HSSC2-05.9A

2nd IHO-HSSC Meeting
Rostock, Germany, 26-29 October 2010

Report of the Hydrographic Dictionary Working Group

Submitted by:	Chairman, HDWG
Related Documents:	N/A
Related Projects:	None

Chair:	Jerry Mills, USA
Vice-Chair:	Vacant
Secretary:	Steve Shipman, IHB
Member States:	Argentina, Australia, Brazil, Chile, France, Malaysia, Mexico, Uruguay; USA.
Expert Contributor Organisations:	None
	see Annex A for full details

Meetings Held During Reporting Period
None

Next Meeting
None planned

Work Program
A revised draft Work Programme has been prepared as set out in Annex B.
Draft definitions as agreed by the HDWG for endorsement by HSSC2 are set out in Annexes C and D. Annex C contains a clean list of the new/revised definitions for endorsement. Annex D provides some background information as to how these revised / new definitions were decided upon.

Progress on HSSC Action Items

HSSC1/30	CL73/2009 sought additional membership for the HDWG. Australia, Malaysia and Mexico have joined.
HSSC1/31	Definition of Navigable Inland Waters adopted by IHO Member States
HSSC1/32	Resolution K3.3 (Now 7/1929, as amended) "Hydrographic Dictionary" adopted by IHO Member States and included in M-3
HSSC1/33	Revised ToR for the HDWG published on the IHO web site (Note: ToR no longer included in M-3)

Problems Encountered
Although the HDWG now has 11 members only the 3 English speaking members (Australia, USA and IHB) have actively participated in the on-line discussion forum used to conduct HDWG business. The full set of proposed definitions as set out in Annex C was been circulated separately to all members of the HDWG three weeks in advance of the submission of this report.

Any Other Items of Note

In the printed editions of the Hydrographic Dictionary defined terms were given an "index" or reference number in order to facilitate the cross linking of definitions between the English, French and Spanish languages. These numbers were volatile in that they were liable to change as terms were added or removed from the dictionary in each new edition. These "index" numbers do not appear in the current on-line version of the dictionary. When the on-line versions are completed the definitions in the three languages will be cross referenced by hyperlinks. Australia has brought to the attention of the HDWG the fact that S-57, and now potentially S-101, include the "Index" number as part of the reference authority where the S-32 definition has been used or adapted.

The HDWG believes that IHO publications and documents should only reference S-32 and should not make any reference to the old "index" numbers.

Conclusions and Recommended Actions
The HSSC is recommended to endorse the definitions set out in Annex C.

Justification and Impacts

None

Action Required of HSSC
The HSSC is invited to:

a. note this report
b. endorse the work program at Annex B
c. endorse the draft definitions as set out in annex C and invite the IHB to circulate these to Member States for adoption.
d. inform all subsidiary bodies and the IRCC that references to definitions in the Hydrographic Dictionary (S-32) should only refer to S-32 and the definition itself and should not make reference to the old "index" numbers that appeared in the printed versions of S-32.

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1. HDWG WORK PLAN

1.1 HDWG Tasks

A Review and update the definitions in the IHO Dictionary in French English and Spanish. (HDWG ToR 1)

B Liaise with other IHO bodies preparing publications containing glossaries. (HDWG ToR 3c)

C Liaise with other organizations developing dictionaries and/or glossaries. (HDWG ToR 3d)

Task	**Work item**	**Priority** H-high M-medium L-low	**Milestones**	**Start Date**	**End Date**	**Status** P-planned O-ongoing C-completed	**Contact Person(s) * indicates leader**	**Related Pubs/Standard**
A1	Consider proposals from Greece for inclusion of 3 new terms related to the Coast.	M	a. Terms 1 - 3	2010	2011	P	All	
~~A2~~	~~Consider UKHO proposal regarding "irregular" and "unreliable" with regard to the working of a navigational light. (See also B-5)~~	M	~~a. Terms 1 – 2~~ Following consultation with CSPCWG it was decided not to propose definitions for "irregular" or"unreliable" lights.	2010	2011	C	All	
B1	Review terms from former S-52 ECDIS Glossary which have not been included in the S-32 ECDIS Appendix for possible inclusion in S-32 (29 terms)	H	a. Terms 1 – 9 b. Terms 10 – 19 c. Terms 20 - 29	2010	2011	P	All	S-32 Appendix 1 (Formerly S-52 Appendix 3)

Task	**Work item**	**Priority** H-high M-medium L-low	**Milestones**	**Start Date**	**End Date**	**Status** P-planned O-ongoing C-completed	**Contact Person(s)** *** indicates leader**	**Related Pubs/Standard**
~~B2~~	~~Review proposals from CSPCWG~~	H	~~a. Ships' Routeing~~ ~~b. "Soundings" and "Depths".~~ ~~c. "Inadequately surveyed areas" and "Unsurveyed Areas"~~ ~~d. Seabed / Sea Bottom / Sea Floor?~~ ~~e. ESSA; PSSA and wind turbine.~~ ~~f. "Phase" of a navigational light.~~ ~~g. Definition of "International Shipping"~~	2009	2010	C passed to HHSC2 for endorsement	All	IMO Ships' Routeing Guide
~~B3~~	~~Review proposals from SCUFN for a harmonization of terms in B-6 (Undersea Feature Terminology) and S-32 (26 terms for consideration by HDWG)~~	H	~~a. Terms 1 – 11~~ ~~b. Terms 12 - 26~~	2009	2010	C Passed to HSSC2 for endorsement	All	IHO Publication B-6 "Standardization of Undersea Feature Names", 4th Ed, Nov 08
B4	Review of proposals from PRNW (Now WWNWS) (16 terms)	H	a. Terms 1 - 16	2010	2011	P	All	
B5	Review of proposal from TSMAD regarding alignment of definitions in S-57 Object Catalogue. 58 proposals.	H	a. Terms 1 – 9 b. Terms 10 -19 c. Terms 20 – 29 d. Terms 30 – 39 e. Terms 40 - 49 f. Terms 50 - 58	~~2009~~ 2010	~~2010~~ 2011	P	All	S-57 Appendix A Object Catalogue
B6	Aquaculture – proposal from CSPCWG	H	a. Aquaculture	2010	2011	P	All	

