG2	INF1	Draft S101 Data Classification and Encoding Guide (.zip)	
TSMAD20/DIPWG2	INF2	Report from the 2nd Tidal and Water Level Working Group (TWLWG) (Stavanger, Norway, 27 - 29 April 2010)	

TSMAD 20 / DIPWG 2 - AGENDA

Document Number		Document Title
M O N D A Y		
TSMAD20/DIPWG2	0	Logistics for Rostock Meeting
1. Opening and Administrative Arrangements [Jonas / Greenslade / Harmon]		
TSMAD20/DIPWG2	1A	List of Documents
TSMAD20/DIPWG2	1B	List of Participants
2. Approval of Joint Agenda [Greenslade / Harmon]		
TSMAD20/DIPWG2	2A	Joint Agenda for TSMAD20 and DIPWG2
3. Matters Arising from TSMAD-19 (Sydney) [Greenslade]		
TSMAD20/DIPWG2	3A	Minutes of TSMAD19, Sydney, 2009
TSMAD20/DIPWG2	3B	Status of Actions from TSMAD19
4. Matters Arising from DIPWG-1 (Ottawa) [Harmon]		
TSMAD20/**DIPWG2**	4A	Minutes of DIPWG1, Ottawa, 2010
TSMAD20/**DIPWG2**	4.1A	Possible alternative colors (other than orange) for Mariner Objects
TSMAD20/**DIPWG2**	4B	Status of Actions from DIPWG1
5. Actions Arising from HSSC-1 (Singapore) [Greenslade / Harmon]		
TSMAD20/DIPWG2	5A	HSSC Actions for TSMAD (Verbal Report)
TSMAD20/**DIPWG2**	5B	HSSC Actions for DIPWG
6. Activities of Other Working Group [Greenslade]		
TSMAD20/DIPWG2	6.1A	Report on CSPCWG activities [Wootton] (additional discussion will also be covered by item 21.2A)
TSMAD20/DIPWG2	6.2A	Report on EUWG activities [Déniel]
TSMAD20/DIPWG2	6.3A	Report on DQWG activities [Greenslade] (Verbal Report)
7. Activities of Other Organizations [Greenslade]		
TSMAD20/DIPWG2	7.1A	IALA Feb 2009 Meeting (to be addressed by item 20.1A)
TSMAD20/DIPWG2	7.2A	ISO 19117 [Greenslade] (Verbal Report)
TSMAD20/DIPWG2	7.3A	IEC
T U E S D A Y		
8. Portrayal Register [Le Bihan / Astle]		
TSMAD20/**DIPWG2**	8.1A	S-100 Portrayal Model
TSMAD20/**DIPWG2**	8.2A	S-100 Symbol Model
TSMAD20/**DIPWG2**	8.3A	Portrayal Package (.zip)
9. Port ECDIS Presentation and Demonstration [Seefeldt]		
TSMAD20/DIPWG2	9A	Port ECDIS
10. S-101 Stakeholders Meeting (March 2010 – Taunton) [Powell]		
TSMAD20/DIPWG2	10A	S-101 Draft 0.1 Standard
TSMAD20/DIPWG2	10B	S-57 to S-101 Crosswalk
TSMAD20/DIPWG2	10C	Outcomes on S-101 Stakeholders Meeting
11. S-101 Development Topics – Session 1 [Greenslade / Powell]		
TSMAD20/DIPWG2	11.1A	S-101 Catalogue File and Discovery Metadata
TSMAD20/DIPWG2	11.2A	S-101 Support File Formats
TSMAD20/DIPWG2	11.2B	Formatting and Management of ENC Support Files
W E D N E S D A Y		
12. 3-D Nautical [Porathe]		
TSMAD20/DIPWG2	12A	A 3-D Nautical GIS targeting Cognitive Off-loading and Decision Making
TSMAD20/DIPWG2	12B	3-D Nautical Navigation Presentation Slides
13. U.S. User Survey Results [Powell]		
TSMAD20/**DIPWG2**	13A	CATZOC, Simplified Symbols and Colour Palettes
14. Paper Chart and ECDIS Chart 1 [Harmon]		
TSMAD20/**DIPWG2**	14A	Paper Chart and ECDIS (P/ECDIS) Chart 1

TSMAD20/**DIPWG2**	14B	INT1 to S-52 symbol Mapping

15. Nautical Information Portrayal [Harmon]		
TSMAD20/**DIPWG2**	15A	Nautical Publication Symbology

16. S-101 Development Topics – Session 2 [Greenslade / Powell]		
TSMAD20/DIPWG2	16.1A	S-101 Scale Independent and Scale Dependent Data
TSMAD20/DIPWG2	16.1B	US position against SI and SD data [Powell]
TSMAD20/**DIPWG2**	16.2A	A Proposal for Improving & Standardising the ECDIS/ECS Pick Report [Coombes]
TSMAD20/**DIPWG2**	16.3A	S-101/S-52 Incorporation [Harmon]
TSMAD20/DIPWG2	16.4A	S-101 Unknown Attributes [Powell]
TSMAD20/DIPWG2	16.5A	S-101 Consistency [Powell]

