

**21<sup>st</sup> TSMAD MEETING**  
**29 November – 03 December 2010, Victoria,**  
**BC, Canada**

**Paper for Consideration by TSMAD**

**Report to TSMAD21 Progress on Compilation of the “S-101 Data Classification and Encoding Guide”**

<b>Submitted by:</b>	Australia
<b>Executive Summary:</b>	Report on progress made in the compilation of the S-101 Data Classification and Encoding Guide
<b>Related Documents:</b>	S-101
<b>Related Projects:</b>	S-101 Development, S-57 Maintenance

### **Introduction / Background**

The S-101 Data Classification and Encoding Guide is the reference document to be used for the consistent encoding of IHO compliant ENC's in the S-101 ENC Product Specification, which is a Product Specification developed in S-100 – IHO Universal Hydrographic data Model. The S-101 Data Classification and Encoding Guide is effectively the equivalent of S-57 Appendix B.1, Annex A – Use of the Object Catalogue for ENC. It is intended that this document be published as Appendix A to S-101.

### **Analysis / Discussion**

The S-101 Data Classification and Encoding Guide is based on the Nautical Chart Manual (Volume 3) – Digital Specifications – Data Capture and Classification Guide (as amended at August 2009); produced by the US National Oceanographic and Atmospheric Administration (NOAA) in MS Word format. The NOAA document is a guide for the compilation of US ENC's based on the existing IHO Transfer Standard for Digital Hydrographic Data (S-57 Edition 3.1, including Supplement No. 2). The Inland Electronic Navigational Chart Encoding Guide, produced and maintained by Inland ENC Harmonization Group, which is almost identical to the NOAA Guide in its structure, has also been used as a guide in the production of the S-101 Data Classification and Encoding Guide. This format was agreed to at TSMAD19.

The S-101 Data Classification and Encoding Guide combines the information currently available in S-57 Appendix A, Chapter 1 – IHO Object Catalogue; S-57 Appendix A, Chapter 2 – Attributes; and S-57 Appendix B.1, Annex A – Use of the Object Catalogue for ENC. Additionally, some information from S-57 Appendix B.1 – Product Specifications for ENC, has also been included.

**Procedure:** The following is a summary of the procedure followed to produce the current draft of the S-101 Data Classification and Encoding Guide:

- A copy of the Nautical Chart Manual (Volume 3) – Digital Specifications – Data Capture and Classification Guide in MS Word format obtained from NOAA August 2009.
- Cover page, contents and overview section have been derived from and formatted in accordance with the Draft S-101 ENC Product Specification as submitted to TSMAD18. The Document Control page has been derived from and formatted in accordance to S-100 Edition 0.0.3.
- The following documents were referenced in the development of the S-101 Data Classification and Encoding Guide and the Working Draft amended to comply with these documents as required:
  - S-4; Regulations of the IHO for International (INT) Charts and Chart Specifications of the IHO, Edition 4.0 (2010)

- INT1; Symbols, Abbreviations and Terms used on Charts
- S-32; Hydrographic Dictionary Edition 5 (1994)
- S-57 Appendix A Chapter 1; Object Classes, Edition 3.1 (November 2000)
- S-57 Appendix A Chapter 2; Attributes, Edition 3.1 (November 2000)
- S-57 Appendix B.1; ENC Product Specification, Edition 2.0 (November 2000)
- S-57 Appendix B.1 – Annex A; Use of the Object Catalogue for ENC, Edition 2.1 (April 2002)
- S-57 Supplement No. 2 (June 2009)
- S-57 Maintenance Document (Cumulative) – Number 8 (March 2002)
- S-57 Internal Extensions List
- S-58 Recommended ENC Validation Checks Edition 4 (June 2009)
- DGIWG FDD (Current as at January 2010).
- The first principle used is that anything from the existing S-57 ENC Product Specification and the Use of the Object Catalogue that has not been incorporated in the Draft S-101 has been incorporated in the Data Classification and Encoding Guide. TSMAD will need to decide which information is not relevant or can be transferred to the main S-101 document. **Consideration must be given to the compiler, who may not be aware that they have to refer to other documents e.g. the Feature Catalogue or the S-101 main document, to find information relevant to their requirements** (e.g. the list of objects permitted for use in ENC and their geometric primitives, and the mandatory attributes table). Balanced against this is the consideration of not repeating information contained in other documents where possible.
- The format of the Guide has been retained as for the NOAA S-57 Data Capture and Classification Guide for ENC in relation to geo Features, i.e. in INT1 order.
- All text taken from existing published S-57 documentation (Object and Attribute catalogues, ENC PS and UOC) is in black in the document. Amendments to the document made in order to standardise content; or incorporate previously endorsed TSMAD decisions included in MD8 or the Internal Extensions List, or incorporate; new suggested text from authorised external sources (e.g. DGIWG FDD), are shown in **dark green text** in the document. Suggested new text taken from other HOs' guidance documents or from other IHO publications such as S-4 are shown in **magenta text** in the document. Any other changes in wording from the UOC (e.g. changing "Object Class" to "feature") is also indicated in **magenta text**. Text for which TSMAD discussion or input from relevant subject matter experts (e.g. S-101 Sub-Working Group) is particularly required is shown in **pink text** in the document.
- Strength of Wording: The terms "must", "should" and "may" have been retained in the draft document as used in S-57 Appendix B.1 – Annex A, although there are many suggestions to mandate guidance which was previously options, which is indicated in **pink text**.
- Maintenance: A maintenance section (Clause 1.5) has been included on the assumption that Appendix A will be maintained as a separate document.
- Within the individual feature clauses, attributes considered to be defining attributes for that feature have been listed. In addition, any enumerated attribute for the feature with an allowable enumerate list that is a subset of the full list as defined in the Register (or presently the existing S-57 Attribute Catalogue) is included. The list of allowable enumerate values has been derived from S-58 Check 2000, and may require extensive review.
- The following steps have been taken in compiling the guidance for each S-101 feature:
  - Compile Table for the feature based on existing information in S-57 Object and Attribute Catalogues and UOC. Determine attributes to be listed and, where required, include full enumerate list from S-57 Attribute Catalogue;
  - Check authenticity of definitions (particularly those attributed to S-32) and suggest changes as required;
  - Check allowable primitives and mandatory attributes for the feature based on S-57 Product Specification Tables 3.1.and 3.2;
  - Amend enumerate list for attributes to restrict to allowable values as defined in S-58 Check 2000;
  - Check INT1 and S-4 references and suggest amendments as required;

- Check existing UOC wording relevant to the feature and standardise for “S-100 speak”, and identify any text that needs further TSMAD review (highlight as appropriate);
- Insert additional guidance from S-4 as considered relevant. The attitude taken here is that as much additional guidance has been inserted as possible. TSMAD will need to determine which text to retain;
- Apply TSMAD amendments as described in S-57 MD8;
- Apply TSMAD amendments as described in S-57 Internal Extensions List;
- Check S-58 for any additional guidance that may be inserted;
- Check list of Distinctions for appropriateness and suggest changes as required;
- Compile separate Sections related to geo, meta and spatial attribute and enumerate descriptions. This information was originally incorporated in the feature tables, but was found to be repetitive; some attributes were not included; and in some cases the full enumerate list is not required for any instance of the attribute in the feature tables.
- During all steps in the compilation process, an “Issues to Raise with TSMAD and Other Fora” document has been incrementally compiled (refer to Annex A to this Paper). Although it is anticipated that most issues have been captured, it must be stressed that these are the opinions of one TSMAD member, and full consideration of the draft Data Classification and Encoding Guide and the “Issues” document will need to be carried out by TSMAD.

Process considered necessary to complete the draft document:

- Complete evaluation of definitions. This includes assessment of those definitions that may be considered to be “hydrographic”, and hence require proposals to HDWG, and those considered not to be hydrographic, for which an alternate source can be attributed. The suggestion is DGIWG FDD as a harmonisation process with S-57 has already been conducted, and features are managed in a Register similar to the S-100 Hydro Register.
- Double check S-57 MD8 and Internal Extensions List to ensure that all changes have been reflected in the document, or issues raised;
- Complete incorporation of ENC Encoding Bulletins and FAQs;
- Review S-65 for possible incorporation of additional guidance (e.g. SCAMIN);
- Incorporate revised feature table entries based on new/improved functionality in S-101 (e.g. complex attributes, information features);
- Incorporate amendments based on enhancements to charting specifications incorporated in S-4 since S-57 was “frozen” (TSMAD8 – conclusion of additions to the Maintenance Document). This can be largely achieved through evaluation of the spreadsheet “S-101 Action Items”, initiated by Chris Roberts after TSMAD8 and maintained by AU. This, and most of the above processes, will result in many proposals for changes to the S-100 Hydro Register;
- Incorporate images (“real world”, paper chart and ECDIS symbology). Only those images in the original NOAA document have been included at this stage;
- Full review by TSMAD, including evaluation of all issues raised in the “Issues” document, and any future issues that may be identified through the above processes.
- Development of the final format for the document (database, XML style sheets?). Yet to be determined.

It is anticipated that much of this work in regard to rationalising all existing documentation will be completed prior to TSMAD22. However, TSMAD evaluation of the document and issues contained in the “Issues” document will be a major step, and may require the formation of a TSMAD Sub-Working Group to make an initial assessment. It is anticipated that much of this process can be conducted in conjunction with the incremental S-101 development process and the development of S-101 test beds.

**Recommendations**

1. That TSMAD endorse the format of the S-101 Data Classification and Encoding Guide, and approve the progress made on the document to date, noting that full evaluation of the document will be required.
2. That TSMAD approve the formation of a Sub-Working Group to begin the process of addressing issues raised during the compilation of the draft document, and begin

reviewing the document for content. Additional input will be required to incorporate changes/improvements to data encoding introduced in S-101.

### **Justification and Impacts**

Complete and concise review of the document is considered extremely important to ensure that production systems, encoders and OEMs are provided with all the guidance required for the classification and encoding of data for S-101 ENC's.

It is considered that the work in reviewing the document will not be minimal, and participants may find that a significant amount of time will be required in order to conduct a full review and address all issues.

### **Action required of TSMAD**

TSMAD is invited to:

- a. Endorse this report;
- b. Discuss and advise as appropriate in regard to the Recommendations above.

Attachments:

Annex A: S-101 Data Classification and Encoding Guide – Issues to Raise with TSMAD and other Fora.

**S-101 DATA CLASSIFICATION AND ENCODING GUIDE****ISSUES TO RAISE WITH TSMAD AND OTHER FORA****GENERAL:**

- The current name of the document is “Data Classification and Encoding Guide”. Is TSMAD happy with this name? What other alternatives are there (if any)?
- Is TSMAD happy to retain the “strength of wording” as used in S-57 Appendix B.1 – Annex A (i.e. “must”, “should” and “may”)?
- How would TSMAD like the document to be ordered? It is currently in INT1 (US Chart 1) order, which is similar to the order used for S-57 Appendix B.1 – Annex A, which is S-4 order. Are there other preferences? IEHG is different again – it may be worth looking at that order.
  - NOTE: The further into the drafting of the document, the more it was considered that attribute descriptions needed to be in their own section of the document, rather than incorporated in the Feature Classes. The main thought behind this is the problem that users would have finding the attribute description if it was not attached to the feature being researched. There is also the situation of duplication throughout the document, and in some cases (as was found with STATUS for instance), the full attribute description is not shown as no feature uses the full list. Hopefully, it will be possible to hyperlink the attributes (using the list of attributes in the body of the feature description) to their corresponding descriptions in the attribute descriptions.
- Maintenance: S-101 (draft version from TSMAD18) did not include a section for maintenance of the PS (according to Clause 1.2 it will be an Annex to the PS). Is Appendix A going to be maintained as a separate document or as part of the maintenance of S-101 as a whole?
- Based on the answer to the question above, a statement similar to S-57 UOC 1.1 Para 3 may need to be included in the document?
- Is it required to include the camelCase in the feature descriptions?
- References to IHO Dictionary in definitions have been amended to “IHO Dictionary – S-32” to conform to IHO standard wording. “Edition 5 ...” (including reference number) has not been included. S-57 definitions taken/derived from S-32 have included the “reference number” as shown in the printable IHO Edition 5 of the document. It may be recommended that these reference numbers be removed (current HDWG discussion as referred to HSSC).
- Definitions: Where a definition is attributed to a Hydrographic Office or other government institution, should we be looking for a more authoritative definition (if one exists) e.g. from DGIWG FDD? Where such definitions cannot be found (or are not suitable), should the S-57 definition be adopted and attributed?
- Definitions: Definitions previously attributed to S-4 have been re-attributed to their S-57 Appendix A Chapter 1 or 2 entry. Is TSMAD happy with this?
- Language: What English language version is to be used for the document? The draft uses English (Australian). This will impact on some spelling e.g. metre/meter.
- There are many instances throughout this document where attribute enumerate values additional to those listed in S-58 test 2000 are recommended to be included, or values currently included in the test removed. The entire document will need to be reviewed in regard to allowable attribute enumerate values.
- Attributes such as CONVIS have a “default state” where if the attribute is not present, it is assumed that the feature has no relevance to the mariner in terms of that attribute. That being so, suggest that the “default state”, such as “not visually conspicuous”, not be allowable in ENC unless the attribute is mandatory or TSMAD consider that in certain cases the enumerate may be required.
- “display scale” has been replaced with “optimum display scale [for the/of the] ENC data” throughout the document. Is this OK, or are there other suggestions?
- INT1 references: Hans has suggested that the INT1 references could be included with the graphic for the paper chart symbol in the Table. Will need further investigation/discussion.
- Hans has suggested that examples of attribute encoding should not be included in the “Allowable Encoding Value” column of the Tables. Requires explanation and discussion.
- There is no guidance in S-57 (main doc, PS, UOC) regarding the chaining of linear geo objects. Should there be guidance in the Encoding Guide (refer S-58 test 40)?

- Inconsistency: In some cases “seabed” has been used, while in others “sea bed” has been used. Is this OK or should these be consistent (suggest “seabed”, but note that DGIWG FDD uses “sea bed”). Also, in many instances, particularly in definitions, the word “bottom” has been used, and not sea bed (seabed). Suggest that this needs to be standardised. There is also inconsistency in some cases in S-4 (seabed/sea bed/sea-bed). (CSPCWG, HDWG, Register).
- Check whether it is possible for conditionality to be applied to instances where the requirement to populate an attribute for a feature is dependant on the value populated for another attribute for the feature. For instance, population of BOYSHP for **MORFAC** is only relevant where the attribute CATMOR is populated with the value 7 (mooring buoy). Also, WATLEV would not be populated if CATMOR is populated as 7. (TSMAD).
- Traffic separation scheme is defined in S-32, but the elements comprising a traffic separation scheme are not, but are defined in IMO Ships’ Routeing. Suggest that the S-32 entry for traffic separation scheme have text similar to “For definitions of elements comprising a traffic separation scheme, see IMO Ships’ Routeing”, or these elements be defined in S-32.

## **FEATURES:**

### **ACHARE:**

- The S-57 definition for anchorage area has been amended by maintenance Clarification and Correction (MD8 – 7.Cl.3 and 7.Co.15). Suggest S-32 definition be similarly amended (although isn't a seaplane legally considered to be a "vessel" once it lands?). (HDWG).
- Suggest add INT1 – N10 (Reported anchorage (no defined limits)), N14 (Anchorage for seaplanes) and Q44 (Numerous moorings) to list of INT1 references for **ACHARE**. (Register).
- Suggest add S-4 – B-431.7 (Numerous moorings) to list of S-4 references for **ACHARE**. (Register).

### **ACHBRT:**

- The S-57 definition for anchor berth has been adopted by DGIWG FDD. If anchor berth is considered to be a hydrographic term, suggest the S-57 definition be included in S-32. (HDWG).
- If the S-57 definition for **ACHBRT** is retained, amend "sea plane" to "seaplane" (refer CATACH below). (Register).
- Suggest that, if it is specified that the swinging circle for an anchor berth is defined using the attribute RADIUS, then the circle should be depicted in the ECDIS based on the value populated. (DIPWG).

### **ADMARE:**

- Suggest INT1 – N40 (International boundary on land) and N41 (International maritime boundary) be included as INT1 references for **ADMARE**. (Register).
- Suggest include S-4 B-440.1 and B-440.3 as S-4 references for **ADMARE**.
- Suggest sub-heading be re-named "International and national territories" to recognise that international maritime boundaries are also encoded as **ADMARE**. (TSMAD).

### **AIRARE:**

- Suggest amended definition for **AIRARE**, as adapted from DGIWG FDD. (Register).
- Aeroplanes or airplanes?

### **ARCSLN:**

- There is an S-32 definition for Archipelagic Sea Area. Suggest this definition be used, and the definition as used in S-57 Supplement No. 1 be moved to the body of the text. (Register).

### **ASLXIS:**

- Suggest only the first part of the definition as used in S-57 Supplement No. 1 be used as the definition for **ASLXIS** and the remainder moved to the body of the text. (Register).

### **BCNCAR:**

- The fact that a cardinal buoy but no cardinal beacon is defined in S-32 needs to be addressed – see comment for **BOYCAR**. (HDWG).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BCNCAR**. (Register).

### **BCNISD:**

- There is an S-32 definition for isolated danger mark which has not been utilised in S-57. Suggest these definitions need to be reconciled in regard to general content. (HDWG, Register).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BCNISD**. (Register).

### **BCNLAT:**

- The fact that a lateral buoy but no lateral beacon is defined in S-32 needs to be addressed (inconsistency) – see comment for **BOYLAT**. See also definition for lateral system. (HDWG).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BCNLAT**. (Register).

### **BCNSAW:**

- There is an S-32 definition for safe water mark which has not been used in S-57. Suggest these definitions need to be reconciled. (HDWG, Register).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BCNSAW**. (Register).

#### **BCNSPP:**

- There is an S-32 definition for special mark which has not been utilised in S-57. Suggest these definitions need to be reconciled in regard to general content. Note also that there is an S-32 definition for buoy: special (inconsistency?). (HDWG, Register).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BCNSPP**. (Register).
- There needs to be a discussion as to whether it is still required to have a separate feature beacon general in S-101 (refer S-57 Extension 06/01). (TSMAD, Register, Feature Catalogue).

