**1. Meta Feature Types**

**1.1. Data Coverage**

**Definition:** A geographical area that describes the coverage and extent of spatial objects.

**CamelCase:** DataCoverage

**Alias:** M\_COVR M\_CSCL

**Super type:**

**Feature use type:** meta

**Primitive:** surface

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Maximum Display Scale |  |  | IN | 1, 1 |
| Minimum Display Scale |  |  | IN | 1, 1 |

**1.2. Local Direction of Buoyage**

**Definition:** An area within which the navigational system of marks has been established in relation to a specific direction.

**CamelCase:** LocalDirectionOfBuoyage

**Alias:** M\_NSYS

**Super type:**

**Feature use type:** meta

**Primitive:** surface

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Orientation Value | (ORIENT) |  | (S) RE | 1, 1 |

**1.3. Navigational System of Marks**

**Definition:** An area within which the navigational system of marks has been established in relation to a specific direction.

**CamelCase:** NavigationalSystemOfMarks

**Alias:** M\_NSYS

**Super type:**

**Feature use type:** meta

**Primitive:** surface

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : CEVNI  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulations - Two Sides  15 : Paraguay-Parana Waterway - Brazilian Complementary Aids | EN | 1, 1 |

**1.4. Sounding Datum**

**Definition:** The horizontal plane or tidal datum to which soundings have been reduced. Also called datum for sounding reduction.

**CamelCase:** SoundingDatum

**Alias:** M\_SDAT

**Super type:**

**Feature use type:** meta

**Primitive:** surface

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Vertical Datum | (VERDAT)  (Datum Level)  (Reference Plane)  (Levelling Datum)  (Datum for Sounding Reduction)  (Datum for Heights) | 1 : Mean Low Water Springs  2 : Mean Lower Low Water Springs  3 : Mean Sea Level  4 : Lowest Low Water  5 : Mean Low Water  6 : Lowest Low Water Springs  7 : Approximate Mean Low Water Springs  8 : Indian Spring Low Water  9 : Low Water Springs  10 : Approximate Lowest Astronomical Tide  11 : Nearly Lowest Low Water  12 : Mean Lower Low Water  13 : Low Water  14 : Approximate Mean Low Water  15 : Approximate Mean Lower Low Water  16 : Mean High Water  17 : Mean High Water Springs  18 : High Water  19 : Approximate Mean Sea Level  20 : High Water Springs  21 : Mean Higher High Water  22 : Equinoctial Spring Low Water  23 : Lowest Astronomical Tide  24 : Local Datum  25 : International Great Lakes Datum 1985  26 : Mean Water Level  27 : Lower Low Water Large Tide  28 : Higher High Water Large Tide  29 : Nearly Highest High Water  30 : Highest Astronomical Tide  31 : Local Low Water Reference Level  32 : Local High Water Reference Level  33 : Local Mean Water Reference Level  34 : Equivalent Height of Water (German GlW)  35 : Highest Shipping Height of Water (German HSW)  36 : Reference Low Water Level According to Danube Commission  37 : Highest Shipping Height of Water According to Danube Commission  38 : Dutch River Low Water Reference Level (OLR)  39 : Russian Project Water Level  40 : Russian Normal Backwater Level  41 : Ohio River Datum  43 : Dutch High Water Reference Level  44 : Baltic Sea Chart Datum 2000  45 : Dutch Estuary Low Water Reference Level (OLW)  46 :  47 :  48 :  49 : | EN | 1, 1 |

**1.5. Vertical Datum of Data**

**Definition:** Any level surface (for example Mean Sea Level) taken as a surface of reference to which the elevations within a data set are reduced. Also called datum level, reference level, reference plane, levelling datum, datum for heights.

**CamelCase:** VerticalDatumOfData

**Alias:** M\_VDAT

**Super type:**

**Feature use type:** meta

**Primitive:** surface

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Vertical Datum | (VERDAT)  (Datum Level)  (Reference Plane)  (Levelling Datum)  (Datum for Sounding Reduction)  (Datum for Heights) | 1 : Mean Low Water Springs  2 : Mean Lower Low Water Springs  3 : Mean Sea Level  4 : Lowest Low Water  5 : Mean Low Water  6 : Lowest Low Water Springs  7 : Approximate Mean Low Water Springs  8 : Indian Spring Low Water  9 : Low Water Springs  10 : Approximate Lowest Astronomical Tide  11 : Nearly Lowest Low Water  12 : Mean Lower Low Water  13 : Low Water  14 : Approximate Mean Low Water  15 : Approximate Mean Lower Low Water  16 : Mean High Water  17 : Mean High Water Springs  18 : High Water  19 : Approximate Mean Sea Level  20 : High Water Springs  21 : Mean Higher High Water  22 : Equinoctial Spring Low Water  23 : Lowest Astronomical Tide  24 : Local Datum  25 : International Great Lakes Datum 1985  26 : Mean Water Level  27 : Lower Low Water Large Tide  28 : Higher High Water Large Tide  29 : Nearly Highest High Water  30 : Highest Astronomical Tide  31 : Local Low Water Reference Level  32 : Local High Water Reference Level  33 : Local Mean Water Reference Level  34 : Equivalent Height of Water (German GlW)  35 : Highest Shipping Height of Water (German HSW)  36 : Reference Low Water Level According to Danube Commission  37 : Highest Shipping Height of Water According to Danube Commission  38 : Dutch River Low Water Reference Level (OLR)  39 : Russian Project Water Level  40 : Russian Normal Backwater Level  41 : Ohio River Datum  43 : Dutch High Water Reference Level  44 : Baltic Sea Chart Datum 2000  45 : Dutch Estuary Low Water Reference Level (OLW)  46 :  47 :  48 :  49 : | EN | 1, 1 |

**2. Geo Feature Types**

**2.1. Aids to Navigation**

**Definition:** A visual, acoustical, or radio device, external to a ship, designed to assist in determining a safe course or a vessel's position, or to warn of dangers and/or obstructions. Aids to navigation usually include buoys, beacons, fog signals, lights, radio beacons, leading marks, radio position fixing systems and GNSS which are chart-related and assist safe navigation.

**CamelCase:** AidsToNavigation

**Alias:**

**Super type:**

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| ID Code | (Identification Number)  (Identification Code) |  | TE | 0, 1 |
| Interoperability Identifier |  |  | UN | 0, 1 |
| Information | (INFORM) |  | C | 0, \* |
| File Locator |  |  | (S) TE | 0, 1 |
| File Reference | (TXTDSC)  (NTXTDS) |  | (S) TE | 0, 1 |
| Headline |  |  | (S) TE | 0, 1 |
| Language |  |  | (S) TE | 1, 1 |
| Text | (INFORM)  (NINFOM) |  | (S) TE | 0, 1 |
| Feature Name |  |  | C | 0, \* |
| Display Name |  |  | (S) BO | 0, 1 |
| Language |  |  | (S) TE | 0, 1 |
| Name | (OBJNAM) |  | (S) TE | 1, 1 |
| Seasonal Action Required |  |  | TE | 0, \* |

**Information Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| association | Aton Status |  |  |  | **AtonStatusInformation** | Statuspart | 0, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Aton Aggregations | **AidsToNavigation** | atonAggregationBy | 0, \* | **AtonAggregation** | peerAtonAggregation | 0, \* |
| Asso | Aton Associations | **AidsToNavigation** | atonAssociationBy | 0, \* | **AtonAssociation** | peerAtonAssociation | 0, \* |

**2.2. Structure Object**

**Definition:** Something (such as a house, tower, bridge, etc.) that is built by putting parts together and that usually stands on its own.

