

NORTH ATLANTIC TREATY ORGANISATION



(NATO)

ADDITIONAL MILITARY LAYERS LARGE BOTTOM OBJECTS PRODUCT SPECIFICATION

Version 2.1, 1 November 2005



Produced and issued by the United Kingdom Hydrographic
Office under the direction of the Geo-spatial Maritime Working
Group of the NATO Geographic Conference.

© UKHO 2005

ALL RIGHTS RESERVED

The copyright in this document, which contains information of a proprietary nature, is vested in UKHO. The contents of this document may not be used for purposes other than that for which it has been supplied.

Document Control

ISSUE

Date	Author	Issue	Summary of Changes
1/11/01	AML	1.0	No prior version
31/07/04	B Parish	2.0	Includes amendments to AML LBO Product Specification approved by AHHWG-9 & AHHWG-10
1/11/05	B Parish	2.1	Amended in response to industry review & GMWG-3 approval

APPROVALS

Approver and Title	Signature	Date
Chairman Geo-spatial Maritime Working Group		21/10/05

VERSION CONTROL

Version	Review Date	Reviewed By

FILE DETAILS

Component	Name & Location	Tool
Document text	J:\AML\Specification\Specifications\ LBO \ LBO PS 2.1	MS Word
Correspondence and hard copy	HA/351/002/015	N/A

Contents

Contents	3
1 INTRODUCTION	5
1.1 SCOPE.....	5
1.2 GENERAL INFORMATION ON THE PRODUCT SPECIFICATION	5
1.2.1 Version Number	5
1.2.2 Date of Issue.....	5
1.2.3 Custodian of the Product Specification	5
1.2.4 Relevant STANAG Number	5
1.3 STATUS OF THE PRODUCT SPECIFICATION	5
1.4 SECURITY.....	6
1.4.1 Security Classification of the Specification.....	6
1.4.2 Security Classification of the Product	6
1.4.3 Copyright Statement	6
1.5 CONTENTS OF THE DOCUMENT	6
1.6 REFERENCES	6
1.6.1 Standards	7
1.6.2 Specifications.....	8
1.6.3 Other References	8
1.7 DEFINITIONS	8
1.8 KEY WORDS	8
1.9 MAINTENANCE AND SUPPORT OF THE PRODUCT SPECIFICATION	8
1.9.1 Frequency of Review.....	8
1.9.2 Method of Maintenance	9
1.9.3 Method of Promulgation.....	9
1.9.4 Authority Responsible for Maintenance	9
1.9.5 Error Reporting/Change Request Procedure	9
1.9.6 Available Support.....	9
2 GENERAL PRODUCT DESCRIPTION	10
2.1 MAINTENANCE OF THE DATA PRODUCT	10
2.2 SUPPORT FOR MULTIPLE MODES OF OPERATION	10
2.3 GEOGRAPHIC ORGANISATION	10
2.3.1 Regional Scheme	10
2.3.2 Tiling Scheme	10
2.4 LAYER ORGANISATION	10
2.5 EXCHANGE STANDARD IMPLEMENTATION	11
2.5.1 Spatial Data Type	11
2.5.2 Level of Topology.....	11
2.5.3 Relationship with Layering	11
2.5.4 Textual Information	11
2.5.5 Reference to External Files	11
2.6 SIZING REQUIREMENTS	11
2.7 GENERAL SOURCE DESCRIPTION	11
2.7.1 Minimum Source Requirements.....	11
2.7.2 Applicable Sources	12
3 GENERAL DATA DESCRIPTION	13
3.1 DATUMS.....	13
3.1.1 Horizontal Datum.....	13
3.1.2 Vertical Datums	13
3.2 UNITS.....	13
3.2.1 Time	13
3.3 CO-ORDINATE SYSTEM	13
3.4 PROJECTION.....	14
3.5 LANGUAGE AND CHARACTER SETS	14
3.5.1 Language	14
3.5.2 Character Sets	14

3.6	DATA QUALITY	14
3.6.1	Accuracy.....	14
3.6.2	Up-to-Dateness/Currency	14
3.6.3	Source(s) of the data.....	15
3.6.4	Completeness for the Product Specification.....	15
3.6.5	Geometric Validation	15
4	DATA STRUCTURE	16
5	DATA DICTIONARY.....	17
5.1	GENERAL GUIDELINES	17
5.2	UNKNOWN/MISSING ATTRIBUTE VALUES	17
5.3	USE OF META INFORMATION.....	17
5.4	EXTERNAL REFERENCING	21
5.5	SCHEMA	21
5.5.1	Features.....	22
5.5.2	Attributes	30
5.5.3	Relationships Between Features.....	81
6	DATA CAPTURE GUIDELINES	82
6.1	CONTINUITY	82
6.2	GUIDANCE ON FEATURE CODING.....	82
7	DATA PRESENTATION.....	83
7.1	SCOPE.....	83
8	PROVISION OF DATA.....	84
8.1	GENERAL.....	84
8.1.1	File Format (Encapsulation).....	84
8.1.2	Auxiliary Information.....	84
8.2	DISTRIBUTION MEDIA	84
8.3	VOLUME NAMING.....	84
8.4	FILE NAMING.....	84
8.5	DIRECTORY STRUCTURE	84
8.6	ERROR DETECTION.....	84
8.7	COMPRESSION.....	84
8.8	ENCRYPTION.....	84
8.9	HARDWARE AND SOFTWARE REQUIREMENTS.....	84
9	TESTING METHOD.....	85

1 INTRODUCTION

1.1 SCOPE

The main body of this Product Specification describes the content and defines the data dictionary of the AML Large Bottom Objects (LBO) product, independent of any exchange standard data format. The schema and data format imposed by the chosen exchange standard implementation are defined in separate annexes (where provided).

It has been prepared in accordance with NATO STANAG 7170, Additional Military Layers and the draft NATO STANAG 4564, Performance Standards for Warship Electronic Chart Display and Information System (WECDIS) Data Products. It is based on the proposed Common Product Specification Framework (CPSF) which is contained as Annex B to the draft STANAG 4564.

The LBO Product Specification is designed to facilitate the encoding of the AML component of the same name. The purpose of this product is to depict all known large bottom objects with at least one dimension greater than five metres.

<p style="text-align: center;">AML LARGE BOTTOM OBJECTS MUST NOT BE USED IN ISOLATION FOR NAVIGATIONAL PURPOSES</p>
--

1.2 GENERAL INFORMATION ON THE PRODUCT SPECIFICATION

1.2.1 Version Number

2.1

1.2.2 Date of Issue

1 November 2005

1.2.3 Custodian of the Product Specification

The Custodian of this specification is the United Kingdom Hydrographic Office:

United Kingdom Hydrographic Office

Admiralty Way

Taunton

Somerset

TA1 2DN

Telephone: +44(0) 1823 337900

Fax: +44(0) 1823 284077

E-mail: aml@ukho.gov.uk

1.2.4 Relevant STANAG Number

NATO STANAG No.7170 Additional Military Layers (AML).

1.3 STATUS OF THE PRODUCT SPECIFICATION

This product specification has been endorsed by the Geo-spatial Maritime Working Group of the NATO Geographic Conference and is subject to the change control procedures implemented by that group.

1.4 SECURITY

1.4.1 Security Classification of the Specification

The Product Specification is UNCLASSIFIED.

1.4.2 Security Classification of the Product

AML LBO can be issued at various security classification levels according to content. AML LBO products of differing security levels (specified at the dataset level by the 'Protective Marking' and 'Caveat' details) are physically partitioned.

The table at section 5.3 contains details of how AML LBO security classification information must be described in this product.

1.4.3 Copyright Statement

Producers of AML datasets must ensure that:

- the Intellectual Property Rights of those owning the information that has been used for production of the AML product is not compromised.
- sufficient mechanisms are put in place to ensure that material is not copied either in whole or part, except as specifically required within the host system, without prior agreement of the data producer and any other copyright holders

Copyright statements should be shown at the following locations:

- on the product label
- on the product packaging
- within the product

1.5 CONTENTS OF THE DOCUMENT

The AML LBO Product Specification defines the real-world features, attributes and metadata required for the production and use of the product. It is laid out as described in the table of contents.

Also included, as annexes to the product specification, are details of the implementation using the relevant exchange standard(s).

Each annex (if included) is identified as follows:

- AML LBO S-57 Implementation (ANNEX A)
- AML LBO DIGEST-C Implementation (ANNEX B)

A cross-reference in the text will be included for instances when there are relevant details in one or more of the implementation annexes.

1.6 REFERENCES

The following standards and specifications affect the content of this Product Specification.

1.6.1 Standards

NATO STANAG 1059 (Edition 6)	Distinguishing Letters for Geographical Entities for use in NATO.
NATO STANAG 2211	Geodetic Datums, Ellipsoids, Grids & Grid References
NATO STANAG 7170	Additional Military Layers.
NATO STANAG 4564	Standard for Warship Electronic Chart Display and Information System (WECDIS), Edition 1, Annex B, Data Products.
NATO STANAG 7074	Digital Geographic Information Exchange Standard (DIGEST), Edition 2.1, September 2000. Part 1: General Description Part 2: Theoretical Model, Exchange Structure and Encapsulation Specifications, Annex C – Vector Relational Format (VRF) Encapsulation Specification. Part 3: Codes, Parameters and Tags Part 4: Feature and Attribute Coding Catalogue (FACC)
NATO STANAG 3715	Specification for filing and charting of Non-Sub Contacts (NSC) information
S-57	IHO Transfer Standard for Digital Hydrographic Data, Edition 3.1, November 2000 Appendix A: Chapter 1, Object Classes Annex A - IHO Codes for Producing Agencies Chapter 2, Attributes Annex B - Attributes/Object Classes Cross Reference
S-52	Specifications for Chart Content and Display Aspects of ECDIS 5th Edition, dated December 1996 (amended March 1999) Appendix 1 Guidance on Updating the Electronic Navigational Chart
ISO 8859	Information processing - 8-bit single-byte coded graphic character sets Part 1: Latin alphabet No.1
ISO 9660	Information Processing - Volume and File Structure of CD-ROM for Information Interchange.

ANSI/IEEE 802.3	IEEE Standards for Local Area Networks, Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications
ISO/IEC 8211,	Information processing - Specification for a data descriptive file for information interchange
ISO/IEC 10646	Information technology - Universal Multiple-Octet Coded Character Set (UCS) Part 1: Architecture and Basic Multilingual Plane

1.6.2 Specifications

MIL-PRF-0089049	General Performance Specification, Vector Product Format (VPF) Products, dated 24 November 1998
MIL-STD-2407	Interface Standard for Vector Product Format, dated 28 June 1996
The Open GIS Abstract Specification	Open GIS Consortium. Topic 9: Quality Version 4 1999
S-57	Edition 3.1 Appendix B.1: ENC Product Specification

1.6.3 Other References

AML	Feature and Attribute Catalogue
-----	---------------------------------

1.7 DEFINITIONS

AML AML is a unified range of digital geospatial data products designed to satisfy the totality of NATO non-navigational maritime defence requirements.

1.8 KEY WORDS

AML
Additional Military Layers
LBO
Large Bottom Objects
Product Specification

1.9 MAINTENANCE AND SUPPORT OF THE PRODUCT SPECIFICATION

Specific processes and mechanisms that are established for the maintenance of AML Product Specifications are described in the sections 1.9.1 to 1.9.6 below.

1.9.1 Frequency of Review

The AML LBO Product specification (version 2.0) will be frozen for a period of 2 years following endorsement.

1.9.2 Method of Maintenance

Corrections, clarifications and requests for change will be administered by the custodian. Discussion regarding proposed changes will be carried out by correspondence with national Points of Contact. Consolidated maintenance documents will be issued periodically containing published corrections and clarifications together with details of agreed extensions to the object catalogue (these will be formally incorporated into the Product Specification and become live at its next revision).

Changes to the Product Specification beyond extensions to the object catalogue will be reviewed by committee¹ during preparatory work for production of the next edition of the specification.

1.9.3 Method of Promulgation

Maintenance documents, new editions of specifications, and related documentation will be sent to nations through their appointed AML point of contact.

1.9.4 Authority Responsible for Maintenance

AML Product Specifications will be maintained by the Custodian specified in section 1.2.3.

1.9.5 Error Reporting/Change Request Procedure

Comments concerning the content of the AML Product Specifications and requests for change should be addressed to the Custodian.

1.9.6 Available Support

Contact the Custodian for guidance and advice relating to this product specification.

¹ Will be a specific group reporting to the AHHWG or its successor.

2 GENERAL PRODUCT DESCRIPTION

PRODUCT TITLE

Additional Military Layers – Large Bottom Objects.

SHORT TITLE

LBO

REFERENCE

NATO STANAG No.7170 (Additional Military Layers).

NATO STANAG No. 4564 (Performance Standards for Warship Electronic Chart Display and Information System (WECDIS), Edition 1, Annex B, Data Products.

2.1 MAINTENANCE OF THE DATA PRODUCT

The frequency and method of provision of update or replacement data will be defined by each AML producing agency.

2.2 SUPPORT FOR MULTIPLE MODES OF OPERATION

AML Large Bottom Objects data is compiled for a variety of purposes.

It is of general use during normal surface operation and of particular use during submarine operations, from a tactical and navigational point of view, for both submerged submarines and hunter / killer surface vessels or aircraft. Additionally, in conjunction with other AML products, it can be used for amphibious and mine warfare applications particularly when used in conjunction with the ESB AML or SBO AML respectively. Therefore, although not actually scaled, the product is most suitable for use in planning (small scale) and operational (medium scale) applications.

It may therefore be made available at the scale bands shown in the following table.

SCALE BAND	SCALE RANGE
0	Unscaled data

2.3 GEOGRAPHIC ORGANISATION

2.3.1 Regional Scheme

AML products will be partitioned by geographic region. This will vary widely depending upon the density of the data.

2.3.2 Tiling Scheme

See appropriate annex.

2.4 LAYER ORGANISATION

The content of the product is not layered. However, specific exchange standards may impose their own internal layering requirements.

2.5 EXCHANGE STANDARD IMPLEMENTATION

This product specification has been written to be independent of the exchange standard used. Details of exchange standard implementations are given in the relevant annex.

2.5.1 Spatial Data Type

AML LBO contains spatial objects as vector data.

2.5.2 Level of Topology

See appropriate annex.

2.5.3 Relationship with Layering

See appropriate annex.

2.5.4 Textual Information

Attributes that contain free text must not be used when it is possible to encode the information by means of any other attribute.

2.5.5 Reference to External Files

Text and picture files may also be included in the AML product to provide additional information.

Below are examples of potential formats.

- ASCII
- TIFF
- PDF
- HTML
- JPEG
- AVI
- MPEG

2.6 SIZING REQUIREMENTS

Data producers should partition datasets such that the screen refresh time in the receiving display system is acceptable to users. This will vary between data types and receiving systems. At present 5Mb is a recommended file size maximum for vector data in WECDIS type display systems.

2.7 GENERAL SOURCE DESCRIPTION

2.7.1 Minimum Source Requirements

Sources for any real-world feature detailed in section 5.5.1 meet the following requirements

- the data capture point-density fulfils the data capture requirements appropriate to the scale bands specified in section 2.2
- mandatory features specified in section 5.5.1.1 are included
- the mandatory attribution levels for each object, specified in section 5.5.1, are met

2.7.2 Applicable Sources

All sources used must meet the minimum requirements. Wherever available, sources which provide exact definitions of entities e.g. geographical co-ordinates should be used in preference to digitising from graphical representations.

3 GENERAL DATA DESCRIPTION

3.1 DATUMS

Please refer to NATO STANAG 2211 - Geodetic Datums, Ellipsoids, Grids & Grid References, which establishes the NATO guidelines to the use of horizontal and vertical datums.

3.1.1 Horizontal Datum

The horizontal datum for the AML LBO is the World Geodetic System 1984 (WGS 84).

3.1.2 Vertical Datums

3.1.2.1 Height Datum

The default height datum for the AML LBO is specified in the metadata of the dataset. The default height datum can be varied by the use of lower level metadata or feature level attribution.

3.1.2.2 Sounding Datum

The default sounding datum for AML LBO is specified in the metadata of the dataset. The default sounding datum can be varied by the use of lower level metadata or feature level attribution.

3.2 UNITS

The default units to be used in AML LBO are:

- Position: latitude and longitude in decimal degrees
- Depth: metres
- Height: metres
- Length/width: metres
- Positional accuracy: metres
- Distance: nautical miles or metres

The default units can be varied by the use of lower level metadata or feature level attribution.