Task	Work item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-completed	Contact Person(s) * indicates leader	Related Pubs/Standard
~~B7~~	~~Proposal from the Chair of the S-44 (5th Edition) WG to revise definitions for Lidar, Swath(e), Swath(e) sounding system, Multi-beam Echo Sounder (MBES), and Interferometric~~	~~H~~	~~a. Terms 1 -5~~	2010	2011	C Passed to HSSC2 for endorsement	All	

1.2 HDWG Meetings (IHO WP Task 3.1.8 refers)

Date	Location	Activity
Only if necessary		

Chair: Jerry MILLS, USA Email: Jerry.Mills@noaa.gov
Vice-Chair: Vacant Email:
Secretary: Steve SHIPMAN, IHB Email: sshipman@ihb.mc

Draft new / amended definitions to be included in S-32

Note: Terms used in definitions which are themselves defined in S-32 are shown in UPPER CASE

Task B2: Proposals from CSPCWG

Traffic Separation Scheme: A ROUTEING measure aimed at the separation of opposing streams of traffic by appropriate means and by the establishment of TRAFFIC LANES.

Roundabout: A ROUTEING measure comprising a separation point or circular SEPARATION ZONE and a circular TRAFFIC LANE within defined limits. Traffic within the roundabout is separated by moving in a counter-clockwise direction around the separation point or zone.

Inshore Traffic Zone: A ROUTEING measure comprising a designated area between the landward boundary of a TRAFFIC SEPARATION SCHEME and the adjacent COAST, to be used in accordance with the provisions of rule 10(d), as amended, of the International Regulations for Preventing Collisions at sea , 1972 (Collision Regulations).

Recommended Track: A route which has been specially examined to ensure so far as possible that it is free of dangers and along which ships are advised to navigate.

Mandatory routeing system: A ROUTEING SYSTEM adopted by the INTERNATIONAL MARITIME ORGANIZATION, in accordance with the requirements of regulation V/10 of the 1974 SOLAS convention, for mandatory use by all ships, certain categories of ships or ships carrying certain cargoes.

No anchoring area: A ROUTEING measure comprising an area within defined limits where anchoring is hazardous or could result in unacceptable damage to the marine environment. Anchoring in a no anchoring area should be avoided by all ships or certain classes of ships, except in case of immediate danger to the ship or the persons on board.

Unsurveyed area: An area where HYDROGRAPHIC SURVEY data is non-existent or very poor.

Foul ground: An area over which it is safe to navigate but which should be avoided for anchoring, taking the GROUND or GROUND fishing.

Sea floor: The BOTTOM of the OCEAN when there is a generally smooth gentle GRADIENT. Also referred to as sea bed (sometimes seabed or sea-bed), sea bottom.

Seabed: See SEA FLOOR

Sea-bed: See SEA FLOOR.

Phase of a navigational light: Each element of the sequence of changing CHARACTERISTICS, including intervals of light and darkness (e.g. a flash, an ECLIPSE) or changes of colour.

Environmentally Sensitive Sea Area (ESSA): A generic term which is used to describe a wide range of areas, considered sensitive for a variety of environmental reasons.

Particularly Sensitive Sea Area (PSSA): An area which needs special protection through action by the IMO because of its significance for recognised ecological or socio-economic or scientific reasons and which may be vulnerable to damage by maritime activities. A PSSA is a type of ENVIRONMENTALLY SENSITIVE SEA AREA (ESSA).

Wind Turbine: A tower and associated equipment that generates electrical power from WIND. They can be sited OFFSHORE.

Wind Farm: A collection of WIND TURBINES that are collocated and are organised as a single power generation unit.

International Voyage: A voyage from a country to which the 1974 SOLAS convention applies to a port outside that country or conversely (SOLAS Chapter 1, Regulation 2d).

International Shipping: Shipping engaged on INTERNATIONAL VOYAGES.

Task B3: Alignment with terms in IHO Publication B-6 – Undersea Feature Terminology

Archipelagic Apron: A gentle SLOPE with a generally smooth surface of the SEA FLOOR, characteristically found around groups of ISLANDS or SEAMOUNTS.

Bank: An ELEVATION of the SEA FLOOR over which the DEPTH of water is relatively shallow but sufficient for safe SURFACE NAVIGATION.

Basin: A DEPRESSION of the SEA FLOOR more or less equidimensional in plan and of variable extent.

Borderland: A region adjacent to a CONTINENT, normally occupied by or bordering a SHELF and sometimes emerging as islands, that is irregular or blocky in plan or profile, with DEPTHS well in excess of those typical of a SHELF.

Continental Margin: The zone, generally consisting of SHELF, SLOPE and CONTINENTAL RISE, separating the CONTINENT from the ABYSSAL PLAIN or DEEP SEA FLOOR.

Continental Rise: A gentle slope rising from the oceanic depths towards the foot of a CONTINENTAL SLOPE.

Escarpment: An elongated, characteristically linear, steep SLOPE, separating horizontal or gently sloping sectors of the SEA FLOOR in non-SHELF areas. Also abbreviated to SCARP.

Fan: A relatively smooth, fan-like depositional feature normally sloping away from the outer termination of a CANYON or canyon system. Also called CONE.