**CamelCase:** StructureObject

**Alias:**

**Super type:** AidsToNavigation

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** No remarks.

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Structure Equipment | **StructureObject** | parent | 1, 1 | **Equipment** | child | 0, \* |

**2.3. Equipment**

**Definition:** The implements used in an operation or activity.

**CamelCase:** Equipment

**Alias:**

**Super type:** AidsToNavigation

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** No remarks.

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Structure Equipment | **Equipment** | child | 0, \* | **StructureObject** | parent | 1, 1 |

**2.4. Electronic Aton**

**Definition:** TBD

**CamelCase:** ElectronicAton

**Alias:**

**Super type:** AidsToNavigation

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| AtoN Number |  |  | UI | 0, 1 |
| MMSI Code |  |  | TE | 1, 1 |
| Status | (STATUS) |  | EN | 0, \* |

**2.5. Virtual AIS Aid to Navigation**

**Definition:** An Automatic Identification System (AIS) message 21 transmitted from an AIS station to simulate on navigation systems an Aid to Navigation which does not physically exist.

**CamelCase:** VirtualAISAidToNavigation

**Alias:**

**Super type:** ElectronicAton

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Virtual AIS Aid to Navigation Type |  | 1 : North Cardinal  2 : East Cardinal  3 : South Cardinal  4 : West Cardinal  5 : Port Lateral  6 : Starboard Lateral  7 : Preferred Channel to Port  8 : Preferred Channel to Starboard  9 : Isolated Danger  10 : Safe Water  11 : Special Purpose  12 : New Danger Marking | EN | 1, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Virtual AIS | **VirtualAISAidToNavigation** | virtualAISbroadcastBy | 0, 1 | **RadioStation** | virtualAISbroadcasts | 0, \* |

**2.6. Physical AIS Aid to Navigation**

**Definition:** An Automatic Identification System (AIS) message 21 transmitted from a physical Aid to Navigation, or transmitted from an AIS station for an Aid to Navigation which physically exists.

**CamelCase:** PhysicalAISAidToNavigation

**Alias:**

**Super type:** ElectronicAton

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category Of Physical AIS Aid To Navigation |  | 1 : Physical AIS Type 1  2 : Physical AIS Type 2  3 : Physical AIS Type 3 | EN | 1, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Physical AIS | **PhysicalAISAidToNavigation** | physicalAISbroadcastBy | 0, 1 | **RadioStation** | physicalAISbroadcasts | 0, \* |

**2.7. Synthetic AIS Aid To Navigation**

**Definition:** -

**CamelCase:** SyntheticAISAidToNavigation

**Alias:**

**Super type:** ElectronicAton

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category Of Synthetic AIS Aid To Navigation |  | 1 : predicted  2 : monitored | EN | 1, 1 |
| Virtual AIS Aid to Navigation Type |  | 1 : North Cardinal  2 : East Cardinal  3 : South Cardinal  4 : West Cardinal  5 : Port Lateral  6 : Starboard Lateral  7 : Preferred Channel to Port  8 : Preferred Channel to Starboard  9 : Isolated Danger  10 : Safe Water  11 : Special Purpose  12 : New Danger Marking | EN | 1, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Synthetic AIS | **SyntheticAISAidToNavigation** | syntheticAISbroadcastBy | 0, 1 | **RadioStation** | syntheticAISbroadcasts | 0, \* |

**2.8. Radio Station**

**Definition:** A place equipped to transmit radio waves. Such a station may be either stationary or mobile, and may also be provided with a radio receiver.

**CamelCase:** RadioStation

**Alias:** RDOSTA W/T Station

**Super type:** Equipment

**Feature use type:** geographic

**Primitive:** point

**Remarks:** The transmission of a radio station may serve to provide mariners with a line of position (IHO Chart Specifications, M-4). The feature 'radio station' is used to encode the point of transmission of the signal.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Radio Station | (CATROS) | 1 : Circular (Non-Directional) Marine or Aero-Marine Radiobeacon  2 : Directional Radiobeacon  3 : Rotating Pattern Radiobeacon  4 : Consol Beacon  5 : Radio Direction-Finding Station  6 : Coast Radio Station Providing QTG Service  7 : Aeronautical Radiobeacon  8 : Decca  9 : Loran C  10 : Differential GNSS  11 : Toran  12 : Omega  13 : Syledis  14 : Chaika  19 : Radio Telephone Station  20 : AIS Base Station | EN | 1, 1 |
| Estimated Range of Transmission | (ESTRNG) |  | RE | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Physical AIS | **RadioStation** | physicalAISbroadcasts | 0, \* | **PhysicalAISAidToNavigation** | physicalAISbroadcastBy | 0, 1 |
| Asso | Synthetic AIS | **RadioStation** | syntheticAISbroadcasts | 0, \* | **SyntheticAISAidToNavigation** | syntheticAISbroadcastBy | 0, 1 |
| Asso | Virtual AIS | **RadioStation** | virtualAISbroadcasts | 0, \* | **VirtualAISAidToNavigation** | virtualAISbroadcastBy | 0, 1 |

**2.9. Generic Beacon**

**Definition:** A fixed artificial navigation mark that can be recognized by its shape, colour, pattern, topmark or light character, or a combination of these. It may carry various additional aids to navigation.

**CamelCase:** GenericBeacon

**Alias:**

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** This term is not commonly used when the navigation mark can be classified as a lighthouse.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Beacon Shape | (BCNSHP) | 1 : Stake, Pole, Perch, Post  2 : Withy  3 : Beacon Tower  4 : Lattice Beacon  5 : Pile Beacon  6 : Cairn  7 : Buoyant Beacon | EN | 1, 1 |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 1, \* (ordered) |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Height | (HEIGHT) |  | RE | 0, 1 |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : CEVNI  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulations - Two Sides  14 : Brazilian National Inland Waterway Regulations - Side Independent  15 : Paraguay-Parana Waterway - Brazilian Complementary Aids | EN | 0, 1 |
| Nature of Construction | (NATCON) | 1 : Masonry  2 : Concreted  3 : Loose Boulders  4 : Hard Surfaced  5 : Unsurfaced  6 : Wooden  7 : Metal  8 : Glass Reinforced Plastic  9 : Painted  10 : Framework  11 : Latticed  12 : Glass  13 : Fiberglass  14 : Plastic | EN | 0, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Vertical Length | (VERLEN) |  | RE | 0, 1 |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 0, 1 |
| Vertical Accuracy |  |  | RE | 0, 1 |

**2.10. Generic Buoy**

**Definition:** A floating object moored to the bottom in a particular (charted) place, as an aid to navigation or for other specific purposes.

