27th Transfer Standard Maintenance and Applications Development Working Group

International Hydrographic Bureau, Monaco (2-6 December 2013)

Minutes

TSMAD
Chairman: Barrie Greenslade (UKHO)
Vice Chairman: Julia Powell (NOAA)
Secretary: Anthony Pharaoh (IHB)

Annexes:

Annex A – List of Documents
Annex B – Agenda
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1. Opening and Administrative Arrangements

On behalf of the Directing Committee, IHO Director Gilles Bessero noted that he was happy to welcome all participants to the IHB in Monaco for the 27th Meeting of TSMAD. He reminded members of the importance of TSMAD work under the aegis of HSSC as one of the most significant building block of the technical programme. The technical programme of the IHO is to be taken more seriously than ever as the mechanism which ensures that end users can access adequate hydrographic services, including adequate standards.

He noted that, in the paper world, if something was inadequate or worse if something went wrong, the international mariner would blame the Admiralty, in most cases meaning the UKHO, regardless of who/what were involved in the obscure process which delivered charts and updates on the bridge.

In the digital world, if something is inadequate or worse if something goes wrong the tendency is more and more to blame the IHO collectively. So we need to be sure that we deliver on time what we announce and that what we deliver is reliable.

"We" means you and me or more precisely Member States, the IHO Secretariat and our partners from other organizations and industry. The IHO Secretariat, that's 20 people in all, and therefore the contribution of Member States is essential both through direct and active participation in the organs of the organization, and through the budget of the organization. "We" means ensuring proper coordination with the various stakeholders, including the industry and in that respect he acknowledged and welcomed their active participation the TSMAD group.

He reminded the meeting that HSSC-5 which took place in November had set directions and objectives. He requested the meeting to ensure, in its deliberations to deliver on time, whether it be new editions of current standards (S-58, S-64) or new S-100 standards.

He wished the all participants a good and productive meeting.

2. Approval of the Agenda.

The joint agenda (document 2A) was approved by the meeting with the exception. BG reported that in addition to the main TSMAD meeting, there would be two parallel meetings during the week. The S-64 sub-working group will work to finalize the new edition Ed. 3.0.0, and the GML sub-working group are tasked to finalize S-100 Part 10B dealing with GML Encoding.

3. Minutes and List of action items from TSMAD-26 (Silver Spring, USA)

The minutes of the 26th TSMAD meeting (TSMAD27-3) which took place in Silver Spring, USA (10 to 14 June 2013) were reviewed and approved without comment.

3.1 The list of actions from the 26th TSMAD meeting (TSMAD27-3B) were reviewed and the status of actions are recorded below.

No	Action	Action For	Status
1	Develop an S-100 product specification template document, for gridded coverage data. This is required for the TWLWG and the SCWG work. Note: see paper TSMAD27 4.3.9	JLP	Ongoing
2	Develop a table showing the status of relevant ISO/TC211 standards, and include it on the TSMAD web site.	TR/TP	Completed Closed
6	DIPWG S-101 portrayal rules Sub-WG to be created in order to develop revised rules for changes to the lookup tables that have occurred as a result of changes in the S-101 DCEG. (Paper 4.4.6 to be dealt with under S-101 work)	CH Lead, TR/JW/JLP/ HA/MS	Ongoing
7	TSMAD drafting group are to.fix S-52 clauses 12.1.5 and 13.3 relating to linear depth areas, obstructions over un-surveyed areas and transparent foul areas. The group should correct all sample picture/plots in S-64 and also add clear test cases. The group should correct the tables in clause 3.3 and clause 3.3 of the S-57 Product specification. An ad-hoc expert review panel should be set up to verify the changes before the document is published. *Note: Complete apart from the s-64 work which will take place during the meeting.*	JW/RF/TR	Completed Closed. (See note)
8	"PresLib 4 finalization Sub-WG" to determine what can be done about symbols being cut off due to overlapping cells and improving the line weight of the tower symbols so that they display more prominently. *Note: To be dealt with at the joint TSMAD28/DIPWG6 meeting.*	PresLib WG	Ongoing (See note)
11	Prepare a paper proposing how the S-58 validations checks should be restructured for S-101 requirements. For submission to TSMAD 27. *Note: RF needs to take into account which tests can be removed. To report by the next TSMAD28/DIPWG6 meeting.*	RF	Ongoing (See note)
12	Resubmit the proposal to remove multiple dataCoverages within a dataset (see paper 10.4A) and develop test datasets and examples for different scenario. TSMAD28/DIPWG6 *Note: To be dealt with under paper TSMAD27-4.4.7*	JLP/LP/RF/TR	Ongoing (See note)
13	Develop a guidance document describing the updating process for feature and portrayal catalogues – based on option 2 in paper 10.5A. This is for inclusion in the S-101 product specification's implementation guide.	JLP/TR	Completed (See note)

	Note: Dealt with under paper 4.4.8		
14	S-52 Sub-WG to develop the necessary logic for new attributes "minimum surrounding depth" and "default clearance depth" required to remove portrayal CSPs for wrecks, underwater rocks and obstructions. *Note: DIPWG action – to be carried over to the next joint meeting.*	TR/HA	Ongoing (See note)
15	Develop a paper on the development of new feature "Buoy, Non-navigational" - for discussion at the next CSPCWG meeting, and report on the discussion to the TSMAD27 meeting. *Note: JW reported that this action is still in hand and will be reported on as an information paper.*	JW	Ongoing (See note)
16	Ensure that an S-101 feature catalogue is available for testing the portrayal catalogue. To be available by September 2013. *Note: BG noted that this action had been overtaken by events.*	TR	Closed
17	Arrange the workshop, to discuss and further develop the test strategy. (TR/JP) *Note: JP reported that this had been completed.*	TR/JP	Completed Closed
18	Include a link to the S-100 "Maintenance – Change Proposal" form on the TSMAD and S-100 web pages.	TP	Completed Closed
19	Revise the S-10n product specification template to make it less ENC specific. *Note: The item has been completed - see paper 4.3.9*	JLP	Completed Closed (See note)
20	Solicit feedback and comments on the S-100 GML profile from home offices (document 11.3A). Consult with Snowflake Software to determine how to cater for spatial attributes, associations, aggregations and compositions, in the S-100 profile. *Note: BG noted that this item would be be dealt with under the GML breakout meeting.*	All/TR	Completed (See note)
21	Request 19115 metadata register database from Mitre. (JP/BG)	JLP and BG	Ongoing
22	Develop a paper (and change proposal form) outlining what additional geometric types are required in S-100. The paper is to be based on options B and E of paper 11.7B.	RM	Completed Closed
23	Prepare a change proposal form "with the necessary text to include codelists S-100" for the next TSMAD meeting. *Note: Completed – see paper TSMAD27 4.3.10*	RM	Completed Closed (See note)
24	Develop a proposal and appropriate text to include the DSA method of integrity check for use in S-100 / S-101.	DPSWG chair	Ongoing
25	Australia (on behalf of Geosciences Australia) to submit the "Maritime Boundary Exchange Product Specification" (paper 11.10A) to the HSSC5 for consideration as an S-10n product specification.	AHS/JW	Completed