3.2.1 Time

AML may contain attributes used to encode time e.g. the beginning and end of an active period for an object. When using these attributes all times should be encoded as Coordinated Universal Time (UTC). ISO 8601 states that the format for UTC time should be CCYYMMDDThhmmssZ (where 'T' is a separator). However, AML attributes that encode time using the ISO 8601 format DO NOT include the 'Z' and they should all be interpreted as UTC.

3.3 CO-ORDINATE SYSTEM

The co-ordinate system used by AML LBO is Latitude and Longitude. These will be recorded as:

Positive values: Used for latitudes **north** of the equator and longitudes **east** of the Greenwich Meridian.

Negative values: are used for latitudes **south** of the equator and longitudes **west** of the Greenwich Meridian.

3.4 PROJECTION

AML LBO is based upon geographical co-ordinates and is not projected.

3.5 LANGUAGE AND CHARACTER SETS

3.5.1 Language

The exchange language used by AML LBO is English.

3.5.2 Character Sets

ISO 8859-1 supports English and most European languages. For those languages that it does not support ISO/IEC 10646 shall be used.

3.6 DATA QUALITY

AML LBO data quality information should be encoded at an appropriate level, as specified by the exchange standard implementation.

AML data quality information encompasses the following categories:

- Accuracy
- Up-to-dateness/currency
- Source(s) of the data
- Completeness for the Product Specification

Data quality information defined for AML LBO can be encoded in the dataset as:

- dataset metadata
- meta information features²
- feature attributes

See section 5.3

3.6.1 Accuracy

Where applicable, the maximum two-dimensional error of AML data should be stated. All positional accuracy figures are cumulative and allow for:

- the accuracy of the original data
- additional errors introduced by the AML production process

If applicable, the cumulative error should be stated for the following:

- Horizontal Accuracy
- Sounding Accuracy
- Vertical (Height) Accuracy

3.6.2 Up-to-Dateness/Currency

Where applicable, currency information should specify the up-to-dateness of the AML dataset(s). This information should include:

- issue date
- update date³

² Only applicable if supported by the exchange standard implementation

³ Only applicable if updating is supported by the exchange standard implementation

3.6.3 Source(s) of the data

Where available, AML source information should include the following details:

- authority (e.g. data provider)
- source type (e.g. graphic or report)
- source ID
- source date

3.6.4 Completeness for the Product Specification

AML products may be produced to fulfil operational requirements, and therefore, may not contain all the meta data, features or attributes included in this Product Specification.

All AML datasets must specify instances when:

- all available data/information has been encoded. Missing data means that the information is not available
- only specified/required data/information is encoded

3.6.5 Geometric Validation

All data produced for AML LBO must be validated for geometric anomalies.

4 DATA STRUCTURE

Refer to the appropriate implementation annex for details of specific implementation, format, and structure.

5 DATA DICTIONARY

5.1 GENERAL GUIDELINES

This section provides real-world descriptions for the metadata and features contained within the AML LBO dataset. Details of how this information is to be encoded (e.g. using the chosen Exchange Standard) can be found in the tables contained in the relevant implementation annexes.

5.2 UNKNOWN/MISSING ATTRIBUTE VALUES

The way in which an unknown or missing attribute value is handled is dependent upon the exchange standard implemented.

5.3 USE OF META INFORMATION

AML datasets contain the following meta-information, the information may be encoded at the levels in the dataset indicated in the following table depending upon the capability of the exchange standard used. Column four indicates the requirement for a feature whose sole purpose is the encoding of meta information. Column five indicates the nature of the meta attribute, where they exist. Meta attributes are either Generic or Specific as indicated.

For details of how to represent the metadata described, refer to the appropriate exchange standard implementation annex.

All meta information encoded at **Dataset** and or **Meta feature** levels in the following table are mandatory.

Meta info	Description	Dataset	Meta feature	Attribute type
Production Agency	The agency responsible for the production of the AML data (IHO Codes for Producing Agencies)	Yes	Yes	Generic
Dataset Name	The name of the dataset	Yes	No	No
Edition Number	The edition number of the dataset	Yes	No	No
Date of Release	The date of the dataset was made available by the AML data producer (e.g. edition or revision date)	Yes	No	No
Product Specification Description	The name of the AML Product Specification to which the dataset conforms (see section 2)	Yes	No	No
Product Specification Version Number	The version number of the AML Product Specification to which the dataset conforms (section 1.2.1)	Yes	No	No
Product Scale Band	The usage application scale-band of the AML dataset (see section 2.2)	Yes	No	No
Compilation Scale	The scale at which the AML data was compiled (see compilation scale band table in section 2.2)	Yes	Yes	Generic

Meta info	Description	Dataset	Meta feature	Attribute type
International Defence Organisation (IDO) status (see note)	The International Defence Organisation (IDO) status (if applicable) that must precede, and be applied to, the Protective Marking thus making it an IDO Marking. -North Atlantic Treaty Organisation (NATO) -North Atlantic Co-operation Council (NACC) -Partnership for Peace (PfP) -Western European Union (WEU)	Yes	Yes	Generic
Protective marking	A marking indicating the minimum standards of protection required of the data. - COSMIC Top Secret - focal Top Secret - Top Secret - Secret - Confidential - Restricted - Unclassified	Yes	Yes	Generic
Owner Authority	The NATO country code (NATO STANAG 1059) denoting the 'owner' that is responsible for establishing and setting the protective marking level	Yes	Yes	Generic
Caveat (see note)	A component of a security clearance and/or security class used for computing access rights and controlling information flow by authorising a specific group of subjects to have access to the information	Yes	Yes	Generic
Update Application Date	The date for which all previous updates (dated on or before) must have been applied	Yes	No	No
Update Number	The update number of the dataset	Yes	No	No
Horizontal Geodetic Datum	The horizontal geodetic datum of the dataset	Yes	No	No
Vertical Datum	The vertical datum of the dataset	Yes	Yes	No
Sounding	The horizontal plane to which the	Yes	Yes	Specific

Meta info	Description	Dataset	Meta feature	Attribute type
Datum	soundings on a hydrographic survey are reduced. (IHO SP32: 1225)			
Co-ordinate Units	The co-ordinate units of the dataset	Yes	No	No
Height/Length Units	The height and length units of the dataset	Yes	No	No
Depth Units	The depth units of the dataset	Yes	No	No
Positional Accuracy Units	The positional accuracy units of the dataset	Yes	No	No
Capture Date	The date when the specific object was captured, edited or deleted.	No	No	Generic
Producing Country	The country responsible for the production of the AML data (IHO Codes for Producing Agencies)	No	Yes	Generic
Data Coverage	The geographical area that describes the coverage and extent of spatial objects	No	Yes	Specific (Boolean)
Source Country	The country responsible for the production of the source (IHO Codes for Producing Agencies)	No	No	Generic
Source Agency	The agency responsible for the production of the source (IHO Codes for Producing Agencies)	No	No	Generic
Source Date	The date of issue of the source information (if applicable)	No	No	Generic
Source ID	ID of the data source (e.g. chart number)	No	No	Generic
Source Type	The type of data source (e.g. chart, report, etc.)	No	No	Generic
Source Scale	The scale at which the source data has been compiled	No	No	Generic
Absolute Horizontal Accuracy	The positional error estimate for a single point, relative to the specified spatial reference system	No	No	Generic
Absolute Vertical Accuracy	The vertical error estimate for a single point, relative to the specified spatial reference system	No	No	Generic
Quality of Position	An indication of the reliability of a quoted position	No	No	Generic
Quality of Sounding	An indication of the reliability of a sounding	No	No	Specific

Meta info	Description	Dataset	Meta feature	Attribute type
Measurement				
Technique of sounding measurement	Indicates the method or equipment used to obtain the object's depth	No	No	Specific
Error Ellipse	Also known as the Figure of Merit. 95% 2sigma value - semi-major and semi-minor axes of error ellipsoid plus orientation.	No	No	Generic
Relative Horizontal Accuracy	The horizontal error estimate for the distance between two points, or the accuracy of one point with respect to another	No	No	Generic
Relative Vertical Accuracy	The vertical error estimate for the distance between two points, or the accuracy of one point with respect to another	No	No	Generic
Sounding Accuracy	The error estimate for soundings relative to the specified spatial reference system	No	Yes	Specific
Completeness for the Product Specification	An indication of how complete the data-set is, with reference to the full range of meta data, features and attributes included in the product specification	No	Yes	Specific (Boolean)
Supporting textual information	Supporting (free text) information relevant to the object that cannot be explicitly encoded by any other attribute	No	No	Generic
Supporting textual information (in national language characters)	Supporting (free text) information (in national language) relevant to the object that cannot be explicitly encoded by any other attribute	No	No	Generic
Copyright Statement	Indicates any copyright or releaseability restrictions on the data	Yes	Yes	Generic

NOTE:

International Defence Organisation (IDO) status and caveats are mutually exclusive. If the data has an IDO status, then the caveat is not applicable. Additionally, caveats only apply to data that has a Protective Marking of CONFIDENTIAL or above.

NOTE:

Update information is only applicable if updating is supported by the exchange standard implementation.

NOTE:

The 'Source Agency' refers to the originators of the data and not the agency responsible for producing AML. If the source agency is not listed in IHO Codes for Producing Agencies, then the agency name should prefix any details provided in the attribute 'Source ID' using a solidus (forward slash) to separate it from the ID.

5.4 EXTERNAL REFERENCING

External Reference Information	Description	Dataset	Meta feature	Attribute
Image File Link	A reference to an image file containing a pictorial representation of the object	No	No	Generic
Text File Reference	The file name relating to an external text file	No	No	Generic
Text File Reference (in national language characters)	The file name (in national language) relating to an external text file	No	No	Generic
Reference to a publication	Reference to a specific location of any relevant information within an external publication	No	No	Generic

5.5 SCHEMA

The following tables (5.5.1 & 5.5.2) provide the descriptions of meta information, real-world features, and associated attributes required for an AML LBO data-set to be attributed as complete for this Product Specification.

For details of how to represent the real-world features and associated attributes described, refer to the appropriate exchange standard implementation annex.

The terms 'specific' and 'generic' are used to indicate an attribute's association to a feature. Attributes that are 'generic' apply to all features listed in this Product Specification. Attributes listed as 'specific' relate only to those in the Features table in section 5.5.1, when included in the 'Associated Attributes' column.

NOTE:

Any feature with attribute(s) used to encode values for; height, depth, length, or width must include an attribute for the unit of measurement.

5.5.1 Features

The following table contains the information described below:

- Feature – gives the name of the feature
- Description – describes the feature
- Associated Attributes – indicates allowable attributes relevant to each feature. (see section 5.5.2 for attribute descriptions and values.)
- M – denotes that export of the attribute field is mandatory
- Form – indicates the geometric form that the feature can take (i.e. **Point**, **Line**, or **Area**)

In addition to the ‘associated attributes’ listed for individual real-world features ‘generic attributes’ are used at the feature level. These encode meta and supporting information that may exist on any feature. Generic attributes used in AML LBO are described in section 5.3

For details of how to encode the features listed in this section, refer to the appropriate exchange standard implementation annex.

Feature	Description	Associated Attributes		Form			
		Description	M	P	L	A	
Completeness for the Product Specification	An indication of how complete the data-set is, with reference to the full range of meta data, features and attributes included in the product specification (<i>AML</i>)	Category of completeness	✓				✓
Data Coverage	A geographical area that describes the coverage and extent of spatial objects	-Category of coverage	✓				✓
Data Source Area (This feature uses the generic source information attributes to encode source information which is applicable to an area. Features within the area need not be individually attributed)	A geographical area that describes the spatial extent of a data source. (<i>AML</i>)	-Source Agency -Source Country -Source Date -Source ID -Source Scale -Source Type	✓				✓
Impact Scour	A scour, being a clearing away of mud or other seabed deposits by the action of an object impacting and/or traversing along the seabed before settling. (<i>AML</i>)	•Cardinal Point Orientation • Depth of Water Over Feature •Depth Units •First Detection Year	✓		✓		

Feature	Description	Associated Attributes		Form			
		Description	M	P	L	A	
		<ul style="list-style-type: none"> •First Sensor •First Source •General Water Depth •Height/Length Units •Horizontal Length •Horizontal Width •Last Detection Year •Last Sensor •Last Source •Name •Name (in national language characters) •Orientation •Quality of Sounding Measurement •Sonar Signal Strength •Sounding Datum •Sounding Accuracy •Status •Surface Composition •Surface Composition - qualifying terms •Technique of Sounding Measurement •Vertical Length •Water Level Effect 					
Obstruction	In marine navigation, anything that hinders or prevents movement, particularly anything that endangers or prevents passage of a vessel. The term is usually used to refer to an isolated	<ul style="list-style-type: none"> •Abandonment Date •Cardinal Point Orientation •Category of 		✓			

Feature	Description	Associated Attributes		Form			
		Description	M	P	L	A	
		<ul style="list-style-type: none"> •Nationality •Nature of Construction •Operator •Orientation •Product •Quality of Sounding Measurement •Re-entered Date •Re-suspended Date •Sonar Signal Strength •Sounding Accuracy •Sounding Datum •Spudded Date •Status •Strength of Magnetic Anomaly •Surface Composition •Suspension Date •Technique of Sounding Measurement •Vertical Datum •Vertical Length •Water Level Effect 					
Sensor Anomaly	<p>An object on the sea floor which has been detected by means of acoustic and/or magnetic sensors, but for which any other means of identification or classification cannot be made. (More commonly known as a non-sub contact.)</p> <p>(AML)</p>	<ul style="list-style-type: none"> •Cardinal Point Orientation •Current Scour Dimensions •Depth of Water Over Feature •Depth Units •First Detection Year •First Sensor 		✓			

Feature	Description	Associated Attributes		Form			
		Description	M	P	L	A	
		<ul style="list-style-type: none"> •First Source •General Water Depth •Height/Length Units •Last Detection Year •Last Sensor •Last Source •Magnetic Anomaly Detector (MAD) Signature •Magnetic Intensity •Name •Name (in national language characters) •Orientation •Quality of Sounding Measurement •Sonar Signal Strength •Sounding Datum •Sounding Accuracy •Status •Strength of Magnetic Anomaly •Technique of Sounding Measurement •Water Level Effect 					
Underwater / Awash Rock	<p>A concreted mass of stony material or coral which dries, is awash or is below the water surface.</p> <p><i>(S-57 Annex A, Appendix A, IHO Object Catalogue)</i></p>	<ul style="list-style-type: none"> •Current Scour Dimensions •Depth Units •Depth of Water Over Feature •First Detection Year 		✓			

Feature	Description	Associated Attributes		Form			
		Description	M	P	L	A	
		<ul style="list-style-type: none"> •First Sensor •First Source •General Water Depth •Height/Length Units •Horizontal Length •Horizontal Width •Last Detection Year •Last Sensor •Last Source •Magnetic Anomaly Detector (MAD) Signature •Magnetic Intensity •Name <ul style="list-style-type: none"> •Name (in national language characters) •Quality of Sounding Measurement •Sonar Signal Strength •Sounding Accuracy •Sounding Datum •Status •Technique of Sounding Measurement •Strength of Magnetic Anomaly •Surface Composition •Surface Composition - qualifying terms •Vertical Length •Water Level 	✓				

Feature	Description	Associated Attributes		Form			
		Description	M	P	L	A	
		Effect					
Wreck	The ruined remains of a stranded or sunken vessel which has been rendered useless. <i>(IHO Dictionary, S-32, 5th Edition, 6027)</i>	<ul style="list-style-type: none"> •Beam of Vessel •Cardinal Point Orientation •Category of Wreck •Condition •Conspicuous, Radar •Conspicuous, Visually •Current Scour Dimensions •Date Sunk •Debris Field •Depth of Water Over Feature •Depth Units •Draught of Vessel •Existence of Restricted Area •First Detection Year •First Sensor •First Source •General Water Depth •Height •Height/Length Units •Horizontal Length •Horizontal Width •Inclination •Last Detection Year •Magnetic Intensity •Last Sensor •Last Source •Length of Vessel •Magnetic Anomaly 	<ul style="list-style-type: none"> ✓ ✓ ✓ 	✓			

Feature	Description	Associated Attributes		Form			
		Description	M	P	L	A	
		Detector (MAD) Signature •Name •Name (in national language characters) •Nationality •Nature of Construction •Orientation •Product •Quality of Sounding Measurement •Sonar Signal Strength •Sounding Accuracy •Sounding Datum •Status •Strength of Magnetic Anomaly •Surface Composition •Technique of Sounding Measurement •Tonnage •Type of Tonnage •Type of Wreck •Underwater Reference Mark •Vertical Datum •Vertical Length • Water Level Effect					
User Defined	A feature not otherwise permissible within the AML content model	Textual description		✓	✓	✓	

5.5.1.1 Mandatory Features

There are no mandatory features in LBO AML.