**CamelCase:** GenericBuoy

**Alias:**

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** Navigational buoys may be classified according to: (a) their shape, appearance, or construction, such as barrel, can, cask, conical, cylindrical, dan, keg, nun, pillar, spar, spherical,or topmark buoy; (b) their colour, such as black, chequered, green, red buoy; (c) their location, such as bifurcation, fairway, junction, mid-channel, middle-ground, or turning buoy; (d) the various kinds of hazards or dangers to navigation which they mark, such as bar, isolated danger, fish trap, obstruction, spoil ground, telegraph or wreck buoy; (e) their particular purpose or use, such as anchor, anchorage, compass adjustment, dredging, farewell (or landfall), marker, quarantine, station (or watch), or warping buoy.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Buoy Shape | (BOYSHP) | 1 : Conical  2 : Can  3 : Spherical  4 : Pillar  5 : Spar  6 : Barrel  7 : Superbuoy  8 : Ice Buoy | EN | 1, 1 |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 1, \* |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : CEVNI  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulations - Two Sides  14 : Brazilian National Inland Waterway Regulations - Side Independent  15 : Paraguay-Parana Waterway - Brazilian Complementary Aids | EN | 0, 1 |
| Nature of Construction | (NATCON) | 1 : Masonry  2 : Concreted  3 : Loose Boulders  4 : Hard Surfaced  5 : Unsurfaced  6 : Wooden  7 : Metal  8 : Glass Reinforced Plastic  9 : Painted  10 : Framework  11 : Latticed  12 : Glass  13 : Fiberglass  14 : Plastic | EN | 0, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Type of Buoy |  |  | TE | 0, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Buoy Topmark | **GenericBuoy** | buoyPart | 1, 1 | **Topmark** | topmarkPart | 0, \* |

**2.11. Generic Light**

**Definition:** -

**CamelCase:** GenericLight

**Alias:**

**Super type:** Equipment

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Height | (HEIGHT) |  | RE | 0, 1 |
| Vertical Length | (VERLEN) |  | RE | 0, 1 |
| Vertical Datum | (VERDAT)  (Datum Level)  (Reference Plane)  (Levelling Datum)  (Datum for Sounding Reduction)  (Datum for Heights) | 1 : Mean Low Water Springs  2 : Mean Lower Low Water Springs  3 : Mean Sea Level  4 : Lowest Low Water  5 : Mean Low Water  6 : Lowest Low Water Springs  7 : Approximate Mean Low Water Springs  8 : Indian Spring Low Water  9 : Low Water Springs  10 : Approximate Lowest Astronomical Tide  11 : Nearly Lowest Low Water  12 : Mean Lower Low Water  13 : Low Water  14 : Approximate Mean Low Water  15 : Approximate Mean Lower Low Water  16 : Mean High Water  17 : Mean High Water Springs  18 : High Water  19 : Approximate Mean Sea Level  20 : High Water Springs  21 : Mean Higher High Water  22 : Equinoctial Spring Low Water  23 : Lowest Astronomical Tide  24 : Local Datum  25 : International Great Lakes Datum 1985  26 : Mean Water Level  27 : Lower Low Water Large Tide  28 : Higher High Water Large Tide  29 : Nearly Highest High Water  30 : Highest Astronomical Tide  31 : Local Low Water Reference Level  32 : Local High Water Reference Level  33 : Local Mean Water Reference Level  34 : Equivalent Height of Water (German GlW)  35 : Highest Shipping Height of Water (German HSW)  36 : Reference Low Water Level According to Danube Commission  37 : Highest Shipping Height of Water According to Danube Commission  38 : Dutch River Low Water Reference Level (OLR)  39 : Russian Project Water Level  40 : Russian Normal Backwater Level  41 : Ohio River Datum  43 : Dutch High Water Reference Level  44 : Baltic Sea Chart Datum 2000  45 : Dutch Estuary Low Water Reference Level (OLW) | EN | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Effective Intensity |  |  | RE | 0, 1 |
| Peak Intensity |  |  | RE | 0, 1 |

**2.12. Landmark**

**Definition:** A prominent object at a fixed location on land which can be used in determining a location or a direction.

**CamelCase:** Landmark

**Alias:** LNDMRK

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** point curve surface

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Landmark | (CATLMK) | 1 : Cairn  2 : Cemetery  3 : Chimney  4 : Dish Aerial  5 : Flagstaff  6 : Flare Stack  7 : Mast  8 : Windsock  9 : Monument  10 : Column/Pillar  11 : Memorial Plaque  12 : Obelisk  13 : Statue  14 : Cross  15 : Dome  16 : Radar Scanner  17 : Tower  18 : Windmill  19 : Windmotor  20 : Spire/Minaret  21 : Large Rock or Boulder on Land  22 : Triangulation Mark  23 : Boundary Mark  24 : Observation Wheel  25 : Torii  26 : Bridge  27 : Dam | EN | 1, \* |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 0, \* (ordered) |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Function | (FUNCTN) | 2 : Harbour-Masters Office  3 : Customs Office  4 : Health Office  5 : Hospital  6 : Post Office  7 : Hotel  8 : Railway Station  9 : Police Station  10 : Water-Police Station  11 : Pilot Office  12 : Pilot Lookout  13 : Bank Office  14 : Headquarters for District Control  15 : Transit Shed/Warehouse  16 : Factory  17 : Power Station  18 : Administrative  19 : Educational Facility  20 : Church  21 : Chapel  22 : Temple  23 : Pagoda  24 : Shinto Shrine  25 : Buddhist Temple  26 : Mosque  27 : Marabout  28 : Lookout  29 : Communication  30 : Television  31 : Radio  32 : Radar  33 : Light Support  34 : Microwave  35 : Cooling  36 : Observation  37 : Timeball  38 : Clock  39 : Control  40 : Airship Mooring  41 : Stadium  42 : Bus Station  43 : Passenger Terminal Building  44 : Sea Rescue Control  45 : Observatory  46 : Ore Crusher  47 : Boathouse  48 : Pumping Station | EN | 0, \* |
| Nature of Construction | (NATCON) | 1 : Masonry  2 : Concreted  3 : Loose Boulders  4 : Hard Surfaced  5 : Unsurfaced  6 : Wooden  7 : Metal  8 : Glass Reinforced Plastic  9 : Painted  10 : Framework  11 : Latticed  12 : Glass  13 : Fiberglass  14 : Plastic | EN | 0, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 1, 1 |
| Height | (HEIGHT) |  | RE | 0, 1 |

**2.13. Lateral Beacon**

**Definition:** A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420). A lateral beacon is used to indicate the port or starboard hand side of the route to be followed. They are generally used for well defined channels and are used in conjunction with a conventional direction of buoyage. (UKHO NP 735, 5th Edition)