			Closed
26	Distribute latest draft edition of S-58 for review to TSMAD members, and prepare for submission to HSSC5.	RF	Completed Closed
27	To reflect the comments reviewed into S-58 5.0.0 and work with production software manufacturers to review further and circulate a final version for review by TSMAD before submission to HSSC5.	TR/RF	Completed Closed
28	To coordinate the completion of S-64 3.0.0 reflecting the finalised S-52 Preslib 4.0 and the latest IEC 61174 draft. For endorsement by HSSC5 and with approval of the final version by member states during early 2014.	TR	Ongoing
29	Prepare a finalised S-57 supplement for submission to HSSC5 reflecting the comments from TSMAD and including the changes regarding linear depth areas.	TR	Completed Closed
30	Produce a new FAQ providing guidance on the use of linear depth areas.	JW	Ongoing
31	Raise the issue concerning “Radio wavelength” (12.4A) with the CSPCWG and provide a report on the discussion to the TSMAD 27 meeting. JW reported that a paper had been submitted to CSPCWG 10	JW	Completed Closed
32	Provide additional guidance on "Masking" for inclusion in the next version of the UOC.	RF/TR/JW	Completed Closed
33	Prepare a new version of the UOC. To be distributed for approval by the end of August.	JW/BG	Completed Closed
34	Develop new S-58 tests for isolated dangers that are coincident with DEPARE and DRGARE limits.	RF	Completed Closed
35	Add a new test to S-58 for area small craft facilities	RF	Completed Closed
36	Develop a proposal to add the S-58 NATSUR/NATQUA table in the UOC (at paragraph 17.8). For discussion at TSMAD27. (See paper TSMAD27 4.8.1)	JLP	Completed Closed
37	Configure the S-64 polar test dataset into 4 cell such that, the cells meet at the pole but do not cover it. To be completed by 1 August 2013.	RF/BG	Completed Closed
38	Inform the HSSC5 that TSMAD Work Item A9 concerning auxiliary navigational layers, has been overtaken by events and should be removed from the TSMAD work plan. *Note: To be discussed during the meeting.*	BG	Ongoing
39	Refer the issue of defining a scheme for assigning product specification identifiers, for S-100 based product specifications, to the HSSC Chairman. Discuss this issue, at the IALA meeting (following TSMAD26) and report to TSMAD27. *Note: See paper HSSC5-5.1E*	BG/TR/EM	Completed Closed (See note)
40	Review the Encoding Bulletin wiring diagram and report any comments to BG. *Note: Discussed at HSSC5. Will be added to TSMAD ToTs*	All/BG	Closed (See note)

41	Amend test 2000 with reference to the changes to allowable light colours	RF	Completed Closed
42	Prepare the final model and text for the new temporal model intended to make provision **truncated date information**. (For TSMAD26). *Note: See paper TSMAD27 4.3.6*	TR	Completed Closed (See note)

4. Matters Arising

4.1.1 From HSSC5 (BG)

BG reported on several issues that were discussed at the HSSC5 meeting and which had resulted in actions for the TSMADWG.

Concerning the report on the status of T&P ENC updates, he reported that HSSC5 agreed that the current status of promulgation of T&P ENC updates should be improved and proposed that MS that do not plan to align their ENC and paper chart T&P update regimes should to be invited to reconsider their position and report on any need for assistance to the IHB. *(See action 1)*

BG noted that TSMAD needs to develop a paper for the next HSSC meeting dealing with NEWOBJ.

BG reported that the HSSC5 meeting had; adopted the proposed amendments to the ToR of TSMAD and DIWPG WGs; approved the draft edition 4.0.0 of S-57 Appendix B1 Annex A Use of the Object Catalogue for ENC (UOC); endorsed the draft S-57 Supplement No 3; endorsed the draft edition 5.0.0 of S-58 Recommended ENC Validation Checks (including the minor amendments and subject the TSMAD 27 WG approval) and agreed that the draft edition 3.0.0 of S-64 IHO Test Data Sets for ECDIS should be finalized during the TSMAD 27 meeting. As a result of this, the following actions were requested of the TSMAD WG *(See actions 2 – 14)*;

- TSMAD to finalize the draft edition 3.0.0 of S-64 at TSMAD-27.
- TSMAD Chair to provide IHB with a clean copy of the draft edition 3.0.0 of S-64 for posting on the IHO website as a familiarization version.
- TSMAD to finalize the draft edition 5.0.0 of S-58 at TSMAD27, in accordance with the guidance provided at HSSC-5.
- TSMAD, in liaison with DIPWG, to provide the IHB with a statement of requirements for developing a feature catalogue builder.
- TSMAD Chair to incorporate in the draft S-101 Value Added Roadmap the comments expressed during HSSC-5.
- TSMAD chair to include an additional item in the TSMAD work plan to review the S-101 Value Added Roadmap annually.
- TSMAD chair to include an additional item in the TSMAD work plan to review the S-100 Master Plan annually. Needs to be completed and will be reviewed annually at HSSC.
- TSMAD chair to consider the impact of the recommendations contained in HSSC5-05.1F (S-101 impact study) on the S-101 Value Added Roadmap. The paper submitted to HSSC5 is to be completed with some modifications.
- TSMAD to include the KHOA S-101 test bed program as part of the TSMAD S-101 test plan strategy.
- TSMAD to assist the TWLWG in the development of a tidal product specification for navigational surface and for tidal data transfer; that could be used for generating dynamic water levels and navigational

surfaces in ECDIS. BG noted that this was one of the areas that fits with projects being undertaken with under keel clearance projects being undertaken by the East Asia Hydrographic Commission.

- TSMAD to consider the impact of introducing Service Lifecycle Management (SLM) in the S-101 Roadmap and S-100 Master Plan. To be discussed at the next meeting.

BG reported on discussions with the International Association of Oil & Gas Producers (OGP) and note that there is a need for TSMAD to liaising with them. He noted that the IHO had responded to a request from OGP for information about the role and type of data the IHO could provide in the event of oil spills. He also reported that there were discussion about the restructuring of the HSSC working groups and more information will be provided when it is available.

4.1.2 IHO TSMAD Work Programme.

BG reported on the TSMAD work programme items:

- *A.1 Develop S-100 Edition 2.0.0.* BG reported that as a result of work being done on product specifications by both IHO and external organizations, a number of enhancements had been identified for inclusion in the next edition of S-100. This will require a new edition of the standard being produced.
- *A.2 Develop a template Product Specification for Marine Information Overlays (MIO).* BG reported that this is ongoing.
- *A.3 Develop 1st draft of S-101 ENC product specification.* BG reported that this and the DCEG document is near completion.
- *A.4 Investigate a suitable grid referencing system for S-100* . This item has been removed from the work programme.
- *A.5 Investigate expanding S-64 to improve its usefulness for both OEMs and type approval authorities*. BG reported that this item should be completed during the course of the (TSMAD27) meeting, or shortly thereafter.
- *A.6 Investigate how the new version of S-58 can be used to implement a minimum validation standard for all ENCs.* Ongoing.
- *A.7 Liaise with Non-IHO Constituents, e.g. Inland ECDIS, Marine Navigation Industry, DGIWG, AML, WMO Ice, and GIS Industry*. BG reported that this item was ongoing, however he noted that TR will report on DGIWG activities and FM is to report on IEHG activities during the course of the meeting.
- *A.8 Study the possibility to encode information features as New Objects (see S-57 supplement) to avoid caution area objects (CNTARE) in some cases, e.g. to encode T&Ps."* BG reported that this item was ongoing, and noted that IC-ENC were working on the issue.
- *B.1 Keep S-58 Recommended Validation Checks up to date*. Ongoing (JW).
- *C.1 Support FAQ and Encoding Bulletins*. Ongoing (JW).

4.2 Reports of Activities of Other Working Groups

4.2.1 SNPWG Report

EM reported that the SNPWG working group had held its 16th meeting in Silver Spring. SNPWG have produced several test data sets and are working on the production of a test dataset for radio signals. He noted that SNPWG require the feature catalogue builder to be completed in order to continue their work. The working group also requested the registry sandbox to be completed. The SNPWG also has a requirement for code lists and unique identifiers, and are also waiting for feedback from the Data Quality WG for assistance with quality parameters. It is proposed to have the next SNPWG meeting in Rostock during the week starting 7 April 2014.

4.2.2 CSPCWG Report

JW reported that since the last CSPCWG meeting a new edition of S-4 had been produced. Part 500 of the publication needs to be completed and this work is being undertaken by correspondence. The next CSPCWG meeting is scheduled to take place in Wellington, New Zealand in January 2014.