5.5.2 Attributes

The table below displays the following information:

- Attribute – gives the name of attribute.
- Definition – gives a more detailed description of the attribute if required.
- Values – specifies the possible values the attribute may take.

For details of how to encode the attributes listed in this section, refer to the appropriate exchange standard implementation annex.

Attribute & definition	Values & definitions
<p>Abandonment Date</p> <p>The date on which a borehole is sealed. All well-head equipment is removed and the hole plugged with cement and a steel plate cemented over the top.</p> <p><i>(Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</i></p>	<p>Indication: CCYYMMDD</p> <p>The “abandonment date” should be encoded using 4 digits for the calendar year (CCYY), 2 digits for the month (MM) (e.g. April = 04) and 2 digits for the day (DD).</p>
<p>Absolute horizontal accuracy</p> <p>The positional error estimate for a single point, relative to the specified spatial reference system.</p> <p><i>(AML)</i></p>	<p>Value: min 0</p> <p>Units: metres or feet</p> <p>(units must be defined)</p> <p>Resolution: 0.1 (metres or ft)</p>
<p>Absolute vertical accuracy</p> <p>The vertical error estimate for a single point, relative to the specified spatial reference system.</p> <p><i>(AML)</i></p>	<p>Value: min 0</p> <p>Units: metres or feet</p> <p>(units must be defined)</p> <p>Resolution: 0.1 (metres or ft)</p>
<p>Beam of Vessel</p> <p>The beam of the vessel, being the widest part of its hull, in its operational state.</p> <p><i>(Adapted from Webster’s 3rd New International Dictionary)</i></p>	<p>Value: 0 - 99.9</p> <p>Units: metres or feet</p> <p>(units must be defined)</p> <p>Resolution: 0.1</p>
<p>Capture date</p> <p>Gives the date when the object was captured, edited or deleted</p> <p><i>(AML)</i></p>	<p>CCYYMMDD</p> <p>4 digits for the calendar year (CCYY), 2 digits for the month (MM) (e.g. April = 04) and 2 digits for the day (DD).</p>
<p>Cardinal Point Orientation</p> <p>The angle of the major axis of the object expressed to the nearest 45 degrees using cardinal compass point notation.</p> <p><i>(Adapted from STANAG 3715)</i></p>	<ul style="list-style-type: none"> • north / south: the object is orientated on average along a north-south axis. <i>(AML)</i> • east/ west: the object is orientated on average along a east-west axis. <i>(AML)</i> • northeast / southwest: the object is orientated on average along a northeast- southwest axis. <i>(AML)</i> • northwest / southeast: the object is orientated on

Attribute & definition	Values & definitions
	<p>average along a northwest-southeast axis. <i>(AML)</i></p> <ul style="list-style-type: none"> •unknown: the object's orientation was not reported. <i>(AML)</i> - Not Applicable
<p>Category of completeness</p> <p>Indicates the inclusion criteria and completeness regarding the feature content of the dataset</p> <p><i>(AML)</i></p>	<p>complete: The area specified has been populated for all known features. Absence of features indicates that there are no such entities available to the data producer</p> <p>partial: Certain features have not been included (or only partially included) within the specified area. Details must be provided in supporting textual information</p>
<p>Category of coverage</p> <p>The availability of coverage</p> <p><i>(AML)</i></p>	<p>coverage available: Continuous coverage of spatial objects is available within this area</p> <p>no coverage available: An area containing no spatial objects</p>
<p>Category of Obstruction</p> <p>Description of the type of obstruction.</p> <p><i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i></p>	<ul style="list-style-type: none"> •wellhead: a submarine structure projecting some distance above the seabed and capping a temporarily abandoned or suspended oil or gas well. <i>(IHO Dictionary, S-32, 5th Edition, 5976.)</i> •diffuser: a structure on an outfall through which liquids are discharged. The structure will usually project above the level of the outfall and can be an obstruction to navigation. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i> •crib: a permanent structure set in the water, framed with wooden beams and filled with rocks or boulders. They are used to anchor log booms or support other constructions, e.g. submerged outfalls, diffusers etc. They may always be dry, submerged or cover and uncover. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i> •fish haven: areas established by private interests, usually sport fishermen, to simulate natural reefs and wrecks that attract fish. The reefs are constructed by dumping assorted junk in areas which may be of very small extent or may stretch a considerable distance along a depth contour. Also called fishery reefs. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i> •foul ground: areas over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing. <i>(IHO Chart Specifications, M-4, 442.8.)</i> •ground tackle: equipment such as anchors,

Attribute & definition	Values & definitions
	<p>concrete blocks, chains and cables, etc., used to position floating structures such as trot and mooring buoys etc. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p> <ul style="list-style-type: none"> •well protection structure: a structure, typically a dome or cube, erected over a wellhead or equipment attached to it (a tree) to lessen the danger of vessels snagging gear. (<i>AML</i>) •subsea installation: any oil or gas related installation or structure on, or projecting from, the seabed, for example a submerged platform or concrete foundations. (<i>AML</i>) •pipeline obstruction: any pipeline related structure which projects above the seabed, for example a joint, T-piece, valve or sleeve, or a crossing where one pipeline is raised over another by means of a supporting structure. (<i>AML</i>) •free standing conductor pipe: lengths of large diameter casing pipe projecting from a wellhead which may extend only a short distance above the seabed, or rise to project above the sea surface. (<i>Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company</i>) •manifold: a complex of pipes forming the junction of several incoming lines with one or more outlets, incorporating valves and instruments where necessary to monitor fluids flowing in individual lines. (<i>Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company</i>) •storage tank: large seabed structures, typically made of concrete, capable of storing oil or gas and usually found attached or adjacent to a rig, or marked by a single point mooring buoy. (<i>AML</i>) •template: a guide frame incorporating a guide base that is lowered to the sea bed to align with an exploration well-head, through which a series of development well are drilled. (<i>An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company</i>) •pontoon: a floating structure, usually rectangular in shape, which serves as landing, pier head or bridge support which has been caused to permanently sink. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 3947</i>)

Attribute & definition	Values & definitions
	<ul style="list-style-type: none"> •sundry objects: miscellaneous items and objects, most of which have been lost overboard or otherwise abandoned to the sea, for example cargo containers or vehicles. (AML) - Unknown - Not Applicable - Other
<p>Category of Wreck</p> <p>Description of the type of wreck.</p> <p>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</p> <p>See also attribute 'Type of Wreck' for indication of the vessel type before it became a wreck.</p>	<ul style="list-style-type: none"> •non dangerous wreck: a wreck which is not considered to be dangerous to surface navigation. (S-57 Annex A, Appendix A, Chapter 2 Attributes) •dangerous wreck: a wreck which is considered to be dangerous to surface navigation. (S-57 Annex A, Appendix A, Chapter 2 Attributes) •distributed remains of wreck: (foul ground) an area over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing. (IHO Chart Specifications, M-4) •wreck showing mast(s): wreck of which only the mast(s) is visible at the sounding datum indicated. (S-57 Annex A, Appendix A, Chapter 2 Attributes) •wreck showing any portion of hull or superstructure: wreck of which any portion of the hull or superstructure is visible at the sounding datum indicated. (S-57 Annex A, Appendix A, Chapter 2 Attributes) - Unknown - Not Applicable - Other
<p>Caveat</p> <p>A component of a security classification used for authorising a specific group to have access rights (AML)</p>	Text string
<p>Condition</p> <p>The state of the object where it is not considered to be normal i.e. completed, undamaged or working normally.</p> <p>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</p>	<ul style="list-style-type: none"> •under construction: a structure that is in the process of being built. (S-57 Annex A, Appendix A, Chapter 2 Attributes) •ruined: a structure in a decayed or deteriorated condition resulting from neglect or disuse, or a damaged structure in need of repair. (IHO Dictionary, S-32, 5th Edition, 4456.) •planned construction: an area where a future construction is planned. (S-57 Annex A, Appendix A, Chapter 2 Attributes) -Operational: Completed, undamaged and working normally (S-57 Annex A, Appendix A, IHO Object

Attribute & definition	Values & definitions
	<p><i>Catalogue</i>)</p> <ul style="list-style-type: none"> - Unknown - Not Applicable - Other
<p>Conspicuous, Radar</p> <p>Indicates if the object returns a radar echo. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p>	<ul style="list-style-type: none"> •radar conspicuous: an object which returns a strong radar echo. (<i>IHO Dictionary, S-32, 5th Edition, 4142.</i>) •not radar conspicuous: an object which does not return a particularly strong radar echo. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)
<p>Conspicuous, Visually</p> <p>Indicates if the object is distinctly visible from seaward. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p>	<ul style="list-style-type: none"> •visually conspicuous: term applied to an object either natural or artificial which is distinctly and notably visible from seaward. (<i>IHO Dictionary, S-32, 5th Edition, 984</i>) •not visually conspicuous: an object which is visible from seaward, but is not conspicuous. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)
<p>Controlling Authority</p> <p>The recognised authority responsible for establishing and maintaining the administrative affairs of all matters relating to a particular field or subject. (<i>AML</i>)</p>	Text string.
<p>Copyright Statement</p> <p>Indicates any copyright or releaseability restrictions on the data. (<i>AML</i>)</p>	Text string
<p>Current Scour Dimensions</p> <p>The length, width, depth and orientation of the longest dimension of a scour that is associated with the object and that is caused by the action of currents. (<i>AML</i>)</p>	<p>Encodes in quadruplets: The length, width, depth and orientation of the longest dimension of the current scour.(<i>AML</i>)</p> <p>Note: Where no value is available for one or more elements, a null value should be used to preserve integrity of the quadruplet</p> <p>Note: Multiple current scours will be represented by repeated groups of these values</p>
<p>Date Sunk</p> <p>Date on which the object sank or was abandoned to the sea. (<i>AML</i>)</p>	<p>Indication: CCYYMMDD</p> <p>The “date of sinking” should be encoded using 4 digits for the calendar year (CCYY), 2 digits for the month (MM) (e.g. April = 04) and 2 digits for the day (DD).</p>
<p>Debris Field</p> <p>The length and orientation of the longest dimension of the debris field associated with the object. (<i>AML</i>)</p>	<p>Encoded in pairs: the length of the material along the sea floor and the orientation of the longest dimension of the material from true north.</p> <p>Note: where no value is available for one or more</p>

	<p>elements, a null value should be used to preserve integrity of the pair.</p> <p>Note: multiple debris fields will be represented by repeated groups of this attribute.</p>
<p>Depth of water over feature</p> <p>Average depth of water over the feature relative to the specified vertical datum.</p> <p>(AML)</p>	<p>Value: min 0</p> <p>Units: metres or feet (units must be defined)</p> <p>Resolution: 0.1 (metres or feet)</p>
<p>Depth units</p> <p>Unit of measurement for depths</p> <p>(AML)</p>	<p>Metres</p> <p>Fathoms and Feet</p> <p>Feet</p> <p>Fathoms and Fractions</p> <p>Unknown</p> <p>Not Applicable</p> <p>Other</p>
<p>Draught of Vessel</p> <p>The draught of the vessel, being the depth of water the ship draws especially when loaded, in its operational state.</p> <p>(Adapted from Webster's 3rd New International Dictionary)</p>	<p>Value: 0 - 99.9</p> <p>Units: metres or feet (units must be defined)</p> <p>Resolution: 0.1</p>
<p>Error Ellipse</p> <p>Also known as the Figure of Merit. 95% 2sigma value – semi-major and semi-minor axes of error ellipsoid plus orientation of the major axis .</p> <p>(AML)</p>	<p>Encodes in triplets: The semi-major, semi -minor and orientation of the error ellipse. Orientation is expressed as the true bearing of the major axis.</p>
<p>Existence of Restricted Area</p> <p>Indication that a restricted area exists around the object.</p> <p>(AML)</p>	<p>•yes: a restricted area exists around the object. (AML)</p> <p>•no: a restricted area does not exist around the object. (AML)</p>
<p>Field Name</p> <p>The name given to a group of reservoirs yielding oil or gas, which the installation is involved in extracting.</p> <p>(Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</p>	<p>Text string.</p>
<p>First Detection Year</p> <p>The year in which the object was originally reported.</p> <p>(Adapted from STANAG 3715)</p>	<p>Indication:</p> <p>4 digits for the calendar year (CCYY).</p>
<p>First Sensor</p>	<p>-Acoustic Sensor: The object was reported as a</p>

<p>Indicates by the use of which sensor the object was originally reported. <i>(Adapted from STANAG 3715)</i></p>	<p>result of a sound signal being returned from the object. <i>(AML)</i></p> <p>-Magnetic Sensor: The object was reported as a result of detecting a fluctuation in the local magnetic field. <i>(AML)</i></p> <p>-Video Sensor: The object was reported as a result of a sighting through electronic visual equipment. <i>(AML)</i></p> <p>-Diver Sighting: The object was reported as a result of a visual sighting made by a diver. <i>(AML)</i></p> <p>-Other: The object was reported as a result of another method. <i>(AML)</i></p> <p>-Physical Snag: The object was reported as a result of the object fouling lines, anchors or fishing nets. <i>(AML)</i></p> <p>-None Reported: The method by which the object was found was not reported. <i>(AML)</i></p> <p>-Reported Sinking: The object was reported as a result of a report made by a third party or from published information. <i>(AML)</i></p> <p>-Observed Sinking: The object was reported as a result of a first hand observation of the object sinking. <i>(AML)</i></p> <p>- Not Applicable</p> <p>- Other</p>
<p>First Source Indicates the source of the original report of the object. <i>(Adapted from STANAG 3715)</i></p>	<p>•naval vessel: the object was reported by a vessel operated by a recognised national Naval authority. <i>(AML)</i></p> <p>•merchant ship: the object was reported by a vessel operated by a merchant marine organisation, engaged in the transport of goods for payment.</p> <p>•fishing vessel: the object was reported by a vessel engaged in harvesting fish or other products from the sea for commercial gain. <i>(Partly adapted from Webster's 3rd New International Dictionary)</i></p> <p>•research vessel: the object was reported by a vessel engaged in the business of conducting research into the sea and its environs. <i>(AML)</i></p> <p>•yacht: the object was reported by a yacht, being a privately owned sailing or power boat used for pleasure. <i>(Partly adapted from Webster's 3rd New International Dictionary)</i></p> <p>•diver: the object was reported as a result of a visual sighting made by a diver. <i>(AML)</i></p> <p>•national HO/authority charts: the object was</p>

	<p>sourced from information given on a chart published by a recognised Hydrographic Office or national authority. <i>(AML)</i></p> <ul style="list-style-type: none"> •national HO/authority notice to mariners: the object was sourced from information given in a Notice to Mariners published by a recognised Hydrographic Office or national authority. <i>(AML)</i> •national HO/authority radio navigation warning: the object was sourced from information given in a Radio Navigational Warning issued by a recognised Hydrographic Office or national authority. <i>(AML)</i> •national HO/authority files: the object was sourced from information held in files maintained by a recognised Hydrographic Office or national authority. <i>(AML)</i> •national HO/authority wreck information: the object was sourced from information held in wreck records maintained by a recognised Hydrographic Office or national authority. <i>(AML)</i> •Lloyds and marine underwriter's reports: the object was sourced from reports published by Lloyds or another marine underwriter. <i>(AML)</i> •owner/operator: the object was sourced from information or reports issued by the vessel or object's owner or operator. <i>(AML)</i> •national coast guard or patrol: the object was sourced from information provided by a recognised national Coast Guard or Patrol. <i>(AML)</i> •ship visit/hydrographic note report: the object was sourced from information provided by a third party as a result of receipt of a ship visit or hydrographic note report by a recognised Hydrographic Office or national authority. <i>(AML)</i> •aerial photography or satellite imagery: the object was sourced from information obtained from aerial photography or satellite imagery. <i>(AML)</i> •geodetic survey reports or charts: the object was sourced from information obtained from geodetic survey reports or charts. <i>(AML)</i> •published World War 1 losses: the object was sourced from information published in books or lists of vessels sunk during world war one. <i>(AML)</i> •published World War 2 losses: the object was sourced from information published in books or lists of vessels sunk during world war two. <i>(AML)</i>
--	---