**CamelCase:** LateralBeacon

**Alias:**

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Lateral Mark | (CATLAM) | 1 : Port-Hand Lateral Mark  2 : Starboard-Hand Lateral Mark  3 : Preferred Channel to Starboard Lateral Mark  4 : Preferred Channel to Port Lateral Mark  5 : Right-Hand Side of the Waterway  6 : Left-Hand Side of the Waterway  7 : Right-Hand Side of the Channel  8 : Left-Hand Side of the Channel  9 : Bifurcation of the Waterway  10 : Bifurcation of the Channel  11 : Channel Near the Right Bank  12 : Channel Near the Left Bank  13 : Channel Cross-Over to the Right Bank  14 : Channel Cross-Over to the Left Bank  15 : Danger Point or Obstacles at the Right-Hand Side  16 : Danger Point or Obstacles at the Left-Hand Side  17 : Turn Off at the Right-Hand Side  18 : Turn Off at the Left-Hand Side  19 : Junction at the Right-Hand Side  20 : Junction at the Left-Hand Side  21 : Harbour Entry at the Right-Hand Side  22 : Harbour Entry at the Left-Hand Side  23 : Bridge Pier Mark  24 : Entry From a Lake to a Narrower Waterway, Right Bank  25 : Entry From a Lake to a Narrower Waterway, Left Bank  26 : Change Bank  27 : Continue Along Bank | EN | 1, 1 |

**2.14. Lateral Buoy**

**Definition:** A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565). A lateral buoy is used to indicate the port or starboard hand side of the route to be followed. They are generally used for well defined channels and are used in conjunction with a conventional direction of buoyage. (UKHO NP 735, 5th Edition)

**CamelCase:** LateralBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Lateral Mark | (CATLAM) | 1 : Port-Hand Lateral Mark  2 : Starboard-Hand Lateral Mark  3 : Preferred Channel to Starboard Lateral Mark  4 : Preferred Channel to Port Lateral Mark  5 : Right-Hand Side of the Waterway  6 : Left-Hand Side of the Waterway  7 : Right-Hand Side of the Channel  8 : Left-Hand Side of the Channel  9 : Bifurcation of the Waterway  10 : Bifurcation of the Channel  11 : Channel Near the Right Bank  12 : Channel Near the Left Bank  13 : Channel Cross-Over to the Right Bank  14 : Channel Cross-Over to the Left Bank  15 : Danger Point or Obstacles at the Right-Hand Side  16 : Danger Point or Obstacles at the Left-Hand Side  17 : Turn Off at the Right-Hand Side  18 : Turn Off at the Left-Hand Side  19 : Junction at the Right-Hand Side  20 : Junction at the Left-Hand Side  21 : Harbour Entry at the Right-Hand Side  22 : Harbour Entry at the Left-Hand Side  23 : Bridge Pier Mark  24 : Entry From a Lake to a Narrower Waterway, Right Bank  25 : Entry From a Lake to a Narrower Waterway, Left Bank  26 : Change Bank  27 : Continue Along Bank | EN | 1, 1 |

**2.15. Navigation Line**

**Definition:** A straight line extending towards an area of navigational interest and generally generated by two navigational aids or one navigational aid and a bearing.

**CamelCase:** NavigationLine

**Alias:** NAVLNE

**Super type:** AidsToNavigation

**Feature use type:** geographic

**Primitive:** curve

**Remarks:** The extent of the navigation line depends on the visibility of the navigational aid(s). The recommended track is that portion of a 'navigation line' that a ship should use for navigation.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Navigation Line | (CATNAV) | 1 : Clearing Line  2 : Transit Line  3 : Leading Line Bearing a Recommended Track | EN | 1, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Orientation Value | (ORIENT) |  | (S) RE | 1, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Range System | **NavigationLine** | navigationLine | 1, \* | **RecommendedTrack** | navigableTrack | 0, \* |

**2.16. Recommended Track**

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

**CamelCase:** RecommendedTrack

**Alias:** RECTRC

**Super type:** AidsToNavigation

**Feature use type:** geographic

**Primitive:** curve

**Remarks:** Recommended tracks include all channels recommended for hydrographic reasons to lead safely between shoal depths. The use of such tracks is generally left to the discretion of the mariner and will depend on the vessel's draught, the state of the tide, adequacy of navigational aids and so on (IHO Chart Specifications, M-4). The recommended track is that portion of a 'navigation line' that a ship should use for navigation. In the case of a two-way recommended track only one value of orientation is encoded; the other value can be deduced (that is, the value encoded + 180 degrees).

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Based On Fixed Marks | (CATTRK=1) |  | BO | 1, 1 |
| Depth Range Minimum Value | (DRVAL1) |  | RE | 0, 1 |
| Maximal Permitted Draught | (lg\_drt) |  | RE | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Vertical Datum | (VERDAT)  (Datum Level)  (Reference Plane)  (Levelling Datum)  (Datum for Sounding Reduction)  (Datum for Heights) | 1 : Mean Low Water Springs  2 : Mean Lower Low Water Springs  3 : Mean Sea Level  4 : Lowest Low Water  5 : Mean Low Water  6 : Lowest Low Water Springs  7 : Approximate Mean Low Water Springs  8 : Indian Spring Low Water  9 : Low Water Springs  10 : Approximate Lowest Astronomical Tide  11 : Nearly Lowest Low Water  12 : Mean Lower Low Water  13 : Low Water  14 : Approximate Mean Low Water  15 : Approximate Mean Lower Low Water  16 : Mean High Water  17 : Mean High Water Springs  18 : High Water  19 : Approximate Mean Sea Level  20 : High Water Springs  21 : Mean Higher High Water  22 : Equinoctial Spring Low Water  23 : Lowest Astronomical Tide  24 : Local Datum  25 : International Great Lakes Datum 1985  26 : Mean Water Level  27 : Lower Low Water Large Tide  28 : Higher High Water Large Tide  29 : Nearly Highest High Water  30 : Highest Astronomical Tide  31 : Local Low Water Reference Level  32 : Local High Water Reference Level  33 : Local Mean Water Reference Level  34 : Equivalent Height of Water (German GlW)  35 : Highest Shipping Height of Water (German HSW)  36 : Reference Low Water Level According to Danube Commission  37 : Highest Shipping Height of Water According to Danube Commission  38 : Dutch River Low Water Reference Level (OLR)  39 : Russian Project Water Level  40 : Russian Normal Backwater Level  41 : Ohio River Datum  43 : Dutch High Water Reference Level  44 : Baltic Sea Chart Datum 2000  45 : Dutch Estuary Low Water Reference Level (OLW) | EN | 0, 1 |
| Orientation |  |  | C | 1, 1 |
| Orientation Uncertainty |  |  | (S) RE | 0, 1 |
| Orientation Value | (ORIENT) |  | (S) RE | 1, 1 |
| Vertical Uncertainty | (VERACC)  (SOUACC) |  | C | 0, 1 |
| Traffic Flow | (TRAFIC) | 1 : Inbound  2 : Outbound  3 : One-Way  4 : Two-Way | EN | 1, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Range System | **RecommendedTrack** | navigableTrack | 0, \* | **NavigationLine** | navigationLine | 1, \* |

**2.17. Light Sectored**

**Definition:** A light presenting different appearances (in particular, different colours) over various parts of the horizon of interest to maritime navigation.