T H U R S D A Y		

17. S-102 Bathymetric Product Specification		
TSMAD20/DIPWG2	17A	Bathymetric Product Specification [Ladner]

18. S-102 Integration of Multiple Layers of S-100 compliant Auxiliary Navigational Information [Canada]		
TSMAD20/DIPWG2	18A	Requirements for the Integration of S-100 compliant Auxiliary Navigational Information with S-101 ENC data
TSMAD20/DIPWG2	18B	Proposed Specification for Auxiliary Information Layer Integration for use with ENC - S.10x
TSMAD20/DIPWG2	18C	Proposed Bathymetric Surface Product Specification - S.102

19. UN-DOALOS - Product Specification for Maritime Boundaries		
TSMAD20/DIPWG2	19A	Product Specification for Maritime Boundaries

20. Virtual Aids to Navigation [Greenslade]		
TSMAD20/DIPWG2	20.1A	IALA Feb 2009 Meeting
TSMAD20/DIPWG2	20.2A	Virtual Aids to Navigation from an ENC perspective [Richardson]

21. Paper Chart Symbology Impacts on ECDIS [Harmon]		
TSMAD20/**DIPWG2**	21.1A	Foul Ground / Foul Area Encoding & Symbology
TSMAD20/**DIPWG2**	21.2A	Paper Chart Symbol Changes Considered by the CSPCWG

22. Corrections to ECDIS Chart 1 [Jonas]		
TSMAD20/**DIPWG2**	22A	Corrections to ECDIS Chart 1

23. S-101 Development Topics – Session 3 [Powell]		
TSMAD20/DIPWG2	23A	Assorted S-101 Issues (the Dirty Dozen)
TSMAD20/DIPWG2	23B	S-101 Strategic Planning Discussion

F R I D A Y		

24. TSMAD Sub-WG Activities [Greenslade]		
TSMAD20/DIPWG2	24.1A	Encoding Bulletins [Wootton]
TSMAD20/DIPWG2	24.1A	EXPSOU=2 and Dredged Areas
TSMAD20/DIPWG2	24.1B	Management of Encoding Bulletins [Déniel]
TSMAD20/DIPWG2	24.2A	S-58 (discussion on tests 1768, 1769, 1770 and 1796)
TSMAD20/DIPWG2	24.3A	S-100 Generic Product Specification Template

25. Any Other Business		

26. Review of Meeting Actions [Greenslade / Harmon]		
27. Date and Venue of Next Meeting		
28. Close of Meeting		

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LIST OF ACTION ITEMS FROM THE MEETING

Agenda Item	Action By	Action	Status
7.3A	JP	There is a requirement to review the relevant IEC standards that may affect S-101.	
9A	TP	TP to include the PECDIS datasets on the TSMAD20/DIPWG2 document index page.	Done
10A	TSMAD Members	TSMAD members to review the Draft S-101 document, and provide feedback to JP by mid-June 2010.	
11.1A	MB TR	A data catalogue product specification needs to be developed. Jeppesen offered to submit a paper to HSSC2 proposing that this be done by the Data Supply Chain Certification WG. Draft PS to be developed and distributed within the group	
11.1A	BG	Base TIFF format to be included in the list of picture formats in S-100. The standard maintenance form is to be used for this.	
11.2A	RF	RF to provide information concerning the optimal size and resolution for TIFF files used for picture representation (PICREP). This is for inclusion in S-101.	
16.5A	JW	Include guidance on contour intervals (depth areas intervals) from S-4, in the S-101 Encoding Guide.	
16.5A	JP RF	It was agreed that further research was needed on the how breaks between source data could be used in ENCs. JP to include a question on this in the next NOAA user feedback questionnaire.	
16.5A	TR	UKHO to investigate and report on the conditions under which the encoding of M_QUAL may not be mandatory (e.g. for small scale cells). This should also include a report on how CATZOCs that are used in small scales ENCs, can be rationalized.	
20.2A	JW	Encoding AIS on aids to navigation (e.g. on buoys). EB 17 needs to be extended to explain that TSMAD recommends that AIS on aids to navigation should not be encoded in S-57 ENCs (other than using INFORM).	
20.2A	UKHO	Sub group to determine how permanent virtual AtoNs will be encoded and displayed in S-57 and draft a proposal for the next TSMAD meeting. This needs to be done for both point and areas AtoNs.	
18A	TSMAD/ WL	TSMAD members to circulate S-102 within their home office experts requesting comments to be sent to WL by end of August 2010. Results to be submitted to the TSMAD 21 meeting (six weeks before the meeting).	
23A	TSMAD/ JP	TSMAD members are to review the list of assorted S-101 issues (in paper 23A) and send all comments, correction or changes to JP by email before the end of July.	
24.1A	JLD	TSMAD to present a paper to HSSC2 on the process to be followed for EBs This is to include a recommendation for dealing with safety related issues which should not be included in EBs.	
24.2A	S-58 Sub	The S-58 sub working group is to make the changes as agreed	

	WG	during the TSMAD20 sub-WG meeting. The new edition of S-58 is to be submitted to the HSSC2 meeting for approval (before 7 September 2010).	
25	BG/JW	Develop a TSMAD paper for presentation at HSSC2 recommending that the S-57 UOC be "un-frozen" to allow for information contained in other documents to be incorporated.	