	<ul style="list-style-type: none"> •published other losses: the object was sourced from information published in books or lists of vessels sunk during periods outside world wars one and two. <i>(AML)</i> •other: the object was reported by another source. <i>(AML)</i> •unknown: the source of the original report is unknown. <i>(AML)</i> •survey vessel: the object was reported by a vessel engaged in the business of determining and recording data relating to bodies of water and the nature of the sea bed. <i>(Adapted from IHO Dictionary, S-32, 5th Edition, 5206.)</i> <p>- Not Applicable</p>
<p>General Water Depth</p> <p>The general depth of the water in the vicinity of the object. <i>(AML)</i></p>	<p>Value: min 0</p> <p>Units: metres or feet (units must be defined)</p> <p>Resolution: 1 (metres or feet)</p>
<p>Height</p> <p>Value of the vertical distance to the highest point of the object, measured from a specified vertical datum. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i></p>	<p>Value: 0 - 999.9</p> <p>Units: metres or feet (units must be defined)</p> <p>Resolution: 0.1</p>
<p>Height/Length Units</p> <p>Unit of measurement for heights and lengths.</p>	<p>-Metres</p> <p>-Feet</p>
<p>Horizontal Length</p> <p>A measurement of the longer of the two linear axes. <i>(Digital Geographic Information Working Group – DGIWG, Oct 87.)</i></p>	<p>Value: min 0</p> <p>Units: metres or feet (units must be defined)</p> <p>Resolution 1 (metres or feet)</p>
<p>Horizontal Width</p> <p>A measurement of the shorter of the two linear axes. <i>(Digital Geographic Information Working Group – DGIWG, Oct 87.)</i></p>	<p>Value: min 0</p> <p>Units: metres or feet (units must be defined)</p> <p>Resolution 1 (metres or feet)</p>
<p>Image file link</p> <p>Indicates an external file containing a pictorial representation of the object <i>(S-57 Annex A, Appendix A, IHO Object Catalogue)</i></p>	<p>Text string</p>
<p>Inclination</p> <p>The angle, measured from the horizontal, at which the object rests on the sea floor <i>(AML)</i></p>	<p>Value: 0.00- 90.00</p> <p>Unit: degree</p> <p>Resolution: 0.01</p>
<p>International Defence Organisation (IDO) status</p>	<p>-North Atlantic Treaty Organisation (NATO)</p>

<p>The International Defence Organisation (IDO) status (if applicable) that must precede, and be applied to, the Protective Marking thus making it an IDO Marking (<i>AML</i>)</p>	<p>-North Atlantic Co-operation Council (NACC) -Partnership for Peace (PfP) -Western European Union(WEU) -Unknown - Multiple -Not Applicable -Other</p>
<p>Last Detection Year The year in which the object was subsequently confirmed. (<i>Adapted from STANAG 3715</i>)</p>	<p>Indication: 4 digits for the calendar year (CCYY).</p>
<p>Last Sensor Indicates by the use of which sensor the object was subsequently confirmed. (<i>Adapted from STANAG 3715</i>)</p>	<p>-Acoustic Sensor: The object was reported as a result of a sound signal being returned from the object. (<i>AML</i>) -Magnetic Sensor: The object was reported as a result of detecting a fluctuation in the local magnetic field. (<i>AML</i>) -Video Sensor: The object was reported as a result of a sighting through electronic visual equipment. (<i>AML</i>) -Diver Sighting: The object was reported as a result of a visual sighting made by a diver. (<i>AML</i>) -Other: The object was reported as a result of another method. (<i>AML</i>) -Physical Snag: The object was reported as a result of the object fouling lines, anchors or fishing nets. (<i>AML</i>) -None Reported: The method by which the object was found was not reported. (<i>AML</i>) -Reported Sinking: The object was reported as a result of a report made by a third party or from published information. (<i>AML</i>) -Observed Sinking: The object was reported as a result of a first hand observation of the object sinking. (<i>AML</i>) - Not Applicable</p>
<p>Last Source Indicates the source which subsequently confirmed the object. (<i>Adapted from STANAG 3715</i>)</p>	<p>•naval vessel: the object was reported by a vessel operated by a recognised national Naval authority. (<i>AML</i>) •survey vessel: the object was reported by a vessel engaged in the business of determining and recording data relating to bodies of water and the nature of the sea bed. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 5206</i>)</p>

	<ul style="list-style-type: none"> •merchant ship: the object was reported by a vessel operated by a merchant marine organisation, engaged in the transport of goods for payment. <i>(AML)</i> •fishing vessel: the object was reported by a vessel engaged in harvesting fish or other products from the sea for commercial gain. <i>(Partly adapted from Webster's 3rd New International Dictionary)</i> •research vessel: the object was reported by a vessel engaged in the business of conducting research into the sea and its environs. <i>(AML)</i> •yacht: the object was reported by a yacht, being a privately owned sailing or power boat used for pleasure. <i>(Partly adapted from Webster's 3rd New International Dictionary)</i> •diver: the object was reported as a result of a visual sighting made by a diver. <i>(AML)</i> •national HO/authority charts: the object was sourced from information given on a chart published by a recognised Hydrographic Office or national authority. <i>(AML)</i> •national HO/authority notice to mariners: the object was sourced from information given in a Notice to Mariners published by a recognised Hydrographic Office or national authority. <i>(AML)</i> •national HO/authority radio navigation warning: the object was sourced from information given in a Radio Navigational Warning issued by a recognised Hydrographic Office or national authority. <i>(AML)</i> •national HO/authority files: the object was sourced from information held in files maintained by a recognised Hydrographic Office or national authority. <i>(AML)</i> •national HO/authority wreck information: the object was sourced from information held in wreck records maintained by a recognised Hydrographic Office or national authority. <i>(AML)</i> •Lloyds and marine underwriter's reports: the object was sourced from reports published by Lloyds or another marine underwriter. <i>(AML)</i> •owner/operator: the object was sourced from information or reports issued by the vessel or object's owner or operator. <i>(AML)</i> •national coast guard or patrol: the object was sourced from information provided by a recognised
--	---

	<p>national Coast Guard or Patrol. (AML)</p> <ul style="list-style-type: none"> •ship visit/hydrographic note report: the object was sourced from information provided by a third party as a result of receipt of a ship visit or hydrographic note report by a recognised Hydrographic Office or national authority. (AML) •aerial photography or satellite imagery: the object was sourced from information obtained from aerial photography or satellite imagery. (AML) •geodetic survey reports or charts: the object was sourced from information obtained from geodetic survey reports or charts. (AML) •published World War 1 losses: the object was sourced from information published in books or lists of vessels sunk during world war one. (AML) •published World War 2 losses: the object was sourced from information published in books or lists of vessels sunk during world war two. (AML) •published other losses: the object was sourced from information published in books or lists of vessels sunk during periods outside world war one and two. (AML) •other: the object was reported by another source. (AML) •unknown: the source of the original report is unknown. (AML) <p>- Not Applicable</p>
<p>Length of Vessel The length of the vessel, being its total extent from end to end, in its operational state. <i>(Adapted from Webster's 3rd New International Dictionary)</i></p>	<p>Value: 0 - 999.9 Units: metres or feet (units must be defined) Resolution: 0.1</p>
<p>Magnetic Anomaly Detector (MAD) Signature Indication of the strength of the Magnetic Anomaly Detector reading caused by the object. (AML)</p>	<ul style="list-style-type: none"> -Nil: The object has no magnetic anomaly detector reading. (AML) -Slight: The object has a slight magnetic anomaly detector reading. (AML) -Moderate: The object has a moderate magnetic anomaly detector reading. (AML) -Strong: The object has a strong magnetic anomaly detector reading. (AML) - Unknown - Not Applicable - Other
<p>Magnetic Intensity</p>	<p>Value: 0 - 999</p>

Magnetic intensity generated by the object. (AML)	Unit: nanoTesla Resolution: 1
Name The principal name or identifier of an object in English. (AML)	Text string.
Name (in national language characters) The principal name or identifier of an object in national language characters. (AML)	Text string.
Nationality Indicates the nationality of the specified object. (S-57 Annex A, Appendix A, Chapter 2 Attributes)	IHO code for producing agencies or comma separated list.
Nature of Construction The material(s) used to make the object. (S-57 Annex A, Appendix A, IHO Object Catalogue)	<p>-Loose boulders: Constructed from large stones or blocks of concrete, often placed loosely for protection against waves or water turbulence. (S-57 Annex A, Appendix A, Chapter 2 Attributes)</p> <p>-Masonry: Constructed from brick or stone. (S-57 Annex A, Appendix A, IHO Object Catalogue)</p> <p>-Metal: Constructed from metal. (S-57 Annex A, Appendix A, IHO Object Catalogue)</p> <p>-Concreted: Constructed of concrete, a material made of sand and gravel that is united by cement into a hardened mass used for foundations etc. (Adapted from the Illustrated Contemporary Dictionary, Encyclopaedic Edition, 1978)</p> <p>-Glass Reinforced Plastic (GRP): Constructed from a plastic material strengthened with fibres of glass. (S-57 Annex A, Appendix A, Chapter 2 Attributes)</p> <p>- Wooden: Constructed from wood. (S-57 Annex A, Appendix A, Chapter 2 Attributes)</p> <p>- Unknown</p> <p>- Multiple</p> <p>- Not Applicable</p> <p>- Other</p>
Operator Name of the company operating the installation. (AML)	Text string.
Orientation The angular distance measured from true north to the major axis of the object. (Digital Geographic Information Working Group –	Value: 0.00- 359.99 Unit: degree Resolution: 0.01

<i>DGIWG, Oct.87)</i>	
<p>Owner authority</p> <p>Denotes the ‘owner’ that is responsible for establishing and setting the protective marking level (<i>AML</i>)</p>	<p>The NATO country code (<i>NATO STANAG 1059</i>)</p>
<p>Producing country</p> <p>The country responsible for the production of the data (<i>AML</i>)</p>	<p>IHO code for producing agencies</p>
<p>Product</p> <p>Indicates the substance(s) which are transported, stored or exploited by the object. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p>	<p>•oil: crude and refined: crude; petroleum as it occurs naturally, as it comes from the well after extraneous substances (eg water) have been removed; oil that has not been refined. Refined; oil that has undergone one or more manufacturing process to make it suitable for a particular purpose. (<i>Webster’s 3rd New International Dictionary and AML</i>)</p> <p>Specific examples include:</p> <p>Diesel Oil: heavy mineral oil used as fuel in diesel engines. (<i>Webster’s 3rd New International Dictionary</i>)</p> <p>Gasoil: oil comprised of various hydrocarbons used especially for making oil gas or carbureted water gas used for oils, feedstock and certain cracking processes. (<i>Webster’s 3rd New International Dictionary</i>)</p> <p>Industrial oil: Oil in a range of specific gravity that facilitates its use in a variety of manufacturing and operating processes. (<i>AML</i>)</p> <p>Light Oil: an oil of low specific gravity or relatively low boiling point, mostly used as lubricants. (<i>Webster’s 3rd New International Dictionary</i>)</p> <p>Paraffin/Kerosene: a liquid distilled from petroleum or shale oil used as a fuel or solvent; a complex mixture of hydrocarbons. (Adapted from Webster’s 3rd New International Dictionary)</p> <p>Petrol/Gasoline: flammable liquid obtained from petroleum, used as fuel in internal-combustion engines. (<i>AML</i>)</p> <p>•solid fuel: material wherein the particles firmly cohere; is hard and compact; and is burnt as a source of heat or power. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Specific examples include:</p> <p>Coal: a firm, brittle and generally black</p>

	<p>combustible carbonaceous rock derived from vegetable matter. (<i>Chambers English Dictionary</i>)</p> <p>Coke: a form of fuel obtained by the heating of coal, whereby its more volatile constituents are driven off. (<i>Chambers English Dictionary</i>)</p> <p>•flammable liquids and gases: a substance which is either; in a state where molecules move freely about one another but do not fly apart; or in a condition in which it has no definite boundaries or fixed volume; but which is combustible under normal atmospheric conditions. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Specific examples include:</p> <p>Benzene: a colourless, flammable, toxic liquid hydrocarbon obtained from the carbonisation of coal or certain petroleum fractions. Used for organic synthesis, solvent and motor fuel. (<i>Webster's 3rd New International Dictionary</i>)</p> <p>Butane: easily flammable, liquefiable gaseous paraffin hydrocarbon obtained from petroleum or natural gas. (<i>Webster's 3rd New International Dictionary</i>)</p> <p>Gas: esp. coal gas, or other gas used for lighting or heating. (<i>Chambers Concise Dictionary</i>)</p> <p>Liquefied Natural Gas (LNG): a compressed gas consisting of flammable light hydrocarbons and derived from natural gas. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p> <p>Liquefied Petroleum Gas (LPG): a compressed gas consisting of flammable light hydrocarbons and derived from petroleum (<i>Adapted from the Webster's New World Dictionary</i>)</p> <p>Propylene: a flammable gaseous olefin hydrocarbon obtained by cracking petroleum hydrocarbons and used chiefly in organic synthesis of compounds. (<i>Webster's 3rd New International Dictionary</i>)</p> <p>•chemicals: a substance used in or resulting from a reaction involving changes to atoms or molecules. (<i>Adapted from Collins English Dictionary</i>)</p> <p>Specific examples include:</p> <p>Acid: a compound capable of reacting with a base to form a salt, evolving hydrogen on reaction with certain metals. Mostly held as a water based solution. (<i>Webster's 3rd New International</i></p>
--	--

	<p><i>Dictionary)</i></p> <p>Aluminium Nitrate: a salt of nitric acid containing aluminium. <i>(AML)</i></p> <p>Calcium Carbide: a compound of calcium and carbon <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Naphthalene: a white crystalline aromatic substance produced by the distillation of coal tar and used in mothballs and the manufacture of dyes etc. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Potassium Carbide: a compound of potassium and carbon. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>•water: a clear, colourless liquid, devoid of taste or smell, that is a compound of hydrogen and oxygen, specifically when used or stored for the purposes of industrial and/or manufacturing processes. <i>(AML)</i></p> <p>•ferrous elements and ores: unrefined and refined: a chemically inseparable substance or solid naturally occurring mineral aggregate, from which one or more valuable constituents may be recovered by treatment or a manufacturing process, and which does contain iron in its trivalent form. <i>(AML)</i></p> <p>Specific examples include:</p> <p>Ferro-Magnesium: an alloy of iron and magnesium. <i>(AML)</i></p> <p>Ferro- Manganese: alloy of iron and manganese. <i>(AML)</i></p> <p>Iron: a heavy metallic element, silvery-white when pure, extracted from ore by smelting which readily rusts in moist air. <i>(Webster's 3rd New International Dictionary)</i></p> <p>Steel: any of various grey or greyish-blue alloys of iron with carbon and usually other elements, much used as structural materials and in manufacturing. <i>(Adapted from Concise Oxford Dictionary Ninth Edition)</i></p> <p>•non ferrous elements and ores: unrefined and refined: a chemically inseparable substance or solid naturally occurring mineral aggregate, from which one or more valuable constituents may be recovered by treatment or a manufacturing process, and which does not contain iron in its trivalent form. <i>(AML)</i></p> <p>Specific examples include:</p> <p>Aluminium: a silvery light and malleable metallic element resistant to tarnishing by air.</p>
--	--

	<p><i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Blende: any naturally occurring metal sulphide, esp. zinc blende. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Brass: an alloy of copper and zinc. <i>(Chambers Concise Dictionary)</i></p> <p>Caesium: a rare soft silver-white element of the alkali metal group, occurring in certain minerals, and used in photoelectric cells and atomic clocks. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Chrome: grey metallic element used in steel alloys and for electroplating. <i>(Collins English Dictionary)</i></p> <p>Copper: a malleable red-brown metallic element of the transition series occurring naturally especially in cuprite and malachite, and used especially for electrical wiring. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Ilmenite: a black ore of titanium. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Lead: a heavy bluish-grey soft ductile metallic element occurring naturally in galena and used in building and the manufacture of alloys, both the metal and its compounds being toxic. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Magnesium: a metallic element of a bright silver-white colour which burns with a dazzling white light. <i>(Chambers Concise Dictionary)</i></p> <p>Magnesite: a white or grey mineral form of magnesium carbonate. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Manganese: a grey brittle metallic transition element used with steel to make alloys. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Magnesium Oxide: a basic magnesium carbonate, used as a medicine. <i>(Chambers Concise Dictionary)</i></p> <p>Mercury: a silvery-white heavy liquid metallic element occurring naturally in cinnabar and used in barometers, thermometers, and amalgams. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Nickel: a malleable ductile silver-white metallic transition element, occurring naturally in various minerals and used in special steels, in magnetic alloys, and as a catalyst. <i>(Concise Oxford Dictionary Ninth Edition)</i></p>
--	--