4.2.3 DQWG Report

EM reported that a meeting of the DQWG had taken place at the University of New Hampshire. They have established a sub WG to investigate how data quality can best be portrayed on the screen – they have produced a paper on this. GB noted that there will be a joint TSMAD / DQWG meeting in Wollongong in March 2014.

4.2.4 DIPWG Report

No report.

4.2.5 TWLWG Report

No reported.

4.2.6 DGIWG Report

TR reported that DGIWG is a multi-national body responsible for developing geospatial standards for the defence organizations of member states. Similar to IHO these standards are based on the ISO TC211 series of standards and also makes use of OGC specifications. He noted that both IHO and DGIWG are developing standards in the specific areas of portrayal registers based on ISO 19117, Metadata Registers and Coordinate Reference System (CRS) and Units of Measure Registers (UOM).

TM reminded the meeting that both DGIWG and the IHO have a formal basis for cooperation and proposed that there is a need for greater participation in each others working groups in order to achieve better harmonisation between their geospatial products.

4.2.7 IALA Report *(TSMAD27-4.2.7)*

EM reported that IALA have developed a guideline document (1087) that sets out potential solutions for the management of the IALA Domain. The development of guidance on procedures and preparation of specifications is carried out by a Data Modelling Working Group within the IALA e-Navigation Committee.

In June 2013 IALA held a workshop on developing Product Specifications and produced a guideline document on developing Product Specifications and procedures to be followed. IALA are working on a Product Specification on aids to navigation information. This is planned to be finalised in early in 2014 for submission to IHO. IALA are also looking into an inter VTS exchange format, and noted that this will require that S-100 is expanded to cater for streaming data.

TR reported there were also discussions about the best way to exchange lights information between port authorities and hydrographic offices and this might have an impact on the lights model.

4.2.8 HDWG Report

BG reported that after several unsuccessful attempts to reach agreement on definitions for Altitude, Elevation and Height, it was decided that an alternative proposal for these terms (which should be agreed by TSMAD and CSPCWG) should be developed. This must be done in time for consideration HSSC6 and further member state approval. He noted that there was not sufficient time to discuss this item during the TSMAD27 meeting given the late submission of the paper and the full meeting agenda. It was agreed that HDWG chair should be requested to discuss this at their next meeting and report to TSMAD28.

4.2.9 IEHG Report

FM reported that the 11th meeting took place in New Jersey, USA, from the 15th to 17th of October 2013. The meeting was attended by representatives from Europe, North & South America and Asia. Some of the key topics included; updates on Inland ENC activities various regions and IEHG alignment with the IHO S-100, 99, 101 standards and the GI Registry. She reported that IEHG has established a process for submitting proposals for amendments (i.e. change requests) for Inland ENC standards. She noted that the meeting carried out a review of the DCEG and it was noted that new features, attributes and enumerations in S-101 will solve some problems for inland waterways ENC production. IEHG intend to include new features such as the pumping stations and buildings above navigable water in the next edition of their Product Specification. The IEHG requests TSMAD to register the new elements included in the draft S-101 DCEG as soon as possible so that they can be included in the Inland ENC product specification.

The meeting noted the activities related to Inland ENC standards development and implementation and the IEHG request to register the new features, attributes and enumerations that have been included in the draft DCEG.

4.3 S-100

4.3.1A S-100 Status update *(TSMAD27-4.3.1A to TSMAD27-4.3.1H)*

JP reported that since the release of S-100 Edition 1.0.0 in January 2010, a number of substantive proposals had been received mainly as a result of the development of product specifications. She proposed that TSMAD should consider working on a new edition (2.0) of the publication. Eighteen proposals have been accepted with a further 10 being considered at TSMAD27. The meeting agreed that S-100 edition 2.0 should be submitted to HSSC6 for consideration - with a view to having it approved in early 2015. Australia supported the recommendation but noted that that portrayal for coverage data should be completed. *(See action 31).*

4.3.1B S-100 Part 1 Conceptual Schema Language

JP reported that the paper 4.3.1B proposed additions to the S-100 section of the Conceptual Schema Language. These include additional normative references, truncated dateTime, and intermediate DateTime types and code lists. It was agreed that these new items should be included in the next edition of the standard.

4.3.1C S-100 Part 2a – Feature Concept Dictionary Registers

JP reported that document 4.3.1C included extensions required in order to make provision for S100_CodeList and S100_TruncatedDateTime types in the feature concept dictionary. These were agreed by the meeting.

4.3.1D S-100 Part 3 – GFM and rules for application Schema

JP noted that the document includes additional entries in the References section and also makes provision for URL references to codelists in the S100_GF_AttributeType table. These were agreed by the meeting.

4.3.1E S-100 Part 5 – Feature Catalogue

JP noted that document 4.3.1.E contains extensions for S100_FC_RoleType that include arcByCenterPoint, circleByCenterPoint, offsetCurve and sectorByCenterPoint roles. These were agreed by the meeting.

4.3.1F S-100 Part 7 – Spatial Schema

JP reported that the paper 4.3.1F proposed the addition of new geometry types that include CircleByCenterPoint, S100_CircleByCenterPoint and S100_SectorByCenterPoint. After some discussion these were agreed by the meeting.

4.3.1G S-100 Part 10a ISO/IEC 8211 Encoding

JP noted that the paper 4.3.1G contains proposals for Information Association code, Attribute label/code Attribute index Parent index Attribute Instruction Attribute value and data records as well as annotations for arc, circle, offset curve and sector types. These were agreed by the meeting.

4.3.1H S-100 Part 11 – Product Specifications

JP reported that a new section "Appendix 11-C (Informative) Guidance on Codelists" had been included in the ENC product specification in order to cater for changes made to S-100.

4.3.2 S-100 Metadata Schema Update *(TSMAD27 4.3.2A)*

JP reported that this paper presents the results of a joint UK / IIC task to extend the S-100 metadata schema. EK noted that S-100 needs to impose a more stringent obligation on the existing file identifier metadata element. This is indicated in the S-100 UML diagrams that have been derived from ISO 19115 and, are enforced via an XML schema validator. IIC noted that they were of the opinion that the use of a schematron is a good way to enforce such obligations.

The meeting endorse the paper and agree that the new metadata schema's should be included in S-100 Edition 2.0. The meeting also approved the schematron provided as document 4.3.2B

4.3.3 S-100 Metadata Proposals

EK noted that IIC had looked at different metadata communities implementations of metadata, and they were of the opinion that the S-100 metadata elements needed to be made clearer. It was noted that this could be done by splitting the concepts of exchange set and catalogue metadata. It was proposed to have two diagrams describing each of these types of metadata.

The meeting approved the document (TSMAD27-4.3.3B rev 1) for inclusion in part 4a (metadata) of the next of S-100. *(See action 35).*

4.3.4A S-100 GML

BG reported that there are two general issues with the current S-100 GML Profile, which relate to a lack of direct support for loxodromic interpolation (rhumb lines) and an incongruous implementation of the ISO 19107 geometry schemas. These issues relate to the GML specification (19136) and as the S-100 GML specification inherits from this specification, it also suffers from the same issues.

Report back from the GML sub WG. BG noted that the group worked on the two issues reported in papers 4.6A and B. Both issues were accepted with some minor changes and will be completed by the S-100 sub WG for inclusion in the next edition.

The proposal on code lists proposal was accepted.

Concerning the "Spatial types" proposal, it was was agreed to accept the inclusion of the elipse. The arc circle by centre type is not in 19107 and was not accepted. "The Offset line was not accepted as it was considered that portrayal for this would be difficult to implement.

BG reported that good progress with the GML work and it was anticipated to have a base schema and an S-100 schema completed. He noted that there might be problem with loxadromes however it was decided to provide some advice in the product specification. Work had commenced on the development of a hydro GML and it was hoped to have a draft schemas completed by the end on the meeting.