Fracture Zone: An extensive linear zone of irregular topography, mountainous or faulted, characterized by steep-sided or asymmetrical RIDGES, clefts, TROUGHS, or ESCARPMENTS.

Gap: A narrow break in a RIDGE or RISE.

Knoll: A relatively small isolated ELEVATION of a rounded shape.

> On the SEA FLOOR, an ELEVATION somewhat smaller than a SEAMOUNT and of rounded profile characteristically isolated or as a cluster. Also called HILL.

Levee: A depositional natural EMBANKMENT bordering a CANYON, VALLEY or SEA CHANNEL on the ocean floor.

Moat (or sea moat): An annular DEPRESSION that may not be continuous, located at the base of many SEAMOUNTS, oceanic islands and other isolated ELEVATIONS.

Plateau: A flat or nearly flat ELEVATION of considerable areal extent, dropping off abruptly on one or more sides; a TABLELAND.

Ridge: The linked major mid-oceanic mountain systems of global extent. Also called mid-OCEANIC RIDGE.

Rise: A broad ELEVATION that rises gently and generally smoothly from the SEA FLOOR.

Saddle: A broad PASS or COL, resembling in shape a riding saddle in a RIDGE or between contiguous ELEVATIONS.

Sea Channel: A continuously sloping elongated discrete DEPRESSION commonly found in FANS or ABYSSAL PLAINS and customarily bordered by LEVEES on one or both sides.

Shelf Edge (or shelf break). The line along which there is a marked increase of SLOPE at the seaward margin of a CONTINENTAL (or ISLAND) SHELF.

Shoal: An offshore hazard to surface NAVIGATION with substantially less clearance than the surrounding area and composed of unconsolidated material.

Sill: A SEA FLOOR barrier of relatively shallow DEPTH restricting water movement between BASINS.

Slope: The deepening SEA FLOOR out from the SHELF EDGE to the upper limit of the CONTINENTAL RISE, or the point where there is a general decrease in steepness.

Terrace: A relatively flat horizontal or gently inclined surface, sometimes long and narrow, which is bounded by a steeper ascending SLOPE on one side and by a steeper descending SLOPE on the opposite side.

Trench: A long narrow, characteristically very deep and asymmetrical DEPRESSION of the SEA FLOOR with relatively steep sides.

Trough: A long DEPRESSION of the SEA FLOOR characteristically flat bottomed and steep sided and normally shallower than a TRENCH.

Valley: submarine. A relatively shallow wide DEPRESSION, the bottom of which usually has a continuous GRADIENT. This term is generally not used for features that have CANYON-like characteristics for a significant portion of their extent.

Task B-7: Proposal from the Chair of S-44 (5th Edition) WG

Lidar. An instrument that measures distance to a reflecting object by emitting timed pulses of LASER light and measuring the time between emission and reception of reflected pulses. The measured time interval is converted to distance. In survey use the lidar system usually scans the light PULSEs across the TRACK of the SURVEY platform (usually an aircraft) so that successive PULSEs cover a SWATH(E) either side of the platform's track. Infra-red LASERS will reflect off land and water, and are normally used for TOPOGRAPHIC lidar SURVEYs. Blue-green LASERS will penetrate water and are used in HYDROGRAPHIC lidar SURVEYs.

Survey vessel (ship) or platform. A vessel or platform (e.g. aircraft) specially equipped for carrying out TOPOGRAPHIC, HYDROGRAPHIC and/or OCEANOGRAPHIC SURVEY.

Systems of sounding lines: The predetermined lines that the SURVEY platform is to follow for the best development of the DEPTH CONTOURS in an area.

Swath(e). The strip or lane on the ground or SEA FLOOR scanned by the SWATH(E) SOUNDING SYSTEM ~~a~~ when the SURVEY platform proceeds along its COURSE.

Swath(e) system. Any of a number of systems which are capable of obtaining a strip or lane of ELEVATIONs or SOUNDINGs from a single SURVEY PLATFORMS's TRACK. In HYDROGRAPHY, systems that fall into this category are MULTI BEAM ECHO SOUNDERs (MBES), INTERFEFOMETRIC ECHO SOUNDERs and LIDAR.

Multi Beam Echo Sounder (MBES). A type of SWATH(E) SOUNDING SYSTEM in which the equipment emits a timed PULSE of sound that is narrow in the fore-aft direction and wide in the across track direction. The reflected sound is received by several RECEIVERs arranged as an ARRAY. By use of SIGNAL processing of the SIGNAL received at combinations of the RECEIVERS a much larger number, potentially many hundreds, of ACOUSTIC receive BEAM angles are formed. For each receive BEAM the time interval between emission and reception of the reflected sound is converted into a RANGE. Geometry is then used to convert each RANGE and receive BEAM angle to DEPTHs and also to position these DEPTHs within the SWATH(E) on the SEA FLOOR. MBES systems may also be referred to as beam-formers.

Interferometric Echo Sounder. A type of SWATH(E) SOUNDING SYSTEM in which the equipment emits a timed PULSE of sound that is narrow in the fore-aft direction and wide in the across-track direction. The system samples the reflected sound hundreds or even thousands of times for each emission and for each sample the PHASE difference of the reflected sound arriving at two (or more) RECEIVERs located a known distance apart is measured and used to compute the ACOUSTIC angle of arrival. Also, the time difference between the emission and reception for each sample is converted to a RANGE. Geometry is then used to convert each RANGE and angle to DEPTHs and also to position these DEPTHs within the SWATH(E) on the SEA FLOOR.