	<p>Sodium: a soft silver-white reactive metallic element, occurring naturally in soda, salt, etc., that is important in industry and is an essential element in living organisms. (<i>Concise Oxford Dictionary Ninth Edition</i>)</p> <p>Sulphur: a pale yellow non-metallic element having crystalline and amorphous forms, burning with a blue flame and a suffocating smell, and used in making gunpowder, matches, and sulphuric acid, in the vulcanising of rubber, and in the treatment of skin diseases. (<i>Concise Oxford Dictionary Ninth Edition</i>)</p> <p>Tin: a silvery -white malleable metallic element resisting corrosion, occurring naturally in cassiterite and other ores, and used esp. in alloys and for plating thin iron or steel sheets to form tin plate. (<i>Concise Oxford Dictionary Ninth Edition</i>)</p> <p>Titanium: a grey metallic element occurring naturally in many clays etc., and used to make strong light alloys that are resistant to corrosion. (<i>Concise Oxford Dictionary Ninth Edition</i>)</p> <p>Zinc: a bluish-white metallic element resistant to atmospheric corrosion, it is a constituent of several alloys and is used in galvanising, battery electrodes, etc. (<i>Chambers Concise Dictionary</i>)</p> <p>•metal: concentrate and products: an opaque elementary substance, which has a lustre, is fusible and conducts heat and electricity. In concentrated form, the metallic substance has been extracted from the original ore but has not undergone change by a method of manufacture into products; being the manufacture of goods or commodities from metal. (<i>AML</i>)</p> <p>Specific examples include:</p> <p>Ingots: a mass of metal cast into a convenient shape for storage or transportation, to be later re-melted for casting and finishing. (<i>Adapted from Webster's 3rd New International Dictionary</i>)</p> <p>Plate: Metal in the form of sheets. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Scrap Metal: discarded pieces of metal, of use only for re-melting and re-processing. (<i>AML</i>)</p> <p>•minerals: substances produced by a process of inorganic nature; a substance neither animal nor vegetable. Normally obtained by mining. (<i>Chambers</i>)</p>
--	--

	<p><i>Concise Dictionary)</i></p> <p>Note: not allowable for object Obstruction.</p> <p>Specific examples include:</p> <p>Bauxite: a clay like mineral that is the chief source of aluminium. <i>(AML)</i></p> <p>Salt: chloride of sodium, occurring naturally as a mineral (rock-salt) and in solution in sea water, salt water springs etc. <i>(Chambers Concise Dictionary)</i></p> <p>•fertiliser: natural and chemical: a substance added to the soil to increase its productivity. It may be produced by or pertaining to nature; not the work of man; or which may be formed from a substance or resulting from a reaction involving changes to atoms or molecules. <i>(AML)</i></p> <p>Specific examples include:</p> <p>Bonemeal: ground bones used as fertiliser. <i>(Chambers Concise Dictionary)</i></p> <p>Nitrate: a salt of nitric acid, often used as a fertiliser. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Nitrate Potash: potassium nitrate, used as a fertiliser. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Phosphate: any salt or ester of phosphoric acid, especially used as a fertiliser. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Urea: fertiliser; specifically being derived from mammalian urine. <i>(Chambers Concise Dictionary)</i></p> <p>•wood: unprocessed and products: the substance of trees. In unprocessed form, the wood has not undergone change by a method of manufacture into products, being the manufacture of goods or commodities from wood. <i>(AML)</i></p> <p>Specific examples include:</p> <p>Cork: the buoyant light brown material obtained from beneath the bark of the cork oak. <i>(Adapted from Concise Oxford Dictionary Ninth Edition)</i></p> <p>Logs: an un-hewn piece of a felled tree, or a similar rough mass of wood, especially cut for firewood. <i>(Adapted from Concise Oxford Dictionary Ninth Edition)</i></p> <p>Pallets: platforms or trays for lifting and</p>
--	---

	<p>stacking goods, used with a forklift truck, and having a double base into which the fork can be thrust. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Plywood: boarding made of thin layers of wood glued together, the grain of each at right angles to that of the next. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Sawdust/Wood Chip: dust or small particles of wood etc, detached in sawing; a small fragment detached by breaking, chopping etc. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Timber: wood suitable for building or carpentry, whether growing or cut; a beam or large piece of wood in a framework. (<i>Chambers Concise Dictionary</i>)</p> <p>•rubber: unprocessed and products: Strong waterproof elastic material, originally made from the dried sap of a tropical tree, now usually synthetic. In unprocessed form, the rubber has not undergone change by a method of manufacture into products, being the manufacture of goods or commodities from rubber. (<i>Adapted from Collins English Dictionary</i>)</p> <p>Specific examples include:</p> <p>Tyres: rubber ring, usually inflated, over the rim of a vehicle's wheel to grip the road. (<i>Collins English Dictionary</i>)</p> <p>•clay products: clay, mixed with water, which has been formed into a specific shape either by hand, or by a method of manufacture, then dried by heat, in order to produce goods or commodities. (<i>AML</i>)</p> <p>Specific examples include:</p> <p>Bricks: a small, usually rectangular, block of fired or sun-dried clay, used in building. (<i>Concise Oxford Dictionary Ninth Edition</i>)</p> <p>China / Porcelain / Pottery / Earthenware: vessels, etc. made of clay fired to a porous state which can be made impervious to liquids by the use of a glaze. (<i>Concise Oxford Dictionary Ninth Edition</i>)</p> <p>Tiles: slabs of baked clay for covering roofs, floors etc. (<i>Chambers Concise Dictionary</i>)</p> <p>•natural fibres and materials in general: unprocessed and products: that out of which anything is or may be made, produced by or</p>
--	---

	<p>pertaining to nature; not the work of man. A fibre being a filament or thread like cell of animal, vegetable or mineral. In unprocessed form, the fibre or material has not undergone change by a method of manufacture into products, being the manufacture of goods or commodities from fibre or material. (AML)</p> <p>Specific examples include:</p> <p>Animal Skins: natural outer covering of tissue from an animal. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Bamboo: a gigantic tropical and sub-tropical grass with hollow-jointed woody stem. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Cellulose: a carbohydrate forming the main constituent of plant cell walls, used in the production of textile fibres. (<i>Concise Oxford Dictionary Ninth Edition</i>)</p> <p>Copra: the dried kernel of the coconut, yielding coconut oil. (<i>Chambers Concise Dictionary</i>)</p> <p>Cloth / Textiles / Clothing: goods made from woven fabrics. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Cotton; raw: white downy fibre covering the seeds of the cotton-plant. (<i>Adapted from Collins English Dictionary</i>)</p> <p>Esparto Grass: a strong grass grown in Spain, N Africa etc, used to make paper, baskets, cordage etc. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Hemp: plant with tough fibres used to make canvas and rope. (<i>Adapted from Collins English Dictionary</i>)</p> <p>Paper: a material made in thin sheets as an aqueous deposit from linen rags, esparto, wood pulp, or other form of cellulose, used for writing, printing, wrapping and other purposes. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Wool; fleeces: soft hair of goat or sheep, fleece being the wool shorn from an animal at one time. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>•foodstuffs: solid: any substance that a living thing feeds on, that nourishes the body; sustains or promotes growth, wherein the particles firmly cohere. Some foodstuffs may be consumed</p>
--	--

	<p>unprocessed, while others may undergo one or more manufacturing processes to make it palatable, or to allow mixing with other foodstuffs. <i>(AML)</i></p> <p>Specific examples include:</p> <p>Animal Feed: substances used as nourishment for livestock. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Beans: the name of several kinds of leguminous plants and their seeds, applied also to the seeds of other plants eg coffee. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Bran: the inner husks of corn sifted from the flour. <i>(Chambers Concise Dictionary)</i></p> <p>Cereals: grains used as food, such as wheat, barley etc. <i>(Adapted from Collins English Dictionary)</i></p> <p>Cocoa: a powder made from crushed cacao seeds, often with other ingredients. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>Coffee: powder made by roasting and grinding the seeds of a tree of the madder family. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Flour: the finely ground meal of wheat or other grain. <i>(Chambers Concise Dictionary)</i></p> <p>Grain: a small hard seed, especially that of any cereal plant such as wheat, rice, corn, rye etc. <i>(Adapted from the Webster's New World Dictionary)</i></p> <p>Maize: a cereal plant, native to North America, yielding large grains set in rows on a cob. <i>(Adapted from Concise Oxford Dictionary Ninth Edition)</i></p> <p>Nuts: any fruit with an edible seed in a hard shell. <i>(Chambers Concise Dictionary)</i></p> <p>Oilcake: the solid residue that remains after expressing or extracting most of the oil from various seeds and is often ground to make oil meal. <i>(Webster's 3rd New International Dictionary)</i></p> <p>Rape: a plant related to the turnip, brilliantly yellow-flowered, and cultivated for its herbage and oil-producing seeds. <i>(Chambers Concise Dictionary)</i></p> <p>Seed: a multi-cellular structure by which flowering plants reproduce, consisting of embryo, stored food and seed-coat. <i>(Chambers Concise Dictionary)</i></p>
--	--

	<p>Sugar: a sweet substance obtained chiefly from cane and beet. (Chambers Concise Dictionary)</p> <p>Tea: dried leaves of an Asian bush used to make a drink by infusing in hot water. (<i>Adapted from Collins English Dictionary</i>)</p> <p>Tobacco: the prepared leaves of an American plant used for smoking, chewing or snuffing. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Vegetables: plants or parts of plants used for food. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>•foodstuffs: liquid: any substance that a living thing feeds on, that nourishes the body; sustains or promotes growth, which is in a state where molecules move freely about one another but do not fly apart. Some foodstuffs may be consumed unprocessed, while others may undergo one or more manufacturing processes to make it palatable, or to allow mixing with other foodstuffs. (<i>AML</i>)</p> <p>Specific examples include:</p> <p>Alcohol: an intoxicating drink formed by fermenting or distilling hydrocarbons with various fruits or grains, in water. (<i>Adapted from Webster's 3rd New International Dictionary</i>)</p> <p>Edible Oil (vegetable): any of various oils extracted from plants typically used in cooking. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Milk: a white fluid secreted by female mammals as food for their young. (<i>Adapted from the Oxford Minidictionary, Third Edition</i>)</p> <p>Water: Drinking: a clear, colourless liquid, devoid of taste or smell, that is a compound of hydrogen and oxygen, which is intended for human consumption. (<i>AML</i>)</p> <p>•foodstuffs: preserved: any substance that a living thing feeds on, that nourishes the body; sustains or promotes growth which has been subjected to a process which prevents it from decaying. (<i>AML</i>)</p> <p>Note: not allowable for object Obstruction.</p> <p>Specific examples include:</p> <p>Tinned Food: edible substances preserved by being sealed in a tin. (<i>Adapted from Collins English Dictionary</i>)</p> <p>Refrigerated/Frozen Cargo: perishables that have been subjected to a degree of cold, either</p>
--	---

	<p>chilled or subjected to a temperature below freezing, in order to facilitate storage or preservation. (Adapted from Webster's 3rd New International Dictionary)</p> <p>•general and mixed goods: general; items relating to the whole or most; not specialised; of broad overall character. Mixed; characterised by scope or variety; items combined or associated. (AML)</p> <p>Specific examples include:</p> <p>Furniture: movable items, either for use or ornament, with which a house is equipped. (Chambers Concise Dictionary)</p> <p>Government Stores: articles for a particular purpose, accumulated for use, owned by the state. (Adapted from Concise Oxford Dictionary Ninth Edition)</p> <p>Hardware: domestic goods (esp. tools etc) made of baser metals; equipment, mechanical or electrical. (Chambers Concise Dictionary)</p> <p>Luxury Goods: items beyond the indispensable minimum; non essential items that contribute to luxurious living; an indulgence in convenience or ornament. (Adapted from Webster's 3rd New International Dictionary)</p> <p>Mail: letters and / or packages transported and / or delivered by or on behalf of a recognised postal or other carrier service. (AML)</p> <p>Medical Supplies: goods relating to the science of medicine. (AML)</p> <p>•stone: a detached piece of rock. The material may consist of either large pieces, un-hewn, or shaped or carved for a particular purpose; or the material may be broken down into smaller pieces. (AML)</p> <p>•granular or powdery material: physical matter consisting of relatively small and hard, but usually separate particles; or in a form which is dusty or easily crumbled into tiny, loose particles. (AML)</p> <p>Specific examples include:</p> <p>Ash: the powdery residue left after the burning of any substance. (Concise Oxford Dictionary Ninth Edition)</p> <p>Cement: a fine grey powder consisting of lime and clay. When mixed with water, sand and sometimes small stones, it forms a binding or filling material commonly used for building. (AML)</p> <p>Chalk: a white soft earthy limestone</p>
--	--

	<p>(calcium carbonate) formed from the skeletal remains of sea creatures, ground into small grains. <i>(Adapted from Concise Oxford Dictionary Ninth Edition)</i></p> <p>Clay (inc. china): fine-grained earth, soft when moist and hardening when baked, used to make bricks and pottery. <i>(Collins English Dictionary)</i></p> <p>Sand: a mass of tiny rounded grains of rock. <i>(Chambers Concise Dictionary)</i></p> <p>Soil: the upper layer of earth in which plants grow, consisting of disintegrated rock usually with a mixture of organic remains. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>•machinery and mechanical parts: machinery; apparatus usually powered by electricity designed to perform a specific task. Mechanical Parts; components of vehicles or machines. <i>(Adapted from Collins English Dictionary)</i></p> <p>Specific examples include:</p> <p>Expellers: screw presses for expressing vegetable oil from soy beans or other seeds. <i>(Adapted from Webster's 3rd New International Dictionary)</i></p> <p>Drilling Equipment: Apparatus used for mining or boring operations. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>•construction materials: that out of which anything is, or may be made; equipment or implements. Parts that may be put together. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Specific examples include:</p> <p>Coils: products wound in circles or spirals. <i>(Adapted from Concise Oxford Dictionary Ninth Edition)</i></p> <p>Cylinders: solid or hollow bodies with straight sides and circular ends. <i>(Adapted from Collins English Dictionary)</i></p> <p>Pipes / Tubes: long hollow bodies for the conveyance of water, gas, etc. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Rods: slender bars of metal or other material. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Wire (inc. barbed): a thin flexible strand of metal, barbed wire having protruding sharp points.</p>
--	---

	<p><i>(Adapted from Collins English Dictionary)</i></p> <p>•vehicles: a means of conveyance or transport especially a structure with wheels in or on which people or things are transported by land. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Specific examples include:</p> <p>Crawler Vehicle(s): a tractor moving on an endless caterpillar track. <i>(Concise Oxford Dictionary 9th Edition)</i></p> <p>Military Vehicle(s): a means of transport used specifically for the purposes of conducting warfare. <i>(AML)</i></p> <p>•aircraft: any structure or machine for travelling in the air. <i>(Chambers Concise Dictionary)</i></p> <p>•railway: stock and construction materials: stock; engines, carriages, goods wagons or any other wheeled vehicle that can run on a track with rails. Construction materials; that out of which a railway may be made; parts that may be put together to build a railway e.g. rails; sleepers. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>•electronics: devices based on the technology of the conduction of electricity in a vacuum, gas or a semiconductor. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Note: not allowable for object Obstruction.</p> <p>•portable buildings: movable structures for giving shelter, normally prefabricated. <i>(AML)</i></p> <p>•containers: large box-like receptacles of standard shape and size in which goods are enclosed for transport on a lorry, train or ship. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>•plastic: a large number of polymeric substances, mostly synthetic, mouldable at some stage under heat or pressure, used to make domestic articles and many engineering products. <i>(Chambers Concise Dictionary)</i></p> <p>•paint: colouring matter, especially in liquid form, for imparting colour to a surface. Normally stored in small metal containers. <i>(AML)</i></p> <p>Note: not allowable for object Obstruction.</p> <p>•refuse (also known as rubbish/garbage/trash) and waste: refuse; matter or materials rejected as fit only to be thrown out or away. Waste; material produced during, or left over from, a manufacturing process and which is not usable for the main</p>
--	--