**CamelCase:** LightSectored

**Alias:** LIGHTS Sector Light

**Super type:** GenericLight

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 1, \* (ordered) |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : CEVNI  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulations - Two Sides  14 : Brazilian National Inland Waterway Regulations - Side Independent  15 : Paraguay-Parana Waterway - Brazilian Complementary Aids | EN | 0, 1 |
| Signal Generation | (SIGGEN) | 1 : Automatically  2 : By Wave Action  3 : By Hand  4 : By Wind  5 : Radio Activated  6 : Call Activated | EN | 0, 1 |
| Exhibition Condition of Light | (EXCLIT) | 1 : Light Shown Without Change of Character  2 : Daytime Light  3 : Fog Light  4 : Night Light | EN | 0, 1 |
| Category of Light | (CATLIT) | 1 : Directional Function  4 : Leading Light  5 : Aero Light  6 : Air Obstruction Light  8 : Flood Light  9 : Strip Light  10 : Subsidiary Light  11 : Spotlight  12 : Front  13 : Rear  14 : Lower  15 : Upper  17 : Emergency  18 : Bearing Light  19 : Horizontally Disposed  20 : Vertically Disposed | EN | 0, \* |
| Sector Characteristics |  |  | C | 1, \* |
| Light Characteristic | (LITCHR)  (Character of Light) | 1 : Fixed  2 : Flashing  3 : Long-Flashing  4 : Quick-Flashing  5 : Very Quick-Flashing  6 : Continuous Ultra Quick-Flashing  7 : Isophased  8 : Occulting  9 : Interrupted Quick Flashing  10 : Interrupted Very Quick Flashing  11 : Interrupted Ultra Quick-Flashing  12 : Morse  13 : Fixed and Flash  14 : Flash and Long-Flash  15 : Occulting and Flash  16 : Fixed and Long-Flash  17 : Occulting Alternating  18 : Long-Flash Alternating  19 : Flash Alternating  20 : Group Alternating  25 : Quick-Flash Plus Long-Flash  26 : Very Quick-Flash Plus Long-Flash  27 : Ultra Quick-Flash Plus Long-Flash  28 : Alternating  29 : Fixed and Alternating Flashing | (S) EN | 1, 1 |
| Number of Features |  |  | (S) IN | 0, 1 |

**2.18. Light All Around**

**Definition:** An all around light is a light that is visible over the whole horizon of interest to marine navigation and having no change in the characteristics of the light.

**CamelCase:** LightAllAround

**Alias:** LIGHTS

**Super type:** GenericLight

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Light | (CATLIT) | 1 : Directional Function  4 : Leading Light  5 : Aero Light  6 : Air Obstruction Light  8 : Flood Light  9 : Strip Light  10 : Subsidiary Light  11 : Spotlight  12 : Front  13 : Rear  14 : Lower  15 : Upper  17 : Emergency  18 : Bearing Light  19 : Horizontally Disposed  20 : Vertically Disposed | EN | 0, \* |
| Exhibition Condition of Light | (EXCLIT) | 1 : Light Shown Without Change of Character  2 : Daytime Light  3 : Fog Light  4 : Night Light | EN | 0, 1 |
| Light Visibility | (LITVIS) | 1 : High Intensity  2 : Low Intensity  3 : Faint  4 : Intensified  5 : Unintensified  6 : Visibility Deliberately Restricted  7 : Obscured  8 : Partially Obscured  9 : Visible in Line of Range | EN | 0, 1 |
| Major Light |  |  | BO | 0, 1 |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : CEVNI  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulations - Two Sides  14 : Brazilian National Inland Waterway Regulations - Side Independent  15 : Paraguay-Parana Waterway - Brazilian Complementary Aids | EN | 0, 1 |
| Signal Generation | (SIGGEN) | 1 : Automatically  2 : By Wave Action  3 : By Hand  4 : By Wind  5 : Radio Activated  6 : Call Activated | EN | 0, 1 |
| Value of Nominal Range | (VALNMR) |  | RE | 0, 1 |
| Multiplicity of Features |  |  | C | 0, 1 |
| Multiplicity Known |  |  | (S) BO | 1, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**2.19. Light Air Obstruction**

**Definition:** An air obstruction light is a light marking an obstacle which constitutes a danger to air navigation.

**CamelCase:** LightAirObstruction

**Alias:** LIGHTS

**Super type:** GenericLight

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Exhibition Condition of Light | (EXCLIT) | 1 : Light Shown Without Change of Character  2 : Daytime Light  3 : Fog Light  4 : Night Light | EN | 0, 1 |
| Light Visibility | (LITVIS) | 1 : High Intensity  2 : Low Intensity  3 : Faint  4 : Intensified  5 : Unintensified  6 : Visibility Deliberately Restricted  7 : Obscured  8 : Partially Obscured  9 : Visible in Line of Range | EN | 0, \* |
| Value of Nominal Range | (VALNMR) |  | RE | 0, 1 |
| Multiplicity of Features |  |  | C | 0, 1 |
| Multiplicity Known |  |  | (S) BO | 1, 1 |
| Number of Features |  |  | (S) IN | 0, 1 |
| Flare Bearing |  |  | IN | 0, 1 |

**2.20. Light Fog Detector**

**Definition:** A fog detector light is a light used to automatically determine conditions of visibility which warrant the turning on or off of a sound signal.

**CamelCase:** LightFogDetector

**Alias:**

**Super type:** GenericLight

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Rhythm of Light |  |  | C | 1, 1 |
| Signal Generation | (SIGGEN) | 1 : Automatically  2 : By Wave Action  3 : By Hand  4 : By Wind  5 : Radio Activated  6 : Call Activated | EN | 0, 1 |

**2.21. Radar Reflector**

**Definition:** A device capable of, or intended for, reflecting radar signals.

**CamelCase:** RadarReflector

**Alias:** RADRFL

**Super type:** Equipment

**Feature use type:** geographic

**Primitive:** point

**Remarks:** A radar reflector is usually a tetrahedron or pentagonal corner reflector to facilitate reflection towards the sender (International Maritime Dictionary, 2nd Ed.).

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Height | (HEIGHT) |  | RE | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |

**2.22. Fog Signal**

**Definition:** A warning signal transmitted by a vessel, or aid to navigation, during periods of low visibility. Also, the device producing such a signal.

**CamelCase:** FogSignal

**Alias:** FOGSIG

**Super type:** Equipment

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Signal Sequence | (SIGSEQ) |  | C | 0, 1 (ordered) |
| Signal Duration |  |  | (S) RE | 1, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |

**2.23. Daymark**

**Definition:** (1) The identifying characteristics of an aid to navigation which serve to facilitate its recognition against a daylight viewing background. On those structures that do not by themselves present an adequate viewing area to be seen at the required distance, the aid is made more visible by affixing a daymark to the structure. A daymark so affixed has a distinctive colour and shape depending on the purpose of the aid. (2) An unlighted navigational mark.