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The HDWG also proposes that:

SOLAS: International convention on “Safety Of Life At Sea”

be included in the list of acronyms

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Note: Terms used in definitions which are themselves defined in S-32 are shown in UPPER CASE

CSPCWG forwarded 16 terms to the HDWG taken from the IMO Publication on Ships' Routeing Edition 8 (2003) which they proposed to use in their revision of S-4.

The HDWG has reviewed these terms and has the following comments:

The definitions of: Routeing System; Separation Zone (or line); Traffic Lane; Two-way Route; Recommended Route; Precautionary Area; Area to be Avoided; Established direction of traffic flow; and Recommended direction of traffic flow; are already included in S-32 with identical wording therefore NO Change.

Five definitions are different from the current S-32 definition. In 4 cases the HDWG recommends amending S-32 to be in line with the IMO Ships' Routeing publication and in one case recommends retaining the current S-32 definition (New text in *italic red* and deleted text in ~~strikethrough~~):

- **Traffic Separation Scheme**: ~~A scheme which aims at reducing the risk of collision in congested and/or converging areas by separating traffic moving in opposite, or nearly opposite, directions~~. *A ROUTEING measure aimed at the separation of opposing streams of traffic by appropriate means and by the establishment of TRAFFIC LANES.*

- **Roundabout**: ~~A traffic separation scheme in which traffic moves in a counter-clockwise direction around a specified point or zone.~~ *A ROUTEING measure comprising a separation point or circular SEPARATION ZONE and a circular TRAFFIC LANE within defined limits. Traffic within the roundabout is separated by moving in a counter-clockwise direction around the separation point or zone.*

- **Inshore Traffic Zone**: A ROUTEING measure comprising a designated area between the landward boundary of a TRAFFIC SEPARATION SCHEME and the adjacent COAST, to be used in accordance with the provisions of *rule 10(d), as amended*, *of the* International Regulations for Preventing Collisions at sea , *1972 (Collision Regulations).*

- **Recommended Track**: ~~A track, shown on a chart by either a dashed or a continuous line, recommended to all or only certain vessels.~~ *A route which has been specially examined to ensure so far as possible that it is free of dangers and along which ships are advised to navigate.*

- **Deep Water Route**: HDWG recommends retaining the current S-32 definition, the difference is highlighted:

  S-32 definition: A route in a designated area within defined limits which has been accurately surveyed for clearance of sea bottom and submerged obstacles to a minimum indicated depth of water.

Ships' Routeing definition: A route within defined limits which has been accurately surveyed for clearance of sea bottom and submerged obstacles as indicated on the chart.

Finally there are two definitions in Ships' Routeing which do not appear in S-32. The HDWG recommends that they be adopted for inclusion in S-32 (In the definition of "Mandatory routeing system" two words have been added for clarity and a further amendment made for consistency with other definitions):

- **Mandatory routeing system**: A ROUTEING SYSTEM adopted by the *INTERNATIONAL MARITIME* ORGANIZATION, in accordance with the requirements of regulation V/10 of the 1974 SOLAS convention ~~International Convention for the Safety of Life at Sea 1974~~, for mandatory use by all ships, certain categories of ships or ships carrying certain cargoes.

- **No anchoring area**: A ROUTEING measure comprising an area within defined limits where anchoring is hazardous or could result in unacceptable damage to the marine environment. Anchoring in a no anchoring area should be avoided by all ships or certain classes of ships, except in case of immediate danger to the ship or the persons on board.

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The CSPCWG invited the HDWG to consider the terms "Sounding" and "Depth".

S-32 currently contains the following definitions:

Depth: The vertical distance from a given water level to the BOTTOM.

Depth: charted The vertical distance from the CHART DATUM to the BOTTOM.

Sounding: Measured or charted DEPTH of water, or the measurement of such a DEPTH.

The HDWG are of the view that the words "sounding" and "depth" have been used almost synonymously over many years and does not see any need to change the current definitions used in S-32. The HDWG proposes that the definitions be retained unchanged and CSPCWG be invited to review their usage within INT1 and S-4.

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CSPCWG invited the HDWG to consider the inclusion of a new definition for "Inadequately Surveyed Area" and to review the existing definition of "Unsurveyed Area" taking into account S-4 Articles B-417 and B-418.

The HDWG are of the opinion that it would not be appropriate to define "Inadequately Surveyed Area" as in effect the definition would be for "Inadequately" and this will depend on the ultimate use of the survey.

B-418 provides a more fulsome definition of "Unsurveyed Area" than S-32:

B-418 unsurveyed areas may be defined as those within which there is no available data derived from a systematic hydrographic survey. This may include areas which only have lines of passage soundings and/or other miscellaneous data such as isolated ship's reports.

S-32 unsurveyed area: An area where survey data is non-existent or very poor.

The HDWG view is that the S-32 definition is adequate and is not in conflict with the definition in B-418 but would recommend that "survey" is amended to read "hydrographic survey" such that the definition would be:

Unsurveyed area: An area where HYDROGRAPHIC SURVEY data is non-existent or very poor.

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CSPCWG considered the terms "foul area" and "foul ground" with regard to IHO Publication S-4 (Formerly M-4) and proposed that the definition of "Foul Ground" be changed to:

foul ground areas over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing.

S-32 currently defines these as follows:

foul area An area of numerous uncharted dangers to navigation. The area charted serves as a warning to the mariner that all dangers are not charted individually and that navigation through the area may be hazardous.
The term "foul" should not be applied to a soft continuum with indefinite boundaries such as mud or sand; to areas congested with marine vegetation such as kelp or grass in water; or to materials not likely to cause damage to a vessel.

foul ground An area where the holding qualities for an anchor are poor, or where danger of striking or fouling the GROUND or other OBSTRUCTIONS exists.