#### **BERTHS:**

- There are minor differences in the wording in the current S-57 definition and the S-52 definition for berth. This needs to be reconciled. (HDWG, Register).
- Suggest add INT1 – F12 to list of INT1 references for **BERTHS**. INT1 – F12 is a mole, with a berthing facility. (Register).
- Suggest S-4 – B-423 (Berths) be listed as the S-4 reference for **BERTHS**. (Register).
- Maximum draft at berth is currently encoded in INFORM. Suggest that maximum draft be an attribute combined as a sub-attribute with DRVAL1 to form a complex attribute? Or perhaps a new attribute? (Register).

#### **BOYCAR:**

- There is an S-32 definition for buoy: cardinal which has not been used in S-57. Suggest these definitions need to be reconciled. (HDWG, Register).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BOYCAR**. (Register).
- Suggest buoy, installation be added to list of distinctions for **BOYCAR**. (Register).

#### **BOYISD:**

- There is an S-32 definition for isolated danger mark which has not been utilised in S-57. Suggest these definitions need to be reconciled in regard to general content. (HDWG, Register).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BOYISD**. (Register).
- Suggest buoy, installation be added to list of distinctions for **BOYISD**. (Register).

#### **BOYLAT:**

- There is an S-32 definition for buoy: lateral which has not been used in S-57. Suggest these definitions need to be reconciled. (HDWG, Register).
- Lateral marks can also be beacons, but the definition in S-32 is for buoy: lateral. Isolated danger marks can also be buoys or beacons, and this is accounted for in S-32 as the definition is for isolated danger mark (not buoy or beacon). There is an inconsistency here that needs to be corrected. (HDWG).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BOYLAT**. (Register).
- Need IALA Region A examples (photo's) of lateral marks.
- Suggest buoy, installation be added to list of distinctions for **BOYLAT**. (Register).

#### **BOYSAW:**

- There is an S-32 definition for safe water mark which has not been used in S-57. Suggest these definitions need to be reconciled. (HDWG, Register).
- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BOYSAW**. (Register).
- Suggest buoy, installation be added to list of distinctions for **BOYSAW**. (Register).

#### **BOYSPP:**

- There is an S-32 definition for buoy: special which has not been used in S-57. Suggest these definitions need to be reconciled. (HDWG, Register).
- Suggest that CATSPM = 16 (leading mark), 41 (clearing mark), 42 (control mark) and 44 (refuge beacon) be removed from the allowable enumerate list for CATSPM in **BOYSPP**. (Feature Catalogue).



- Suggest S-4 – B-461.3 (The IALA Maritime Buoyage System) and B-467 (Summary table of IALA marks) be included as S-4 reference for **BOYSPP**. (Register).
- Suggest a new feature be created for Emergency Wreck Marking Buoy (**BOYEWK?**). Alternative is a new enumerate for CATSPP, but would prefer a separate feature. (TSMAD, Register, Feature catalogue).
- There needs to be a discussion as to whether it is still required to have a separate feature buoy general in S-101 (refer S-57 Extension 06/01). (TSMAD, Register, Feature Catalogue).

#### **BRIDGE:**

- Definition for **BRIDGE** has been changed slightly to agree with current definition in S-32 (544(2)). Or is the “to carry utility services” part important? If so need to suggest a change to the S-32 definition. (HDWG, Register).
- Suggest pipe, overhead be added to list of Distinctions. (Register).
- INT1 references have been abbreviated to “D 20-24” as the existing list is all inclusive. (Register)

#### **BUAARE:**

- Suggest amended definition for **BUAARE**, as taken from DGIWG FDD. (Register).
- Suggest landmark and railway be added to list of Distinctions. (Register).
- Suggest square be removed from the list of distinctions – it is prohibited in S-57 and it is assumed that it will be prohibited in S-101.

#### **BUISGL:**

- Definition for **BUISGL** has been changed to agree with current definition in DGIWG FDD. (Register).
- Suggest list of allowable values for FUNCTN on **BUISGL** be reviewed for possible removal of some values (suggestions included in document). (Feature Catalogue).
- Suggest INT1 – D8 (Ruins) be added to list of INT1 references. (Register).
- Suggest INT1 – D28-30.1 be removed from list of INT1 references. (Register).
- Suggest B-375.1,2 and B-487.3 be removed from list of S-4 references. (Register).
- Suggest silo and tank be added to list of Distinctions. (Register).
- Why can't a **BUISGL** area or point sit on a **SLCONS** area (WATLEV = 2) which is covered by **UNSARE** or **DEPARE?** (S-58 Check 54).

#### **CANALS:**

- S-57 definition does not agree with S-32 definition for canal. Suggest S-57 definition be adopted as the first part of the S-32 definition. (HDWG, Register).
- Suggest canal bank be removed from list of distinctions for **CANALS** (is prohibited for ENC). (Register).
- Suggest remove CONDTN = 2 (ruined) from S-58 list of allowable values for **CANALS**. (Feature Catalogue).
- Suggest amend S-4 references for **CANALS** to include all B-361. (Register).

#### **CAUSWY:**

- Suggest add STATUS = 7 (temporary) to S-58 list of allowable values for CAUSWY. (Feature Catalogue).
- Suggest remove WATLEV = 3 (always under water/submerged) from S-58 list of allowable values for **CAUSWY**. (Feature Catalogue).

#### **CBLARE:**

- Definition of **CBLARE** has been amended to the S-32 definition (?????). (Register).
- Suggest numerous values for RESTRN be removed from list of allowable enumerate values for RESTRN on **CBLARE** (suggestions included in document). (Feature Catalogue).
- Amend S-4 reference for **CBLARE** to add B-443.3 (Cable areas) and remove B-443.2 (Power transmission cables). (Register).

#### **CBLOHD:**

- Suggest removing “An overhead cable is” from definition for **CBLOHD**. Also, is AHS a sufficient authority for this definition; there is a definition in DGIWG FDD for “cable overhead”? (Register).
- The question in the AHO has been asked as to whether populating VERCLR when the safe vertical clearance (for power or transmission cables) is unknown, as the mariner may misinterpret VERCLR for VERCSA. AU policy is to populate VERCSA with an

empty (null) value for power and transmission cables where safe vertical clearance is not known.

- There is a discrepancy between the guidance in the UOC clause 11.5.2 and S-58 test 2000. UOC states that if a cable has radar reflectors, this should be indicated by encoding separate REDRFL objects. This would suggest that value CONRAD = 3 (radar conspicuous – has radar reflector) is redundant (double encoding). S-58 test 2000 suggests all values of CONRAD are acceptable. Suggest CONRAD = 3 be prohibited for **CBLOHD** (will need amendment to S-58 test 2000). (Register).

#### **CBLSUB:**

- S-57 definition for cable: submarine is different to S-32 definition. Current S-32 definition may be out of date. Suggest something similar to S-57 definition be incorporated in S-32. (HDWG).
- Suggest add Q42 (mooring cables on mooring trots) to list of INT1 definitions for **CBLSUB**. (Register).
- Suggest add B-443 (Submarine cables), B-443.2 (Power transmission cables) and B-443.8 (Buried cables) to list of S-4 references for **CBLSUB**, and remove B-443.3 (Cable areas). (Register).

#### **CGUSTA:**

- There is an entry for “coast guard station” in S-32 which refers to “life saving station” which is not the same as the current S-57 definition for **CGUSTA** (in fact it is closer to the S-57 definition for rescue station). These definitions need to be reconciled, or the reference to life saving station removed and a new definition for coast guard station included in S-32. (HDWG, Register).
- The term used in S-57 is “coastguard”, while in S-32 it is “coast guard”. S-4 and INT1 uses “coastguard”. Suggest S-32 term be amended to “coastguard”. (HDWG).
- Suggest INT1 – T11 (coastguard station with rescue station) be added to list of INT1 references for **CGUSTA**. (Register).
- Need to decide a method for encoding Marine Rescue and Coordination Centres (MRCC). See S-4 – B-492.3. (TSMAD).

#### **CHKPNT:**

- As there is only one enumerate for CATCHK, is there a requirement for CATCHK, or should consideration be given to re-defining the feature to be just a “customs checkpoint” (e.g. CUSCHK)? (Register)
- Dependent on answer to the above, suggest amended definition for **CHKPNT**, as adapted from DGIWG FDD. (Register).

#### **COALNE:**

- Suggest add INT1 – C25 (glacier) to list of INT1 references for **COALNE**. (Register).
- Suggest add S-4 – B-311 (coastline inadequately surveyed) to S-4 references for coastline, and B-353.8 (glacier) to S-4 references for natural coastline. (Register).
- The method for encoding mangroves (and possibly marsh?) needs to be addressed to be consistent with S-4 B-312.4. (TSMAD).
- There are a number of values for the attribute COLOUR that should be considered for exclusion as allowable values. (Feature Catalogue).
- Distinctions: Are canal bank, lake shore and river bank still considered to be distinctions if they are prohibited for ENC? (TSMAD, Register).

#### **CONVYR:**

- The DGIWG FDD definition has been substituted for **CONVYR** in lieu of the current non-authorized S-57 definition. This definition appears to be a bit narrower than the S-57 definition, but seems to satisfy the two values for CATCON. Is TSMAD happy with this change? (Register).
- Suggest that, due to the guidance to populate VERDAT for **CONVYR** with a height datum, that all values for VERCLR related to low water datums be excluded as allowable enumerate values for VERDAT in relation to **CONVYR**. (Feature Catalogue).

#### **CONZNE:**

- What is the point of having STATUS as an allowable attribute for **CONZNE**, when the only allowable value is 1 (permanent)? (Feature Catalogue).
- It looks like the word “shelf” is missing from the distinctions (continental shelf area). (Register).

**CRANES:**

- How does the ECDIS user know that the lifting capacity is in tonnes? Is this an issue?

**CTNARE:**

- The SD-57 definition for caution area has been adopted in DGIWG FDD. Note that the DGIWG FDD specifically relates this definition to marine navigation (through reference to “the mariner”). Should this definition go in S-32 (first impressions are no)? (HDWG)
- Suggest INT1 – M29.2 (Area to be avoided e.g. because of danger of stranding) be removed as INT1 reference for **CTNARE**, as area to be avoided is a category of restricted area. (Register).
- Suggest that perhaps S-4 – B-242 (Cautionary and explanatory notes) could be added as an S-4 reference for caution area. (Register).

**CTRPNT:**

- Are all values for attribute CATCTR required for ENC? From a mariners’ perspective, most control points are not visible. Suggest values 3 (fixed point), 4 (bench-mark) and 7 (horizontal control, secondary station) be removed from the allowable enumerate list for **CTRPNT**. (Feature Catalogue).
- Distinctions have been added – these require review. (Register).

**CTSARE:**

- The S-57 definition for cargo transshipment area is abbreviated from the S-32 definition for transshipment or lightening area. Suggest the full S-32 definition be adopted (or is the issue the use of the word “larger”?). (HDWG(?), Register).
- The first sentence of S-4 – B-449.4 should be in bold text to be consistent with S-4 convention. (CSPCWG).
- Should the word used (as an alternative to cargo transshipment area) be “lightering” (S-57) or “lightening” (S-4)? Note that S-32 uses “lightening”. (CSPCWG, TSMAD).

**CURRENT:**

- There is a definition for non-tidal current in S-32. Could this be used as the definition for current – non-gravitational, or should a definition for current – non-gravitational be included in S-32? (HDWG, Register).
- Suggest area be added as an allowable primitive for **CURRENT**. (Register).
- Suggest include all of B-408 as S-4 reference for current – non-gravitational. (Register).
- Suggest adding Tidal Stream (flood/ebb) to list of distinctions for current – non-navigational. (Register).

**DAMCON:**

- Suggest that point primitive be prohibited for **DAMCON**, as it has been determined that it is not required to display point **DAMCON** in ECDIS. (Feature Catalogue).
- Suggest INT1 – F43 (flood barrage) be included in list of INT1 references for **DAMCON**. (Register).
- Suggest add S-4 – B-326.7 to S-4 references for **DAMCON**. (Register).
- Suggest that NATCON = 4 (hard surfaced) be removed from the allowable enumerate list for NATCON in **CONVYR**. (Feature Catalogue).
- Need to determine which values for STATUS are not required for **CONVYR**. (Feature Catalogue).

**DAYMAR:**

- Why is there a reference to encoding **RADRFL** for **DAYMAR** (no attribute CONRAD for **DAYMAR**) but not for **TOPMAR**? (S-58 test 1762). (TSMAD).
- Suggest S-4 – B-455.9 (daymark) be substituted as S-4 reference for **DAYMAR**. (Register).

**DEPARE:**

- Suggest remove “A depth area is” from definition for **DEPARE**. (Register).
- Is line going to be an allowable primitive for **DEPARE** in S-101? Suggest it is no longer required. (TSMAD, Register).
- There should be S-4 references for something as fundamental in ENCs as depth areas – needs to be discussed. (TSMAD, Register).
- Diagrams need to be re-done to remove all references to **DEPARE** of type line.
- The sub-section “Bathymetry in areas of minimal depiction of detail on paper charts” needs to be revised to reflect discussions from TSMAD meetings.

- Is there a purpose for having QUASOU as an allowable attribute for **DEPARE**? (Feature Catalogue).

#### DEPCNT:

- Suggest remove the words “A depth curve is” from the S-32 definition for depth curve (1315). (HDWG).
- The definition for depth contour is almost exactly the same as the S-32 definition for depth curve (1315), except for substituting “contour” for “curve”. Is the modern term most used “contour” rather than “curve”? Suggest S-32 definitions be swapped with the actual definition be included for depth contour (1314) and wording and references amended accordingly. (HDWG, Register).
- Suggest S-4 references for depth contour be amended to include B-411.1, B-411.3-5; and to remove B-413.2. (Register).
- Guidance for the encoding of depth contours suggests that QUAPOS = 4 (approximate) should be used for approximate contours. Discussions with cartographers and surveyors within the AHS has determined that a better value to use is QUAPOS = 3 (inadequately surveyed), as the accuracy of the contours are based on the adequacy of the surveys used to derive the contours. Additionally, it can be argued that all depth contours are “approximate” as they are an interpolation of survey data. Does this warrant further discussion? (TSMAD).

#### DISMAR:

- Suggest that S-57 definition for distance mark (as a hydrographic feature) be included in S-32. Note that the S-57 definition has been adapted (in combination of definition and description) for DGIWG FDD. (HDWG, Register).
- Amend INT1 references for DISMAR to B25.1 and B25.2. Suggest F40 be removed as it does not refer to distance mark (Register).
- Suggest a new attribute (DSTNCE?) to encode the value of the distance. Perhaps a complex attribute also containing the unit of measurement?

#### DMPGRD:

- The S-57 definition for **DMPGRD** has been expanded from the S-32 definition for spoil ground to include dumping grounds where harmful materials are deposited. Should there be a separate definition for dumping ground in S-32 (given that spoil ground is only one category of dumping ground)? Note that the S-57 definition has been adopted by DGIWG FDD. (HDWG).
- S-4 provides a mechanism for indicating the date (year) when dumping activity ceased. This could be provided in INFORM, but suggest that a new attribute (DATDMP?) be added. (Register, Feature Catalogue).

#### DOCARE:

- Suggest remove “A dock area is” from current definition for **DOCARE**. (Register).
- Suggest all of S-4 – B-442 (dumping grounds: general; harmful materials); B-462 (spoil grounds; extraction (or dredging) areas) and B-462.1 (spoil grounds) be listed as the S-4 references for **DMPGRD**. (Register).
- Remarks bullet point 4: If **DOCARE** must only be covered by **LNDARE** or **UNSARE**, and this bullet point says that **DOCARE** and **SEAARE** can overlap, then it should be stated that where this is the case, **DOCARE** must be covered by **UNSARE** (**SEAARE** and **LNDARE** cannot overlap). (TSMAD).

#### DRGARE:

- Suggest a new attribute to encode the date of dredging (DRGDAT?). (Register, Feature Catalogue).
- Suggest that the value of DRVAL1 (where populated with a known value) display within the dredged area on the ECDIS. Is there a way that DRVAL2 can display if DRVAL1 is populated with an empty (null) value? (DIPWG).
- Suggest list of allowable enumerate values for RESTRN be reviewed for possible exclusion of some values (suggest at least value 7 (entry prohibited) and 22 (removal of historical artefacts prohibited) be excluded). (Feature Catalogue).
- Suggest that TECSOU = 11 (satellite imagery) be removed from the allowable enumerate list for TECSOU in **DRGARE**. (Feature Catalogue).
- Suggest all of S-4 – B-414 be listed as the S-4 references for **DRGARE**. (Register).

#### DRYDOC:

- Maximum draft in the dock is currently encoded in INFORM. Suggest that maximum draft be an attribute combined as a sub-attribute with DRVAL1 to form a complex attribute? Or just a separate attribute (DRAMAX?)? (Register).

#### **DWRTCL:**

- Suggest that QUASOU = 6 (least depth known) and 7 (least depth unknown, safe clearance at value shown) be added to list of allowable enumerate values for QUASOU on **DWRTCL**. (Feature Catalogue).
- Suggest TECSOU = 2 (found by side scan sonar) and 11 (satellite imagery) be removed from; and TECSOU = 5 (found by lead-line) be added to; the list of allowable enumerate values for TECSOU on **DWRTCL**. (Feature Catalogue).

#### **DWRTPT:**

- Additional text is required in the definition to define the route part – sample text based on that used for two-way route has been included. (Register).
- Suggest that QUASOU = 6 (least depth known) and 7 (least depth unknown, safe clearance at value shown) be added to list of allowable enumerate values for QUASOU on **DWRTPT**. (Feature Catalogue).
- Suggest RESTRN = 14 (area to be avoided) be removed from the list of allowable enumerate values for RESTRN on **DWRTPT**. (Feature Catalogue).
- Suggest TECSOU = 2 (found by side scan sonar) and 11 (satellite imagery) be removed from; and TECSOU = 5 (found by lead-line) be added to; the list of allowable enumerate values for TECSOU on **DWRTPT**. (Feature Catalogue).