**CamelCase:** Daymark

**Alias:** DAYMAR

**Super type:** Equipment

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Special Purpose Mark | (CATSPM) | 1 : Firing Danger Mark  2 : Target Mark  3 : Marker Ship Mark  4 : Degaussing Range Mark  5 : Barge Mark  6 : Cable Mark  7 : Spoil Ground Mark  8 : Outfall Mark  9 : ODAS  10 : Recording Mark  11 : Seaplane Anchorage Mark  12 : Recreation Zone Mark  13 : Private Mark  14 : Mooring Mark  15 : LANBY  16 : Leading Mark  17 : Measured Distance Mark  18 : Notice Mark  19 : TSS Mark  20 : Anchoring Prohibited Mark  21 : Berthing Prohibited Mark  22 : Overtaking Prohibited Mark  23 : Two-Way Traffic Prohibited Mark  24 : Reduced Wake Mark  25 : Speed Limit Mark  26 : Stop Mark  27 : General Warning Mark  28 : Sound Ship's Siren Mark  29 : Restricted Vertical Clearance Mark  30 : Maximum Vessel's Draught Mark  31 : Restricted Horizontal Clearance Mark  32 : Strong Current Warning Mark  33 : Berthing Permitted Mark  34 : Overhead Power Cable Mark  35 : Channel Edge Gradient Mark  36 : Telephone Mark  37 : Ferry Crossing Mark  39 : Pipeline Mark  40 : Anchorage Mark  41 : Clearing Mark  42 : Control Mark  43 : Diving Mark  44 : Refuge Beacon  45 : Foul Ground Mark  46 : Yachting Mark  47 : Heliport Mark  48 : GNSS Mark  49 : Seaplane Landing Mark  50 : Entry Prohibited Mark  51 : Work in Progress Mark  52 : Mark With Unknown Purpose  53 : Wellhead Mark  54 : Channel Separation Mark  55 : Marine Farm Mark  56 : Artificial Reef Mark  57 : Ice Mark  58 : Nature Reserve Mark  59 : Fish Aggregating Device  60 : Wreck Mark  61 : Customs Mark  62 : Causeway Mark  63 : Wave Recorder  64 : Jetski Prohibited | EN | 0, 1 |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 1, \* |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Height | (HEIGHT) |  | RE | 0, 1 |
| Nature of Construction | (NATCON) | 1 : Masonry  2 : Concreted  3 : Loose Boulders  4 : Hard Surfaced  5 : Unsurfaced  6 : Wooden  7 : Metal  8 : Glass Reinforced Plastic  9 : Painted  10 : Framework  11 : Latticed  12 : Glass  13 : Fiberglass  14 : Plastic | EN | 0, \* |
| Orientation Value | (ORIENT) |  | RE | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Topmark/Daymark Shape | (TOPSHP) | 1 : Cone (Point Up)  2 : Cone (Point Down)  3 : Sphere  4 : 2 Spheres  5 : Cylinder  6 : Board  7 : X-Shaped  8 : Upright Cross  9 : Cube (Point Up)  10 : 2 Cones (Point to Point)  11 : 2 Cones (Base to Base)  12 : Rhombus  13 : 2 Cones (Points Upward)  14 : 2 Cones (Points Downward)  15 : Besom (Point Up)  16 : Besom (Point Down)  17 : Flag  18 : Sphere Over a Rhombus  19 : Square  20 : Rectangle (Horizontal)  21 : Rectangle (Vertical)  22 : Trapezium (Up)  23 : Trapezium (Down)  24 : Triangle (Point Up)  25 : Triangle (Point Down)  26 : Circle  27 : Two Upright Crosses (One Over the Other)  28 : T-Shape  29 : Triangle Pointing Up Over a Circle  30 : Upright Cross Over a Circle  31 : Rhombus Over a Circle  32 : Circle Over a Triangle Pointing Up  33 : Other Shape (See Shape Information)  34 : Tubular | EN | 1, 1 |
| IsSlatted |  |  | BO | 1, 1 |

**2.24. Retroreflector**

**Definition:** A means of distinguishing unlighted marks at night. Retro-reflective material is secured to the mark in a particular pattern to reflect back light.

**CamelCase:** Retroreflector

**Alias:** RETRFL

**Super type:** Equipment

**Feature use type:** geographic

**Primitive:** point

**Remarks:** The body carrying the retro-reflector is a separate feature.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 0, \* |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : CEVNI  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulations - Two Sides  14 : Brazilian National Inland Waterway Regulations - Side Independent  15 : Paraguay-Parana Waterway - Brazilian Complementary Aids | EN | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |

**2.25. Radar Transponder Beacon**

**Definition:** A transponder beacon transmitting a coded signal on radar frequency, permitting an interrogating craft to determine the bearing and range of the transponder.

**CamelCase:** RadarTransponderBeacon

**Alias:** RTPBCN Radar Beacon RACON

**Super type:** Equipment

**Feature use type:** geographic

**Primitive:** point

**Remarks:** The feature 'radar transponder beacon' is only used to encode the technical equipment independent of the structure on which it is located (for example a beacon, light-vessel or tower).

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Radar Transponder Beacon | (CATRTB) | 1 : Ramark, Radar Beacon Transmitting Continuously  2 : Racon, Radar Transponder Beacon  3 : Leading Racon/Radar Transponder Beacon | EN | 1, 1 |
| Radar Wave Length |  |  | C | 0, 1 |
| Radar Band |  |  | (S) TE | 1, 1 |
| Wave Length Value | (RadarWaveLength) |  | (S) RE | 1, 1 |
| Signal Group | (SIGGRP) |  | TE | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Value of Nominal Range | (VALNMR) |  | RE | 0, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**2.26. Isolated Danger Beacon**

**Definition:** A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420). An isolated danger beacon is a beacon erected on an isolated danger of limited extent, which has navigable water all around it. (UKHO NP735, 5th Edition)

**CamelCase:** IsolatedDangerBeacon

**Alias:**

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**2.27. Cardinal Beacon**

**Definition:** A cardinal beacon is used in conjunction with the compass to indicate where the mariner may find the best navigable water. It is placed in one of the four quadrants (North, East, South and West), bounded by inter-cardinal bearings from the point marked.

**CamelCase:** CardinalBeacon

**Alias:**

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Cardinal Mark | (CATCAM) | 1 : North Cardinal Mark  2 : East Cardinal Mark  3 : South Cardinal Mark  4 : West Cardinal Mark | EN | 1, 1 |

**2.28. Isolated Danger Buoy**

**Definition:** A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565). A isolated danger buoy is a buoy moored on or above an isolated danger of limited extent, which has navigable water all around it. (UKHO NP735, 5th Edition)

**CamelCase:** IsolatedDangerBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**2.29. Cardinal Buoy**

**Definition:** A cardinal buoy is used in conjunction with the compass to indicate where the mariner may find the best navigable water. It is placed in one of the four quadrants (North, East, South and West), bounded by inter-cardinal bearings from the point marked.