The HDWG supports the retention of the definition of "foul area" and the adoption of the revised definition of "foul ground" with the exception that it should be in the singular. The HDWG therefore proposes:

foul ground An area over which it is safe to navigate but which should be avoided for anchoring, taking the GROUND or GROUND fishing.

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The CSPCWG raised the issue of the terms "seabed", "sea floor" and "sea bottom" with the HDWG citing the varied use of these terms in many publications and charts.

Currently S-32 includes the following:

sea floor The bottom of the ocean when there is a generally smooth gentle gradient. Also referred to as sea bed, sea bottom;

sea bed See SEA FLOOR; and

sea bottom See SEA FLOOR.

The HDWG believes that these terms should remain linked through the definition of "sea floor" but that note should also me made of the use of the single word "seabed" such that the definition becomes:

sea floor The BOTTOM of the OCEAN when there is a generally smooth gentle GRADIENT. Also referred to as sea bed (sometimes seabed or sea-bed), sea bottom.

Additionally the following entries should be made:

seabed See SEA FLOOR; and
sea-bed See SEA FLOOR.

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The CSPCWG proposed an amendment to the definition of the "Phase of a navigational light" (new text shown in italic):

Phase of a navigational light [HR-3169]-n Each element of the sequence of *changing CHARACTERISTICS, including* intervals of light and darkness (e.g. a flash, an eclipse) *or changes of colour*.

The HDWG supports this amendment.

The HDWG received a proposal from the Lights List Officer at UKHO for the inclusion of definitions of "*Irregular Light*" and "*Unreliable Light*". The HDWG passed this request for comment to CSPCWG. Following a response from CSPCWG the HDWG concluded that the inclusion of such definitions was not appropriate.

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The CSPCWG invited the HDWG to consider including definitions of ESSA and PSSA in the Hydrographic Dictionary:

The HDWG proposes that the following definitions be adopted:

Environmentally Sensitive Sea Area (ESSA): A generic term which is used to describe a wide range of areas, considered sensitive for a variety of environmental reasons.

Particularly Sensitive Sea Area (PSSA): An area which needs special protection through action by the IMO because of its significance for recognised ecological or socio-economic or scientific reasons and which may be vulnerable to damage by maritime activities. A PSSA is a type of ENVIRONMENTALLY SENSITIVE SEA AREA (ESSA).

The proposed definition for ESSA has been taken from S-4 (modified slightly – The 5th word "is" in S-4 is "may be".) The proposed definition for PSSA has come from IMO Resolution A.927(22), except for the last sentence which is considered important as it relates PSSA back to ESSA.

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Wind Turbine & Wind Farm

The CSPCWG has included a description (and symbol) for a "Wind Turbine" and "Wind Farm" in S-4. They have asked the HDWG to consider whether a definition should be added to S-32?

The terminology in S-4 is:

Wind turbines are generally tall, multi-bladed structures, usually with two or three blades, often visible over long distances. Their purpose is to generate electricity for large communities, or to feed a national grid. They are often in groups (known as wind farms) and may be sited off-shore.

Wind farms. On-shore wind turbines are charted as landmarks. It is therefore preferable to chart the individual turbines in their actual positions. However, where scale or available information does not permit this, an on-shore wind farm may be shown by the centred wind farm symbol within a black dashed limit

The HDWG would not use of the words "generally", "usually" and "may be". HDWG believes that the definitions should be aligned with DGIWG FDD Definitions and therefore proposes:

Wind Turbine: A tower and associated equipment that generates electrical power from WIND. They can be sited OFFSHORE.

Wind Farm: A collection of WIND TURBINES that are collocated and are organised as a single power generation unit.

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The HDWG received a proposal from the "Lights List Officer" at UKHO for the inclusion of two definitions: "Unreliable Light" and "Irregular Light". It was the view of the HDWG that this matter should be considered by the CSPCWG and a proposal made to the HDWG if the CSPCWG considered it appropriate.

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International Shipping

The CSPCWG has requested that HDWG consider including a definition of "International Shipping" in S-32. Their message together with some information taken from a UK MCA guidance document follows this introduction.

SOLAS Chapter 1 Regulation 2d defines an International Voyage as:

"International Voyage means a voyage from a country to which the 1974 SOLAS convention applies to a port outside that country, or conversely."

The inclusion of "*to which the 1974 SOLAS convention applies*" is there, I would assume, to ensure the applicability of SOLAS to the voyage!

Further SOLAS Chapter 3 Regulation 3, defines "*A Short International Voyage*", as set out in the attachment (Please note that this is a slightly abbreviated version of the text in SOLAS but it serves its purpose.)

SOLAS does not define "A Long International Voyage" and the UK MCA, not unreasonably, takes this to be An International Voyage which is not a 'short' one.

The UK MCA then accepts that "International Shipping" is shipping engaged on "International Voyages", once again this would seem quite a reasonable approach.

It is proposed to include the SOLAS definition of an International Voyage with a note *"As defined in the 1974 SOLAS Convention."* and then define International Shipping as *"Shipping engaged on INTERNATIONAL VOYAGES"*.

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The IHO publishes document B-6 "Standardization of Undersea Feature Names" which is maintained by the Sub-Committee on Undersea Feature Names (SCUFN), a Sub-Committee of the GEBCO Guiding Committee (GGC) which is a joint IHO – IOC body. B-6 contains a glossary of terms related to undersea features. B-6 is published in several languages and can be downloaded from the IHO web site.

Some years ago Erich Frey, a former member of the Committee on the Hydrographic Dictionary (CHD), as it then was, reviewed the definitions in the B-6 Glossary and their equivalents in the Hydrographic Dictionary (S-32). In some cases he proposed that B-6 terms should be aligned with S-32, in others that S-32 should be aligned with B-6 and in others that both B-6 and S-32 should be revised. Erich's proposals were reviewed by Michel Le Gouic, another former member of the CHD, and by Michel Huet, the IHB secretary to SCUFN. The majority, but not all, of Erich's recommendations have been adopted in B-6 and the HDWG is now requested to review those terms where S-32 would need revision to be in agreement with B-6.