#### **DYKCON:**

- Why is CONVIS not an allowable attribute for this feature?
- Suggest that CONRAD = 3 (radar conspicuous (has radar reflector)) and 4 (radar conspicuous (has Radar Target Enhancer)) be removed from the allowable enumerate list for CONRAD in **DYKCON**. (Feature Catalogue).
- Suggest remove NATCON = 4 (hard surfaced) and 5 (unsurfaced) from S-58 list of allowable values for **DYKCON**. (Feature Catalogue).

#### **FAIRWY:**

- The current S-57 definition is from the International Maritime Dictionary. There is a definition for fairway in S-32, but it is much broader than the S-57 definition. Should the S-32 definition be amended? (HDWG).
- Suggest that QUASOU = 3 (doubtful sounding) and 4 (unreliable sounding) be removed from the allowable enumerate list for QUASOU, and QUASOU = 6 (least depth known) be added to the allowable enumerate list for QUASOU on **FAIRWY**. (Feature Catalogue).
- Should INT1 – M18 (fairway designated by regulatory authority) be included as the INT1 reference for **FAIRWY**? (Register).
- Suggest add S-4 – B-432.1 (a fairway) and B-434.5 (a fairway designated by a regulatory authority) to S-4 references for **FAIRWY**.

#### **FERYRT:**

- Suggest that STATUS = 14 (public) be added to the allowable enumerate list for STATUS on **FERYRT**. (Feature Catalogue).
- Suggest all of S-4 – B-438 (ferries) be listed as the S-4 references for **FERYRT**. (Register).

#### **FLODOC:**

- Is **FLODOC** going to be a Group 1 feature in S-101? If so, then DATEND and DATSTA should be removed from the allowable attribute list.
- Suggest that CONDTN = 3 (under reclamation) be removed from the allowable enumerate list for CONDTN in **FLODOC**. (Feature Catalogue).
- The implementation of ENC Encoding Bulletin needs to be looked at. It doesn't look like it will work properly.
- Maximum draft in the dock is currently encoded in INFORM. Suggest that maximum draft be an attribute combined as a sub-attribute with DRVAL1 to form a complex attribute? Or just a separate attribute (DRAMAX?)? (Register).

#### **FNCLNE:**

- Existing S-57 definition includes the words "natural or man-made". Current DGIWG definitions for both fence and wall only state man-made. Suggest the "natural or" be

removed from the definition, or is there a situation where such a natural feature would be encoded as **FNCLNE**? (Register).

- Suggest that CONRAD = 3 (radar conspicuous (has radar reflector)) and 4 (radar conspicuous (has Radar Target Enhancer)) be removed from the allowable enumerate list for CONRAD in **FNCLNE**. (Feature Catalogue).
- Suggest that STATUS = 7 (temporary) and 13 (historic) be added to the allowable enumerate list for STATUS in **FNCLNE**. (Feature Catalogue).

#### **FOGSIG:**

- Suggest S-4 references for **FOGSIG** be amended to add B-451, B-453 and B-454. (Register).

#### **FORSTC:**

- Suggest amended definition for **FORSTC**, as adapted from DGIWG FDD. (Register).
- Suggest list of allowable enumerate values for STATUS be reviewed for possible exclusion of some values. (Feature Catalogue).
- Suggest landmark be added to list of Distinctions. (Register).

#### **FRPARE:**

- What is the point of having STATUS as an allowable attribute for **FRPARE**? (Feature Catalogue).

#### **FSHFAC:**

- Suggest delete “.1-2” from INT1 reference K44 for **FSHFAC** (consistency). Both K44.1 and 44.2 are references, but these constitute all K44. (Register).
- Suggest B-447 (aquaculture: fish traps, shellfish beds, fish havens, marine farms) be added to S-4 references for **FSHFAC**. (Register).
- Something needs to be sorted out in relation to having to double encode **FSHFAC** as **OBSTRN** in order for adequate portrayal in ECDIS, as per ENC EB. (TSMAD, DIPWG).

#### **FSHGRD:**

- Suggest list of allowable enumerate values for RESTRN be reviewed for possible exclusion of some values (suggestions in document). (Feature Catalogue).

#### **FSHZNE:**

- What is the point of having STATUS as an allowable attribute for **FSHZNE**? (TSMAD, Register).
- If a fishery zone is encoded as an area, why does the distance of the associated limit have to be encoded in INFORM? (TSMAD).
- Is there a display alternative that can be implemented in lieu of ENC EB **XX**? (DIPWG).

#### **GATCON:**

- There is a definition for gate: hydraulic in S-32. Should this definition be adopted for S-100? Should a separate definition just for “gate” be incorporated in S-32? (TSMAD, HDWG, Register).
- Suggest remove S-4 – B-326.3 (A wet dock or non-tidal basin) from the list of S-4 references for **GATCON**. (Register).

#### **GRIDRN:**

- Suggest S-32 definition for careening grid be amended to agree with S-57 definition (removal of word “timber”). Suggest also that “Also called gridiron” be added to S-32 definition. (HDWG).
- Suggest removing point as an allowable primitive for **GRIDRN** for ENC – does not symbolise in ECDIS (ENC EB No. 29). (Register (or Feature Catalogue?)).
- Inconsistency between S-32 and INT1. Term in INT1 is “gridiron or scrubbing grid” (F32). Suggest INT1 term be amended to “gridiron or careening grid” to be consistent. Same situation for S-4 – clause B-326.8. Note that the term “scrubbing grid” is not included in S-32. (CSPCWG).
- Suggest that STATUS = 16 (watched) and 17 (unwatched) be removed from list of allowable enumerate values for STATUS on **GRIDRN**. (Feature Catalogue).
- WATLEV values 2 (always dry) and 3 (always underwater/submerged) should not be allowable values for **GRIDRN** as these values conflict with definition – “A structure in the intertidal zone ...”. (Feature Catalogue).

- Suggest dry dock and floating dock be included as distinctions for **GRIDRN**. (Register).

#### **HRBARE:**

- There is a very clear distinction between the S-57 definition for harbour area, and the S-32 definition for harbour, as the S-57 definition refers to a harbour authority having jurisdiction. The S-32 definition relates more to the geography (natural or man-made). Suggest these definitions be discussed and resolved (e.g. include definition for harbour area in S-32?). Note that DGIWG FDD has distinct definitions for both. (TSMAD, HDWG, Register).

#### **HRBFAC:**

- Need to amend INT1 reference U1.1 (boat harbour, marina) following removal of section U from INT1 (CSPCWG 2009). (Register).
- Suggest list of allowable enumerate values for PRODC and RESTRN be reviewed for possible exclusion of some values. (Feature Catalogue).
- Suggest remove S-4 – B-328.2 (A timber yard) from list of S-4 references for **HRBFAC**. Timber yard has been removed as an allowable enumerate for CATHAF. (Register).

#### **HULKES:**

- S-57 definition for Hulk and S-32 definition do not agree. These definitions should be synchronised (note that there is a definition for "hulk" in DGIWG FDD, which is mostly consistent with S-32). There is also an association with the term "hulk" and various types of offshore platforms (**OFSPLF**) in S-4 (B-445.5). Discuss with HDWG and CSPCWG. (HDWG, CSPCWG).
- Suggest adding offshore platform and shoreline construction to list of distinctions for **HULKES**. (Register).

#### **ICNARE:**

- The burning of chemical waste at sea has been prohibited since 1996 under amendments made to the 1972 IMO Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (S-4 – B-449.3). Suggest that **ICNARE** be retired from the Register, or at least not included in the S-101 Feature Catalogue. (Register, Feature Catalogue).

#### **ISTZNE:**

- Suggest that RESTRN = 16 (discharging prohibited) and 17 (discharging restricted) be added to list of allowable enumerate values for RESTRN on **ISTZNE**. (Feature Catalogue).
- Suggest adding INT1 – M25.2 (inshore traffic zone without defined end limits) to INT1 references for **ISTZNE**. (Register).

#### **LAKARE:**

- Suggest removing lake shore from Distinctions (not allowed for ENC) (Register).

#### **LIGHTS:**

- Complex Attribute: Suggest SECTR1 and SECTR2 can be sub-attributes of a complex attribute SECTOR. Would it be possible to have multiple instances of SECTOR for a single light, so that multiple lights do not need to be encoded? Needs discussion.
- Clause "Unwatched lights". Isn't this up to the HO? Suggest removing this clause.
- Suggest INT1 – P130.4 (direction light with narrow fairway sector flanked by light sectors of different character on multicoloured charts) and P31 (moire effect light (day and night)) be included in list of INT1 references for **LIGHTS**. (Register).
- Should other INT1 references for features having lights (e.g. Q7 (lighted marks on standard charts) and Q8 (lighted marks on multicoloured charts)) be included in list of INT1 references for **LIGHTS**? (Register).
- The introductory section for lights will need to be re-written once the complex attribute process with lights is sorted out. (TSMAD).
- Suggest S-4 references for **LIGHTS** be amended to cover all of Section B-470. (Register).

#### **LITFLT:**

- Suggest removing INT1 – Q31 (light float not part of IALA system) from list of INT1 references for **LITFLT**. Will need to check next Edition of INT1. (Register).

**LNDARE:**

- Suggest moving this to section 6.2 (Natural Features).
- Suggest that CONDTN = 1 (under construction) and 5 (planned construction) be removed from list of allowable enumerate values for CONDTN on **LNDARE**. (Feature Catalogue).
- Suggest that STATUS = 16 (watched) and 17 (unwatched) be removed from list of allowable enumerate values for STATUS on **LNDARE**. (Feature Catalogue).
- Should B-421.1 be included as an S-4 reference for Rocks which do not cover (islets)? (Register).

**LNDELV:**

- Suggest adding S-4 – B-352 (Relief: Spot Heights) to references.

**LNDMRK:**

- There is a disparity between the S-32 definition and the S-57 definition (adapted from S-32) for landmark. Suggest S-32 definition be amended as the S-57 definition is better suited to hydrography? (HDWG).
- Suggest list of allowable enumerate values for CATSPM on **LNDMRK** be reviewed for possible exclusion of most values (many suggestions have been made in document). (Feature Catalogue).
- Suggest list of allowable values for FUNCTN on **LNDMRK** be reviewed for possible removal of some values (suggestions included in document). (Feature Catalogue).
- Suggest that STATUS = 16 (watched) and 17 (unwatched) be removed from list of allowable enumerate values for STATUS on **LNDMRK**. (Feature Catalogue).
- Suggest removing INT1 D 5-6 and 13 and inserting D 8; removing E 10.1-22 and inserting E 10.2-10.4; 20; amending to E 22-31 (all inclusive) for INT1 references for **LNDMRK**. (Register).
- Suggest S-4 – B-373 (places of worship and associated features); B-374.3 (a tower in general); B-445.8 (wind turbines) and B-445.9 (wind farms) be added; and B-445.6 (safety zones) be removed; from list of S-4 references for **LNDMRK**. (Register).

**LNDRGN:**

- Suggest that NATQUA = 10 (hard) be removed from list of allowable enumerate values for NATQUA on **LNDRGN**. (Feature Catalogue).
- Suggest remove S-4 – B-312.1 (a steep coast), B-312.3 (sandhills or dunes) and B-312.4 (mangroves) be removed from list of INT1 references for **LNDRGN**. Suggest B-350 (natural features in general) be included in list of S-4 references in relation to introductory paragraphs. (Register).

**LOCMAG:**

- Minor change to definition of Local Magnetic Anomaly to agree with S-32. (Register).
- Complex Attribute: Suggest VALLMA can be a complex attribute with sub-attributes VALPOS and VALNEG to populate the range of magnetic anomaly. This would remove the requirement to populate INFORM (or an information object). (Register, Feature Catalogue).
- Heading in body of text changed to Local magnetic **anomaly**.

**LOGPON:**

- Note that an adaptation of the S-57 definition for log pond has been included in DGIWG FDD (booming ground). Is this a hydrographic feature, and therefore warranting a definition in S-32? (HDWG, Register).

**LOKBSN:**

- Suggest words “A lock basin is” be removed from current S-57 definition for lock basin to agree with S-32 definition. Also suggest “Adapted from” be removed from definition as this definition matches the definition for lock in S-32. (Register).
- Suggest include canal to list of distinctions for **LOKBSN**. (Register).

**MAGVAR:**

- Suggest definition for Magnetic variation be amended to be derived from S-32. (Register).
- Complex Attribute: Suggest that VALACM and VALMAG can be combined as sub-attributes to a complex attribute to define the overall magnetic variation at a specific date (perhaps this can be combined with RYRMGV at some stage to internally calculate the actual magnetic variation for the displayed ECDIS date?).



- Suggest INT1 references for magnetic variation be amended. (Register). Will need to be reviewed and confirmed.
- Suggest S-4 references for magnetic variation be amended. (Register). Will need to be reviewed and confirmed.

#### **MARCUL:**

- The S-57 definition for **MARCUL** also additionally includes “Also called fish farm.”. Should the S-32 definition for “fish farm” therefore include “Also called marine farm, marine culture.”? (HDWG).
- Suggest delete “.1-2” from INT1 reference K48 for **FSHFAC** (consistency). Both K48.1 and 48.2 are references, but these constitute all K48. (Register).
- Is it possible to have a **MARCUL** which has a value of sounding that is deeper than the range of depth of the surrounding depth area? Suggest that EXPSOU = 3 (deeper than the depth of the surrounding depth area) be removed from the allowable list of values for EXPSOU on **MARCUL**. (TSMAD, Feature Catalogue).

#### **MIPARE:**

- The S-57 definition has been derived from the S-32 definition for exercise area. The difference between the two definitions is the inclusion of “shown on charts” in the S-32 definition. Suggest this is not required as it suggests that it is not an exercise area unless it is shown on a chart(?). (HDWG).

#### **MORFAC:**

- Suggest that STATUS = 5 (periodic/intermittent) be added to list of allowable enumerate values for STATUS on **MORFAC**. (Feature Catalogue).
- Remove INT1 – G18.1 from list of INT1 references for **MORFAC**. Does not exist in INT1. (Register).
- Suggest there is a discussion as to why visitors moorings (**SMCFAC**) and Single Anchor Leg Mooring (SALM) and other such production moorings (**OFSPLF**) are not **MORFAC** (will effect all other issues listed here for **MORFAC**). (TSMAD, Register).
- Suggest S-4 references for **MORFAC** be amended to qualify B-327.1-4 (B-327.5 – Stumps of posts or piles – is **OBSTRN**) and to add B-431.5-6 (mooring buoys and mooring trots). (Register).
- Suggest “pile” be added to list if distinctions for **MORFAC**. (Register).

#### **M\_QUAL:**

- Suggest S-4 – B-297 (zone of confidence (ZOC) diagrams) be included as S-4 reference for **M\_QUAL**. (Register).

#### **NAVLNE:**

- The S-57 definition for navigation line has been included in DGIWG DFDD. Should this be listed as the authority, or should this be considered to be a feature related to hydrography and therefore included in S-32? Suggest the term should be included in S-32. (HDWG).
- Suggest definition for Navigation line be amended to remove the “A navigation line is” bit. (Register).
- What does “legend as shown on the source” mean for INFORM? There should be an example here. Should this be a new attribute indicating the length of the measured distance (perhaps HORLEN?). (TSMAD, Register, Feature Catalogue).
- Suggest INT1 – M3 (Recommended track based on a system of fixed marks) be removed from INT1 references for **NAVLNE**. (Register).
- Should INT1 – Q122 (Beacons marking measured distance with quoted bearings) be included in INT1 references for **NAVLNE**. (Register).

#### **OBSTRN:**

- Amend INT1 references K 46.1-2 to K 46 (consistency – fully inclusive). (Register).
- There may be other INT1 references (new values for CATOBS) that need to be added to INT1 references. (Register).
- There may be other S-4 references (new values for CATOBS) that need to be added to S-4 references. (Register).
- Suggest that EXPSOU = 3 (deeper than the range of depth of the surrounding depth area) be removed from list of allowable enumerate values for EXPSOU on **PINGOS**. (Feature Catalogue).
- Suggest list of allowable values for NATSUR on **OBSTRN** be reviewed for possible removal of some values (suggestions included in document). (Feature Catalogue).

#### **OFSPLF:**

- S-32 definition for “platform: offshore” has been amended in S-57 through MD8 – 7.Cl.11 and 7.Co.6 to widen the meaning of the term. Suggest this amendment be considered for S-32. (HDWG).
- Add hulk to list of distinctions for **OFSPLF**. (Register).
- Suggest adding B-445.4 and B-445.5 to S-4 references for **OFSPLF**. Articulated loading platform and single anchor leg mooring are at B-445.4 and floating production, storage and off-loading vessel is at B-445.5. (Register).
- Should offshore wind turbines be considered as a type of offshore platform? (TSMAD, Register).
- Depending on outcome of above discussion, suggest add CONDTN = 4 (wingless) to list of allowable values for CONDTN on **OFSPLF**. (TSMAD, Feature Catalogue).

#### **OILBAR:**

- Suggest the DGIWG FDD definition for **OILBAR** be adopted and added to S-32 if this is considered to be a hydrographic feature. (HDWG).
- Suggest S-4 – B-449.2 (floating barrier) be included as S-4 reference for **OILBAR**. Should also be included as S-4 reference in INT1 – F29.1). (CSPCWG (INT1 Sub-WG), Register).

#### **OSPARE:**

- Suggest that CONDTN = 3 (under reclamation) be removed from; and CONDTN = 4 (wingless) be added to; list of allowable enumerate values for CONDTN on **OSPARE**. Adding CONDTN = 4 dependant on decisions regarding wind farm. (Feature Catalogue).
- Suggest add L5.2 (wind farm) to list of INT1 references for **OSPARE**. (Register).
- The current INT reference for **OSPARE** is L4 (limit of development area). This does not appear to be a correct reference. How are development areas to be encoded in S-101 (there is no guidance in the UOC)? (TSMAD, Register).
- Should B-445.3 (development area) stay as an S-4 reference for **OSPARE**? (refer INT1 references above). (TSMAD, Register).
- Suggest B-445.9 (wind farms) be added to S-4 references for **OSPARE**. May also need to include B-445.11 (underwater turbine/current farm) and B-445.12 (wave farm) to references, dependant on discussions related to above points. (Register).