4.3.4B S-100 GML Profile Analysis

BG reported that the S-101 GML review was based on work carried out to convert the XML sample nautical publications datasets for marine protected areas into GML. He noted that there were a few gaps in the current 19136 GML profile, and proposed that the optimal approach may be to retain the S-100 GML profile as conforming to the ISO 19136 rules as much as possible, and then resolve ambiguities and fill in gaps for the S-100 constructs that are common to all S-100 application schemas.

The meeting noted the paper as an important input to the development of the S-100 GML profile.

4.3.5A S-100 ISO Tracker

No discussion.

4.3.6A Temporal Model in S-100 – Change Proposal for the inclusion of a Temporal Model within S100

The proposal form was introduced by JP and there was no further discussion.

4.3.6B Inclusion of a Temporal Model within S-100

TR reported that S-100 currently defines a number of specific attribute types to carry date time information. It also references ISO 8601:2004 which defines formats for date time information, but it does not make provision for truncated date time types which are used in S-57 and was supported in older version of ISO 8601. The proposed temporal model (included at annex A) requires that a temporal profile of 19108 should be added to S-100.

The meeting agree that there is a requirement for truncated date time information within S-100, and approved the inclusion of the proposed temporal model within S-100 to reflect this.

4.3.7A S-100 Part 3 GFM Annex A

TR reported that S-100 Edition 1 Part 3 currently makes reference to an unspecified Annexe in sections 3-4.2 and 3-5.2.3 however Part 3 does not have any Annexes. He proposed that during the development of S-100 Part 3 the intention was to document the full GFM or make it available separately as a package contained in Annex A to Part 3. He proposed that S-100 should include UML models at Annex B with packages differentiated by namespaces.

He also pointed out that S-100 12-2 also refers to an Annex A which should be Appendix 12- A. The meeting agreed that S-100 section 12-2 paragraph 4 sentence 2 should be amended from; *"All proposals shall be submitted using the S-100 maintenance proposal form in Annex A"* to *"All proposals shall be submitted using the S-100 maintenance proposal form at Appendix 12-A, a digital version is also provided on the IHO website."*

4.3.8A S-100 Change Proposal Part 11 Clause 7.3

TR noted that S-100 section 11-7.3 makes two references to S-100 Part 5 which should be references to Part 6 - Coordinate Reference Systems. The meeting agreed that the references in S-100 section 11-7.3 to Part 5 should be changed to Part 6 - Coordinate Reference Systems (Editorial change).

4.3.9A S-100 Change Proposal Part 11 PS Template

JP reported that TSMAD recognised that, as organizations such as IALA and WMO started developing S-100 based product specifications a more generic Product Specification template would be required. TSMAD25 tasked the US to produce a generic product specification template that would also cater for coverage (gridded) data to supplement the example in Appendix 11B of S-100.

The template document TSMAD27-4.3.9B (which was tentatively approved by TSMAD25), was approved by the meeting. (This completed actions 1 and 9 from TSMAD26).

4.3.10A S-100 Codelists Proposal

The following change proposals were considered.

1-3 Normative References: Add ISO 19136: Geographic Information – Geography Markup Language was agreed.

- OGC 10-129r1: Geographic Information – Geography Markup Language (GML) – Extended schemas and encoding rules was agreed.
- SKOS: SKOS – Simple Knowledge Organization System – Reference. W3C Recommendation, 2009. http://www.w3.org/TR/2009/REC-skos-reference-20090818/
- ISO 25964-1: Information and documentation — Thesauri and interoperability with other vocabularies — Part 1: Thesauri for information retrieval.
- ISO 25964-2: Information and documentation — Thesauri and interoperability with other vocabularies — Part 2: Interoperability with other vocabularies was agreed.

The insertion of "1-4.7 Codelist types" and associated text was agreed by the meeting.

The proposals to add —"codelist" to the attribute data types at 2a-4.2 was agreed.

The proposals to add a sentence explaining that for a codelist the domain of values may be given by a URI identifying a — "vocabulary" to 3-5.2.8 S100_GF_AttributeType was agreed.

The proposal to add at section 3-5.3: S100_CodeListAttributeType to the UML diagram in Figure 3-2 – Attributes was agreed.

5-A Figure A-1: The proposal to add "codelist" to the enumeration in S100_CD_AttributeDataType was agreed.

New Annex 11c (Informative) – Guidance on Codelists: The proposal to add Annex A of the accompanying paper — "Codelists" as an informative annex, was agreed.

4.3.10B S-100 Codelists *(TSMAD27-4.3.10B)*

EM reported that Codelists data types are used in the ISO 191xx series of standards, in the GML specification, the INSPIRE project guidelines and other geospatial standards. Currently S-100 Edition 1.0.0 does not define a CodeList data types. Section 1-4.8.1 states that code lists are to be implemented as ordinary enumeration types however § 4a-5.1 mentions "dictionaries to implement the ISO 19115:2005 code lists". Implementations are not currently available.

He proposed that Codelist data types should be modelled in S-100 Edition 2 and proposed 4 ways that this could be done; (A) - as ordinary enumerations (as per S-100 Ed 1.0); (B) - as external Enumerations, implemented as ordinary enumerations but maintained separately and imported into feature catalogues; (C) - as enumeration with pattern, implemented as a union of an enumeration with a pattern in the format; (D) - as an external dictionary, using the GML or INSPIRE dictionary format and published as an Internet resource.

The meeting agreed that codelist types should be added to S-100 and proposed to adopt both Options C (enumeration with pattern) and Option D (external dictionary) for inclusion in S-100 Edition 2.0.

4.3.11A S-100 Spatial Types Proposal

The change proposal for spatial types was noted and will be dealt with by the S-100 sub-WG.

4.4.11B Spatial Types for S-100 Edition 2.0.0

AT noted that a TSMAD 25 action was to produce a paper recommending how additional geometries contained in ISO 19107 can be included in the next edition of S-100. The meeting noted the paper and the new spatial types for inclusion in the S-100 Spatial Schema, and the GML and ISO8211 encoding profiles.

4.3.12 More Spatial Types S-100

AT noted that the SNPWG16 meeting had identified two additional candidate spatial types and proposed that these should be considered for inclusion in S-100 Edition 2.0.0. The meeting noted that the SNPWG requirements and agreed that they should be considered for inclusion in the next edition of S-100.

4.4 S-101

4.4.1A S-101 ENC Product Specification

JP presented the current draft of the ENC product specification and requested members to review the document and provide any comments/feedback to her. She noted that items that needed attention and additional resources were highlighted in the S-101 risk register – included in paper 4.4.1.B.

4.4.1B S-101 Risk Register Update and next steps

JP informed the meeting that the purpose of the risk register is to assess the different items of work that are needed to complete S-101. Items of concern include;

- S-100 Portrayal Completed (SVG Profile Excluded). This is being done under contract.
- New features and attributes need to be added to the FCD for S-101
- One of the main issues for concern is the feature catalogue builder.
- S-101 Test Cases
- S-101 ECDIS (non-type approved) capable of testing S-101 – no test system.

4.4.1C S-101 Status and Risk Register

JP provided an update on the risk register and highlights areas of S-101 development that will need additional resources for completion. She noted that sections A to E of the register must be near to completion before testing of the standard can commence. The S-101 Implementation Guidance must also be completed before the product specification can be submitted to HSSC for approval.

The meeting decided that it was not necessary to distributed S-101 to TSMAD / DIPWG members for a final review at this stage. The meeting also agreed that that a sub-working group should be formed to begin amending the S-57 and S-58 tests for S-101.

4.4.2 S-101 Timeline

JP outlined the time schedule for S-101 development and S-100 testing. It was agreed that the DCEG did not require an additional review at this stage.