	<p>purpose of manufacture, but may be usable for some other purpose or in another operation. (<i>Adapted from Webster's 3rd New International Dictionary</i>)</p> <p>Note: not allowable for object Obstruction.</p> <p>Specific examples include:</p> <p>Clinker: the incombustible residue of fused ash raked out of furnaces. (<i>Chambers Concise Dictionary</i>)</p> <p>Burnt Ore: solid naturally occurring mineral aggregate from which the valuable constituents have been recovered by a heat process. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>•radioactive material: physical matter which relates to, is caused by or exhibits radioactivity, being the emission of radiant energy elements capable of spontaneously emitting alpha, beta or sometimes gamma rays by the disintegration of the nuclei of atoms. (<i>Adapted form Webster's 3rd New International Dictionary</i>)</p> <p>•armament: military weapons. a total means of making war; defensive equipment. (<i>AML</i>)</p> <p>Specific examples include:</p> <p>Ammunition: a supply of projectiles, especially bullets, shells, and grenades. (<i>Adapted from Concise Oxford Dictionary Ninth Edition</i>)</p> <p>Bomb / Torpedo: a hollow case containing explosive, incendiary, smoke-producing, poisonous or other offensive material. A Torpedo is specifically a self-propelled submarine weapon. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Explosives: substances specifically created to blow up with violence. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>Munitions / Military Stores: military weapons, ammunition, equipment, and stores. (<i>Concise Oxford Dictionary Ninth Edition</i>)</p> <p>Small Arms: weapons that can be carried by a person, especially handguns or short weapons. (<i>Adapted from Chambers Concise Dictionary</i>)</p> <p>•personnel: people in general. (<i>Chambers Concise Dictionary</i>)</p> <p>Specific examples include:</p> <p>Military Personnel: persons employed in the business of warfare. (<i>Adapted from Chambers Concise Dictionary</i>)</p>
--	--

	<p>Passengers: persons travelling in a means of transport operated by others. <i>(AML)</i></p> <p>•animals (land & sea) and birds : animals; organisms having life, sensation and voluntary movement, which require predominantly land or sea conditions for survival. Birds; warm blooded, egg laying, feathered vertebrates of the class Aves. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Specific examples include:</p> <p>Livestock / Animals: organisms having life, sensation and voluntary motion. Livestock typically being domestic animals eg. horses, cattle, sheep and pigs. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Shark: large elasmobranch fish with lateral gill slits and mouth on the under side. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Whale: large cetaceous aquatic mammal. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>Seal: amphibious mammal with flippers as limbs. <i>(Collins English Dictionary)</i></p> <p>•fish: a vertebrate cold-blooded animal with gills and fins living wholly in water. <i>(Concise Oxford Dictionary Ninth Edition)</i></p> <p>•shellfish and crustaceans: shelled aquatic invertebrates. <i>(Chambers Concise Dictionary)</i></p> <p>Specific examples include:</p> <p>Scallops: a bivalve having a sub-circular shell with radiating ridges and eared hinge-line. <i>(Chambers Concise Dictionary)</i></p> <p>•ballast: heavy material used to weigh down and steady a ship. <i>(Adapted from Chambers Concise Dictionary)</i></p> <p>•other: the product is of a type which will not readily fall into another value. <i>(AML)</i></p> <p>•unknown: the product is unknown or unreported. <i>(AML)</i></p> <p>- Multiple</p> <p>- Not Applicable</p>
<p>Production agency</p> <p>The agency responsible for the production of the data</p> <p><i>(AML)</i></p>	<p>IHO code for producing agencies</p>
<p>Protective marking</p>	<p>COSMIC Top Secret</p>

<p>A marking indicating the minimum standards of protection required of the data (AML)</p>	<p>FOCAL Top Secret</p> <p>Top Secret</p> <p>Secret</p> <p>Confidential</p> <p>Restricted</p> <p>Unclassified</p> <p>Unknown</p> <p>Not Applicable</p>
<p>Quality of position</p> <p>An indication of the reliability of a quoted position</p> <p>Note:</p> <p>The value 'Approximate' when applied to the attribute 'Quality of position' is prohibited for use in AML. In circumstances where the term 'Position approximate' would normally be applied to an object in a standard navigational charting sense, the value 'estimated' should be used.</p>	<p>Surveyed: The position(s) were determined by the operation of making measurements for determining the relative position of points on, above or beneath the earth's surface. Survey implies a regular, controlled survey of any date. (<i>adapted from IHO Dictionary, S-32, 5195, & IHO Chart Specifications, M-4, 175.2</i>)</p> <p>Unsurveyed: Survey data does not exist or is very poor. (<i>Adapted from IHO Dictionary, S-32, 5732</i>)</p> <p>Inadequately surveyed: Position data is of a very poor quality. (<i>Adapted from IHO Dictionary, S-32, 5732</i>)</p> <p>Position doubtful: An object whose position has been reported but which is considered to be doubtful. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Unreliable: An object's position obtained from questionable or unreliable data. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Reported (not surveyed): An object whose position has been reported and its position confirmed by some means other than a formal survey such as an independent report of the same object. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Reported (not confirmed): An object whose position has been reported and its position has not been confirmed. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Estimated: The most probable position of an object determined from incomplete data or data of questionable accuracy. (<i>Adapted from IHO Dictionary, S-32, 3960</i>)</p> <p>Precisely known: A position that is of a known value, such as the position of an anchor berth or other defined object. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p>

	<p>Calculated: A position that is computed from data. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Unknown</p> <p>Multiple</p> <p>Not Applicable</p> <p>Other</p>
<p>Quality of sounding measurement Indicates the reliability of the value of the sounding (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p>	<p>Depth Known: The depth from chart datum to the bottom is a known value. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Depth Unknown: The depth from chart datum to the bottom is unknown. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Doubtful Sounding: A depth that may be less than indicated. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 4840</i>)</p> <p>Unreliable sounding: A depth that is considered to be an unreliable value. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>No Bottom Found at Value Shown: Upon investigation the bottom was not found at this depth. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 4848</i>)</p> <p>Not regularly maintained: Depths may be altered by human influence, but will not be routinely maintained. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Maintained Depth: The depth at which a channel is kept by human influence, usually by dredging. (<i>IHO Dictionary, S-32, 5th Edition, 3057</i>)</p> <p>Least Depth Known: The shallowest depth over an object is of known value. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 2705</i>)</p> <p>Least Depth Unknown, Safe Clearance at Depth Shown: The least depth over an object is unknown, but there is considered to be safe clearance at this depth. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Value Reported (Not Surveyed): Depth value obtained from a report, but not fully surveyed. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Value Reported (Not Confirmed): Depth Value obtained from a report, which it has not been possible to confirm. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Not Applicable</p>

	Other
<p>Re-entered Date</p> <p>The date on which activity at a well site resumed, either to enable further exploration or development work, or to initiate production of oil or gas.</p> <p><i>(AML)</i></p>	<p>Indication: CCYYMMDD</p> <p>The “re-entered date” should be encoded using 4 digits for the calendar year (CCYY), 2 digits for the month (MM) (e.g. April = 04) and 2 digits for the day (DD).</p>
<p>Re-suspended Date</p> <p>The date on which a well is suspended for a second or subsequent time, meaning it has again been temporarily abandoned</p> <p><i>(Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</i></p>	<p>Indication: CCYYMMDD</p> <p>The “re-suspended date” should be encoded using 4 digits for the calendar year (CCYY), 2 digits for the month (MM) (e.g. April = 04) and 2 digits for the day (DD).</p>
<p>Reference to a publication</p> <p>Reference to a specific location of any relevant information within an external publication</p> <p><i>(AML)</i></p>	Text string
<p>Relative Horizontal Accuracy</p> <p>The horizontal error estimate for the distance between two points, or the accuracy of one point with respect to another</p>	Text string
<p>Relative Vertical Accuracy</p> <p>The vertical error estimate for the distance between two points, or the accuracy of one point with respect to another</p>	Text string
<p>Sonar Signal Strength</p> <p>An indication of the strength of the echo of a sonic signal returned from an object.</p> <p><i>(Adapted from IHO Dictionary, S-32, 4819)</i></p>	<ul style="list-style-type: none"> •nil: the object returns no sonar signal. <i>(AML)</i> •poor: the object returns a poor sonar signal. <i>(AML)</i> •moderate: the object returns a moderate sonar signal. <i>(AML)</i> •strong: the object returns a strong sonar signal. <i>(AML)</i> <p>Unknown</p> <p>Not Applicable</p> <p>Other</p>
<p>Sounding Accuracy</p> <p>The best estimate of the accuracy of the sounding data. The error is assumed to be positive and negative.</p> <p><i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i></p>	<p>Value: 0 - 99.9</p> <p>Units: metres, fathoms or feet (units must be defined)</p> <p>Resolution: 0.1</p>
<p>Sounding datum</p> <p>Indicates the datum to which soundings are referred.</p> <p><i>(Adapted from S-57 Annex A, Appendix A, IHO Object Catalogue)</i></p>	<p>Approximate Lowest Astronomical Tide: An arbitrary level, usually within $\pm 0.3\text{m}$ from that of Lowest Astronomical Tide (LAT). <i>(Hydrographic Service, Royal Australian Navy)</i></p>

	<p>Approximate Mean Low Water Springs: An arbitrary level, usually within $\pm 0.3\text{m}$ from that of Mean Low Water Springs (MLWS). (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <p>Approximate Mean Low Water: An arbitrary level, usually within $\pm 0.3\text{m}$ from that of Mean Low Water (MLW). (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <p>Approximate Mean Lower Low Water: An arbitrary level, usually within $\pm 0.3\text{m}$ from that of Mean Lower Low Water (MLLW). (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <p>Approximate Mean Sea Level: An arbitrary level, usually within $\pm 0.3\text{m}$ from that of Mean Sea Level (MSL). (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <p>Equinoctial Spring Low Water: The level of low water springs near the time of an equinox (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>High Water Springs: An arbitrary level, approximating that of Mean High Water Springs (MHWS). (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <p>High Water: The highest level reached at a place by the water surface in one tidal cycle. Also called high tide. (<i>IHO Dictionary, S-32, 5th Edition, 2251</i>)</p> <p>Higher High Water Large Tide (HHWLT): The average of the highest high waters, one from each of 19 years of observations. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Highest Astronomical Tide (HAT): The highest level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. (<i>Adapted from Admiralty Tide Tables</i>)</p> <p>Indian Spring Low Water (ISLW): An arbitrary tidal datum approximating the level of the mean of the lower low water at spring tides. Also called Indian tidal plane. (<i>IHO Dictionary, S-32, 5th Edition, 2427</i>)</p> <p>International Great Lakes Datum 1985 (IGLD 1985): A vertical reference system with its zero based on the mean water level at Rimouski/Pointe-au-Père, Quebec, over the period 1970 to 1988. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Local Datum: An arbitrary datum defined by a</p>
--	--

	<p>local harbour authority, from which levels and tidal heights are measured by this authority. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Low Water Springs: An arbitrary level, approximating that of Mean Low Water Springs (MLWS). (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <p>Low Water: An approximation of mean low water adopted as the reference level for a limited area, irrespective of better determinations at a later date. Used mostly in harbour and river engineering. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Lower Low Water Large Tide (LLWLT): The average of the lowest low waters, one from each of 19 years of observations. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Lowest Astronomical Tide (LAT): The lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. (<i>IHO Dictionary, S-32, 5th Edition, 2936</i>)</p> <p>Lowest Low Water: An arbitrary level conforming to the lowest tide observed at a place, or somewhat lower. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Lowest Low Water Springs: An arbitrary level conforming to the lowest water level observed at a place at spring tides during a period of time shorter than 19 years. (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <p>Mean High Water (MHW): The average height of all high waters at a place over a 19-year period. (<i>IHO Dictionary, S-32, 5th Edition, 3141</i>)</p> <p>Mean High Water Springs (MHWS): The average height of the high waters of spring tides. Also called spring high water. (<i>IHO Dictionary, S-32, 5th Edition, 3144</i>)</p> <p>Mean Higher High Water (MHHW): The average height of higher high waters at a place over a 19-year period. (<i>IHO Dictionary, S-32, 5th Edition, 3140</i>)</p> <p>Mean Low Water (MLW): The average height of all low waters at a place over a 19-year period. (<i>IHO Dictionary, S-32, 5th Edition, 3147</i>)</p> <p>Mean Low Water Springs (MLWS): The average height of the low waters of spring tides. Also called</p>
--	--

	<p>spring low water. (<i>IHO Dictionary, S-32, 5th Edition, 3150</i>)</p> <p>Mean Lower Low Water (MLLW): The average height of the lower low waters at a place over a 19-year period. (<i>IHO Dictionary, S-32, 5th Edition, 3145</i>)</p> <p>Mean Lower Low Water Springs (MLLWS): The average height of lower low water springs at a place. (<i>IHO Dictionary, S-32, 5th Edition, 3146</i>)</p> <p>Mean Sea Level (MSL): The average height of the surface of the sea at a tide station for all stages of the tide over a 19-year period, usually determined from hourly height readings measured from a fixed predetermined reference level. (<i>IHO Dictionary, S-32, 5th Edition, 3156</i>)</p> <p>Mean Tide Level (MTL): The level mid-way between one or more successive high and low waters. It may be computed by averaging the four tidal levels (MHWS, MHWN, MLWN and MLWS or MHHW, MLHW, MHLW and MLLW) for the place concerned. (<i>UKHO Tidal Branch</i>)</p> <p>Mean Water Level: The average of all hourly water levels over the available period of record. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Nearly Highest High Water: An arbitrary level approximating the highest water level observed at a place, usually equivalent to the high water springs. (<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p> <p>Nearly Lowest Low Water: An arbitrary level approximating the lowest water level observed at a place, usually equivalent to the Indian Spring Low Water (ISLW). (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <p>Unknown</p> <p>Not Applicable</p> <p>Other</p>
<p>Source agency</p> <p>The agency responsible for the production of the source. (<i>AML</i>)</p>	<p>IHO Codes for Producing Agencies</p>
<p>Source country</p> <p>The country responsible for the production of the source. (<i>AML</i>)</p>	<p>IHO Codes for Producing Agencies</p>
<p>Source date</p> <p>The date of issue of the source information, if applicable. (<i>AML</i>)</p>	<p>Indication:</p> <p>4 digits for the calendar year (CCYY), 2 digits for the month (MM) (e.g. April = 04) and 2 digits for</p>

	the day (DD).
Source ID Any ID of the source (e.g. chart number). (AML)	Text string
Source scale The scale at which the source data has been compiled. (AML)	Unit: None Resolution: 1
Source type The type of the source (e.g. chart or report). (AML)	Text string
Spudded Date The date on which a new well is spudded, meaning to start drilling a new borehole. <i>(Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</i>	Indication: CCYYMMDD The “spudded date” should be encoded using 4 digits for the calendar year (CCYY), 2 digits for the month (MM) (e.g. April = 04) and 2 digits for the day (DD).
Status Indicates the condition of the object in terms of permanency or usage. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i>	<ul style="list-style-type: none"> •not in use: no longer used for the purpose intended; disused. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i> •historic: famous in history; of historic interest. <i>(The Concise Oxford Dictionary, 7th Edition)</i> •existence doubtful: an object that has been reported but has not been definitely determined to exist. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i> •dead: not detected by repeated surveys, leading to doubts about the object’s existence. (AML) •lifted: an object that has been salvaged or removed. (AML) •mass grave: where a significant number of persons have perished as a direct result of a vessel or structure sinking and their remains cannot be recovered, the wreck and immediate area may be declared as a Mass Grave or more specifically, a War Grave. Such sites are protected from disturbance by International Law. (AML) •production: a borehole that is actively engaged in the extraction of oil or gas from the seabed. <i>(Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</i> •exploration: a borehole drilled in the search for a new source of oil or gas. <i>(An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</i> •suspended: a well where the extraction of oil or gas has been temporarily abandoned. When

	<p>suspended, a well is either plugged (filled with concrete and topped with a steel plate) or capped (well-head equipment is installed over the well). <i>(Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</i></p> <ul style="list-style-type: none"> •injection: a borehole drilled for the purpose of injecting a secondary substance, for example water, into the pore spaces in a reservoir rock to encourage oil or gas to flow into adjacent producing wells. <i>(An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</i> •unspecified: the status of the object is unspecified. <i>(AML)</i> <ul style="list-style-type: none"> - Unknown - Multiple - Not Applicable - Other
<p>Strength of Magnetic Anomaly Indication of the strength of the magnetic anomaly caused by the object. <i>(AML)</i></p>	<ul style="list-style-type: none"> -Nil: The object generates no magnetic anomaly. <i>(AML)</i> -Slight: The object generates a slight magnetic anomaly. <i>(AML)</i> -Moderate: The object generates a moderate magnetic anomaly. <i>(AML)</i> -Strong: The object generates a strong magnetic anomaly. <i>(AML)</i> <ul style="list-style-type: none"> - Unknown - Not Applicable - Other
<p>Supporting textual information Supporting (free text) information relevant to the object that cannot be explicitly encoded in any other attribute</p>	Text string
<p>Supporting textual information (in national language characters) Supporting (free text) information in national language characters relevant to the object that cannot be explicitly encoded in any other attribute</p>	Text string
<p>Surface Composition The general nature of the material of which the land surface or the sea bed is composed. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i></p>	<ul style="list-style-type: none"> •mud: soft, wet earth. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i> •clay: (particles of less than 0.002 mm); stiff, sticky earth that becomes hard when baked. <i>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</i> •silt: (particles of 0.002 - 0.0625 mm); when dried