#### **PILBOP:**

- Suggest a definition for pilot boarding place, or at least boarding place, be included in S-32. Note that pilot is defined in S-32. Note also that pilot boarding place is defined in DGIWG FDD, and their definition is a little more concise than the S-57 definition. Suggest this definition be adopted as the S-32 definition. (HDWG, Register).
- Suggest add S-4 – B-491.1 (the position of a pilot boarding place or pilot cruising vessel) to list of S-4 references for **PILBOP**. (Register)

#### **PILPNT:**

- Suggest the words “or seabed” be added to the IHO definition for pile. (HDWG, Register).
- There seems to be very little difference between the definitions for pile, stake and post. Should there be more distinction between them? Are the values CATPLE = 1 and 3 necessary, or can they be combined? (TSMAD/HDWG, Register).
- Remove **PILPNT** from S-58 test 1762 (CONRAD has been added to this feature – S-57 Extension 6/01). (S-58).
- Piles are covered in S-4 – B-327.2. Should the reference therefore be added for **PILPNT**? Note that the guidance in S-4 is very minimal, which may explain why there is no reference included in UOC clause 4.6.7.2. (Register).

#### **PINGOS:**

- “Unexcluded” (see Extension 6/01). CATSLO = 5 (pingo) removed from **SLOGRD** and **SLOTOP**. Are there any additional words to add for this feature? (TSMAD).
- Suggest that CONRAD = 3 (radar conspicuous (has radar reflector)) and 4 (radar conspicuous (has Radar target Enhancer)) be removed from list of allowable enumerate values for CONRAD on **PINGOS**. (Feature Catalogue).
- Suggest that EXPSOU = 3 (deeper than the range of depth of the surrounding depth area) be removed from list of allowable enumerate values for EXPSOU on **PINGOS**. (Feature Catalogue).
- Suggest that NATSUR = 14 (coral), 17 (shells) and 18 (boulder) be removed from list of allowable enumerate values for NATSUR on **PINGOS**. (Feature Catalogue).

- Suggest that QUASOU = 10 (maintained depth) and 11 (not regularly maintained) be removed from list of allowable enumerate values for QUASOU on **PINGOS**. (Feature Catalogue).
- Suggest numerous values for VERDAT be removed from list of allowable enumerate values for VERDAT on **PINGOS** (suggestions included in document). (Feature Catalogue).
- Suggest that WATLEV = 7 (floating) be removed from list of allowable enumerate values for WATLEV on **PINGOS**. (Feature Catalogue).
- All other attributes for **PINGOS** need to be reviewed for possible exclusion of values from allowable list. (Feature Catalogue).
- The original deleted S-57 object contained the attribute QUAVEM, which has been deleted from S-57, and therefore is not currently in the S-100 Register. Is it required to have this attribute re-proposed?
- Why is VERDAT an allowable attribute for PINGOS? (Register).
- List of distinctions needs to be reviewed. (Register).

#### **PIPARE:**

- Should a definition for submarine pipeline area be included in S-32? Note that there is a definition in DGIWG FDD. This also suggests that perhaps the term should be “submarine pipeline area” rather than just “pipeline area”? Does anyone encode pipeline areas on land in ENC? Suggest the word “submarine” be added to the definition for pipeline area. (TSMAD, HDWG, Register)
- Suggest amend S-4 reference for **PIPARE** to B-444.3 (pipeline areas) in place of B-444.2 (outfalls and intakes). (Register).
- Note that S-4 references in Attribute Catalogue include B-439.3, which is not in the UOC. Suggest that B-439.3 be retained. (Register).

#### **PIPOHD:**

- Suggest S-57 definition of overhead pipeline be included in S-32. (HDWG).
- Suggest that CONRAD = 3 (radar conspicuous (has radar reflector)) and 4 (radar conspicuous (has Radar target Enhancer)) be removed from list of allowable enumerate values for CONRAD on **PIPOHD**. (Feature Catalogue).

#### **PIPSOL:**

- There is a broader definition for pipeline in DIGWG FDD (“A connected set of pipes for conveying liquids, slurries, or gases”). Should this definition be adopted in S-32 and therefore in S-100? (HDWG, Register).
- Suggest point primitive should not be allowed for S-101 ENCs – does not display in ECDIS. Refer ENC EB 29. (TSMAD, Feature catalogue).
- Suggest that PRODC = 20 (wine) and 21 (grain) be removed from list of allowable enumerate values for PRODC on **PIPSOL**. (Feature Catalogue).
- Suggest S-4 – B-444 (submarine pipelines) and B-444.2 (outfalls and intakes) be added to list of S-4 references for **PIPSOL**. (Register).

#### **PONTON:**

- Suggest add “Adapted from” to definition of pontoon to cater for MD8 – 4.Co.7 and 4.Cl.5, or amending the S-32 definition accordingly. (HDWG, Register).
- Is **PONTON** going to be a Group 1 feature in S-101? If so, then DATEND, DATSTA PEREND and PERSTA should be removed from the allowable attribute list.
- Suggest most values for RESTRN be removed from allowable enumerate list for RESTRN on **PONTON** (suggestions in document). (Feature Catalogue).
- The implementation of ENC Encoding Bulletin No. 11 needs to be looked at. It doesn’t look like it will work properly.

#### **PRDARE:**

- The definition for **PRDARE** is not authorised. As there is a measure of hydrographic perspective in the current S-57 definition (use of the term “on land”), suggest that the S-57 definition be included in S-32. (HDWG).
- Add E26.2 (wind farm) to list of INT1 references for **PRDARE**. (Register).
- Suggest add B-328.2 (a timber yard) and B-374.6 (wind turbines) to list of S-4 references for **PRDARE**. (Register).
- Some **PRDARE** of type point do not symbolise in ECDIS (see ENC Encoding Bulletin No. 29). Should this be stated in the Encoding Guide? Is there a way that we can prohibit these geometric primitive/feature/attribute combinations from being encoded? (TSMAD, DIPWG).

- Suggest that CONRAD = 3 (radar conspicuous (has radar reflector)) and 4 (radar conspicuous (has Radar target Enhancer)) be removed from list of allowable enumerate values for CONRAD on **PRDARE**. (Feature Catalogue).
- Suggest add STATUS = 12 (illuminated) to S-58 list of allowable values for **PRDARE**. (Feature Catalogue).

#### **PYLONS:**

- Suggest S-57 definition of pylon/bridge support be included in S-32. (HDWG).
- Suggest S-4 – B-381.5 (bridge supports) be added to list of S-4 references for **PYLONS**. (Register).
- Suggest adding landmark as a distinction for **PYLONS**. (Register).

#### **RADLNE:**

- The S-32 definition used for the S-57 definition of radar line is “radar guided tracks”, which is referred to in the S-57 definition. Suggest “Also called radar line” be included in the S-32 definition, or the term defined in S-32 amended to radar line. (HDWG).
- Suggest that STATUS = 3 (recommended) be added to list of allowable enumerate values for STATUS on **RADLNE**. (Feature Catalogue).

#### **RADRFL:**

- Suggest S-4 – B-455.8 (Radar reflectors) be added to the list of S-4 references for **RADRFL**. (Register).

#### **RADRNG:**

- The S-57 definition for radar range has been adopted by DGIWG FDD (part as definition and part as description. If this is considered to be a hydrographic term, should it be included in S-32? (HDWG, Register).

#### **RAILWY:**

- Definition for **RAILWY** has been changed to agree with current definition in DGIWG FDD. (Register).
- Suggest that CONDTN = 2 (ruined) be added to; and CONDTN = 3 (under reclamation) be removed from; list of allowable enumerate values for CONDTN on **RAILWY**. (Feature Catalogue).
- Suggest that STATUS = 13 (historic) and 14 (public) be added to list of allowable enumerate values for STATUS on **RAILWY**. (Feature Catalogue).

#### **RAPIDS:**

- Is **RAPIDS** required for S-101 ENCs? AU has tidal rapids on the north-west coast (**check if these are encoded**), but does anyone else use this feature? Note that S-4 specifies rapids being depicted “in otherwise navigable rivers” on paper charts. How then can it be encoded on a **RIVERS** feature if it should be in a navigable river? (Register).
- If the answer to the above is yes, consider excluding Point as a valid primitive for rapids in S-101 ENCs, as it does not symbolise in ECDIS (ENC EB 29 refers).

#### **RCRTCL:**

- Recommended route centreline has been included in the DGIWG FDD with the same definition as that used in S-57. Suggest as this is a hydrographic term the definition be included in S-32. (HDWG, Register).
- Suggest that QUASOU = 6 (least depth known) be added to list of allowable enumerate values for QUASOU on **RCRTCL**. (Feature Catalogue).
- Suggest that TECSOU = 2 (found by side scan sonar) and 11 (satellite imagery) be removed from list of allowable enumerate values for TECSOU on **RCRTCL**. (Feature Catalogue).

#### **RCTLPT:**

- Suggest the revised S-32 definition for recommended direction of traffic flow (as derived from IMO Ships’ Routing) be used as a definition for **RCTLPT**. Additional text is required to define the lane part – sample text based on that used for two-way route has been included. (Register).

#### **RDOCAL:**

- There is a definition for calling-in point in S-32 which has not been used in S-57. Suggest these definitions need to be reconciled, and the existing S-57 definition incorporated in the body of the text. (HDWG, Register).

- Amend INT1 references for **RDOCAL** to reflect latest Edition – i.e. M40.1 and M40.2. (Register).
- Suggest amend S-4 references for **RDOCAL** to reflect revised S-4 (radio calling-in points are only covered B-488.1 and B-488.2 (not all of B-488)). (Register).
- Suggest “calling-in” and “reporting” in the sub-heading be transposed, as the feature name and acronym is “radio calling-in point” (**RDOCAL**).
- The current encoding for **RDOCAL** requires 2 coincident one-way features to be encoded if the point is actually 2-way but one bearing is not the reciprocal of the other. Is there a way that this can be done using only one feature? Suggest this may be done by having ORIENT as a complex attribute having 2 sub-attributes. (Register, Feature Catalogue).

#### **RDOSTA:**

- Note that many of the types (categories) of radio stations are no longer required to be depicted on paper charts, and their symbols in INT1 have been classed obsolete. Suggest evaluation of this be made for ENC and values retired accordingly. (Register, Feature Catalogue).
- Suggest amend S-4 references for **RDOSTA** to include all B-480 to B-484. (Register).

#### **RECTRC:**

- The S-32 definition for “track: recommended” contains the words “shown on a chart by either a dashed or a continuous line”, which is not relevant to ENC encoding. Suggest this part of the definition be removed and made consistent with the existing S-57 definition. (HDWG).
- Suggest that QUASOU = 3 (doubtful sounding) and 4 (unreliable sounding) be removed from list of allowable enumerate values for QUASOU on **RECTRC**. (Feature Catalogue).
- Suggest that TECSOU = 11 (satellite imagery) be removed from list of allowable enumerate values for TECSOU on **RECTRC**. (Feature Catalogue).
- INT1 references for recommended track are inclusive of M3 to M6. Suggest this be reflected in the references in the document by removing M5.1 and M5.2. (Register).
- Suggest adding S-4 – B-434.1-4 to list of S-4 references for **RECTRC**. (Register).
- Suggest a new attribute be used to encode the maximum authorised draft along a recommended track (e.g. MAXDFT). (Register, Feature catalogue).
- Suggest adding fairway to list of distinctions for **RECTRC**.

#### **RESARE:**

- The S-57 definition for restricted area, which was derived from S-32, has been amended by MD8 Clarification and Correction (2.Cl.2 and 2.Co.2). Suggest S-32 be amended to revised S-57 definition. (HDWG).
- Suggest add INT1 – L5.2 (wind farm with restricted area); M29.1 (area to be avoided (ATBA) around navigational aid); and N63 (dredging area) be added to INT1 references for **RESARE**. (Register).
- Suggest add S-4 – B-437.1-7 (ESSA and other environmental areas); B-435.7 (area to be avoided); B-435.11 (no anchoring areas); B-445.9 (wind farm with restricted area); B-446.4 (dredging area); and B-448 (degaussing range) (and remove B-448.2) to S-4 references for **RESARE**. (Register).

#### **RETRFL:**

- Complex Attribute: This feature should be a complex attribute of **BCN\*\*\***, **BOY\*\*\*** and **DAYMAR(?)** (at least), with COLOUR etc. as sub-attributes.
- In S-4, the term used is “retroreflector”, while in S-57 it is “retro-reflector”. Suggest the term be as for S-4. (Register).
- INT1 – Q6 is “retroreflecting material”. Should this be included as an INT1 reference for retro-reflector even though there is no symbol? (Register).
- Suggest S-4 – B-460.7 (retroreflectors) be included as S-4 reference for **RETRFL**. (Register).

#### **RIVERS:**

- Suggest that STATUS = 2 (occasional) be removed from list of allowable enumerate values for STATUS on **RIVERS**. The better term in regard to a river is periodic/intermittent. (Feature Catalogue).

#### **ROADWY:**

- Suggest removing “A road is” from the start of the definition for road. (Register).

- There have been a number of values for the attributes CONDTN, NATCON and STATUS suggested in the document for removal as allowable values on **ROADWY** (**ROADWY** is not included for these attributes in S-58 test 2000). These will need to be reviewed. (Feature catalogue).
- Suggest remove point as a valid geometric primitive for **ROADWY**, as it does not symbolise in ECDIS (refer ENC EB No. 29). (Register, Feature Catalogue).
- Suggest add INT1 – D7 (street name, road name) be added to list of INT1 references for **ROADWY**.
- Is square a valid distinction for ENC, given that it is prohibited? (Register).

#### **RSCSTA:**

- The S-57 definition for rescue station has been adopted by DGIWG FDD (maritime station type code). Suggest a definition for rescue station (perhaps maritime rescue station?) be included in S-32. (HDWG, Register).
- There is an INT1 reference for **RSCSTA** to Q124 (refuge beacon). Refuge beacon is a category of special purpose mark. Is a refuge beacon going to be considered as a rescue station or a beacon special purpose? According to S-57 (UOC clause 13.3) it is beacon special purpose, therefore suggest that Q-124 be removed from INT1 references for **RSCSTA**. (TSMAD, Register, Feature catalogue).
- Suggest S-4 – B-490 (Marine services and signal stations) be added to S-4 references for **RSCSTA**. (Register).

#### **RTPBCN:**

- Suggest S-4 reference for **RTPBCN** be amended to include all B-486, as all clauses within B-486 apply to radar transponder beacons. (Register).

#### **RUNWAY:**

- Suggest that STATUS = 7 (temporary) be removed from list of allowable enumerate values for STATUS on **RUNWAY**. (Feature Catalogue).
- Suggest amending “airport area” to “airport/airfield”, and adding seaplane landing area, in distinctions.

#### **SBDARE:**

- The S-57 definition for **SBDARE** is a derivation of the S-32 definition for “bottom: nature of”, therefore suggest “Adapted from” be added to S-32 reference. (Register).
- Consider adding J12 (two layers and mixed natures) to list of INT1 references. (Register).
- S-4 – B-425.1 recommends that colours are no longer relevant to the mariner in regard to nature of the seabed. Suggest that attribute COLOUR be removed (retired?) as allowable attribute for **SBDARE**. (Feature Catalogue).
- Complex attribute: Suggest NATSUR and NATQUA be combined as sub-attributes for a complex attribute (SURFCE?). (Register).

#### **SEAARE:**

- Suggest S-4 – B-550 (toponymy – general rules) be included as S-4 reference for **SEAARE**. (Register).
- Suggest STATUS be added as an allowable attribute for **SEAARE** to allow for buoyed (STATUS = 19 (marked by buoys)) areas of navigable lakes and rivers, where the positions of the buoys are not known, to be encoded.
- Suggest administration area (named) be added to list of distinctions for **SEAARE**. (Register).

#### **SILTNK:**

- Suggest that BUISHP = 5 (high rise building) be removed from list of allowable enumerate values for BUISHP on **SILTNK**. (Feature Catalogue).
- Suggest that PRODC T = 21 (cement) be removed from list of allowable enumerate values for PRODC T on **SILTNK**. (Feature Catalogue).
- Suggest that STATUS = 13 (historic) be added to list of allowable enumerate values for STATUS on **SILTNK**. (Feature Catalogue).
- Suggest “building, single” and “control point” be added to list of Distinctions for **SILTNK**. (Register).

#### **SISTAW:**

- Suggest a more specific definition for signal station, traffic be included in S-32. The definition will need to be determined. (HDWG, TSMAD, Register).

- Suggest S-4 references for **SISTAT** be amended to include all B-494 and B-495. (Register).

#### **SISTAW:**

- The S-57 definition for **SISTAW**, which has been taken from S-32, is the generic definition for signal station. Suggest in addition a more specific definition for signal station, warning be included. The definition will need to be determined. (HDWG, TSMAD, Register).
- Suggest S-4 – B-490.3 (no longer exists) be removed from list of S-4 references for **SISTAW**. (Register).

#### **SLCONS:**

- Suggest S-57 definition be included in S-32? (HDWG).
- Suggest that NATCON = 8 (glass reinforced plastic (GRP)) be removed from list of allowable enumerate values for NATCON on **SLCONS**. (Feature Catalogue).
- Suggest that STATUS = 9 (mandatory), 16 (watched) and 17 (unwatched) be removed from; and STATUS = 13 (historic) be added to; list of allowable enumerate values for STATUS on **SLCONS**. (Feature Catalogue).
- Suggest F3 (causeway) be removed from list of INT1 references for **SLCONS** (is a separate feature). (Register).
- Suggest F24 (gridiron), F25 (dry dock) and F26 (floating dock) be removed from list of INT1 references for **SLCONS**. (Register).
- Suggest S-4 – B-320 (ports and harbours in general) and B-329 (works under construction and projected) be added to list of S-4 references for **SLCONS**. (Register).
- Suggest causeway, dry dock, floating dock and gridiron be added to list of distinctions for **SLCONS**.
- Should lake shore and river bank be listed as distinctions given that they are prohibited for ENC? (Register).