4.4.3 S-100/S-101 Test Strategy Workshop outcomes

JP reported that a two day test strategy meeting took place in Taunton to review the test strategy for S-100 and more specifically for S-101. One of the key outcomes from this strategy meeting was a revised phased approach for the test bed development work that allows for an iterative development process rather than a linear one. It is proposed that the testing should be undertaken in seven different phases.

The meeting noted the document and endorse the phased approach as the way forward for the test framework.

4.4.3A S-100/S-101 Test Strategy Workshop Actions

JP reported that as an outcome of the Taunton S-100 / S-101 working group meeting, two important items were identified for discussion.

It was noted that the S-100 GFM does not cater for conditional/mandatory situations and it was proposed that either the S-100 GFM should be changed or S-101 should be re-work to eliminate the conditional/mandatory attributes. HB noted that this does not have anything to do with the GFM. It was questioned whether S-101 should be modified to handle C/M attributes, or should the DCEG group include encoding guidance to eliminate them. It was also questioned whether there an alternative solution that can be implemented through validation? After further discussion, the meeting decided that conditional/mandatory attributes will still be needed in S-101.

Digital signatures were also discussed and it was proposed that they should be utilized as part of the authentication process in S-101. They should also be made available for other S-100 based product specifications. The meeting agreed that this should it be referred to the DPSWG. *(See action 15)*.

It was also noted that the feature and portrayal catalogue models do not have a mechanism for retiring items which may result in such items being retained in the FC and PC. BG noted that they won't necessarily be retired in a catalogue but may be retired in the registry. EK reported that the question was whether there would be one catalogue per version of a product specification / dataset, or one master catalogue for all versions of the product specifications / datasets. HA reminded the meeting that there was a discussion about minor versions of a product specification which made provision for minor changes (i.e. if a features need to be changed or removed, new versions of the catalogues should be issued). It was decided that this issue needs further discussion and consideration. *(See action 16)*.

JP informed the meeting that there was also a proposal to amend the test strategy to include some text about a requirement for a simple viewer and shore-based ECDIS tests.

The meeting also recommended that S-100 part 9 should allows for user defined symbols. And the portrayal catalogue builder should be able to import a separate .xml feature catalogue as well as record which version of a catalogue is being used. Portrayal rules for a text placement were also discussed. It was also agreed that the proposal for including CRCs and alerts and indications should be included in the portrayal catalogue.

The meeting noted the actions from the test strategy workshop.

4.4.3B KHOA _S-101 Test Beds

YB reported that KHOA are conducting S-101 ECDIS projects to assist TSMAD in the development and implementation of the S-101 ENC standard. The meeting recognized the need for conducting test bed projects for implementing of S-100 and S-101 standards and noted the benefit of conducting test beds in support of the development of S-101. The meeting also confirmed that the KHOA S-101 test bed program should be included with, and harmonized with the TSMAD S-100 Test Plan Strategy. JP thanked KHOA for their considerable effort in facilitating the test bed strategy.

4.4.4 S-100/S-101 Test Plan Review

JP noted that there are different methodologies used in the software development community in order to develop and test specifications and the Test Bed Plan was based on standard test methods. After discussion, the meeting approved the format used for the S-100 test bed framework.

The meeting approved the recommended phased approach proposed by the Test Strategy Workshop participants. JP requested TSMAD members to submit test scenarios that they deem appropriate. The meeting also agreed that test cases for phases 1 to 3 (as outlined in the test framework) should be undertaken by contract support.

4.4.4A S-100 Test Framework document

JP presented the S-100 Test Framework document and provided a brief overview of the test strategy.

4.4.4B Test Scenarios

JP introduced the spreadsheet (document 4.4.4B) containing various test scenarios and noted that there will be a test dataset for each of the scenarios. There may also be example geographic scenario to test issues such as crossing the 180 deg meridian. The document will be further developed as new scenarios are identified. TSMAD members were invited to provide scenarios that they considered relevant.

4.4.4C Test Case Template

JR reported that document at Annex C was intended as a template for test case scenarios. There was no further discussion.

4.4.5 S-57 to S-101 Feature Mapping Review

JP reported that in order to keep track of the changes in features, attributes and enumerations from S-57 to S-101, a preliminary mapping table had been produced showing items that had either been added to or removed from the DCEG. (See document TSMAD27-4.4.6A). JW proposed that there might also be a need to extend the table to include attribute mappings. It was agreed that this would also be a useful reference for hydrographic offices.

The meeting noted the S-57 to S-101 mapping table and invited the DCEG sub-working group to maintain the spreadsheet document.

4.4.6 S-101 Portrayal Look Up Table review

MS noted that SPAWAR had done the initial work for most of the new feature types and additional attributes that have been identified in the S-101 DCEG baseline. He stated that the LUT sub-WG should receive the entire review package sometime in January 2014. The meeting noted the paper and endorsed the continuation of this work.

4.4.7 Multiple Data Coverage's in S-101

SL reported that at the 26th TSMAD meeting there was a paper and discussion about restricting the use of data coverage's (i.e. should there be only one dataCoverage per dataset). The proposal was not accepted and it was noted that the DCEG should reconsider how dataCoverage should be used and portrayed in S-101.

HP proposed that if multiple coverage's are allowed, then a set of rules (as presented in the paper) will improve the current situation, however he supported the elimination of the use of multiple coverage's.

RF noted that currently S-57 states that there should not be too many multiple coverage's but ENCs still have many coverage's. It was proposed that this should be limited to no more than 3 multiple coverage's within a cell.

The meeting endorse the draft specifications for multiple dataCoverages in S-101 and agreed to their inclusion in S-101 but the maximum number of data dataCoverages allowed in a cell should be limited to 3. It was also proposed to replace the concept of overview, transit … with the concept of cell max and min scale range.

KI proposed that there also needs to be some test scenarios that check the dataCoverage rules. *(See action 17).*

4.4.8 S-101 Version Control

JP reported that there needs to be a better understanding of how new editions of a products specification will influence associated documents such as the encoding guide (and visa-versa). This also needs to take account of associated catalogues. Changes to product specifications will be made as "new editions," "revisions" or "clarifications" and each will have a different impact for users of the specification, and might require different actions for associated documents of files. The meeting agreed in principal to the rules proposed in the paper.

4.5 S-101 Encoding Guide Working Group

4.5.1 DCEG Review Comments

JW provided a brief report on what had transpired since the TSMAD 26 meeting and noted that the document had been distributed for a full TSMAD document review. The comments and actions from the DCEG meeting held in Silver Spring and had also been included in the latest document however comments provided by France, Jeppesen and the UKHO still need to be reviewed for inclusion. *(See actions 18 and 19).*

4.5.2A Changes to Sections 3.1, 3.5 and 3.8 of the S101 DCEG

SL noted that the paper 4.5.2.A was produced in response to a DQWG action. The DQWG recommended that TSMAD reconsider adopting the changes to several sections of the DCEG document.

JW noted that all the attributes that require changes from accuracy to uncertainty (as recommended in the paper) have been included in the DCEG. He noted that the "overlap proposal" had not been included as this needed the agreement of the full group.

The meeting noted the paper and agreed that it should be accepted as the baseline content for further development and also for the developing the portrayal of quality information. *(See action 20).*

It was noted that the French proposal suggesting that Lake, River, Canal, Lock Basin and Dock area should be Group 1 features, will avoid the need for creating un-surveyed Area or Land Area underneath these features. This will also avoid the need to carry out abnormal encoding, such as point LNDARE within area LNDARE when encoding an islet situated in a river, or a jetty in a LNDARE. *(See actions 21 to 24)*.

4.5.2B Lights Modeling in S-101

JW reported that there are some issues relating to the re-modelling of lights in S-101. She noted that there are different approaches that can be taken, however each has advantages and disadvantages. She considered that a wider TSMAD discussion on the topic was required in order to determine the "best" solution.