Please note that S-32 in some cases contains several definitions for a single term and it is only that definition which relates to undersea features and corresponds with B-6 that is considered here. The other definitions in S-32 will remain unchanged.

In the following text all amendments to S-32 necessary to align with the B-6 definition are shown in red with deleted text in ~~strikethrough~~.

ARCHIPELAGIC APRON

S-32 A gentle SLOPE with a generally smooth surface ~~on~~ of the SEA FLOOR, ~~particularly~~ characteristically found around groups of ISLANDS or SEAMOUNTS.

B-6 A gentle SLOPE with a generally smooth surface of the sea floor, characteristically found around groups of islands or SEAMOUNTS.

BANK

S-32 An ELEVATION of the SEA FLOOR ~~located on a CONTINENTAL (or an ISLAND) SHELF,~~ over which the DEPTH of water is relatively shallow but sufficient for safe SURFACE NAVIGATION.

B-6 An elevation of the sea floor, over which the depth of water is relatively shallow, but sufficient for safe surface navigation.

BASIN

S-32 ~~In OCEANOGRAPHY,~~ a DEPRESSION of the SEA FLOOR more or less equidimensional in ~~form~~ plan and of ~~very~~ variable extent.

B-6 A depression, in the sea floor, more or less equidimensional in plan and of variable extent.

BORDERLAND

S-32 A region adjacent to a CONTINENT, normally occupied by or bordering a SHELF and sometimes emerging as islands, that is ~~highly~~ irregular or blocky in plan or profile, with DEPTHS well in excess of those typical of a SHELF.

B-6 A region adjacent to a continent, normally occupied by or bordering a SHELF and sometimes emerging as islands, that is irregular or blocky in plan or profile, with depths well in excess of those typical of a SHELF.

CONTINENTAL MARGIN

S-32 The zone, generally consisting of SHELF, SLOPE and CONTINENTAL RISE, separating the CONTINENT from the ABYSSAL PLAIN or DEEP ~~OCEAN~~ SEA FLOOR.

B-6 The zone, generally consisting of SHELF, SLOPE and CONTINENTAL RISE, separating the continent from the deep sea floor or ABYSSAL PLAIN.

CONTINENTAL RISE

S-32 A gentle slope rising from the oceanic depths towards the foot of a ~~RISE with a generally smooth surface lying between the~~ CONTINENTAL SLOPE ~~and the DEEP OCEAN FLOOR~~.

B-6 A gentle slope rising from the oceanic depths towards the foot of a continental SLOPE.

ESCARPMENT

S-32 An elongated, ~~and comparatively~~characteristically linear, steep SLOPE ~~of the SEA FLOOR~~, separating ~~flat~~ horizontal or gently sloping sectors of the SEA FLOOR in non-SHELF areas. Also abbreviated to ~~called sea~~ SCARP.

B-6 An elongated, characteristically linear, steep slope separating horizontal or gently sloping sectors of the sea floor in non-SHELF areas. Also abbreviated to SCARP.

FAN

S-32 A relatively smooth, fan-like depositional feature normally sloping away from the outer termination of a CANYON or canyon system. Also called CONE.

B-6 A relatively smooth, fan-like, depositional feature normally sloping away from the outer termination of a CANYON or canyon system. Also called CONE.

FRACTURE ZONE

S-32 An extensive linear zone of ~~unusually~~ irregular topography, mountainous or faulted, ~~of the sea floor,~~ characterized by ~~large seamounts,~~ steep-sided or asymmetrical RIDGES, clefts, TROUGHS, or ESCARPMENTS.

B-6 An extensive linear zone of irregular topography, mountainous or faulted, characterized by steep-sided or asymmetrical RIDGES, clefts, TROUGHS or ESCARPMENTS.

GAP

S-32 ~~In nomenclature of undersea features, a~~ A narrow break in a RIDGE or RISE.

B-6 A narrow break in a RIDGE or a RISE.

KNOLL

S-32 A relatively small isolated ELEVATION of a rounded shape.

On the SEA FLOOR, an ELEVATION somewhat smaller than a SEAMOUNT and of rounded profile shape characteristically isolated or as a cluster. rising less than 1,000 metres from the sea floor and of limited extent across the summit. Also called HILL.

B-6 An elevation somewhat smaller than a SEAMOUNT and of rounded profile, characteristically isolated or as a cluster on the sea floor. See also HILL(S).

LEVEE

S-32 A depositional natural EMBANKMENT bordering a CANYON, VALLEY or ~~deep~~ SEA CHANNEL on the ocean floor.

B-6 A depositional natural embankment bordering a CANYON, VALLEY or SEACHANNEL on the ocean floor.

MOAT

S-32 **(or sea moat).** An annular DEPRESSION that may not be continuous, located at the base of many SEAMOUNTS, oceanic islands and other isolated ELEVATIONS ~~or ISLANDS~~.

B-6 An annular depression that may not be continuous, located at the base of many SEAMOUNTS, oceanic islands and other isolated elevations.

PLATEAU

S-32 A flat or nearly flat ~~area~~ ELEVATION of considerable areal extent, dropping off abruptly on one or more sides; a TABLELAND.

B-6 A flat or nearly flat elevation of considerable areal extent, dropping off abruptly on one or more sides.

RIDGE

S-32 The linked major mid-oceanic mountain systems of global extent. Also called mid-OCEANIC RIDGE.

B-6 The linked major mid-oceanic mountain systems of global extent. Also called MID-OCEANIC RIDGE.