#### **SLOGRD:**

- Non-display of most **SLOGRD** areas unless CONRAD = 1 needs to be further discussed. What about a large visually conspicuous or prominent hill or sand dune? (DIPWG).
- Suggest all values of CONRAD except CONRAD = 1 and 2 be excluded from the allowable enumerate list for **SLOGRD**. (Feature Catalogue).
- Suggest several values for NATSUR be removed from the allowable list of values for NATSUR on **SLOGRD** (suggestions in document). (Feature Catalogue).
- Suggest INT1 – F1 be removed from list of references. This reference is more appropriate for **DYKCON**. (Register).
- Suggest S-4 – B-363.2 (a cutting) and B-364.1 (embankments) be added to; and B-313.1 and B-313.2 be removed from; the S-4 references for **SLOGRD**. (Register).

#### **SLOTOP:**

- Suggest that CATSLO = 3 (hill), 4 (dune) and 7 (scree) be removed from list of allowable enumerate values for CATSLO on **SLOTOP**. (Feature Catalogue).
- Suggest several values for COLOUR be removed from the allowable list of values for COLOUR on **SLOTOP** (suggestions in document). (Feature Catalogue).
- Suggest all values of CONRAD except CONRAD = 1 and 2 be excluded from the allowable enumerate list for **SLOTOP**. (Feature Catalogue).
- Suggest several values for NATSUR be removed from the allowable list of values for NATSUR on **SLOTOP** (suggestions in document). (Feature Catalogue).
- Do we have to restrict the use of **SLOTOP** to on the land only? What if a HO considers it important to encode an ocean cliff (that cannot be represented in the depth contour range) on its ENCs? (TSMAD, DIPWG).

#### **SMCFAC:**

- The S-57 definition for small craft facility has been adopted by DGIWG FDD. Suggest this definition also be adopted in S-32, as small craft facility should be considered to be a hydrographic feature. (HDWG).
- All INT1 references need to be reviewed in lieu of CSPCWG decision to remove Section U from INT1. As part of this review, consideration also needs to be given as to whether all the current S-57 enumerate values for CATSCF will be required for S-101 ENCs. (Register, Feature Catalogue).
- Suggest S-4 – B-320.1 (fishing harbours or ports) and B-320.2 (boat harbours and marinas) be included as S-4 references for **SMCFAC**. (Register)

#### **SNDWAV:**

- The S-57 definition for **SNDWAV** has been taken from S-32, therefore suggest the S-32 reference be added. (Register).
- In S-57, the term used is “sand wave” (2 words), while in S-32 it is a single word (“sandwave”). Which term is correct? Suggest “sandwave” (note that DGIWG FDD uses “sandwave”). (Register).

#### **SOUNDG:**

- Definition in S-57 is a derivative from S-32 and has been adapted to suit nautical charting. Is this definition too narrow for other hydrographic applications? [Refer HDWG discussions February 2010 and CSPCWG discussions mentioned in this discussion]. (HDWG, Register).
- The EXP SOU = 2 issue for soundings needs to be sorted out in regards to the way it is implemented in the ECDIS. (TSMAD, Register).
- Suggest that TECSOU = 10 (photogrammetry) and 11 (satellite imagery) be removed from list of allowable enumerate values for TECSOU on **SOUNDG**. (Feature Catalogue).
- Suggest INT1 – I11 be removed from INT1 references for **SOUNDG**, as sounding out of position is prohibited for ENC. Should I12 (least depth in narrow channel) also be removed?. (Register).
- Suggest S-4 – B-413.1 (drying heights) be added to S-4 references for **SOUNDG**. (Register).

#### **SPLARE:**

- S-4 uses the term “seaplane”, while in S-57 **SPLARE** is “sea-plane”. Suggest this be amended to “seaplane” (there are no instances of “sea-plane” in S-4 and seaplane is not included in S-32 but is used in UOC. “Seaplane” is also used in DGIWG FDD). (Register).
- Should seaplane landing area be a term defined in S-32? (HDWG).
- Should runway be added to the list of distinctions for **SPLARE**? (Register).

#### **SPRING:**

- The S-32 reference number in the S-57 definition for **SPRING** is incorrect (but refer to general comment on use of S-32 reference numbers). (Register).

#### **SUBTLN:**

- Suggest the S-57 definition for submarine transit lane be included in S-32. Note that there are definitions for both submarine transit lane (submerged) and submarine transit lane (surface) in DGIWG FDD, which are more specific than the S-57 definition. (HDWG).

#### **SWPARE:**

- There are definitions for “sweep” and “sweeping” in S-32. Should there also be a definition for “swept area” included in S-32? Suggest S-57 definition can be adopted. (HDWG).
- Suggest a new attribute to encode the date of sweeping (SWPDAT?). (Register).
- If the above suggestion does not get approved, there is an inconsistency between the guidance for **SWPARE** and **DRGARE** in that **DRGARE** suggests NINFOM can be used to encode the depth of dredging in the national language while similar guidance is not supplied for NINFOM for **SWPARE**. (Register).

#### **TESARE:**

- Suggest removing the words “The territorial sea is” from the definition of **TESARE** (it is not included in the S-32 definition). (Register).
- Suggest several values for RESTRN be removed from allowable enumerate list for RESTRN on **TESARE** (suggestions in document). (Feature Catalogue).

#### **TIDEWY:**

- There are two definitions for Tideway in S-57, one being the S-32 definition and the other being a slightly more specific definition with no stated authority. Does this need to be addressed with HDWG? (TSMAD/Register, HDWG).
- Suggest adding S-4 – B-413.3 (a natural watercourse in intertidal areas) as an S-4 reference for **TIDEWY**. This is actually one of the few clauses in S-4 where S-57 is mentioned. (Register).



#### TNLENT:

- This feature was made obsolete for S-57. Perhaps there is a reason to re-activate this feature in S-100/101 given the new approved symbology for paper charts for tunnel entrances? (Register).

#### TOPMRK:

- Complex Attribute: This feature should be a complex attribute of **BCN\*\*\***, **BOY\*\*\*** and **DAYMAR(?)** (at least), with COLOUR and TOPSHP as sub-attributes.
- Suggest S-4 – B-467 (Summary table of IALA marks) be added to the list of S-4 references for **TOPMAR**. (Register).

#### TS\_FEB:

- The definition for tidal stream (tidal current) is only a derivation of the S-32 definition because of the word “alternating”. Is there a problem with this word? Needs to be discussed and reconciled with S-32. (TSMAD/HDWG, Register).
- Add S-32 reference number 1169 to definition of tidal stream. (Register).
- Suggest add B-407 as S-4 reference for **TS\_FEB**. (Register).
- Suggest adding Current – non-gravitational to list of distinctions for tidal stream (flood/ebb). (Register).

#### TS\_PAD:

- Suggest amend INT1 references to H31 and H46. (Register).
- Suggest S-4 – B-407, B-407.2 and B-407.3 be added as S-4 references for **TS\_PAD**. B-407.4 and B-408.2 should be removed. (Register).
- Suggest adding tidal stream (flood/ebb) to distinctions. (Register).

#### TS\_PNH:

- In S-32 the word is “nonharmonic” (no hyphen). Which is correct (suggest non-harmonic)? (HDWG, TSMAD, Register).
- There is a definition for harmonic prediction in S-32. Should there similarly be a definition for nonharmonic (or non-harmonic) prediction? (HDWG, Register).
- INT1 references refer to flood and ebb tidal stream arrows (best related to **TS\_FEB**). Is this an appropriate reference to use for **TS\_PNH**? (Register).
- S-4 references refer to flood/ebb arrows and currents in restricted waters. Are these appropriate references for **TS\_PNH**? (TSMAD, Register).
- Suggest adding tidal stream (flood/ebb) to distinctions. (Register).

#### TS\_PRH:

- There is a definition for harmonic prediction in S-32. This definition is nothing like the second half of the S-57 definition. Should these definitions be rationalised into a single definition, or could the S-57 definition be changed slightly to be a derivation of the S-32 definition? Note that the S-32 definition (2201) looks a bit antiquated and may need to be revised anyway. (HDWG, TSMAD, Register).
- INT1 references refer to flood and ebb tidal stream arrows (best related to **TS\_FEB**). Is this an appropriate reference to use for **TS\_PRH**? (Register).
- S-4 references refer to flood/ebb arrows and currents in restricted waters. Are these appropriate references for **TS\_PRH**? (TSMAD, Register).
- Suggest adding tidal stream (flood/ebb) to distinctions. (Register).

#### TS\_TIS:

- INT1 references refer to flood and ebb tidal stream arrows (best related to **TS\_FEB**). Is this an appropriate reference to use for **TS\_TIS**? (Register).
- S-4 references refer to flood/ebb arrows and currents in restricted waters. Are these appropriate references for **TS\_TIS**? (TSMAD, Register).
- Suggest adding tidal stream (flood/ebb) to distinctions. (Register).

#### T\_HMON:

- S-57 and S-32 definition for tide are almost identical (“sea” in S-57; “oceans, bays etc” in S-32). Suggest these definitions be reconciled? (HDWG, Register).

#### T\_NHMN:

- S-57 and S-32 definition for tide are almost identical (“sea” in S-57; “oceans, bays etc” in S-32). Suggest these definitions be reconciled? (HDWG, Register).

#### T\_TIMS:

- S-57 and S-32 definition for tide are almost identical (“sea” in S-57; “oceans, bays etc” in S-32). Suggest these definitions be reconciled? (HDWG, Register).

#### **TSELNE:**

- Suggest add S-4 – B-436.3 to list of S-4 references for **TSELNE**. (Register).

#### **TSEZNE:**

- Suggest adding INT1 – M20.3 and M21 to list of INT1 references for **TSEZNE** (should M20.2 also be in the list?). (Register).
- Suggest add S-4 – B-436.3 to list of S-4 references for **TSEZNE**. (Register).

#### **TSSBND:**

- Suggest include INT1 – M15 (limit of routeing measure) be included as S-4 reference for **TSSBND**. (Register).

#### **TSSLPT:**

- There is a definition for traffic lane in S-32 which is the same as the current S-57 definition (as derived from IMO Ships’ Routeing) with some additional text. Suggest the S-32 definition be adopted. (Register).
- Suggest the definition for the lane part conclude with “generally along one bearing” as has been adopted for similar features. (Register).
- Suggest including INT1 – M20.1-3 and M22 as list of INT1 references for **TSSLPT**. (Register).
- Suggest S-4 – B-435.1 (traffic separation schemes and inshore traffic zones) be included as S-4 reference for **TSSLPT**. (Register).

#### **TSSRON:**

- The S-32 definition for roundabout states that traffic moves in a counter-clockwise direction around a specified point or zone. **TSSRON** is presently (S-57) only of type area. Should point primitive be allowed for this feature? (TSMAD, Feature Catalogue).

#### **TUNNEL:**

- Suggest adding definition of tunnel to S-32 (assuming this feature is considered to be relevant to hydrography). Definition in DGIWG FDD is too restrictive. Alternatively, suggest amendment to DGIWG definition for purposes of interoperability. (HDWG/DGIWG/Register).
- Suggest point primitive should not be allowed for **TUNNEL** in S-101 ENCs – does not display in ECDIS. Refer ENC EB 29. (Register, Feature Catalogue).
- Suggest that STATUS = 16 (watched) and 17 (unwatched) be removed from list of allowable enumerate values for STATUS on **TUNNEL**. (Feature Catalogue).

#### **TWRTPT:**

- Suggest that QUASOU = 6 (least depth known) be added to list of allowable enumerate values for QUASOU on **TWRTPT**. (Feature Catalogue).
- Suggest that TECSOU = 2 (found by side scan sonar), 10 (photogrammetry) and 11 (satellite imagery) be removed from; and TECSOU = 5 (found by lead-line) be added to; list of allowable enumerate values for TECSOU on **TWRTPT**. (Feature Catalogue).
- UOC clause 10.2.6 indicates that DRVAL1 is used to populate the minimum depth. Is this the minimum depth along the whole route, or just the part? Suggest it should be the minimum depth along the whole route. (TSMAD).

#### **UNSARE:**

- There is a definition for unsurveyed area in S-32. This definition is nothing like the S-57 definition. Should these definitions be rationalised into a single definition? Note that the DGIWG FDD definition for “unsurveyed area” has been adopted from the S-57 definition, while the definition for “unsurveyed” appears to be adapted from the S-32 definition. (HDWG, TSMAD, Register).
- Suggest “inadequately” be used instead of “incompletely” to be consistent with S-4.
- Suggest B-418 be listed as S-4 reference for unsurveyed area and B-417 be included as S-4 reference for inadequately surveyed area. (Register).

#### **UWTROC:**

- There are definitions for rock, rock which covers and uncovers, awash rock and sunken rock in S-32. Should these definitions be rationalised into a single definition for underwater rock? (TSMAD, HDWG, Register).

- Suggest that EXPSOU = 3 (deeper than the range of depth of the surrounding depth area) be removed from list of allowable enumerate values for EXPSOU on **UWTROC**. (Feature Catalogue).
- Suggest that NATQUA = 6 (soft) and 7 (stiff) be added to list of allowable enumerate values for NATQUA on **UWTROC** (could apply to coral?). (Feature Catalogue).
- Suggest adding INT1 – K11 (rock which covers and uncovers) to list of INT1 references for **UWTROC**. Is K16 (coral reef which is always covered) an appropriate INT1 reference (it is an area feature with individual submerged rock symbols inside)? (Register).
- Suggest S-4 references for **UWTROC** be restricted to B-421.2 to B-421.4. B-421.5 may be retained dependant on decision regarding relevance of INT1 – K16 (see above). (Register).
- Suggest seabed area be added to list of distinctions for **UWTROC**. (Register).

#### **VEGATN:**

- Suggest amended definition for Vegetation, as adapted from DGIWG FDD (vegetation should not be considered to be a hydrographic term). (Register).
- Consider excluding CATVEG = 1, 10, 11, 12 as allowable values for **VEGATN** in S-101 ENCs, as they do not symbolise in ECDIS (ENC EB 29 refers). (Register, Feature Catalogue).
- Suggest add S-4 – B-352.4 (the height of top of trees) be added to list of S-4 references for **VEGATN**. B-354.4 needs to be removed as it is no longer a clause in S-4. (Register).
- The way that mangroves are encoded in intertidal areas (particularly the seaward edge) needs to be determined (refer revised S-4 guidance at B-312.4).

#### **WATFAL:**

- Suggest amended definition for waterfall, as taken from DGIWG FDD. (Register).
- Consider excluding Point as a valid primitive for waterfall in S-101 ENCs, as it does not symbolise in ECDIS (ENC EB 29 refers). (Register).

#### **WATTUR:**

- Should there be a definition for “turbulence: water” (or “water turbulence”) in S-32? If so suggest the current S-57 definition be used as starting point for discussions. Note that the S-57 definition has been adopted in the DGIWG FDD. (HDWG, Register).

#### **WEDKLP:**

- There is an S-32 definition for seaweed which has not been used in S-57. Is there something wrong with this definition? Needs to be reconciled. (HDWG, Register).
- In S-57, the term used is “sea weed” (2 words), while in S-32 it is a single word (“seaweed”). Which term is correct? Suggest “seaweed” (note that “seaweed” has been used in DGIWG FDD). (Register).
- In S-57, the term used is “sea grass” (2 words), while in S-32 it is a single word (“seagrass”). Which term is correct? Suggest “seagrass” (note that “sea grass” has been used in DGIWG FDD). (Register).
- The current S-57 definition for kelp contains “(laminariales)”, which is not included in the S-32 definition. Needs to be reconciled. See also comment below for CATWED = 1 (kelp). (HDWG, Register).
- This may be a little radical, but is there any reason while the enumerate values for CATWED are not included in CATVEG and **WEDKLP** removed from the Register? (TSMAD, Register).

#### **WRECKS:**

- Suggest that EXPSOU = 3 (deeper than the range of depth of the surrounding depth area) be removed from list of allowable enumerate values for EXPSOU on **WRECKS**. (Feature Catalogue).
- Suggest add INT1 – K31 (foul ground, e.g. remains of a wreck, no longer dangerous to surface navigation but to be avoided by vessels anchoring, trawling etc.) and N26 (historic wreck and restricted area) be added to the INT1 references for **WRECKS**. (Register).
- Suggest S-4 –B-449.5 (historic wrecks) be added to list of S-4 references for **WRECKS**. (Register).
- Is it possible to have a **WRECKS** which has a value of sounding that is deeper than the range of depth of the surrounding depth area? (TSMAD).



## ATTRIBUTES:

### BCNSHP:

- There is a superseded DGIWG FDD definition for shape of marine beacon which has been included in the document. Needs to be reviewed for suitability, and possible inclusion in S-32(?). If accepted, the Remark can be removed. (HDWG, TSMAD, Register).
- Suggest definition for BCNSHP = 1 (stake, pole, perch, post) be amended slightly to improve syntax (as a result of MD8 – 7.CI.12 and 7.Co.12). Also consider amending S-32 to agree. (HDWG, Register).
- Should a definition for BCNSHP = 2 (withy) be included in S-32? Note that the S-57 definition has been included in DGIWG FDD. (HDWG).
- Should a definition for BCNSHP = 3 (beacon tower) be included in S-32? Note that the S-57 definition has been included in DGIWG FDD. (HDWG).
- Should a definition for BCNSHP = 4 (lattice beacon) be included in S-32? Note that the S-57 definition has been included in DGIWG FDD. (HDWG).
- Should a definition for BCNSHP = 7 (buoyant beacon) be included in S-32? Note that the S-57 definition has been included in DGIWG FDD. (HDWG).