It was proposed to further develop this in a breakout group during the meeting and the results of the work should be considered as the "baseline" from which S-101 test beds are developed in regard to lights.

JW reported on the outcomes of the breakout group and noted that a lot of modelling had been done to; reduce the complexity of rules for encoding; devise more logical and efficient models; remove the requirement to encode multiple lights to define a single physical light (e.g. sectored lights) and to reduce/eliminate S-52 conditional symbology procedures.

TR reported that IALA are also looking at modelling light information and this must also be taken into consideration. *(See action 25).*

4.5.3 Additional DCEG Comments

JW noted that the additional DCEG comments provided by Jeppesen had been included with the consolidated comments document referenced in paper 4.5.1.

4.5.4 Additional DCEG Comments

The DCEG comments provided by the UKHO were reviewed and included with the consolidated document.

4.6 New S-101 Features

4.6.1 No agenda item.

4.7 S-58

4.7.1 S-58 Test Dataset *(no paper)*

RF noted that the new edition of S-58 had been approved by HSSC5 subject to TSMAD27 approving a few minor editorial changes that had been identified. The meeting approved the proposed changes and invited the IHB to circulate the new edition of S-58 to MS for approval. *(See action 26).*

4.8 S-57

4.8.1A Add in S-58 NATSUR/NATQUA table into the UOC *(TSMAD27-4.8.1A)*

SL proposed that the table from the S-58 Logical Consistency check 1780 should be added to the Use of the Object Catalogue (Section 7.1) as an aid to encoding seabed objects. This will facilitate the correct encoding of NATSUR and the NATQUA. JW proposed that they did not see any benefit in including the table however he proposed that "attribute value" and "name" fields should be added to the table.

The meeting noted the paper in principle. US was requested to reformat the table to include the attribute value and names. JW is to add the revised table to the next edition of the UOC. *(See action 27).*

4.8.1B Proposals to amend the UOC *(TSMAD27-4.8.1B)*

JW noted that as a result of the discussions and reviews undertaken during the development of UOC Edition 4.0.0, some issues were raised that require TSMAD discussion and possible action of the S-57 Maintenance Sub-Working Group, and therefore they could not be considered for inclusion in UOC Edition 4.0.0. These included;

Dates. The meeting was requested to consider adding new guidance at clause 2.1.5 similar to the following: *Where the temporal attributes DATEND, DATSTA, PEREND or PERSTA have been encoded for any …* MH noted that this proposal will cause an S-58 error. An amended version of the paragraph was produced and accepted for inclusion in the UOC.

TECSOU on M_QUAL. JW noted that the DQWG proposed that the "Remarks" bullets at UOC clause 2.2.3.1 related to TECSOU should be removed. He proposed that TECSOU should be prohibited for M_QUAL, but allowed for M_SREL, as TECSOU is an attribute that is more directly related to individual surveys than overall data quality. The meeting agreed with the proposal.

Gates. JW proposed that changes to the UOC should be made so as to reflect the approved amendments to S-58 check 1580. The meeting agreed to the proposed change.

Wrecks. JW proposed that the value of WATLEV for a wreck having the mast only visible at high water be amended to 1 (partially submerged at high water). The characteristics of the mast should not be encoded independently of the wreck. He noted that it is not considered that WATLEV = 2 be removed from wreck showing

any part of hull or superstructure as a wreck may be above the high water line. There was general agreement with the proposal to split out the encoding. *(See action 28).*

Areas to be avoided. The recommendation of the S-58 Sub-Working Group is that the new guidance be included in the UOC at clause 10.2.7 on areas to be avoided. It was also agreed that S-58 check 2000 should to be amended to reflect this change. *(See action 29).*

Radar conspicuous features: Concerning the proposal to revise the guidance at clause 12.12 in relation to the encoding of RADRFL on point or area objects not having CONRAD as an allowable attribute, the meeting agreed that the first option *(where CONRAD is an allowable attribute. Where CONRAD is not an allowable attribute for the object class, a RADRFL object having CONRAD = 3 (radar conspicuous (has radar reflector)) must be encoded within or coincident with the object…)* should be moved to the UOC. It was agreed that the check should be implemented however no decision was made as to when it should be implemented. It was proposed to add a new bullet point to paragraph 10.2.7

4.8.2 S-57 UOC Software of KHOA *(TSMAD27-4.8.2)*

YB noted that when producing ENCs, the Object Catalogue, Attribute Catalogue, and the "Use of Object Catalogue" (UOC)) are key IHO S-57 documents that should be referred to when creating ENC objects. This process is greatly facilitated by the S-57 Object Catalogues on the SevenCS and CARIS websites.

There are other standards including S-4, S-57, S-58, and S-56 that also have cross-references and he noted that KHOA developed an S-57 UOC software that references other relevant documents that will be useful to support the production of ENC. KHOA will use this software not only for the production of ENC, but also for ENC training. This software will be made available to IHO MS and other ENC producers through the KHOA website. KHOA plans to improve and stabilize the S-57 UOC software on a continuous basis.

The meeting noted the benefit of the KHOA software application to assists in the process and training for ENC production and training, and thanked KHOA for the offer to maintain the software. It was agreed that TSMAD members should inform KHOA of any ideas for further enhancements in order that it better meets the needs of other ENC producers. SO noted that the software application will be made available free from the IHO web site. The meeting commended YB and SO on an excellent product. *(See action 30).*

4.9 S-64

4.9.1A S-64 Working Group 3 Agenda *(TSMAD27-4.9.1A)*

A breakout sub Working Group was convened to discuss the items on this agenda. The primary objective was to make sufficient progress with S-64 3.0.0 draft to a level of completion that would enable the test datasets to be created.

4.9.1B S-52 to S-64 cross reference *(TSMAD27-4.9.1B)*

The S-64 sub WG supporting document (spreadsheet containing cross reference between the S-52 Preslib 4.0 and S-64 3.0.0. was introduced. There was no further discussion.

4.9.1C S-64 3.0.0 current outline draft *(TSMAD27-4.9.1C)*

S-64 sub WG document. (S-64 3.0.0 Current Outline draft). Working document for the S64 subWG.

4.9.1D S-64 Datasets *(TSMAD27-4.9.1D)*

Item 4.9.1D - a compressed file containing S-64 datasets. No discussion.

4.10 Encoding bulletins

4.10.1 No discussion.

4.11 Miscellaneous

4.11.1 JCOMM Weather Update *(TSMAD27 -4.11.1A and TSMAD27 -4.11.1B)*

JP reported that NOAA's Ocean Prediction Centre (OPC) is developing an S-100 based product specification on behalf of the WMO. There are some considerations about making provision for multiple vertical reference systems – namely height, pressure and surface. The OPS have three questions on which they require clarity;

1 - How to make provision for three vertical references in the weather information product specification? HB noted that there should not be a problem supporting two CRF systems. He proposed that pressure should not be a coordinate but a value.

2 - Does TSMAD see the need for the use of FOIDs in this specification? HB proposed that there should not be an absolute need for a FOID. It should however be made optional especially if the ISO 8211 encoding is to be used.

3 - How does JCOMM/ETMSS apply for an IHO "S" number. BG reported that one had been assigned at the HSSC5 meeting. *(See action 34).*

4.11.2 EAHC Marine Environment MIO (*TSMAD27-4.11.2)*

SO reported on the Marine Environment MIO project which is based on the S-57 data and which is being conducted under the guidance of the East Asia Hydrographic Commission. He noted that KHOA could provide assistance with the development of an S-10x MIO framework document. KI proposed that that there is a need for MIO information and a common format for MIO information. He noted that Transas and Jepessen will submit a combined paper to the next TSMAD meeting on MIOs.

The meeting noted this important initiative and requested members to discuss the paper 4.11.2 with their home offices and provide any feedback or recommendations that may be helpful in developing a S-10X standard for marine environmental protection, to KHOA.