**CamelCase:** CardinalBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Cardinal Mark | (CATCAM) | 1 : North Cardinal Mark  2 : East Cardinal Mark  3 : South Cardinal Mark  4 : West Cardinal Mark | EN | 1, 1 |

**2.30. Installation Buoy**

**Definition:** A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565). An installation buoy is a buoy used for loading tankers with gas or oil. (IHO Chart Specifications, M-4)

**CamelCase:** InstallationBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category Of Installation Buoy |  | 1 : catenary anchor leg mooring (CALM)  2 : catenary anchor leg mooring (CALM) | EN | 1, 1 |

**2.31. Mooring Buoy**

**Definition:** The equipment or structure used to secure a vessel. (IHO Registry)

**CamelCase:** MooringBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**2.32. Emergency Wreck Marking Buoy**

**Definition:** An emergency wreck marking buoy is a buoy moored on or above a new wreck, designed to provide a prominent (both visual and radio) and easily identifiable temporary (24-72 hours) first response. (IHO Registry)

**CamelCase:** EmergencyWreckMarkingBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**2.33. Lighthouse**

**Definition:** A distinctive structure on or off a coast exhibiting a major light designed to serve as an aid to navigation.

**CamelCase:** Lighthouse

**Alias:**

**Super type:** Landmark

**Feature use type:** geographic

**Primitive:** point surface

**Remarks:** No remarks.

**2.34. Light Float**

**Definition:** A boat-like structure used instead of a light buoy in waters where strong streams or currents are experienced, or when a greater elevation than that of a light buoy is necessary.

**CamelCase:** LightFloat

**Alias:** LITFLT

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** point

**Remarks:** The light of a light float is a separate feature, handled as with buoys, beacons, etc.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 1, \* (ordered) |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Nature of Construction | (NATCON) | 1 : Masonry  2 : Concreted  3 : Loose Boulders  4 : Hard Surfaced  5 : Unsurfaced  6 : Wooden  7 : Metal  8 : Glass Reinforced Plastic  9 : Painted  10 : Framework  11 : Latticed  12 : Glass  13 : Fiberglass  14 : Plastic | EN | 0, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 0, 1 |

**2.35. Light Vessel**

**Definition:** A distinctively marked vessel anchored or moored at a charted point, to serve as an aid to navigation. By night, it displays a characteristic light(s) and is usually equipped with other devices, such as fog signal, submarine sound signal, and radio-beacon, to assist navigation.

**CamelCase:** LightVessel

**Alias:** LITVES Lightship

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** point

**Remarks:** The light(s), fog signal etc. of a light vessel are separate features, handled as with buoys, beacons, etc.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 1, \* (ordered) |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Nature of Construction | (NATCON) | 1 : Masonry  2 : Concreted  3 : Loose Boulders  4 : Hard Surfaced  5 : Unsurfaced  6 : Wooden  7 : Metal  8 : Glass Reinforced Plastic  9 : Painted  10 : Framework  11 : Latticed  12 : Glass  13 : Fiberglass  14 : Plastic | EN | 0, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 0, 1 |

**2.36. Offshore Platform**

**Definition:** A permanent offshore structure, either fixed or floating.

**CamelCase:** OffshorePlatform

**Alias:** OFSPLF

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** point surface

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Offshore Platform | (CATOFP) | 1 : Oil Rig  2 : Production Platform  3 : Observation/Research Platform  4 : Articulated Loading Platform  5 : Single Anchor Leg Mooring  6 : Mooring Tower  7 : Artificial Island  8 : Floating Production, Storage and Off-Loading Vessel  9 : Accommodation Platform  10 : Navigation, Communication and Control Buoy  11 : Floating Oil Tank | EN | 0, \* |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 0, \* (ordered) |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Condition | (CONDTN) | 1 : Under Construction  2 : Ruined  3 : Under Reclamation  4 : Wingless  5 : Planned Construction | EN | 0, 1 |
| Nature of Construction | (NATCON) | 1 : Masonry  2 : Concreted  3 : Loose Boulders  4 : Hard Surfaced  5 : Unsurfaced  6 : Wooden  7 : Metal  8 : Glass Reinforced Plastic  9 : Painted  10 : Framework  11 : Latticed  12 : Glass  13 : Fiberglass  14 : Plastic | EN | 0, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 0, 1 |

**2.37. Silo/Tank**

**Definition:** A large storage structure used for storing loose materials, liquids and/or gases.

**CamelCase:** SiloTank

**Alias:** SILTNK

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** point surface

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Building Shape | (BUISHP) | 5 : High-Rise Building  6 : Pyramid  7 : Cylindrical  8 : Spherical  9 : Cubic | EN | 0, 1 |
| Category of Silo/Tank | (CATSIL) | 1 : Silo in General  2 : Tank in General  3 : Grain Elevator  4 : Water Tower | EN | 0, 1 |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 0, \* (ordered) |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Height | (HEIGHT) |  | RE | 0, 1 |
| Nature of Construction | (NATCON) | 1 : Masonry  2 : Concreted  3 : Loose Boulders  4 : Hard Surfaced  5 : Unsurfaced  6 : Wooden  7 : Metal  8 : Glass Reinforced Plastic  9 : Painted  10 : Framework  11 : Latticed  12 : Glass  13 : Fiberglass  14 : Plastic | EN | 0, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 0, 1 |

**2.38. Pile**

**Definition:** A long heavy timber or section of steel, wood, concrete, etc., forced into the earth or sea floor to serve as a support, as for a pier, or to resist lateral pressure; or as a free standing pole within a marine environment.

**CamelCase:** Pile

**Alias:** PILPNT

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Pile | (CATPLE) | 1 : Stake  3 : Post  4 : Tripodal  5 : Piling  6 : Area of Piles  7 : Pipe | EN | 0, 1 |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 0, \* |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Height | (HEIGHT) |  | RE | 0, 1 |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 0, 1 |

**2.39. Building**

**Definition:** A free-standing self-supporting construction that is roofed, usually walled, and is intended for human occupancy (for example: a place of work or recreation) and/or habitation.

**CamelCase:** Building

**Alias:** BUISGL

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** point

**Remarks:** This feature is used to encode single buildings, including those with a particular function or service of major interest.

**2.40. Bridge**

**Definition:** (1) An elevated structure extending across or over the weather deck of a vessel, or part of such a structure. The term is sometimes modified to indicate the intended use, such as navigating bridge or signal bridge. (2) A structure erected over a depression or an obstacle such as a body of water, railroad, etc., to provide a roadway for vehicles or pedestrians.

**CamelCase:** Bridge

**Alias:** BRIDGE

**Super type:** StructureObject

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** A bridge may consist of portions which cover the land and the water.