### BOYSHP:

- There is a DGIWG FDD definition for shape of buoys which has been included in the document. Needs to be reviewed for suitability, and possible inclusion in S-32(?). (HDWG, TSMAD, Register).
- Note that there is a definition for BOYSHP = 7 (super-buoy) in S-32 which has not been used in S-57, although the term is “super buoy”. Note that the S-57 definition has been included in DGIWG FDD. Also, the S-57 term used is “super-buoy” as far as the enumerate is concerned, but “superbuoy” in the general text of the UOC. S-4 uses “superbuoy” in all cases but one in Part B, and uses “super-buoy” in all cases in part C. DGIWG FDD uses “super-buoy” (probably as a result of S-57). This all needs to be standardised. Suggest “superbuoy” and adopt S-32 definition. (HDWG, CSPCWG).
- Should a definition for BOYSHP = 8 (ice buoy) be included in S-32? Note that the S-57 definition has been included in DGIWG FDD. (HDWG).

### CATACH:

- The definition for CATACH = 1 (unrestricted anchorage) has been taken from S-32. The definition for the feature **ACHARE**, which has been taken from the same definition, has been amended by Clarification and Correction, and it is suggested that the S-32 definition be amended similarly. If this is done, then suggest that “Adapted from” be added to definition source for CATACH = 1, as including seaplanes in this category negates CATACH = 6 (sea-plane anchorage). (Register).
- S-4 uses the term “seaplane”, while in S-57 CATACH = 6 is “sea-plane anchorage”. Suggest this be amended to “seaplane anchorage” (there are no instances of “sea-plane” in S-4 and seaplane is not included in S-32). (Register).
- Suggest definition for CATACH = 7 (small craft anchorage) be included in S-32 (precedence set by explosives and quarantine anchorages). (HDWG).

### CATBRG:

- Definition for CATBRG = 4 (lifting bridge) contains the words “(or span thereof)” which is not in the S-32 definition. This needs to be resolved with S-32. (HDWG/Register).
- Definition for CATBRG = 5 (bascul bridge) missing “bridge” at end of definition. (Register).
- Suggest amended definition for CATBRG = 8 (transporter bridge), as taken from DGIWG FDD. (Register).

### CATBUA:

- Suggest amended definition for CATBUA = 2 (settlement), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATBUA = 3 (village), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATBUA = 4 (town), as taken from DGIWG FDD. (Register).
- S-57 definition for CATBUA = 5 (city) is the same as DGIWG FDD definition. Suggest add DGIWG FDD as authority. (Register).
- Suggest amended definition for CATBUA = 6 (holiday village), as taken from DGIWG FDD. (Register).

#### CATCBL:

- Suggest amended definition for CATCBL = 1 (power line), as taken from DGIWG FDD. (Register).
- Although the S-57 definition for CATCBL = 3 (transmission line) is not authorised, it is more appropriate (i.e. provides a better distinction from power line) than the DGIWG definition. Is TSMAD happy to retain this unauthorised definition (bearing in mind that the current S-57 definition may not be totally appropriate for **CBLSUB**)?
- Suggest amended definition for CATCBL = 4 (telephone), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATCBL = 5 (telegraph), as taken from DGIWG FDD. (Register).
- Although the S-57 definition for CATCBL = 6 (mooring cable/chain) is not authorised, it is more appropriate (i.e. is not restrictive to mooring of vessels) than the DGIWG definition. Is TSMAD happy to retain this unauthorised definition?

#### CATCHK:

- Suggest amended definition for CATCHK = 1 (custom), as taken from DGIWG FDD. (Register).

#### CATCON:

- Suggest amended definition for CATCON = 1 (aerial cableway (telepheric)), as taken from DGIWG FDD. (Register).

#### CATCOA:

- All definitions in CATCOA will need to be checked once CSPCWG have completed their review of S-4 section B-300.
- Mangrove: Does this enumerate for CATCOA belong here? Should it be re-named “mangrove seaward edge” or similar (and is this therefore really a type of “coastline”)? This needs to be considered in line with the revised S-4 guidelines for the depiction of mangroves on paper charts (B-312.4). Suggest that the seaward edge of a mangrove area can be encoded as a **VEGATN** line perhaps? Or the ECDIS symbology simply depicts the edge of a **VEGATN** area with the appropriate symbol?
- Marshy shore: As for mangrove above in regards to its relevance to coastline.
- There is a definition for marsh in S-32 but the definition in S-57 has been adapted from the definition for swamp. Options include changing the definition to be consistent with the S-32 definition of marsh or amending the enumerate value to “swampy shore” (S-4 and INT1 implications).
- Definition for ice coast has had abbreviation “m” expanded to “metres” for consistency. (Register). Also, there is no reference for this definition – where did it come from?
- S-57 definition for shelly shore does not include a reference for the definition. Have included reference to S-32 to be consistent with sandy, stony and shingly shore.
- INT1 Reference: There was no reference for glacier seaward edge or ice coast in S-57. Have added C-25 (glacier) to the reference. (Register).
- S-4 Reference: As for INT1 Reference above – have included B-353.8.

#### CATCRN:

- Suggest most, if not all, the current S-57 definitions for the various categories of crane should be included in S-32. Most of these types of cranes are found mainly on the waterfront. (HDWG, Register).

#### CATCTR:

- Minor change to definition for Triangulation Point to agree with S-32. (Register).
- S-57 definition for Observation Spot seems to mean something slightly different to the definition in S-32. Needs to be reconciled. (Register).
- Source for definition of Boundary Mark amended to DGIWG FDD, although there is a definition in S-32. Is a boundary mark a hydrographic feature? (TSMAD/HDWG, Register).

#### CATDAM:

- Suggest definition for CATDAM = 3 (flood barrage) be included in S-32 (note that there is a DGIWG FDD definition which is different to the current S-57 definition). (HDWG, Register).

#### CATDOC:

- There are definitions of different types of docks in S-32, including wet dock, but tidal dock is not included. Suggest the S-57 definition for tidal dock be included in S-32 (dock: tidal). (HDWG, Register).

#### CATDPG:

- S-57 definition for CATDPG = 5 (spoil ground) begins “An area at sea”, while S-32 definition begins “A sea area”. Suggest these be reconciled (may affect other definitions for CATDPG (consistency)). Also, this definition includes “Also called dumping ground”, which is the feature class. How can the enumerate also be called the feature name? Suggest remove this sentence (see also point for **DMPGRD** above). (HDWG, Register).

#### CATFIF:

- The S-57 definition for CATFIF = 2 (fish trap) includes an indication that fish traps are usually portable, which is not in the S-32 definition. Suggest the S-32 definition be amended to agree with the S-57 definition. Alternatively, add “Adapted from” to the definition reference. (HDWG, Register).
- The S-57 definition for CATFIF = 3 (fish weir) is not quite the same as the S-32 definition. Suggest the S-32 definition be amended to agree with the S-57 definition. Alternatively, add “Adapted from” to the definition reference. (HDWG, Register).

#### CATFNC:

- Suggest amended definition for CATFNC = 1 (fence), as taken from current Version of DGIWG FDD (previous definition superseded). (Register).
- Suggest amended definition for CATFNC = 4 (wall), as taken from current Version of DGIWG FDD (previous definition superseded). (Register).

#### CATFOG

- There is an S-32 definition for CATFOG = 1 (explosive) that has not been used in S-57. Suggest that these definitions be reconciled. (HDWG).
- There is an S-32 definition for CATFOG = 2 (diaphone) that has not been used in S-57. Suggest that these definitions be reconciled. (HDWG).
- There is an S-32 definition for CATFOG = 3 (siren) that has not been used in S-57. Suggest that these definitions be reconciled. (HDWG).
- There is an S-32 definition for CATFOG = 5 (reed) (is Reed horn in S-32) that has not been used in S-57. Suggest that these definitions be reconciled. (HDWG).
- According to S-32, CATFOG = 5 (reed) and CATFOG = 6 (tyfon) mean the same thing. Are both values required? (TSMAD).

#### CATFOR

- Suggest amended definition for CATFOR = 5 (fortified tower), as adapted from DGIWG FDD. (Register).
- Definition required for CATFOR = 8 (fortified submarine shelter) – no definition in DGIWG FDD. (Register).
- Is there any reason why fortified submarine structure has not been allocated value 7, which is currently not used? (TSMAD, Register).

#### CATGAT:

- S-57 definition for CATGAT = 1 (flood barrage gate) has been adopted in DGIWG FDD. Suggest DGIWG FDD be added as authority, or should a definition be included in S-32 (is this a hydrographic feature?)? (HDWG, Register).
- Suggest remove the “lock gates are” text at the start of the definition for CATGAT = 4 (lock gate). Also, the S-57 definition for CATGAT = 4 (lock gate) is an adaptation of the S-32 definition. Do these definitions need to be reconciled? (HDWG, Register).
- S-57 definition for CATGAT = 5 (dyke gate) has been adopted in DGIWG FDD. Suggest DGIWG FDD be added as authority, or should a definition be included in S-32 (is this a hydrographic feature?)? (HDWG, Register).

#### CATHAF:

- The S-57 definition for CATHAF = 5 (yacht harbour/marina) is not the full definition as shown in S-32. Suggest the full S-32 definition be used. (Register).

#### CATHLK:

- Suggest amended definition for CATHLK = 1 (floating restaurant), as taken from DGIWG FDD. Note that this definition is very similar to the existing S-57 definition

(perhaps derived from?), and as it is relevant to hydrographic charting, may be considered for inclusion in S-32. (HDWG, Register).

- Current S-57 definition for CATHLK = 2 (floating restaurant) has been adopted by DGIWG FDD. Suggest as this is directly relevant to hydrographic charting, that this definition may be included in S-32. (HDWG, Register).
- Suggest that CATHLK = 3 (museum) be amended to “floating museum”, as the definition is specific, and to be consistent with CATHLK = 1. Suggest amended definition as taken from DGIWG FDD. Note that this definition is very similar to the existing S-57 definition (perhaps derived from?), and as it is relevant to hydrographic charting, may be considered for inclusion in S-32. (HDWG, Register).
- Suggest that CATHLK = 4 (accommodation) be amended to “floating accommodation”, as the definition is specific, and to be consistent with CATHLK = 1. Suggest amended definition as taken from DGIWG FDD. Note that this definition is very similar to the existing S-57 definition (perhaps derived from?), and as it is relevant to hydrographic charting, may be considered for inclusion in S-32. (HDWG, Register).
- The S-57 definition for **HULKES** is “A permanently moored ship”. How does CATHLK = 5 (floating breakwater) fit with this definition. NOTE: The S-57 and S-32 definitions do not agree; see entry for **HULKES** above. This can also be encoded as **SLCONS** with CATSLC = 1 (breakwater) and WATLEV = 7 (floating). Suggest that this enumerate be removed. (Register).

#### CATINB:

- Should there be a definition for CATINB = 1 (catenary anchor leg mooring (CALM)) included in S-32? (HDWG).

#### CATLIT:

- S-57 definition for CATLIT = 4 (leading light) is adapted from S-32. The S-57 definition appears to be an improvement in wording (without changing the meaning) of the S-32 definition. Suggest the S-32 definition be amended to agree with the S-57 definition. (HDWG).
- The S-57 definition for CATLIT = 16 (moire effect) is derived from S-4. There is a S-32 definition for moire effect (and inogen light) in S-32. Suggest that all these definitions be reconciled. (HDWG, Register).
- Suggest the S-57 definition for CATLIT = 17 (emergency light) be included in S-32. (HDWG).

#### CATLMK:

- Suggest amended definition for CATLMK = 2 (cemetery), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATLMK = 3 (chimney), as taken from current Version of DGIWG FDD (current S-57 definition superseded). (Register).
- Suggest amended definition for CATLMK = 5 (flagstaff (flagpole)), as taken from current Version of DGIWG FDD (current S-57 definition superseded). (Register).
- Should S-32 definition for flare stack be expanded to include the additional S-4 wording? (HDWG).
- There is no definition for mast (as in on land or on a vessel) in S-32. Is one required? (HDWG).
- Suggest amended definition for CATLMK = 9 (monument), as taken from current Version of DGIWG FDD. Note that this definition is based on the DFDD definition for memorial monument – the DFDD definition for monument is much broader, and may be too broad for hydrographic applications? May need further discussion. (Register).
- Suggest amended definition for CATLMK = 13 (statue), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATLMK = 17 (tower), as taken from current Version of DGIWG FDD (current S-57 definition superseded). (Register).
- Suggest amended definition for CATLMK = 18 (windmill), as taken from current Version of DGIWG FDD (current S-57 definition superseded). (Register).
- Suggest amended definition for CATLMK = 19 (windmotor), as taken from DGIWG FDD. (Register).
- Definition for CATLMK = 21 (large rock or boulder on land) amended to include S-32 number (4415), and “Adapted from” to indicate that the definition is not a direct translation from S-32.

#### CATLND:

- Suggest amended definition for CATLND = 9 (agricultural land), as taken from DGIWG FDD. (Register).



- Suggest amended definition for CATLND = 10 (savanna/grassland), as taken from DGIWG FDD. Note that this is a combination of the individual definitions for savanna and grassland. (Register).
- S-57 definition for CATLND = 18 (cave) is no longer valid in the DGIWG FDD. Slightly amended version taken from Merriam-Webster On-line Dictionary. (Register).
- Suggest expansion of UKHO be added to definition for CATLND = 20 (cay) (consistency). (Register).
- **Suggest a new value for CATLND (blowhole) be proposed for the Hydro Register.**

#### CATMFA:

- Suggest definition for CATMFA = 1 (crustaceans) be included in S-32 (or is this not a hydrographic feature?). (HDWG).
- Suggest a definition for “bivalve molluscs” be included in S-32 (or is this not a hydrographic feature?). (HDWG).
- Suggest a definition for “fish” be included in S-32 (or is this not a hydrographic feature?). (HDWG).
- Apply any change to definition for CATMFA = 4 (seaweed) that is implemented as a result in any change made to CATWED = 2 (sea weed).
- Should a definition for “pearl culture” be included in S-32? (HDWG).

#### CATMOR:

- The current S-57 definition for CATMOR = 1 (dolphin) is not the same as the S-32 definition (is a partial derivation from S-32). Suggest “Adapted from” be added to definition source. (Register).
- Suggest S-57 definition for CATMOR = 2 (deviation dolphin) be added to S-32. Note that S-57 definition has been adopted in DGIWG FDD. (HDWG).
- Current S-57 definition for CATMOR = 3 (bollard) is identical to S-32 definition. Suggest add S-32 reference as definition source. (Register).
- Suggest removing text “A tie-up wall” from definition for CATMOR = 4 (tie-up wall). Also, suggest this definition for CATMOR = 4 (tie-up wall) be added to S-32. Note that S-57 definition has been adopted in DGIWG FDD (combined in definition and description). (HDWG). (Register).
- The current S-57 definition for CATMOR = 5 (post or pile) is not the same as the S-32 definition (is a partial derivation from S-32). Suggest “Adapted from” be added to definition source, and/or the S-32 definition be amended. Note the use of the word “seabed” in the S-57 definition as distinct from “earth” in the S-32 definition. (HDWG, Register).
- Suggest definition for CATMOR = 6 (chain/wire/cable) be amended to an adaptation of the S-32 definition for chain. (Register).

#### CATNAV:

- There is a definition for CATNAV = 2 (transit line) in S-32 (5596). Suggest that this definition (although it does not quite fit), a new definition, or an adaptation of this definition, be adopted for S-101. (Register).

#### CATOBS:

- AU Proposal: Insert new value for CATOBS = Artificial Reef.
- There are minor differences between the S-57 definition for CATOBS = 1 (snag/stump) and the S-32 definition. Suggest S-32 definition be amended to agree with S-57 definition. If not, add “Adapted from” to definition source. (HDWG, Register).
- Suggest S-57 definition for CATOBS = 3 (diffuser) be included in S-32. (HDWG, Register).
- S-57 definition for CATOBS = 4 (crib) is different to the S-32 definition. These definitions need to be reconciled. (HDWG, Register).
- Suggest S-57 definition for CATOBS = 5 (fish haven) be included in S-32. (HDWG, Register).
- Check definition for CATOBS = 6 (foul area) in terms of amended definition approved by HDWG. Also discuss this value in terms of discussions currently underway in CSPCWG, DIPWG, HDWG. (TSMAD, HDWG, Register).
- Incorrect S-32 reference number for CATOBS = 7 (foul ground). Amend to 1918 (if required). Amend this enumerate (including definition) in terms of discussions currently underway in CSPCWG, DIPWG, HDWG. (TSMAD, HDWG, Feature Catalogue, Register).
- Suggest S-57 definition for CATOBS = 8 (ice boom) be included in S-32. (HDWG, Register).

- Suggest S-57 definition for CATOBS = 9 (ground tackle) be included in S-32. (HDWG, Register).
- Should there be a new value for CATOBS (underwater turbine) be included? Should it be a value of CATPRA? (TSMAD, Register).

#### CATOFFP:

- The S-57 definition for CATOFFP = 2 (production platform) has been amended from the S-32 definition. Suggest add "Adapted from" to the definition reference. (Register).
- Suggest definition for CATOFFP = 4 (articulated loading platform) be included in S-32. (HDWG).
- Suggest definition for CATOFFP = 5 (single anchor leg mooring) be included in S-32. (HDWG).
- Suggest definition for CATOFFP = 6 (mooring tower) be included in S-32. (HDWG).
- S-32 reference number for definition for CATOFFP = 7 (artificial island). Amend to 2461 (if required). There is very little difference between the S-32 and S-57 definitions. Suggest these be reconciled. (HDWG, Register).
- Suggest definition for CATOFFP = 8 (floating production, storage and off-loading vessel) be included in S-32. (HDWG).
- Suggest a definition for CATOFFP = 9 (accommodation platform) be included in S-32. (HDWG).
- Suggest a definition for CATOFFP = 10 (navigation, communication and control buoy) be included in S-32. (HDWG).
- Should a new CATOFFP for offshore wind turbines be added (refer **OFSPLF** above). (TSMAD, Register).