	<p>on hand will rub off easily. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p> <ul style="list-style-type: none"> •sand: (particles of 0.0625 - 2.0 mm); tiny grains of crushed or worn rock. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) •stone: a general term for rock fragments ranging in size from pebbles and gravel to boulders or a large rock mass. (<i>IHO Dictionary, S-32, 5th Edition, 5059</i>) •gravel: (particles of 2.0 - 4.0 mm); small stones with coarse sand. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) •pebbles: (particles of 4.0 - 64.0 mm); small stones made small and round by being rolled in water. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) •cobbles: (particles of 64.0 - 256.0 mm); stones worn round and smooth by water and used for paving. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) •rock: any formation of natural origin that constitutes an integral part of the lithosphere. The natural occurring material that forms firm, hard, and solid masses. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 4415</i>) •lava: the fluid or semi-fluid matter flowing from a volcano. The substance that results from the cooling of the molten rock. Part of the ocean bed is composed of lava. (<i>IHO Dictionary, S-32, 5th Edition, 2680</i>) •coral: hard calcareous skeletons of many tribes of marine polyps. (<i>IHO Dictionary, S-32, 5th Edition, 1061</i>) •shells: exoskeletons of various water dwelling animals. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 4680</i>) •boulder: a rounded rock with diameter of 256 mm or larger. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 527</i>) <p>- Unknown</p> <p>- Multiple</p> <p>- Not Applicable</p> <p>- Other</p>
<p>Surface Composition - qualifying terms</p> <p>Physical characteristics of the natural surface composition in terms of their size, morphology and</p>	<ul style="list-style-type: none"> •fine: falls within the smallest size continuum for a particular nature of surface term. (<i>M-4 425.6</i>) •medium: falls within the moderate size continuum

<p>consistency. <i>(Adapted from S-57 Annex A, Appendix A, Chapter 2 Attributes)</i></p>	<p>for a particular nature of surface term. <i>(M-4 425.6)</i></p> <ul style="list-style-type: none"> •coarse: falls within the largest size continuum for a particular nature of surface term. <i>(M-4 425.6)</i> •broken: Fractured or in pieces. <i>(Adapted from Webster's II New Riverside Dictionary, 1984)</i> •sticky: having an adhesive or glue like property. <i>(Adapted from Webster's II New Riverside Dictionary, 1984)</i> •soft: not hard or firm <i>(Adapted from Webster's II New Riverside Dictionary, 1984)</i> •stiff: not pliant; thick, resistant to flow. <i>(Adapted from Webster's II New Riverside Dictionary, 1984)</i> •volcanic: composed of or containing material ejected from a volcano. <i>(Adapted from Webster's II New Riverside Dictionary, 1984)</i> •calcareous: composed of or containing calcium or calcium carbonate. <i>(IHO Dictionary, S-32, 5th Edition, 603)</i> •hard: firm; usually refers to an area of the sea floor not covered by unconsolidated sediment. <i>(IHO Dictionary, S-32, 5th Edition, 2194 and adapted from Webster's II New Riverside Dictionary, 1984)</i> <p>- Unknown - Multiple - Not Applicable - Other</p>
<p>Suspension Date The date on which a well is suspended, meaning it has been temporarily abandoned. <i>(Adapted from An A-Z of Offshore Oil & Gas by Harry Whitehead, 2nd Ed, 1983, Gulf Publishing Company)</i></p>	<p>Indication: CCYYMMDD The "suspension date" should be encoded using 4 digits for the calendar year (CCYY), 2 digits for the month (MM) (e.g. April = 04) and 2 digits for the day (DD).</p>
<p>Technique of sounding measurement Indicates the method or equipment used to obtain the object's depth. <i>(S-57 AnnexA, Appendix A, IHO Object Catalogue)</i></p>	<p>Found by Echo-Sounder/ Precision depth recorder: The depth was determined by using an instrument that determines depth of water by measuring the time interval between emission of a sonic or ultra-sonic signal and return of its echo from the bottom. <i>(Adapted from IHO Dictionary, S-32, 1547)</i></p> <p>Found by Side-Scan Sonar: The depth was computed from a record produced by active sonar in which fixed acoustic beams are directed into the water perpendicularly to the direction of travel to scan the bottom and generate a record of the bottom configuration. <i>(Adapted from IHO Dictionary, S-32,</i></p>

	<p>4710)</p> <p>Found by Multi-Beam/Sonarray: The depth was determined by using a wide swath echo sounder that uses multiple beams to measure depths directly below and transverse to the ship's track. <i>(Adapted from IHO Dictionary, S-32, 3339)</i></p> <p>Found by Diver: The depth was determined by a person skilled in the practice of diving. <i>(Adapted from IHO Dictionary, S-32, 1422)</i></p> <p>Found by Lead Line: The depth was determined by using a line, graduated with attached marks and fastened to a sounding lead. <i>(Adapted from IHO Dictionary, S-32, 2698)</i></p> <p>Swept by Wire-drag: The given area was determined to be free from navigational dangers to a certain depth by towing a buoyed wire at the desired depth by two launches, or a least depth was identified using the same technique. <i>(Adapted from IHO Dictionary, S-32, 5248, 6013)</i></p> <p>Found by Laser: The depth was determined by using an instrument that measures distance by emitting timed pulses of laser light and measuring the time between emission and reception of the reflected pulses. <i>(Adapted from IHO Dictionary, S-32, 2763)</i></p> <p>Swept by Vertical Acoustic System: The given area has been swept using a system comprised of multiple echo sounder transducers attached to booms deployed from the survey vessel. <i>(S-57 Annex A, Appendix A, IHO Object Catalogue)</i></p> <p>Found by Electromagnetic Sensor: The depth was determined by using an instrument that compares electromagnetic signals. <i>(Adapted from IHO Dictionary, S-32, 1571)</i></p> <p>Photogrammetry: The depth was determined by applying mathematical techniques to photographs. <i>(Adapted from IHO Dictionary, S-32, 3791)</i></p> <p>Found by Levelling: The depth was determined by using levelling techniques to find the elevation of the point relative to the datum <i>(Adapted from IHO Dictionary, S-32, 2741)</i></p> <p>Swept by Side-scan sonar: The given area was determined to be free from navigational dangers to a certain depth by towing a side scan sonar. <i>(Adapted from IHO Dictionary, S-32, 5248, 4710)</i></p> <p>Satellite Imagery: The depth was determined by</p>
--	---

	<p>using instruments placed aboard an artificial satellite. (<i>Adapted from IHO Dictionary, S-32, 4509</i>)</p> <p>Computer Generated: The sounding was determined from a bottom model constructed using a computer. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p> <p>Unknown</p> <p>Not Applicable</p> <p>Other</p>
<p>Text file reference</p> <p>The file name relating to an external text file</p>	Text string
<p>Text file reference (in national language characters)</p> <p>The file name (in national language characters) relating to an external text file</p>	Text string
<p>Textual description</p> <p>The actual words used to define a particular thing, for the capture of information related to the feature "User Defined" (<i>adapted from SOED</i>)</p>	Text string
<p>Tonnage</p> <p>The operational tonnage of the vessel. (<i>AML</i>)</p>	<p>Value: 0 - 999999</p> <p>Units: tonnes</p> <p>Resolution: 1</p>
<p>Type of Tonnage</p> <p>The method used to derive the operational tonnage of the vessel. (<i>AML</i>)</p>	<ul style="list-style-type: none"> •builders' measurement: figure supplied by the builders of the vessel. (<i>AML</i>) •displacement: figure derived from the volume or weight of water displaced by a ship of equal weight. (<i>Webster's 3rd New International Dictionary</i>). •gross: tonnage of the vessel including cargo. (<i>AML</i>) •net: tonnage of the vessel excluding cargo. (<i>AML</i>) •not applicable: the tonnage of the vessel is unknown, therefore the method of measurement cannot be given. (<i>AML</i>) <p>Unknown</p> <p>Other</p>
<p>Type of Wreck</p> <p>An indication of the type and/or usage of the vessel before it became a wreck. (<i>AML</i>)</p>	<ul style="list-style-type: none"> •steam ship: a vessel driven by water in the form of gas or vapour. (<i>Adapted from Chambers Concise Dictionary</i>) •motor vessel: a craft or structure for transport by water, driven by an engine. (<i>Adapted from Chambers Concise Dictionary</i>) •twin motor vessel: a craft or structure for transport by water, driven by two engines. (<i>Adapted from</i>

	<p><i>Chambers Concise Dictionary</i>)</p> <ul style="list-style-type: none"> • diesel electric vessel: a vessel driven by the electric current produced by a diesel-engined generator. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) • turbo electric vessel: a vessel using a form of electric drive in which turbine-driven generators supply electric power to motors coupled to the propeller. (<i>Adapted from Chambers Concise Dictionary</i>) • gas turbine vessel: a vessel driven by a rotary motor in which a wheel or drum with curved vanes is driven by expanding hot air admitted to it and allowed to escape. (<i>Adapted from Chambers Concise Dictionary</i>) • merchant vessel: vessel operated by a merchant marine organisation, engaged in the transport of goods for payment. (<i>AML</i>) • fishing vessel: a vessel engaged in harvesting fish or other products from the sea for commercial gain. (<i>Partly adapted from Webster's 3rd New International Dictionary</i>) • military vessel: a vessel used by a countries armed forces, sometimes engaged in the pursuit of warfare. (<i>AML</i>) • coaster: a ship that travels along the coast from port to port. (<i>Concise Oxford Dictionary 9th Edition</i>) • inshore vessel: a vessel that operates close to the shore. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) • sailing vessel: a vessel driven by sails, being pieces of material (originally canvas, now usually nylon etc.) extended on rigging to catch the wind. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) • tanker: a vessel for carrying liquids in bulk, especially mineral oils. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) • carrier: in general, a vessel engaged in the transport of goods or passengers for payment. Specifically, a boat that takes the catch from a fishing fleet to market. (<i>Adapted from Webster's 3rd New International Dictionary</i>) • bulk carrier: a vessel designed to carry (large) quantities of cargo, such as grain, that is not in the
--	---

	<p>form of separate packages. <i>(Adapted from Chambers Concise Dictionary)</i></p> <ul style="list-style-type: none"> •container ship: a ship designed to carry goods stored in containers. <i>(Adapted from Concise Oxford Dictionary 9th Edition)</i> •freighter: a vessel carrying cargo. <i>(Adapted from Chambers Concise Dictionary)</i> •East Indiaman: a large ship engaged in trade with the East Indies. <i>(Concise Oxford Dictionary 9th Edition)</i> •liberty ship: a prefabricated US-built freighter of the Second World War. <i>(Concise Oxford Dictionary 9th Edition)</i> •smack: a single-masted sailing boat for coasting or fishing. <i>(Concise Oxford Dictionary 9th Edition)</i> •drifter: a boat used for drift-net fishing. <i>(Concise Oxford Dictionary 9th Edition)</i> •trawler: a vessel that fishes by dragging an open-mouthed bag-net along the sea-bed. <i>(Adapted from Chambers Concise Dictionary)</i> •stern trawler: a fishing vessel that drags its trawl from the rear of the vessel. <i>(AML)</i> •beam trawler: a fishing vessel equipped with a trawl net with its mouth held apart by a beam. <i>(Adapted from Webster's 3rd New International Dictionary)</i> •factory ship: a fishing vessel with facilities for immediate processing of the catch. <i>(Adapted from Concise Oxford Dictionary 9th Edition)</i> •tug: a small powerful boat for towing larger boats and ships. <i>(Concise Oxford Dictionary 9th Edition)</i> •ocean tug: a small powerful boat for towing larger boats and ships that can operate in ocean conditions. <i>(Adapted from Concise Oxford Dictionary 9th Edition)</i> •supply vessel: a vessel carrying provisions and/or equipment. <i>(Adapted from Concise Oxford Dictionary 9th Edition)</i> •lighter: a boat, usually flat-bottomed, for transferring goods from a ship to a wharf or another ship. <i>(Concise Oxford Dictionary 9th Edition)</i> •tender: a vessel attending a larger one to supply stores, convey passengers or orders, etc. <i>(Concise Oxford Dictionary 9th Edition)</i> •barge: a usually flat bottomed boat, used
--	---

	<p>principally in harbours and inland waterways though is often seagoing, for the transport of goods or sometimes passengers and usually propelled by towing. (<i>Webster's 3rd New International Dictionary</i>)</p> <ul style="list-style-type: none"> •derrick/lifting barge: a barge upon which is mounted a mechanism for hoisting materials by a boom hung from a central post. (<i>Adapted from Chambers Concise Dictionary</i>) •mobile crane: a machine for moving heavy objects, usually by suspending them from a projecting arm or beam, mounted on a floating platform (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) •drill vessel/rig: a floating offshore vessel or platform supporting the complete apparatus and structure required for drilling an oil or gas well. (<i>Adapted from Chambers Concise Dictionary</i>) •collier: a vessel that carries coal. (<i>Adapted from Chambers Concise Dictionary</i>) •sloop: a small one-masted fore-and-aft rigged vessel with mainsail and jib. (<i>Concise Oxford Dictionary 9th Edition</i>) •brigantine: a two-masted sailing ship with a square-rigged foremast and a fore-and-aft-rigged mainmast. (<i>Concise Oxford Dictionary 9th Edition</i>) •ketch: a two-masted fore-and-aft rigged sailing boat with a mizzen-mast stepped forward of the rudder and smaller than its foremast. (<i>Concise Oxford Dictionary 9th Edition</i>) •cutter: a small fast sailing ship or a small boat carried by a large ship. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) •schooner: a fore-and-aft rigged ship with two or more masts, the foremast being smaller than the other masts. (<i>Concise Oxford Dictionary 9th Edition</i>) •dredger: a vessel equipped for extracting underwater sediment by means of a bucket or suction, to deepen a harbour, canal or river. (<i>Adapted from Chambers Concise Dictionary</i>) •barque: a small square sterned ship without head rails. Technically a three masted vessel whose mizzen mast is fore and aft rigged. (<i>Chambers Concise Dictionary</i>) •yacht: a light sailing vessel, especially equipped
--	---

	<p>for racing or a larger, usually power-driven vessel equipped for cruising. (<i>Concise Oxford Dictionary 9th Edition</i>)</p> <ul style="list-style-type: none">•junk: a Chinese flat bottomed sailing vessel, with high forecastle and poop, sometimes large and three masted. (<i>Chambers Concise Dictionary</i>)•mailboat: a vessel carrying letters and parcels. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>)•ferry: a vessel for conveying passengers and goods, especially as a regular service. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>)•hovercraft: a craft that travels over water on a cushion of air provided by a downward blast. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>)•hydrofoil: a boat equipped with a device consisting of planes for lifting its hull out of the water to increase its speed. (<i>Concise Oxford Dictionary 9th Edition</i>)•roll on-roll off: a vessel on which vehicles are driven directly on at the start of the voyage and off at the end of it. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>)•non propelled roll on-roll off: a vessel with no means of self-propulsion on which vehicles are driven directly on at the start of the voyage and off at the end of it. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>)•liner: a ship carrying passengers on a regular line. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>)•cruiser (merchant): a vessel used to sail about from port to port as distinguished from voyaging to a set destination. (<i>Webster's 3rd New International Dictionary</i>)•cabin cruiser: a large motor boat with living accommodation. (<i>Concise Oxford Dictionary 9th Edition</i>)•catamaran: a boat with twin hulls in parallel. (<i>Concise Oxford Dictionary 9th Edition</i>)•pinnace: a warship's or other ship's small boat, usually motor-driven, originally schooner-rigged or eight-oared. (<i>Concise Oxford Dictionary 9th Edition</i>)•launch: a large motor boat, used especially for
--	--