5. National Papers

5.1 No national papers were submitted.

6. Any Other Business

6.1 S102 proposal for TSMAD *(TSMAD27 – 6.1)*

WL reported that there is a proposal to create an informal working group to implement recommendations and enhancements identified by the Open Navigational Surface WG, in S-102. He noted that it had been recognised that there is a requirement for an S-102 dataset. The meeting approved the proposal for the S-102 WG to implement the changes implemented in the latest version of the BAG specification and invited the sub-working group to produce a new Edition of the S-102 product specification. *(See action 32).*

INF1 paper

JW apologised for the late submission of the paper which had been received from the DQWG and reports on the status of HICUP sub-WG which has developed use case scenarios for displaying data quality in a more intuitive manner than the current 'star' system used for the current generation ENC. The display methodology uses a

colour scheme (Red, Amber and Green) to represent three levels of risk derived from depth, data quality and the user-defined Safety Depth of a vessel. *(See action 33).*

7. Date and location of next meeting

JW noted that Australia (AHO) extended an invitation to host the next joint TSMAD28/DIPWG6 meeting in Sydney Australia from the 31st March to 4th April 2014. He also noted that there would probably be a requirement for a DCEG meeting, and this would likely tale place in Wollongong prior to the main meeting.

8. Close of Meeting

BG thanked the participants for attending the meeting and for the hard work that had been carried out in three separate working groups on several important tasks. He also thanked Australia (AHO) for their offer to host the next meeting in Sydney, Australia.

Annex A

List of Documents.

Document No	Document Title
	Provisional Meeting Timetable
TSMAD27-1A	List of Documents
TSMAD27-1B	List o f Participants
TSMAD27-2A	Agenda
TSMAD27-3	Minutes of the 26th Meeting - Silver Spring, USA
TSMAD27-3.1	Action Items from 26 meeting (also included in Agenda)
TSMAD27-4.1.1	Actions from HSSC5 (See HSSC5 Outcomes and Action - Rough Draft)
TSMAD27-4.1.2	TSMAD Work Plan (2014-15)
TSMAD27-4.2.1	Report on SNPWG
TSMAD27-4.2.2	Report on CSPCWG
TSMAD27-4.2.3	Report on DQWG
TSMAD27-4.2.4	Report on DIPWG
TSMAD27-4.2.5	Report on TWLWG
TSMAD27-4.2.6	Report on DGIWG
TSMAD27-4.2.7	Report on IALA - (IALA briefing paper to HSSC5)
TSMAD27-4.2.8	Report from HDWG
TSMAD27-4.3.1A	S-100 Status Update
TSMAD27-4.3.1B	S-100 – Part 1 - Conceptual Schema Language
TSMAD27-4.3.1C	S-100 – Part 2a - Feature Concept Dictionary Registers
TSMAD27-4.3.1D	S-100 Part 3 - General Feature Model and Rules for Application Schema
TSMAD27-4.3.1E	S-100 – Part 5 - Feature Catalogue
TSMAD27-4.3.1F	S-100 – Part 7 - Spatial Schema
TSMAD27-4.3.1G	S-100 – Part 10a - ISO/IEC 8211 Encoding
TSMAD27-4.3.1H	S-100 – Part 11 - Product Specifications
TSMAD27-4.3.2A	S-100 Metadata Schema Update
TSMAD27-4.3.2B	S-100 Metadata Schema Update - Companion files to TSMAD27-4.3.2A
TSMAD27-4.3.3A	S-100 Metadata Proposals
TSMAD27-4.3.3B	Part 4A Metadata 2.0.0 through TSMAD27 proposals

TSMAD27-4.3.4A	Reconciling Geographic Markup Language (GML) with S-100
TSMAD27-4.3.4B	S-100 GML profile analysis
TSMAD27-4.3.4C	S-100 GML Profile documents (zip)
TSMAD27-4.3.5A	Status of ISO 19100 Standards Profiled in S-100 (.xls)
TSMAD27-4.3.6A	S-100 Maintenance - Change Proposal Form - Temporal Model
TSMAD27-4.3.6B	Inclusion of a Temporal Model within S-100
TSMAD27-4.3.7A	S-100 Part 3 Annex A
TSMAD27-4.3.8A	S-100 Maintenance - Change Proposal Form - 11-7.3
TSMAD27-4.3.9A	S-100 Maintenance - Change Proposal Form - Correction to S-100 Part 11 ACTION 1 and 19
TSMAD27-4.3.9B	S-10n Product Specification Template
TSMAD27-4.3.10A	S-100 Maintenance - Change Proposal Form - Codelists
TSMAD27-4.3.10B	Codelists
TSMAD27-4.3.11A	S-100 Maintenance - Change Proposal Form - Spatial Types
TSMAD27-4.3.11B	Spatial Types for S-100 Edition 2.0.0
TSMAD27-4.3.12A	More Spatial Types for S-100 Edition 2.0.0
TSMAD27-4.4.1A	ENC Product Specification (Draft November 2013)
TSMAD27-4.4.1B	S-101 Risk Register Update and next steps
TSMAD27-4.4.1C	S-101 status and risk register
TSMAD27-4.4.2A	S-101 Development and S-100 Testbed Timeline
TSMAD27-4.4.3	S-100/S-101 Test Strategy Workshop Outcome (rev 1)
TSMAD27-4.4.3A	S-100/S-101 Test Strategy Workshop Actions
TSMAD27-4.4.3B	Test Bed Projects in Support of S-101 Development and Implementation
TSMAD27-4.4.4	S-100/S-101 Test Plan Review
TSMAD27-4.4.4A	Annex A – S-100 Test Framework (rev 1)
TSMAD27-4.4.4B	Annex B – Test Scenarios
TSMAD27-4.4.4C	Annex C Sample Test Template
TSMAD27-4.4.5	S-57 to S-101 Mapping table
TSMAD27-4.4.5A	Annex A S-57 to S-101 mapping table - Annex A (.xls)
TSMAD27-4.4.6	S-101 Lookup Tables
TSMAD27-4.4.6A	S-101 Lookup Tables - Annex A (.zip)
TSMAD27-4.4.7	Multiple Data Coverages in S-101
TSMAD27-4.4.8A	S-101 Feature Catalogue and Portrayal Catalogue Versioning
TSMAD27-4.5.1A	DCEG comments consolidated - November 2013

TSMAD27-4.5.2A	Changes to Sections 3.1, 3.5 and 3.8 of the S101 Data Classification and Encoding Guide
TSMAD27-4.5.2B	Lights Modelling in S-101
TSMAD27-4.5.3	DCEG Comments - Jeppesen
TSMAD27-4.5.4	DCEG Comments - SM
TSMAD27-4.8.1A	NATSUR and NATQUA - Table to the UOC
TSMAD27-4.8.1B	Proposals to Amend the UOC
TSMAD27-4.8.2	KHOA - S-57 UOC Software
TSMAD27-4.9.1A	S-64 Working Group 3 Agenda
TSMAD27-4.9.1B	S-52 Preslib 4.0.0 - S-64 3.0.0 Cross Reference (.xls)
TSMAD27-4.9.1C	S-64 3.0.0 - Current Outline draft
TSMAD27-4.9.1D	S-64 Datasets (.zip)
TSMAD27-4.11.1A	JCOMM/ETMSS Weather Overlay Project
TSMAD27-4.11.1B	Annex B - Visualization Tables
TSMAD27-4.11.2	Progress of Marine Environment MIO Project of EAHC
TSMAD27-6.1	S-102 Proposal
	Data Capture and Encoding Guide Documents
DCEG1. - .pdf	Agenda - DCEG Sub-WG
DCEG2. - pdf	Actions from Monaco and Status
	S-101_Data Classification and Encoding Guide_TSMAD Review_2
	20130822_2 DCEG 0.0.01 SubWG Review Aug 2013 Comment Form Consolidated
	S-101 DCEG TSMAD Review No1 Comment Form_consolidated_subWG4
	S 101 Data Classification and Encoding Guide_Working_SubWG

Annex B

Agenda

1. Opening and Administrative Arrangements

A. List of Documents
B. List of Participants

2. Approval of Agenda

NOTE: There will be two parallel meetings during the week: S-64 sub-working group to finalize ed. 3.0.0; The GML sub-working group to finalize S-100 Part 10B GML Encoding

3. Minutes of the 26th TSMAD Meeting, 10th to 14th June, 2013 – Silver Spring, MD, USA

Approval of 26th TSMAD minutes

3.1 LIST OF ACTION ITEMS FROM TSMAD 26

Table of actions not included.