#### CATOLB:

- Suggest S-57 definition for CATOLB = 1 (oil retention (high pressure pipe)) be included in S-32. (HDWG).
- Suggest S-57 definition for CATOLB = 2 (floating oil barrier) be included in S-32. (HDWG).

#### CATPIP:

- Current S-57 definition for CATPIP = 2 (outfall pipe) agrees with DGIWG definition. Add DGIWG FDD as authority for the definition or add to S-32? (Register/HDWG).
- Definition for CATPIP = 3 (intake pipe) is not the same as the S-32 definition (intake – 2468). Suggest adding "Adapted from" to definition. (Register).
- Current S-57 definition for CATPIP = 4 (sewer) agrees with DGIWG definition. Add DGIWG FDD as authority for the definition or add to S-32? (Register/HDWG).
- Suggest amended definition for CATPIP = 6 (supply pipe), as taken from DGIWG FDD. Note this is only a minor variation from the current S-57 definition. (Register).

#### CATPLE:

- Definition for CATPLE = 1 (stake) is an adaptation of the S-32 definition, which is narrow in that it restricts stakes used only as supports to fishing nets. Suggest that the S-32 definition be amended to agree with the S-57 definition. (HDWG).
- Definition for CATPLE = 3 (post) does not agree with the definition in S-32, which is specific to posts serving the purpose of navigational aids (the S-57 definition is not even derived from the S-32 definition). Suggest that the S-32 definition be expanded to include the current S-57 definition. Either way, the definitions need to be reconciled. Note that the S-57 and DGIWG FDD definitions are the same. (HDWG, Register).
- Suggest that the current S-57 definition for CATPYL = 4 (tripodal) be adopted as a new S-32 definition for "tripodal" (doesn't currently exist in S-32). (HDWG).
- Suggest that the new S-57 definition for CATPLE = 5 (piling) be adopted as the S-32 definition. The current S-32 definition supplies no distinction between "piling" and "row of piles" (CATPLE = 6). (HDWG, Register).

#### CATPRA:

- Suggest definition for CATPRA = 1 (quarry) be amended to the current DGIWG FDD definition. (Register).
- Suggest definition for CATPRA = 2 (mine) be amended to the current DGIWG FDD definition. (Register).
- There is a DGIWG FDD definition for stockpile(s) (CATPRA = 3), but it is narrower than the current S-57 definition as it is restricted to "mined materials" only. Can this definition be adopted? A derivation of the DGIWG FDD definition? (TSMAD, Register).

- Suggest definition for CATPRA = 4 (power station area) be amended to the current DGIWG FDD definition. (Register).
- Suggest definition for CATPRA = 5 (refinery area) be amended to the current DGIWG FDD definition. (Register).
- Suggest definition for CATPRA = 6 (timber yard) be amended to the current DGIWG FDD definition. (Register).
- Suggest definition for CATPRA = 8 (tank farm) be amended to the current DGIWG FDD definition. (Register).
- Suggest definition for CATPRA = 9 (wind farm) be amended to the current DGIWG FDD definition. Note that in FDD the term used is “windmotors” (one word), while in S-57 it is “wind motors” (two words), and S-4 it is one word. (TSMAD/CSPCWG, Register).
- Should there be a new value for CATPRA (underwater turbine) be included? Should it be a value of CATOBS? (TSMAD, Register).
- Suggest there be a new value for CATPRA (wave farm). (TSMAD, Register).

#### CATPYL:

- Suggest definition for CATPYL = 1 (power transmission pylon/pole) be amended to the current DGIWG FDD definition. (Register).
- Definition for CATPYL = 2 (telephone/telegraph pylon/pole) amended to the current DGIWG FDD definition (previous definition for telephone-telegraph pylon/pole superseded). (Register).
- Could not find definition for CATPYL = 3 (aerial cableway/sky pylon) in DGIWG FDD 2.1 that looks like it has been adapted to the S-57 definition. Closest was “A pylon supporting an aerial cable” for Aerial Cable Pylon. Have left it at the FDD 1.2 definition. Is TSMAD happy with this?
- Definition for CATPYL = 4 (bridge tower/pylon) amended to the current DGIWG FDD definition. (Register).
- Definition for CATPYL = 5 (bridge pier) amended to the current DGIWG FDD definition. (Register).

#### CATREA:

- The S-32 definition for CATREA = 1 (offshore safety zone) is taken from “safety zone”. Should the S-32 definition be changed to “offshore safety zone” to agree with S-57 (the S-32 definition specifies the zone is around offshore installations). Additionally, the S-32 definition is divided into 2 sentences, while the S-57 definition is divided by “;”. Suggest these be reconciled, with preference given to the S-32 definition. (HDWG, Register).
- Suggest S-57 definition for CATREA = 8 (degaussing range) be included in S-32 (note that “degaussing” and “degaussing cable” are defined in S-32. (HDWG).
- Should a definition for CAREA = 10 (historic wreck area), and perhaps also historic wreck, be included in S-32? (TSMAD, HDWG).
- Should a definition for CAREA = 18 (swimming area) be included in S-32? (TSMAD, HDWG).
- Should a definition for CAREA = 19 (waiting area) be included in S-32? (TSMAD, HDWG).
- Should a definition for CAREA = 21 (dredging area) be included in S-32 (note that there is a definition for dredging buoy)? (TSMAD, HDWG).
- While checking for definitions for CATREA in S-32, it was noticed that there is a definition for both fishing ground and fishing zone. Fishing ground states “also called fishing zone”. The definition for fishing zone is different to the definition for fishing ground, and does not reference fishing ground. Suggest these 2 S-32 definitions be reconciled, and the definition for fishing zone be amended to “see FISHING GROUND”. (HDWG).
- Should a definition for CAREA = 22 (fish sanctuary) be included in S-32? (TSMAD, HDWG).
- Should a definition for CAREA = 24 (no wake area) be included in S-32? (TSMAD, HDWG).
- Should a definition for CAREA = 25 (swinging area) be included in S-32? (TSMAD, HDWG).
- Should a definition for CAREA = 29 (disengagement area) be included in S-32? (TSMAD, HDWG).
- S-4 – B-439.2 makes mention of depicting port security limits as restricted area. Suggest add new enumerate “port security area”. (Register).

#### CATROD:

- Suggest amended definition for CATROD = 1 (motorway), as adapted from DGIWG FDD. (Register).
- Consider separating CATROD = 4 (track/path) into separate enumerates. Note that DGIWG FDD has an attribute "Thoroughfare Use Code" which has a code "TrackOrPath" which is identical (including definition) to CATROD = 4. (Register).
- Suggest attributing definitions for track and path in CATROD = 4 (track/path) to DGIWG FDD (see above bullet). (Register).
- Suggest CATROD = 7 (crossing) be deleted. (Feature Catalogue).
- Suggest adding D7 (street name) to INT1 references. (Register).

#### CATROS:

- Suggest remove "Loran-C is" from definition for CATROS = 9 (Loran C). (Register).
- Suggest remove "Toran is" from definition for CATROS = 11 (Toran). (Register).
- Suggest remove "Omega is" from definition for CATROS = 12 (Omega). (Register).
- Suggest remove "Syledis is" from definition for CATROS = 13 (Syledis). (Register).
- Suggest remove "Chaika is" from definition for CATROS = 14 (Chaika). (Register).
- Note that many of the types (categories) of radio stations are no longer required to be depicted on paper charts, and their symbols in INT1 have been classed obsolete. Suggest evaluation of this be made for ENC and values removed accordingly. (Register, Feature Catalogue).

#### CATRUN:

- Suggest amending definition for CATRUN = 1 (aeroplane runway), as taken from S-32. (Register).

#### CATSCF:

- CSPCWG decision is to remove section U from INT1, with only a few references being re-distributed to different parts of INT1. Need to decide whether to remove most enumerate values from CATSCF in line with this decision. (TSMAD, Register).

#### CATSEA:

- Note that there is work currently being done (June 2010) to harmonise some of the S-32 oceanographic terms with the corresponding B-6 definition. These definitions may need to be re-assessed to determine whether the modified S-32 definition should be quoted. (Register).
- Suggest the first part of the S-32 definition for bay replace the existing S-32 definition for CATSEA = 5 (bay). (Register).
- Definition for CATSEA = 8 (mud flats) is identical to S-32 definition for flat. Suggest S-32 reference be added as authority for definition. Is TSMAD happy that this enumerate is restricted only to mud flats? Or should this be amended to "flats". (Register, TSMAD).
- Add S-32 index number for ledge (2707) to definition for CATSEA = 10 (ledge). (Register).
- Add S-32 index number for narrows (3359) to definition for CATSEA = 12 (narrows). (Register).
- Add S-32 index number for pinnacle (3852) to definition for CATSEA = 17 (pinnacle). (Register).
- Add S-32 index number for seamount (5275) to definition for CATSEA = 34 (guyot). Also, can this value and CATSEA = 16 (seamount) be combined into a single value (seamount/guyot) as they are the same thing? (Register, TSMAD).
- Suggest that definition for CATSEA = 51 (canal) be amended to first part of S-32 definition for canal. Do we want to restrict canals only to navigable canals? (TSMAD, Register).
- Definition for CATSEA = 53 (river) is identical to S-32 definition for river. Suggest S-32 reference be added as authority for definition. (Register).

#### CATSIL:

- Suggest amended definition for CATSIL = 1 (silo), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATSIL = 4 (water tower), as taken from DGIWG FDD. (Register).

#### CATSIT:

- Suggest S-4 – B-494 (Signal stations: general) be added to the list of S-4 references for **SISTAT**. (Register).

#### CATSIW:

- For CATSIW = 9 (time), the S-32 (and therefore S-57) definition states that the signal can be sent by telegraph. Suggest this is no longer done, and therefore this statement should be removed. (HDWG, Register).
- Suggest S-4 – B-490.3 be removed from the list of S-4 references for **SISTAW** (this clause no longer exists in S-4). (Register).

#### CATSLC:

- Amend S-32 reference number for CATSLC = 2 (groyne (groin)) from 2525 to 2121. Also see issue in regard to rip rap below. (Register).
- Definition for CATSLC = 3 (mole) does not agree with the first part of the S-32 definition. As the S-57 definition has been derived from S-4, these definitions need to be reconciled in the relevant Working Groups. Note that the DGIWG FDD definition is derived from S-4. (CSPCWG, HDWG).
- Suggest S-57 definition for CATSLC = 5 (promenade pier), as derived from S-4, be added to S-32. (HDWG, Register).
- Definition for CATSLC = 7 (training wall) is adapted from S-32, but the part of the S-32 definition that has been removed from the S-57 definition is the word “jetty” (CATSLC = 4 (pier (jetty))), and the part added to the S-57 definition (“or to promote scour action”) is part of the S-32 definition for groyne (CATSLC = 2). These definitions need to be sorted out so that they are consistent and not ambiguous. (TSMAD/CSPCWG, HDWG).
- According to S-32, rip rap (CATSLC = 8) is another term for groyne (CATSLC = 2). Another one that needs to be sorted out. (TSMAD/CSPCWG, HDWG).
- Suggest S-57 definition for CATSLC = 11 (landing steps) be added to S-32. Note that the S-57 definition has been adopted in the DGIWG FDD. (HDWG, Register).
- Suggest S-32 definition for ramp (CATSLC = 12) be amended to agree with S-57 definition. (HDWG).
- S-57 and S-32 definitions for CATSLC = 14 (fender) are different. Need to be reconciled. Suggest S-57 definition be adopted, which seems a better (broader) fit. Note that DGIWG FDD has adopted the S-57 definition. (TSMAD, HDWG).
- Suggest S-57 definition for CATSLC = 15 (solid face wharf) be added to S-32. Note that the DGIWG FDD definition is an adaptation of the S-57 definition. (HDWG, Register).
- Suggest S-57 definition for CATSLC = 16 (open face wharf) be added to S-32. Note that the DGIWG FDD definition has been adopted from the S-57 definition. (HDWG, Register).
- Suggest S-57 definition for CATSLC = 17 (log ramp) be added to S-32. Note that the S-57 definition has been adopted in the DGIWG FDD. (HDWG, Register).

#### CATSLO:

- Suggest amended definition for CATSLO = 2 (embankment), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATSLO = 7 (scree), as taken from S-32. (Register).

#### CATSPM:

- S-57 definition for CATSPM = 2 (target mark) does not very well fit a special purpose mark intended as a target mark (particularly the second part of the definition, which relates to aerial photographs). Suggest that at least the definition be amended to only be the first part of the current definition. (Register).
- There is a definition for buoy: cable, which is very similar to the S-57 definition for CATSPM = 6 (cable mark). Suggest these definitions be reconciled (except in respect to “buoy” and “mark”), and an “Adapted from” reference be included, similar to “spoil ground mark”. (HDWG, Register).
- Suggest expanded term for LANBY (CATSPM = 15) be added to either the enumerate value or its definition, as has been done in S-32. (Register).
- S-57 MD8 – 2.Co.4 states “Remove the M-4 reference” from CATSPM, but does not state which S-4 reference should be removed. There is no reference to a paper on which this decision is based. Need to chase this up. (TSMAD).

#### CATTRK:

- S-57 MD8 – 2.Co.5 and 2.Cl.6 amends the definition for CATTRK = 1 (based on a system of fixed marks). This has not been followed through to CATTRK = 2 (not based on a system of fixed marks), in that structures and features are quoted as plural. Suggest definition be amended accordingly. (TSMAD, Register).

#### CATVEG:

- Suggest amended definition for CATVEG = 13 (tree in general), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATVEG = 14 (evergreen tree), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATVEG = 20 (deciduous tree), as taken from DGIWG FDD. (Register).
- Suggest amended definition for CATVEG = 21 (filao tree), as taken from DGIWG FDD. (Register).

#### CATWAT:

- S-32 definition for CATWAT = 2 (eddies) is in the singular, while S-57 is plural. Suggest that these need to be reconciled (suggest S-32 to be amended to the plural, noting that overfalls and tide rips are also plural), or S-57 definition be “Adapted from” S-32. (HDWG, Register).
- Considering that CATWAT = 5 (bombora) is a hydrographic term, suggest that the S-57 definition be adopted in S-32. (HDWG).

#### CATWED:

- Minor editorial changes to definitions of kelp and seagrass. (Register).
- The definition for CATWED = 1 (kelp) is different to the general definition included for **WEDKLP**. These definitions need to be reconciled. (HDWG, Register).
- The definition for CATWED = 2 (seaweed) is slightly different to the general definition included for **WEDKLP**. These definitions need to be reconciled. (HDWG, Register).

#### CATWRK:

- Suggest amended definition for CATWRK = 2 (dangerous wreck), as taken from S-32. (Register).

#### CAT\_TS:

- Add S-32 reference number 1857 to definition for CAT\_TS = 1 (flood stream). The only difference between the S-57 and S-32 definitions for flood stream is “toward” (S-57) and “towards” (S-32) – these should be reconciled (suggest “toward”). (TSMAD/HDWG, Register).
- Add S-32 reference number 1857 to definition for CAT\_TS = 2 (ebb stream). The S-57 and S-32 definitions for ebb stream are identical, therefore suggest remove “Adapted from” from definition. (Register).

#### COLOUR:

- Complex Attribute: Can COLOUR and COLPAT be combined into a complex attribute?

#### COLPAT:

- Complex Attribute: Can COLOUR and COLPAT be combined into a complex attribute?
- With COLPAT being mandatory where COLOUR has more than 1 value, COLPAT has been made allowable for many features where the enumerate values just don't make sense (e.g. **BRIDGE**, **CONVYR**). Can the entire enumerate list be prohibited, and instruction inserted in the guide to populate the attribute with an empty (null) value? Another alternative would be to make COLPAT non-mandatory where colour has more than one value in certain circumstances.

#### CONDTN:

- Suggest amended definition for CONDTN = 1 (under construction), as adapted from DGIWG FDD. (Register).
- Should the definition for CONDTN = 3 (under reclamation) be included in S-32? (HDWG).
- No comparable definition for CONDTN = 4 (wingless). Suggest add “vanes or” to current S-57 definition if it is to be retained to be consistent with windmill definition. Should this definition be proposed for DGIWG FDD? (DGIWG FDD).
- Suggest amended definition for CONDTN = 5 (planned construction), as taken from DGIWG FDD. (Register).

#### CURVEL:

- Complex Attribute: In order to cater for situations where the maximum rate of current velocity is stated as a range on the source (e.g. 1 – 2 kn), suggest CURVEL be a complex attribute with sub attributes e.g. VELRA1 (mandatory) and VELRA2.

- Complex Attribute: Should CURVEL and ORIENT be combined into a complex attribute? (Register).
- There is no authority listed for the definition for CURVEL.

#### DRVAL1 and DRVAL2:

- There is a DGIWG FDD definition for “depth range”. Suggest this definition be considered for S-32, and used as part of the definitions for DRVAL1 and DRVAL2. (HDWG, Register).