	<p>pleasure. (<i>Concise Oxford Dictionary 9th Edition</i>)</p> <ul style="list-style-type: none"> •pleasure craft: a boat used for pleasure or amusement. (<i>Chambers Concise Dictionary</i>) •speed boat: a motor boat designed for high speed. (<i>Concise Oxford Dictionary 9th Edition</i>) •dinghy: a small open boat, propelled by oars, sails or an outboard motor. (<i>Chambers Concise Dictionary</i>) •ship's lifeboat: a ship's small boat for use in emergency. (<i>Concise Oxford Dictionary 9th Edition</i>) •rescue boat: a vessel used for the purpose of saving people from danger. (<i>AML</i>) •pilot boat: a vessel used by a person qualified to take charge of a ship entering or leaving harbour. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) •boarding vessel: generally, a vessel used to convey passengers to another vessel for embarkation. Specifically, used by a military force to enter a ship for the purposes of providing information or inspection of the ship, its crew or contents.(<i>AML</i>) •auxiliary vessel: a vessel functioning in a subsidiary capacity; supplementary. In naval terms, not a fighting ship. (<i>Webster's 3rd New International Dictionary</i>) •light ship: a distinctively marked vessel anchored or moored at a charted point, to serve as an aid to navigation. (<i>IHO Dictionary, S-32, 5th Edition, 2828</i>) •ice breaker: a vessel specially strengthened for the specific purpose of breaking ice to facilitate passage. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) •salvage vessel: a vessel used in the business of raising sunken or wrecked ships or their contents. (<i>Adapted from Chambers Concise Dictionary</i>) •exploration vessel: a vessel engaged in visiting undiscovered or un-investigated territory, especially to get scientific information. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) •research vessel: a vessel engaged in the business of conducting investigation into the sea and its environs to increase the sum of knowledge. (<i>Adapted from Chambers Concise Dictionary</i>) •survey vessel: a ship or vessel specially equipped
--	---

	<p>for carrying out hydrographic and/or oceanographic surveys. (<i>IHO Dictionary, S-32, 5th Edition, 5235</i>)</p> <ul style="list-style-type: none">•hospital ship: a ship fitted out exclusively for the treatment and transport of the sick and wounded. (<i>Chambers Concise Dictionary</i>)•hulk: the body of a dismantled ship, used as a store vessel etc. (<i>Concise Oxford Dictionary 9th Edition</i>)•ancient military vessel: a vessel from long ago used by an armed force. (<i>AML</i>)•ancient merchant vessel: a vessel from long ago engaged in the transport of goods for payment. (<i>AML</i>)•aircraft: a machine capable of flight, especially an aeroplane or helicopter. (<i>Concise Oxford Dictionary 9th Edition</i>)•helicopter: a type of aircraft obtaining lift and propulsion from horizontally revolving overhead blades or rotors, and capable of moving vertically and horizontally. (<i>Concise Oxford Dictionary 9th Edition</i>)•coast guard vessel: a vessel used by a military or naval force to guard a coastline and specified area of water and to police the regulations, safety, order and effective operation of marine traffic in its jurisdiction. (<i>Adapted from Webster's 3rd New International Dictionary</i>)•battleship: the largest and most heavily armoured class of warship, having at least 10 inches of armour and carrying a main battery of 12 inch guns or larger. (<i>Webster's 3rd New International Dictionary</i>)•dreadnought battleship: a type of battleship greatly superior in armament to all its predecessors (from the name of the first, launched in 1906). (<i>Concise Oxford Dictionary 9th Edition</i>)•battlecruiser: a heavy-gunned ship faster and more lightly armoured than a battleship. (<i>Concise Oxford Dictionary 9th Edition</i>)•aircraft carrier: a warship that carries and serves as a base for aeroplanes. (<i>Concise Oxford Dictionary 9th Edition</i>)•cruiser (military): a warship of high speed and medium armament. (<i>Concise Oxford Dictionary 9th Edition</i>)•heavy cruiser: large naval cruiser whose principal armament usually consists of 8" guns. (<i>Webster's</i>
--	---

	<p><i>3rd New International Dictionary)</i></p> <ul style="list-style-type: none"> •light cruiser: large naval cruiser whose principal armament usually consists of 6" guns. (<i>Webster's 3rd New International Dictionary)</i> •corvette: a small naval escort vessel. (<i>Concise Oxford Dictionary 9th Edition)</i> •destroyer: a fast warship with guns and torpedoes used to protect other ships. (<i>Concise Oxford Dictionary 9th Edition)</i> •frigate: a naval escort vessel between a corvette and a destroyer in size. (<i>Concise Oxford Dictionary 9th Edition)</i> •submarine hunter / chaser: vessel used for the detection and pursuit of submarines. (<i>AML)</i> •minesweeper: a ship for clearing away floating and submarine mines. (<i>Concise Oxford Dictionary 9th Edition)</i> •minelayer: a ship or aircraft for laying mines. (<i>Concise Oxford Dictionary 9th Edition)</i> •torpedo boat: a small, fast and lightly armed warship for carrying or discharging torpedoes. (<i>Concise Oxford Dictionary 9th Edition)</i> •patrol boat: a vessel which moves systematically around an area for the purposes of watching, repressing, protecting, inspecting etc. (<i>Chambers Concise Dictionary)</i> •gunboat: a small vessel of light draught fitted to carry one or more guns. (<i>Chambers Concise Dictionary)</i> •small defence vessel: a small vessel used for military purposes. (<i>AML)</i> •armed vessel: vessel carrying weapons. (<i>AML)</i> •escort vessel: vessel accompanying another vessel for security or protection. (<i>Adapted from Concise Oxford Dictionary 9th Edition)</i> •transport vessel: ship used to carry troops, stores, etc. (<i>Adapted from Concise Oxford Dictionary 9th Edition)</i> •landing craft: any of several types of craft especially designed for putting troops and equipment ashore. (<i>Concise Oxford Dictionary 9th Edition)</i> •blockship: a ship used to block a channel. (<i>Concise Oxford Dictionary 9th Edition)</i> •bombardon: floating breakwater used to make a
--	---

	<p>man-made harbour. (AML)</p> <ul style="list-style-type: none"> •landing stage: a platform, often floating, on which goods and passengers are disembarked. (<i>Concise Oxford Dictionary 9th Edition</i>) •mulberry unit: concrete caisson used to make a man-made harbour (AML) •anti-submarine barrier: a man-made obstacle that bars advance or access to submarines. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) •target: an object, normally an obsolete vessel, providing a mark to shoot at for practice; an object to aim at. (<i>Adapted from Chambers Concise Dictionary</i>) •submarine: a vessel, especially a warship, capable of operating under water and usually equipped with torpedoes, missiles, and a periscope. (<i>Concise Oxford Dictionary 9th Edition</i>) •unknown: the type of wreck is unknown or unreported. (AML) •other: the wreck is not of a type defined in the preceding list. (AML) •victory ship: general term applied to vessels of the Second World War, built under the direction of the US War Shipping Administration. (AML) •trimaran: a boat with three hulls in parallel. (<i>Adapted from Concise Oxford Dictionary 9th Edition</i>) <p>Multiple</p> <p>Not Applicable</p>
<p>Underwater Reference Mark</p> <p>Indication that the object can be used as a reference mark to confirm the vessel's position.</p> <p>(AML)</p>	<p>-Yes: The object is suitable as an underwater reference mark. (AML)</p> <p>-No: The object is not suitable as an underwater reference mark. (AML)</p>
<p>Vertical Datum</p> <p>Indicates the datum to which both heights and soundings are referred.</p> <p>(S-57 Annex A, Appendix A, Chapter 2 Attributes)</p>	<ul style="list-style-type: none"> • mean low water springs (MLWS): the average height of the low waters of spring tides. Also called spring low water. (<i>IHO Dictionary, S-32, 5th Edition, 3150</i>) • mean lower low water springs (MLLWS): the average height of lower low water springs at a place. (<i>IHO Dictionary, S-32, 5th Edition, 3146</i>) • mean sea level (MSL): the average height of the surface of the sea at a tide station for all stages of the tide over a 19-year period, usually determined from hourly height readings measured from a fixed predetermined reference level. (<i>IHO Dictionary, S-</i>

	<p>32, 5th Edition, 3156)</p> <ul style="list-style-type: none"> • lowest low water: an arbitrary level conforming to the lowest tide observed at a place, or some what lower. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • mean low water (MLW): the average height of all low waters at a place over a 19-year period. (<i>IHO Dictionary, S-32, 5th Edition, 3147</i>) • lowest low water springs: an arbitrary level conforming to the lowest water level observed at a place at spring tides during a period of time shorter than 19 years. (<i>Hydrographic Service, Royal Australian Navy</i>) • approximate mean low water springs: an arbitrary level, usually within $\pm 0.3\text{m}$ from that of Mean Low Water Springs (MLWS). (<i>Hydrographic Service, Royal Australian Navy</i>) • Indian spring low water (ISLW): an arbitrary tidal datum approximating the level of the mean of the lower low water at spring tides. Also called Indian Tidal Plane. (<i>IHO Dictionary, S-32, 5th Edition, 2427</i>) • low water springs: an arbitrary level, approximating that of Mean Low Water Springs (MLWS). (<i>Hydrographic Service, Royal Australian Navy</i>) • approximate lowest astronomical tide: an arbitrary level, usually within $\pm 0.3\text{m}$ from that of Lowest Astronomical Tide (LAT). (<i>Hydrographic Service, Royal Australian Navy</i>) • nearly lowest low water: an arbitrary level approximating the lowest water level observed at a place, usually equivalent to the Indian Spring Low Water (ISLW). (<i>Hydrographic Service, Royal Australian Navy</i>) • mean lower low water (MLLW): the average height of the lower low waters at a place over a 19-year period. (<i>IHO Dictionary, S-32, 5th Edition, 3145</i>) • low water: an approximation of mean low water adopted as the reference level for a limited area, irrespective of better determinations at a later date. Used mostly in harbour and river engineering. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • approximate mean low water: an arbitrary level, usually within $\pm 0.3\text{m}$ from that of Mean Low Water
--	--

	<p>(MLW). (<i>Hydrographic Service, Royal Australian Navy</i>)</p> <ul style="list-style-type: none"> • approximate mean lower low water: an arbitrary level, usually within $\pm 0.3\text{m}$ from that of Mean Lower Low Water (MLLW). (<i>Hydrographic Service, Royal Australian Navy</i>) • mean high water (MHW): the average height of all high waters at a place over a 19-year period. (<i>IHO Dictionary, S-32, 5th Edition, 3141</i>) • mean high water springs (MHWS): the average height of the high waters of spring tides. Also called spring high water. (<i>IHO Dictionary, S-32, 5th Edition, 3144</i>) • high water: the highest level reached at a place by the water surface in one tidal cycle. Also called high tide. (<i>IHO Dictionary, S-32, 5th Edition, 2251</i>) • approximate mean sea level: an arbitrary level, usually within $\pm 0.3\text{m}$ from that of Mean Sea Level (MSL). (<i>Hydrographic Service, Royal Australian Navy</i>) • high water springs: an arbitrary level, approximating that of Mean High Water Springs (MHWS). (<i>Hydrographic Service, Royal Australian Navy</i>) • mean higher high water (MHHW): the average height of higher high waters at a place over a 19-year period. (<i>IHO Dictionary, S-32, 5th Edition, 3140</i>) • equinoctial spring low water: the level of low water springs near the time of an equinox. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • lowest astronomical tide (LAT): the lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. (<i>IHO Dictionary, S-32, 5th Edition, 2936</i>) • local datum: an arbitrary datum defined by a local harbour authority, from which levels and tidal heights are measured by this authority. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • International Great Lakes Datum 1985 (IGLD 1985): a vertical reference system with its zero based on the mean water level at Rimouski/Pointe-au-Père, Quebec, over the period 1970 to 1988. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • mean water level: the average of all hourly water
--	--

	<p>levels over the available period of record. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p> <ul style="list-style-type: none"> • lower low water large tide (LLWLT): the average of the lowest low waters, one from each of 19 years of observations. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • higher high water large tide (HHWLT): the average of the highest high waters, one from each of 19 years of observations. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • nearly highest high water: an arbitrary level approximating the highest water level observed at a place, usually equivalent to the high water springs. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • highest astronomical tide (HAT): the highest level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. (<i>Adapted from Admiralty Tide Tables.</i>) • mean tide level (MTL): the level mid-way between one or more successive high and low waters. It may be computed by averaging the four tidal levels (MHWS, MHWN, MLWN and MLWS or MHHW, MLHW, MHLW and MLLW) for the place concerned. (<i>UKHO Tidal Branch.</i>) <p>- Unknown - Not Applicable - Other</p>
<p>Vertical Length</p> <p>The effective vertical length of an object, measured from the highest (lowest) point of the object to either the seabed or ground (if fixed), or the water level (if floating)</p> <p>(<i>S-57 Annex A, Appendix A, IHO Object Catalogue</i>)</p>	<p>Units: metres or feet (units must be defined)</p> <p>Resolution: 0.1 (metres or feet)</p>
<p>Water Level Effect</p> <p>Indicates the effect of the surrounding water on the object.</p> <p>(<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>)</p>	<ul style="list-style-type: none"> • partly submerged at high water: partially covered and partially dry at high water. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) <p>Note: not allowable for objects Impact Scour; Sensor Anomaly: Underwater/awash Rock.</p> <ul style="list-style-type: none"> • always dry: not covered at high water under normal meteorological conditions. (<i>S-57 Annex A, Appendix A, Chapter 2 Attributes</i>) • always under water / submerged: remains covered by water at all times under average meteorological conditions. (<i>S-57 Annex A, Appendix</i>

	<p><i>A, Chapter 2 Attributes)</i></p> <ul style="list-style-type: none"> • covers and uncovers: expression intended to indicate an area of a reef or other projection from the bottom of a body of water which periodically extends above and is submerged below the surface. Also referred to as dries or uncovers. (<i>IHO Dictionary, S-32, 5th Edition, 1111</i>) • awash: flush with, or washed by the waves at low water under average meteorological conditions. (<i>Adapted from IHO Dictionary, S-32, 5th Edition, 308</i>) <ul style="list-style-type: none"> - Unknown - Not Applicable - Other
--	---

5.5.3 Relationships Between Features

5.5.3.1 Feature Dependency

No parent child relationships exist in LBO AML

5.5.3.2 Feature Association

There is no feature association in LBO AML

6 DATA CAPTURE GUIDELINES

6.1 CONTINUITY

Features crossing the boundaries of digital source files or other media should be continuous whenever possible. Datasets consisting of multiple digital source files should also aim to be contiguous for consistency of display.

6.2 GUIDANCE ON FEATURE CODING

The 'AML LBO Guidance on Feature Coding and Attribution' section of the carrier format annex provides guidance on the conventions that are to be used to encode features, their geometry, and associated attribution, using a relevant implementation standard.

The content of the AML LBO product is at the discretion of the producing authority, provided that the conventions described in the 'AML LBO Guidance on Feature Coding and Attribution' section of the carrier format annex are followed.

7 DATA PRESENTATION

7.1 SCOPE

The way in which AML LBO is displayed is dependent upon an individual customer's requirement. How their systems are developed to display AML LBO data will largely be governed by the:

- environment in which the data is to be viewed
- types of products that are to be displayed with the AML product

This Product Specification is designed to support the production and supply of LBO. It does not address data presentation.

8 PROVISION OF DATA

8.1 GENERAL

8.1.1 File Format (Encapsulation)

The file format or encapsulation is exchange standard specific.

8.1.2 Auxiliary Information

All media containing AML products will contain cataloguing information regarding the coverage of the products contained within it. A complete AML catalogue is planned for future development.

8.2 DISTRIBUTION MEDIA

AML is available in the following format(s):

- **CD-ROM**
- **DVD**

Other approved means of distribution will be promulgated in due course. While data must be available to users on standard media, other media/transmission means may be agreed directly between producers and recipients.

8.3 VOLUME NAMING

AML volumes (defined as packages) may contain several datasets, each from a different product specification. The volume naming convention for AML 'Packages' is not defined by AML Product Specifications.

8.4 FILE NAMING

CD-ROM AML file naming conforms to ISO 9660, International Standards Organisation, Information Processing - Volume and File Structure of CD-ROM for Information Interchange. See appropriate implementation annex.

8.5 DIRECTORY STRUCTURE

CD-ROM The directory structure conforms to ISO 9660, International Standards Organisation, Information Processing - Volume and File Structure of CD-ROM for Information Interchange. See appropriate implementation annex.

8.6 ERROR DETECTION

Datasets will undergo file integrity checks that are dependent upon the exchange standard implemented.

8.7 COMPRESSION

AML products do not use compression techniques.

8.8 ENCRYPTION

All AML products are unencrypted, irrespective of security classification.

8.9 HARDWARE AND SOFTWARE REQUIREMENTS

N/A.

9 TESTING METHOD

This product specification has been designed to achieve interoperability of AML data products and other digital data products. This is achieved by the separation of the data dictionary from the standard used to encode the data and by the use of internationally recognised standards for the transfer of the data.

It is the responsibility of the data producer to ensure that AML data products fully conform to this Product Specification and to the chosen transfer standard.