4 Matters arising

4.1 From HSSC5

Action/Agenda No	Item	Who	Paper
4.1.1	Actions from HSSC5	BG	*TSMAD27-4.1.1*
4.1.2	IHO TSMAD Work Programme	BG	*TSMAD27-4.1.2*

4.2 Reports from Other Working Groups

Action/Agenda No	Item	Who	Paper
4.2.1	SNPWG		
4.2.2	CSPCWG		
4.2.3	DQWG		
4.2.4	DIPWG		
4.2.5	TWLWG		
4.2.6	DGIWG		*TSMAD27-4.2.6*
4.2.7	IALA		*TSMAD27-4.2.7*
4.2.8	HDWG		*TSMAD27-4.2.8*

4.3 S-100

Action/Agenda No	Item	Who	Paper
4.3.1A	S-100 Status update	JP	*TSMAD27-4.3.1A*
4.3.1B	S-100 Part 1 Conceptual Schema Language	2J	*TSMAD27-4.3.1B Reference Redline*
4.3.1C	S-100 Part 2a – Feature Concept Dictionary Registers	2J	*TSMAD27-4.3.1C Reference Redline*
4.3.1D	S-100 Part 3 – GFM and rules for application Schema	2J	*TSMAD27-4.3.1D Reference Redline*
4.3.1E	S-100 Part 5 – Feature Catalogue	2J	*TSMAD27-4.3.1E Reference Redline*
4.3.1F	S-100 Part 7 – Spatial Schema	2J	*TSMAD27-4.3.1F Reference Redline*
4.3.1G	S-100 Part 10a ISO/IEC 8211 Encoding	2J	*TSMAD27-4.3.1G Reference Redline*
4.3.1H	S-100 Part 11 – Product Specifications	2J	*TSMAD27-4.3.1H Reference Redline*
4.3.2	S-100 Metadata Schema Update	JP	*TSMAD27-4.3.2*
4.3.3	S-100 Metadata Proposals	JP	*TSMAD27-4.3.3* *TSMAD27-4.3.3A*
4.3.4A	S-100 GML	SPAWAR	*TSMAD27-4.3.4A*
4.3.4B	S-100 GML Profile Analysis	2P	*TSMAD27-4.3.4B*
4.3.5A	S-100 ISO Tracker	UKHO	*TSMAD27-4.3.5A*
4.3.6A	Temporal Model in S-100 – Change Proposal Inclusion of a Temporal Model within S100	UKHO/2J	*TSMAD27-4.3.6A* *TSMAD27-4.3.6B*
4.3.7A	S-100 Part 3 GFM Annex A	UKHO	*TSMAD27-4.3.7A*
4.3.8A	S-100 Change Proposal Part 11 Clause 7.3	UKHO	*TSMAD27-4.3.8a*
4.3.9A	S-100 Change Proposal Part 11 PS Template	JP	*TSMAD27-4.3.9A* *TSMAD27-4.3.9B*
4.3.10A	S-100 Codelists Proposal	2J	*TSMAD27-4.3.10A* *TSMAD27-4.3.10B*
4.3.11A	S-100 Spatial Types Proposal	2J	*TSMAD27-4.3.11A* *TSMAD27-4.3.11B*

4.3.12	More Spatial Types S-100	BSH	*TSMAD27 -4.3.12*

4.4 S-101

Action/Agenda No	Item	Who	Paper
4.4.1A	S-101 ENC Product Specification	JP	*TSMAD27-4.4.1A*
4.4.1B	S-101 Risk Register Update and next steps	JP	*TSMAD27-4.4.1B*
4.4.1C	S-101 Status and Risk Register	JP	*TSMAD27-4.4.1C*
4.4.2	S-101 Timeline	JP	*TSMAD27-4.4.2*
4.4.3	S-100/S-101 Test Strategy Workshop outcomes	JP	*TSMAD27-4.4.3*
4.4.3A	S-100/S-101 Test Strategy Workshop Actions	JP	*TSMAD27-4.4.3A*
4.4.3B	KHOA _S-101 Test Beds	KHOA	*TSMAD27-4.4.3B*
4.4.4	S-100/S-101 Test Plan Review	JP	*TSMAD27-4.4.4* *TSMAD27-4.4.4A* *TSMAD27-4.4.4B* *TSMAD27-4.4.4C*
4.4.5	S-57 to S-101 Feature Mapping Review	JP	*TSMAD27-4.4.5*
4.4.6	S-101 Portrayal Look Up Table review	JP	*TSMAD27-4.4.6* *TSMAD27-4.4.6A*
4.4.7	Multiple Data Coverages in S-101	JP	*TSMAD27-4.4.7*
4.4.8	S-101 Version Control	JP	*TSMAD27-4.4.8*

4.5 S-101 Encoding Guide Working Group

Action/Agenda No	Item	Who	Paper
4.5.1	DCEG Review Comments	JW	*TSMAD27-4.5.1A*
4.5.2A	Changes to Sections 3.1, 3.5 and 3.8 of the S101 DCEG	SL	*TSMAD27-4.5.2A*
4.5.2B	Lights Modelling in S-101	JW	*TSMAD27-4.5.2B*
4.5.3	Additional DCEG Comments_2J_late	2J	*TSMAD27-4.5.3*
4.5.4	Additional DCEG Comments_UKHO_Late	UKHO	*TSMAD27-4.5.4*

4.6 New S-101 Features

Action/Agenda No	Item	Who	Paper
4.6.1			

4.7 S-58

Action/Agenda No	Item	Who	Paper
4.7.1	S-58 Test Dataset	JP	*No paper*

4.8 S-57

Action/Agenda No	Item	Who	Paper
4.8.1A	Add in S-58 NATSUR/NATQUA table into the UOC	JP	*TSMAD27-4.8.1A*
4.8.1B	Proposals to amend the UOC	JW	*TSMAD27-4.8.1B*
4.8.2	S-57 UOC Software of KHOA	KHOA	*TSMAD27-4.8.2*

4.9 S-64

Action/Agenda No	Item	Who	Paper
4.9.1A	S-64 Working Group 3 Agenda	UKHO	*TSMAD27-4.9.1A*
4.9.1B	S-52 to S-64 cross reference	UKHO	*TSMAD27-4.9.1B*
4.9.1C	S-64 3.0.0 current outline draft	UKHO	*TSMAD27-4.9.1C*
4.9.1D	S-64 Datasets	UKHO	*TSMAD27-4.9.1D*

4.10 Encoding bulletins

Action/Agenda No	Item	Who	Paper
4.10.1			

4.11 Miscellaneous

Action/Agenda No	Item	Who	Paper

4.11.1	JCOMM Weather Update	JP	*TSMAD27 -4.11.1A* *TSMAD27 -4.11.1B*
4.11.2	EAHC Marine Environment MIO	KHOA	*TSMAD27-4.11.2*

5. National Papers

Action/Agenda No	Item	Who	Paper
5.1			

6. Any Other Business

Action/Agenda No	Item	Who	Paper
6.1	S102 proposal for TSMAD	WL	*TSMAD27 – 6.1*

7. Date and location of next meeting

Annex C

List of Participants

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