#### FUNCTN:

- Suggest amended definition for FUNCTN = 3 (custom office), as taken from DGIWG FDD. (Register).
- Suggest amended definition for FUNCTN = 9 (police station), as taken from DGIWG FDD. (Register).
- S-57 definition for FUNCTN = 10 (water-police station) is the same as DGIWG FDD definition. Suggest add DGIWG FDD as authority. (Register).
- Suggest amended definition for FUNCTN = 19 (educational facility), as taken from DGIWG FDD. (Register).
- Suggest amended definition for FUNCTN = 30 (television), as taken from DGIWG FDD. (Register).
- Suggest amended definition for FUNCTN = 31 (radio), as taken from DGIWG FDD. (Register).
- Incorrect S-32 reference for FUNCTN = 32 (radar). Amend reference to 4133. (Register).
- Suggest amended definition for FUNCTN = 33 (light support), as taken from DGIWG FDD. (Register).
- Suggest amended definition for FUNCTN = 35 (cooling), as taken from DGIWG FDD. (Register).
- Incorrect S-32 reference for FUNCTN = 36 (observation). Amend reference to 3500. (Register).
- Amend “timeball” to “time ball” for consistency with S-32. (Register).
- Current S-57 definition for FUNCTN = 38 (clock) is adapted from S-32 5536 (time ball), but clock is a defined word in the Dictionary. Suggest use S-32 833 (clock) definition. (Register).
- Suggest amended definition for FUNCTN = 39 (control), as taken from current Version of DGIWG FDD (current S-57 definition superseded). (Register).
- Suggest amended definition for FUNCTN = 40 (airship mooring), as taken from current Version of DGIWG FDD (current S-57 definition superseded). (Register).
- Suggest amended definition for FUNCTN = 41 (stadium), as taken from DGIWG FDD. (Register).
- Suggest amended definition for FUNCTN = 42 (bus station), as taken from DGIWG FDD. (Register).
- Suggest definition for FUNCTN = 43 (passenger terminal building), as taken from DGIWG FDD. (Register).
- Suggest definition for FUNCTN = 44 (sea rescue control), as taken from DGIWG FDD. (Register).
- Suggest definition for FUNCTN = 45 (observatory), as taken from DGIWG FDD. (Register).
- Time ball (FUNCTN): Enumerate is “Timeball” and definition is “Time ball”. Which is correct? (suggest “Time ball”).

#### HEIGHT:

- The S-32 and S-57 definitions for height, as applied in hydrography, need to be reviewed and aligned. (HDWH/Register).

#### HORACC:

- Complex attribute: See HORCLR below. (Register, Feature Catalogue)
- Suggest foot (ft) be removed as allowable units of measure for HORACC. (Register).

#### HORCLR:

- Should there be a definition for horizontal clearance in S-32? (HDWG).
- Complex attribute: Could HORCLR be a complex attribute comprising the value (HCLEAR?) and HORACC as sub-attributes? Will need to check whether HORACC is always associated only with HORCLR. (Register).
- Suggest foot (ft) be removed as allowable units of measure for HORCLR. (Register).

HORLEN:

- Suggest foot (ft) be removed as allowable units of measure for HORLEN. (Register).

HORWID:

- Suggest foot (ft) be removed as allowable units of measure for HORWID. (Register).

LITCHR:

- Should definitions for LITCHR = 5 (very quick-flashing) and 6 (ultra quick-flashing) be included in S-32? Mariners using ECDIS and not carrying a copy of INT1 may not have any documentation to define the difference in flash rates between quick, very quick and ultra quick-flashing lights, and the period is not defined in the ENC for these lights. (TSMAD, HDWG).
- Suggest S-32 definition for LITCHR = 7 (isophased) be amended from "light: equal interval" to "light: isophase". Isophase is the most common term now used in the international community. Also, should the enumerate value be "isophased" or "isophase". (TSMAD, HDWG).
- Should there be definitions added for LITCHR values 14-27 and 29 (no definitions included in S-57 or S-32)? (TSMAD, Register).

MARSYS:

- Should MARSYS be considered to be a meta attribute (order in the document)? (Register).

NATCON:

- Suggest amended definition for NATCON = 1 (masonry), as adapted from DGIWG FDD. (Register).

NATQUA:

- The authority quoted for the definition of NATQUA = 1 (fine) is S-4 – B-425.6. The contents of this clause have been removed from S-4; therefore this reference is no longer relevant as it is shown. Alternatives include siting S-57 as the reference (used in the draft document); adding the S-4 Edition number (date) that this definition was derived from (1988); siting DGIWG FDD, where the definition of "fine" has been adopted from the S-57 definition; or adding a definition in S-32. Decision will depend on general discussions relating to quoted definition of source references in the Register. (TSMAD, Register).
- The authority quoted for the definition of NATQUA = 2 (medium) is S-4 – B-425.6. The contents of this clause have been removed from S-4; therefore this reference is no longer relevant as it is shown. Alternatives include siting S-57 as the reference (used in the draft document); adding the S-4 Edition number (date) that this definition was derived from (1988); siting DGIWG FDD, where the definition of "medium" has been adopted from the S-57 definition; or adding a definition in S-32. Decision will depend on general discussions relating to quoted definition of source references in the Register. (TSMAD, Register).
- The authority quoted for the definition of NATQUA = 3 (coarse) is S-4 – B-425.6. The contents of this clause have been removed from S-4; therefore this reference is no longer relevant as it is shown. Alternatives include siting S-57 as the reference (used in the draft document); adding the S-4 Edition number (date) that this definition was derived from (1988); siting DGIWG FDD, where the definition of "coarse" has been adopted from the S-57 definition; or adding a definition in S-32. Decision will depend on general discussions relating to quoted definition of source references in the Register. (TSMAD, Register).

NATSUR:

- Note that there are some differences in the particle sizes quoted between S-57 and S-32. In discussions on amending and reconciling definitions, these need to be taken into account. (TSMAD, HDWG).
- There is an S-32 definition for mud (NATSUR = 1) in S-32, which has not been used in S-57. Suggest that these definitions be reconciled. Note that the S-32 definition is fairly convoluted, and DGIWG FDD definition is different again. (HDWG, Register).
- There is an S-32 definition for clay (NATSUR = 2) in S-32, which has not been used in S-57. Suggest that these definitions be reconciled. Note that the S-32 definition is fairly convoluted, and DGIWG FDD definition is different again. (HDWG, Register).
- Suggest definition for NATSUR = 3 (silt) be amended to agree with S-32 definition. (Register).



- Suggest definition for NATSUR = 4 (sand) be amended to agree with S-32 definition. (Register).
- Suggest definition for NATSUR = 5 (stone) be amended slightly to agree fully with S-32 definition. (Register).
- There is an S-32 definition for gravel (NATSUR = 6) in S-32, which has not been used in S-57. Suggest that these definitions be reconciled. Note that the S-32 definition covers particles up to 256mm, which also covers the sizes for pebbles and cobbles. (HDWG, Register).
- Suggest definition for NATSUR = 7 (pebbles) be amended to agree with S-32 definition. (Register).
- Suggest definition for NATSUR = 8 (cobbles) be amended slightly to agree fully with S-32 definition. (Register).
- The definition for NATSUR = 17 (shells) claims to be an adaptation of the S-32 definition for shell. The definitions are not similar, and need to be reconciled. (HDWG, Register).

NOBJNM:

- Should NOBJNM be re-named NFEANM (feature name in national language)? (TSMAD, Register).

OBJNAM:

- Should OBJNAM be re-named FEANAM (feature name)? (TSMAD, Register).

ORIENT:

- Complex Attribute: Can CURVEL and ORIENT be combined as sub-attributes in a complex attribute for tidal features? Would also be required to be a top level attribute for other features. (Register).

PICREP:

- There is no statement anywhere in S-57 that PICREP can only be used to reference one file (not two or more) – although it is implied. Wording is required to clearly state that PICREP can only be used to reference a single file. Should attribute type be changed from S to A? Or is PICREP going to be replaced by Information Objects? (Register).

PRODCT:

- Current spelling for PRODCT = 18 and 19 is “liquified”. All other sources investigated indicate spelling should be “liquefied”. Suggest amend spelling accordingly. (Register).
- Suggest amended definition for FUNCTN = 18 (liquified natural gas (LNG)), as taken from DGIWG FDD. (Register).
- Current spelling for PRODCT = 20 is “fermanted”. All other sources investigated indicate spelling should be “fermented”. Suggest amend spelling accordingly. (Register).

QUASOU:

- There is a DGIWG FDD definition for QUASOU = 1 (depth known), which includes a reference to known depths of drying features. Suggest an adaptation of this definition be adopted, or a definition be included in S-32. (HDWG, Register).
- There is a DGIWG FDD definition for QUASOU = 2 (depth unknown). Suggest therefore that such a definition is required in S-32 (is a hydrographic term). (HDWG, Register).
- What is the difference between QUASOU = 3 (doubtful sounding) and 4 (unreliable sounding)? Is there a purpose behind defining a sounding as unreliable when an indication of the reliability is given in **M\_QUAL**? (TSMAD, DQWG, Register).
- The definition for QUASOU = 5 (no bottom found at value shown) is attributed to be adapted from S-32 code 4848, but the definition is nothing like the S-32 definition. Should these be reconciled? (TSMAD, HDWG, Register).
- Suggest that a definition for safe clearance (from which the definition of QUASOU = 7 (least depth unknown, safe clearance at value shown) can be derived), be included in S-32 – perhaps as “depth: safe clearance”. Note that there is a definition for “safe clearance known” in DGIWG FDD that has been adapted from the S-57 definition. (HDWG, Register).
- There is a DGIWG FDD definition for “unmaintained depth” which has been adopted from the S-57 definition for QUASOU = 11 (not regularly maintained). Should a definition be included in S-32? (HDWG, Register).

- Within the definitions for the values of QUASOU, there appears to be an interchanging of the terms “least depth” and “shoalest depth”. Suggest that these should be standardised (may have implications on S-32). (HDWG, Register).

RECDAT:

- Should RECDAT be considered to be a meta attribute (order in document)? (TSMAD).

RECIND:

- Should RECIND be considered to be a meta attribute (order in document)? (TSMAD).

RESTRN:

- Suggest the S-32 definition (prohibited area) for RESTRN = 7 (entry prohibited) be amended to agree with the S-57 definition. The inclusion of the word “charts” is too restrictive. (HDWG).
- The S-57 definition for RESTRN = 8 (entry restricted) is the same as the S-57 definition for **RESARE**. Is it allowable to have an enumerate have the same definition as a feature? It has been suggested that the definition for **RESARE** be amended. If this is done, and the definition for entry restricted is not amended, is this OK? Additionally, is it OK for entry restricted to be designated by an appropriate authority but there is no such designation mentioned for entry prohibited? Suggest that this requirement be added to S-32 and S-57 definition for entry prohibited. (HDWG, TSMAD, Register).
- There is an S-32 definition for RESTRN = 14 (area to be avoided). Suggest this definition be adopted. (Register).
- Value for RESTRN = 22 includes the word “artifacts”. Suggest this is incorrect spelling and the word should be “artefacts”. (Register).
- In the second Remarks point, there are errors in attribute descriptions, and a reference to “anchoring prohibition area”, which has been deleted from S-57. Suggest this bullet point be amended accordingly.

SCAMAX:

- There have been arguments to re-introduce SCAMIN for S-101 ENCs. This needs to be discussed with use cases. (TSMAD).
- Should SCAMAX be considered to be a meta attribute (order in document)? (TSMAD).

SCAMIN:

- Should SCAMAX be considered to be a meta attribute (order in document)? (TSMAD).

SDISMN:

- Suggest foot (ft) be removed as allowable units of measure for SOUACC. (Register).

SDISMX:

- Suggest foot (ft) be removed as allowable units of measure for SOUACC. (Register).

SIGGEN:

- Suggest use text in Remarks for a definition of SIGGEN. (Register).

SOUACC:

- Suggest definition for SOUACC which is similar to that used for POSACC. (Register).
- Suggest fathom (fm) and foot (ft) be removed as allowable units of measure for SOUACC. (Register).

STATUS:

- Suggest amended definition for STATUS = 4 (not in use), as adapted from DGIWG FDD. (Register).
- Suggest amended definition for STATUS = 8 (private), as taken from DGIWG FDD. (Register).
- Request a definition be included in S-32 for STATUS = 12 (illuminated). (HDWG).
- Suggest amended definition for STATUS = 18 (existence doubtful), as taken from DGIWG FDD. (Register).
- Request a definition be included in S-32 for STATUS = 19 (buoyed). (HDWG).

TECSOU:

- Suggest amend start of definition for TECSOU = 1 (found by echo sounder) from “The depth was determined ...” to “The depth was measured ...” – more consistent with attribute name “technique of sounding measurement”. (Register).

- Suggest amend start of definition for TECSOU = 3 (found by multi-beam) from “The depth was determined ...” to “The depth was measured ...” – more consistent with attribute name “technique of sounding measurement”. (Register).
- Suggest amend start of definition for TECSOU = 4 (found by diver) from “The depth was determined ...” to “The depth was measured ...” – more consistent with attribute name “technique of sounding measurement”. (Register).
- Suggest amend start of definition for TECSOU = 5 (found by lead line) from “The depth was determined ...” to “The depth was measured ...” – more consistent with attribute name “technique of sounding measurement”. (Register).
- Suggest amend start of definition for TECSOU = 7 (found by laser) from “The depth was determined ...” to “The depth was measured ...” – more consistent with attribute name “technique of sounding measurement”. (Register).
- Should there be a definition for “vertical acoustic system” in S-32? Note that there is a definition for “area swept by vertical acoustic system” in DGIWG FDD that has been adapted from the S-57 definition. (HDWG).
- Suggest amend start of definition for TECSOU = 9 (found by electromagnetic sensor) from “The depth was determined ...” to “The depth was measured ...” – more consistent with attribute name “technique of sounding measurement”. (Register).
- Suggest amend start of definition for TECSOU = 10 (found by levelling) from “The depth was determined ...” to “The depth was measured ...” – more consistent with attribute name “technique of sounding measurement”. (Register).
- There is an S-4 reference included at the end of the S-57 definition for TECSOU = 13 (swept by side-scan sonar). Suggest this be removed. (Register).
- Should there be a definition for “depth: computer generated” or similar in S-32? Note that there is a definition for “computer generated” in DGIWG FDD (enumerate for Bathymetric Measurement Technique Code) that has been adopted from the S-57 definition. (HDWG).
- Should TECSOU be considered to be a meta attribute (order in document)? (TSMAD).

#### TOPSHP:

- Suggest amended definition for TOPSHP = 4 (2 spheres). Current definition is not a definition as it is. Also may need to have an authorised definition (S-32?). (Register).
- Suggest amended definition for TOPSHP = 9 (cube, point up) to combine the definition of cube with cube, point up. (Register).
- Suggest adding definition for TOPSHP = 13 (2 cones, points up) and 14 (2 cones, points down). (Register).
- Suggest amended definition for TOPSHP = 15 (besom, point up) and 16 (besom, point down) to include description of what “point up) and “point down” means. (Register).

#### T\_VAHC:

- Definition appears to be derived from S-32 (2200 – harmonic constituent). Suggest “Adapted from IHO Dictionary – S-32, Edition 5; 2200” be added to definition. (Register).

#### TXTDSC:

- There is no statement anywhere in S-57 that TXTDSC can only be used to reference one file (not two or more) – although it is implied. Wording is required to clearly state that PICREP can only be used to reference a single file. Should attribute type be changed from S to A? Or is TXTDSC going to be replaced by Information Objects? (Register).

#### VERACC:

- Suggest foot (ft) be removed as allowable units of measure for VERACC. (Register).

#### VERCCL:

- Suggest adding “horizontal” in relation to the plane of reference from which VERCCL is measured.
- DGIWG FDD has used the S-57 definition for this attribute to define vertical clearance, closed. Suggest this definition be included in S-32. (HDWG).
- Complex attribute: Could VERCCL be a complex attribute comprising the value (VCLEAR), VERACC and VERDAT as sub-attributes? Need to check whether VERACC and VERDAT are associated with VERCCL in all cases. (Register).
- Suggest foot (ft) be removed as allowable units of measure for VERCCL. (Register).

#### VERCLR:

- Suggest adding “horizontal” in relation to the plane of reference from which VERCLR is measured.
- Suggest S-57 definition be included in S-32. (HDWG).
- Complex attribute: Could VERCLR be a complex attribute comprising the value with VERACC and VERDAT as sub-attributes? Need to check whether VERACC and VERDAT are associated with VERCLR in all cases. (TSMAD, Register).
- The Remarks for the S-57 entry for VERCLR are more specifically related to VERCSA. Consider there should be no instruction in the Specification for populating VERCLR in regard to safe clearance when there is no way to distinguish that a safe clearance has been populated and there is a different attribute for this anyway. Suggest if there are going to be Remarks these should reference VERCSA, and it be mandated that VERCSA be used to populate authorised safe vertical clearances. (Register).
- Suggest foot (ft) be removed as allowable units of measure for VERCLR. (Register).

#### VERCOP:

- Suggest adding “horizontal” in relation to the plane of reference from which VERCOP is measured.
- DGIWG FDD has used the S-57 definition for this attribute to define vertical clearance, open. Suggest this definition be included in S-32. (HDWG).
- Complex attribute: Could VERCOP be a complex attribute comprising the value (VCLEAR), VERACC and VERDAT as sub-attributes? Need to check whether VERACC and VERDAT are associated with VERCOP in all cases. (Register).
- Suggest foot (ft) be removed as allowable units of measure for VERCOP. (Register).

#### VERCSA:

- Suggest adding “horizontal” in relation to the plane of reference from which VERCSA is measured.
- DGIWG FDD has used the S-57 definition for this attribute to define vertical clearance, safe. Suggest this definition be included in S-32. (HDWG).
- Complex attribute: Could VERCSA be a complex attribute comprising the value (VCLEAR), VERACC and VERDAT as sub-attributes? Need to check whether VERACC and VERDAT are associated with VERCSA in all cases. (Register).
- Suggest amend the Remarks to better specify the population of VERCSA when required (see comments for VERCLR). (Register).
- Suggest foot (ft) be removed as allowable units of measure for VERCSA. (Register).

#### VERDAT:

- For VERDAT = 30 (Highest astronomical tide (HAT)), the abbreviation is included in the enumerate value. This is inconsistent with other values. Suggest (HAT) be removed. (Register).

#### VERLEN:

- Suggest foot (ft) be removed as allowable units of measure for VERLEN. (Register).

#### WATLEV:

- There is an S-32 definition for submerged, which has not been used in the S-57 definition for WATLEV = 3 (always underwater/submerged). Suggest that these definitions be reconciled, with S-57 definition being given preference. Note that the S-57 definition has been adopted in DGIWG FDD. (HDWG, Register).
- The S-57 definition for WATLEV = 5 (awash) is adapted from the S-32 definition, in that it is a slightly expanded definition. Suggest that the S-57 definition be adopted in S-32. (HDWG).
- Should a definition of “floating” be included in S-32? (HDWG, Register).