RISE

S-32 A ~~long~~, broad ELEVATION that rises gently and generally smoothly from the SEA FLOOR.

B-6 A broad elevation that rises gently and generally smoothly from the sea floor.

SADDLE

S-32 A ~~COL or~~ broad PASS or COL, ~~any land form recalling~~ resembling in shape a riding saddle~~. A low part on~~ in a RIDGE or between ~~SEAMOUNTS~~ contiguous ELEVATIONS.

B-6 A broad pass or col, resembling in shape a riding saddle, in a RIDGE or between contiguous elevations.

SEA CHANNEL

S-32 ~~A long, narrow, U-shaped or V-shaped shallow depression of the SEA FLOOR usually occurring on a gently sloping PLAIN or FAN.~~ A continuously sloping elongated discrete DEPRESSION commonly found in ~~CONES~~ FANS or ABYSSAL PLAINS and customarily bordered by LEVEES on one or both sides.

B-6 A continuously sloping elongated discrete depression found in FANS or ABYSSAL PLAINS and customarily bordered by LEVEES on one or both sides.

SHELF EDGE

S-32 **(or shelf break).** The line along which there is a marked increase of SLOPE at the ~~outer~~ seaward margin of a CONTINENTAL (or ISLAND) SHELF.

B-6 The line along which there is marked increase of slope at the seaward margin of a CONTINENTAL (or island) SHELF. Also called SHELF BREAK.

SHOAL

S-32 An offshore hazard to surface NAVIGATION ~~on which there is a DEPTH of ten FATHOMS or twenty METRES or less,~~ with substantially less clearance than the surrounding area and composed of unconsolidated material~~, except CORAL or ROCK. See REEF~~.

B-6 An offshore hazard to surface navigation with substantially less clearance than the surrounding area and composed of unconsolidated material.

SILL

S-32 ~~The low part of the RIDGE or RISE separating ocean basins from one another or from the adjacent SEA FLOOR.~~ A SEA FLOOR barrier of relatively shallow DEPTH restricting water movement between BASINS.

B-6 A sea floor barrier of relatively shallow depth restricting water movement between BASINS.

SLOPE

S-32 *No corresponding definition therefore adopt B-6 wording as #3 for Slope.* The deepening SEA FLOOR out from the SHELF EDGE to the upper limit of the CONTINENTAL RISE, or the point where there is a general decrease in steepness.

B-6The deepening sea floor out from the SHELF-EDGE to the upper limit of the CONTINENTAL RISE, or the point where there is a general decrease in steepness.

TERRACE

S-32 A relatively flat horizontal or gently inclined surface, sometimes long and narrow, ~~bounded above and below by rather abrupt SLOPES~~ which is bounded by a steeper ascending SLOPE on one side and by a steeper descending SLOPE on the opposite side.

B-6 A relatively flat horizontal or gently inclined surface, sometimes long and narrow, which is bounded by a steeper ascending slope on one side and by a steeper descending slope on the opposite side.

TRENCH

S-32 A long~~,~~ narrow, ~~and deep~~ characteristically very deep and asymmetrical DEPRESSION of the SEA FLOOR with relatively steep sides.

B-6 A long narrow, characteristically very deep and asymmetrical depression of the sea floor, with relatively steep sides.

TROUGH

S-32 A long DEPRESSION of the SEA FLOOR characteristically flat bottomed and steep sided and normally ~~wider and~~ shallower than a TRENCH.

B-6A long depression of the sea floor characteristically flat bottomed and steep sided and normally shallower than a TRENCH.

VALLEY

S-32 **submarine.** A relatively shallow wide DEPRESSION ~~with gentle SLOPES~~, the bottom of which usually has a continuous GRADIENT. ~~grades continuously downward.~~ This term is generally not used for features that ~~do not~~ have CANYON-like characteristics ~~in any~~ for a significant ~~part~~ portion of their extent.

B-6 A relatively shallow, wide depression, the bottom of which usually has a continuous gradient. This term is generally not used for features that have CANYON-like characteristics for a significant portion of their extent. Also called SUBMARINE VALLEY or SEA VALLEY

****

Chris Howlett, former Chair of the S-44 (5th Edition) WG has made the following proposals regarding definitions of Lidar; Swath(e), Swath(e) sounding system; Multi Beam Echo Sounder; and Interferometric; for inclusion in S-32:

Included after each proposal is the existing definition in S-32 and the final text of the definition as proposed by HDWG. New text is shown in *red in italic* and deleted text in ~~strikethrough~~.

****

Proposal - **Lidar**. An instrument that measures distance to a reflecting object by emitting timed pulses of LASER light and measuring the time between emission and reception of reflected pulses. The measured time interval is converted to distance. *In survey use the lidar system usually scans the light pulses across the TRACK of the SURVEY platform (usually an aircraft) so that successive pulses cover a SWATH(E) either side of the SURVEY platform's track. Infra-red LASERS will reflect off of land and water, and are normally used for topographic LIDAR surveys. Blue-green lasers will penetrate water, and are used in bathymetric LIDAR surveys.*

Existing definition in S-32: **Lidar**. An instrument that measures distance to a reflecting object by emitting timed pulses of light and measuring the time between emission and reception of reflected pulses. The measured time interval is converted to distance.

Following discussion the HDWG proposes the following:

Lidar. An instrument that measures distance to a reflecting object by emitting timed pulses of LASER light and measuring the time between emission and reception of reflected pulses. The measured time interval is converted to distance. *In survey use the lidar system usually scans the light PULSEs across the TRACK of the SURVEY platform (usually an aircraft) so that successive PULSEs cover a SWATH(E) either side of the platform's track. Infra-red LASERS will reflect off land and water, and are normally used for TOPOGRAPHIC lidar SURVEYs. Blue-green LASERS will penetrate water and are used in HYDROGRAPHIC lidar SURVEYs.*

Following the HDWG proposal to use the term "platform" in this definition the HDWG considers that, for uniformity, amendments are required to two other definitions as set out below:

Survey ~~(or surveying) ship (or vessel)~~ vessel (ship) or platform. A ~~ship or~~ vessel *or platform (e.g. aircraft)* specially equipped for carrying out *TOPOGRAPHIC*, HYDROGRAPHIC and/or OCEANOGRAPHIC SURVEY.

Existing definition in S-32: **Survey (or surveying) ship (or vessel**). A ship or vessel specially equipped for carrying out hydrographic and/or oceanographic survey.

Systems of sounding lines: The predetermined lines that the SURVEY ~~VESSEL~~ *platform* is to follow for the best development of the DEPTH CONTOURS in an area.

Existing definition in S-32: **Systems of sounding lines**: The predetermined lines that the SURVEY VESSEL is to follow for the best development of the DEPTH CONTOURS in an area.

****

Proposal - **Swath(e).** The strip or lane on the ground or SEA FLOOR scanned by the SWATH(E) SOUNDING SYSTEM ~~a multi-beam sounder~~ when the SURVEY vessel proceeds along its COURSE.

Existing definition in S-32: **Swath(e).** The strip or lane on the ground scanned by a multi-beam sounder when the survey vessel proceeds along its course.

Following discussion the HDWG proposes the following:

Swath(e). The strip or lane on the ground or SEA FLOOR scanned by the SWATH(E) SOUNDING SYSTEM ~~a multi-beam sounder~~ when the SURVEY ~~VESSEL~~ platform proceeds along its COURSE.

****

Proposal - **Swath(e) sounding system.** Any of a number of systems which are capable of obtaining a strip or lane of SOUNDINGs from a single SURVEY vessel's TRACK. Systems that fall into this category are MULTI BEAM ECHO SOUNDERs (MBES), interferometric systems and LIDAR.

Existing definition in S-32: **Swath(e) sounding system.** A multi-beam system which is capable of obtaining a lane of soundings from a single ship's track.

Following discussion the HDWG proposes the following:

Swath(e) system. Any of a number of systems which are capable of obtaining a strip or lane of ELEVATIONs or SOUNDINGs from a single SURVEY PLATFORMS's TRACK. In HYDROGRAPHY, systems that fall into this category are MULTI BEAM ECHO SOUNDERs (MBES), INTERFEFOMETRIC ECHO SOUNDERs and LIDAR.

****

Proposal - **Multi Beam Echo Sounder (MBES).** A type of SWATH(E) SOUNDING SYSTEM in which the equipment emits a timed pulse of sound that is narrow in the fore-aft direction and wide in the across track direction. The reflected sound is received by several RECEIVERs arranged as an ARRAY. By use of SIGNAL processing of the SIGNAL received at combinations of the RECEIVERS a much larger number, potentially many hundreds, of ACOUSTIC receive BEAM angles are formed. For each receive BEAM the time interval between emission and reception of the reflected sound is converted into a range. Geometry is then used to convert each range and receive BEAM angle to depths and also to position these DEPTHs within the SWATH(E) on the SEA FLOOR. MBES systems may also be referred to as beam-formers.

Existing definition in S-32: M**ulti-beam echo sounder.** Wide swath echo sounder for use in seabed mapping and surveying using the multi-beam principle. Depths are measured directly below and transverse to the ship's track. The width of the swath is a function of the number of beams and their aperture.

Following discussion the HDWG proposes the following:

Multi Beam Echo Sounder (MBES). A type of SWATH(E) SOUNDING SYSTEM in which the equipment emits a timed PULSE of sound that is narrow in the fore-aft direction and wide in the across track direction. The reflected sound is received by several

RECEIVERs arranged as an ARRAY. By use of SIGNAL processing of the SIGNAL received at combinations of the RECEIVERS a much larger number, potentially many hundreds, of ACOUSTIC receive BEAM angles are formed. For each receive BEAM the time interval between emission and reception of the reflected sound is converted into a RANGE. Geometry is then used to convert each RANGE and receive BEAM angle to DEPTHs and also to position these DEPTHs within the SWATH(E) on the SEA FLOOR. MBES systems may also be referred to as beam-formers.

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Proposal – **Interferometric Echo Sounder**. A type of SWATH(E) SOUNDING SYSTEM in which the equipment emits a timed PULSE of sound that is narrow in the fore-aft direction and wide in the across-track direction. The system samples the reflected sound 100s or even 1000s of times for each emission and for each sample the PHASE difference of the reflected sound arriving at two (or more) RECEIVERs located a known distance apart is measured and used to compute the ACOUSTIC angle of arrival. Also, the time difference between the emission and reception for each sample is converted to a range. Geometry is then used to convert each range and angle to DEPTHs and also to position these depths within the SWATH(E) on the SEA FLOOR.

This does not currently exist in S-32.

Following discussion the HDWG proposes the following:

Interferometric Echo Sounder. A type of SWATH(E) SOUNDING SYSTEM in which the equipment emits a timed PULSE of sound that is narrow in the fore-aft direction and wide in the across-track direction. The system samples the reflected sound hundreds or even thousands of times for each emission and for each sample the PHASE difference of the reflected sound arriving at two (or more) RECEIVERs located a known distance apart is measured and used to compute the ACOUSTIC angle of arrival. Also, the time difference between the emission and reception for each sample is converted to a RANGE. Geometry is then used to convert each RANGE and angle to DEPTHs and also to position these DEPTHs within the SWATH(E) on the SEA FLOOR.

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