**2.41. Topmark**

**Definition:** A characteristic shape secured at the top of a buoy or beacon to aid in its identification. (IHO Dictionary, S-32, 5th Edition, 5548)

**CamelCase:** Topmark

**Alias:**

**Super type:** AidsToNavigation

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 0, \* |
| Colour Pattern | (COLPAT) | 1 : Horizontal Stripes  2 : Vertical Stripes  3 : Diagonal Stripes  4 : Squared  5 : Stripes (Direction Unknown)  6 : Border Stripe  7 : Single Colour  8 : Rectangle  9 : Triangle | EN | 0, \* |
| Status | (STATUS) | 1 : Permanent  2 : Occasional  3 : Recommended  4 : Not in Use  5 : Periodic/Intermittent  6 : Reserved  7 : Temporary  8 : Private  9 : Mandatory  11 : Extinguished  12 : Illuminated  13 : Historic  14 : Public  15 : Synchronized  16 : Watched  17 : Unwatched  18 : Existence Doubtful  19 : On Request  20 : Drop Away  21 : Rising  22 : Increasing  23 : Decreasing  24 : Strong  25 : Good  26 : Moderately  27 : Poor  28 : Buoyed  29 : Fully Operational  30 : Partially Operational  31 : Drifting  32 : Broken  33 : Offline  34 : Discontinued  35 : Manual Observation  36 : Unknown Status  37 : Confirmed  38 : Candidate  39 : Under Modification  41 : Under Removal / Deletion  42 : Removed / Deleted  43 : Candidate for Modification | EN | 0, \* |
| Topmark/Daymark Shape | (TOPSHP) | 1 : Cone (Point Up)  2 : Cone (Point Down)  3 : Sphere  4 : 2 Spheres  5 : Cylinder  6 : Board  7 : X-Shaped  8 : Upright Cross  9 : Cube (Point Up)  10 : 2 Cones (Point to Point)  11 : 2 Cones (Base to Base)  12 : Rhombus  13 : 2 Cones (Points Upward)  14 : 2 Cones (Points Downward)  15 : Besom (Point Up)  16 : Besom (Point Down)  17 : Flag  18 : Sphere Over a Rhombus  19 : Square  20 : Rectangle (Horizontal)  21 : Rectangle (Vertical)  22 : Trapezium (Up)  23 : Trapezium (Down)  24 : Triangle (Point Up)  25 : Triangle (Point Down)  26 : Circle  27 : Two Upright Crosses (One Over the Other)  28 : T-Shape  29 : Triangle Pointing Up Over a Circle  30 : Upright Cross Over a Circle  31 : Rhombus Over a Circle  32 : Circle Over a Triangle Pointing Up  33 : Other Shape (See Shape Information)  34 : Tubular | EN | 1, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Buoy Topmark | **Topmark** | topmarkPart | 0, \* | **GenericBuoy** | buoyPart | 1, 1 |

**2.42. Safe Water Beacon**

**Definition:** A safe water beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420). A safe water beacon may be used to indicate that there is navigable water around the mark. (UKHO NP735, 5th Edition)

**CamelCase:** SafeWaterBeacon

**Alias:**

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**2.43. Special Purpose General Beacon**

**Definition:** A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420). A special purpose beacon is primarily used to indicate an area or feature, the nature of which is apparent from reference to a chart, Sailing Directions or Notices to Mariners. (UKHO NP 735, 5th Edition) Beacon in general: A beacon whose appearance or purpose is not adequately known.

**CamelCase:** SpecialPurposeGeneralBeacon

**Alias:**

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Special Purpose Mark | (CATSPM) | 1 : Firing Danger Mark  2 : Target Mark  3 : Marker Ship Mark  4 : Degaussing Range Mark  5 : Barge Mark  6 : Cable Mark  7 : Spoil Ground Mark  8 : Outfall Mark  9 : ODAS  10 : Recording Mark  11 : Seaplane Anchorage Mark  12 : Recreation Zone Mark  13 : Private Mark  14 : Mooring Mark  15 : LANBY  16 : Leading Mark  17 : Measured Distance Mark  18 : Notice Mark  19 : TSS Mark  20 : Anchoring Prohibited Mark  21 : Berthing Prohibited Mark  22 : Overtaking Prohibited Mark  23 : Two-Way Traffic Prohibited Mark  24 : Reduced Wake Mark  25 : Speed Limit Mark  26 : Stop Mark  27 : General Warning Mark  28 : Sound Ship's Siren Mark  29 : Restricted Vertical Clearance Mark  30 : Maximum Vessel's Draught Mark  31 : Restricted Horizontal Clearance Mark  32 : Strong Current Warning Mark  33 : Berthing Permitted Mark  34 : Overhead Power Cable Mark  35 : Channel Edge Gradient Mark  36 : Telephone Mark  37 : Ferry Crossing Mark  39 : Pipeline Mark  40 : Anchorage Mark  41 : Clearing Mark  42 : Control Mark  43 : Diving Mark  44 : Refuge Beacon  45 : Foul Ground Mark  46 : Yachting Mark  47 : Heliport Mark  48 : GNSS Mark  49 : Seaplane Landing Mark  50 : Entry Prohibited Mark  51 : Work in Progress Mark  52 : Mark With Unknown Purpose  53 : Wellhead Mark  54 : Channel Separation Mark  55 : Marine Farm Mark  56 : Artificial Reef Mark  57 : Ice Mark  58 : Nature Reserve Mark  59 : Fish Aggregating Device  60 : Wreck Mark  61 : Customs Mark  62 : Causeway Mark  63 : Wave Recorder  64 : Jetski Prohibited | EN | 1, \* |

**2.44. Safe Water Buoy**

**Definition:** A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565). A safe water buoy is used to indicate that there is navigable water around the mark. (UKHO NP735, 5th Edition)

**CamelCase:** SafeWaterBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**2.45. Special Purpose General Buoy**

**Definition:** A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565). A special purpose buoy is primarily used to indicate an area or feature, the nature of which is apparent from reference to a chart, Sailing Directions or Notices to Mariners. (UKHO NP 735, 5th Edition) Buoy in general: A buoy whose appearance or purpose is not adequately known.

**CamelCase:** SpecialPurposeGeneralBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Special Purpose Mark | (CATSPM) | 1 : Firing Danger Mark  2 : Target Mark  3 : Marker Ship Mark  4 : Degaussing Range Mark  5 : Barge Mark  6 : Cable Mark  7 : Spoil Ground Mark  8 : Outfall Mark  9 : ODAS  10 : Recording Mark  11 : Seaplane Anchorage Mark  12 : Recreation Zone Mark  13 : Private Mark  14 : Mooring Mark  15 : LANBY  16 : Leading Mark  17 : Measured Distance Mark  18 : Notice Mark  19 : TSS Mark  20 : Anchoring Prohibited Mark  21 : Berthing Prohibited Mark  22 : Overtaking Prohibited Mark  23 : Two-Way Traffic Prohibited Mark  24 : Reduced Wake Mark  25 : Speed Limit Mark  26 : Stop Mark  27 : General Warning Mark  28 : Sound Ship's Siren Mark  29 : Restricted Vertical Clearance Mark  30 : Maximum Vessel's Draught Mark  31 : Restricted Horizontal Clearance Mark  32 : Strong Current Warning Mark  33 : Berthing Permitted Mark  34 : Overhead Power Cable Mark  35 : Channel Edge Gradient Mark  36 : Telephone Mark  37 : Ferry Crossing Mark  39 : Pipeline Mark  40 : Anchorage Mark  41 : Clearing Mark  42 : Control Mark  43 : Diving Mark  44 : Refuge Beacon  45 : Foul Ground Mark  46 : Yachting Mark  47 : Heliport Mark  48 : GNSS Mark  49 : Seaplane Landing Mark  50 : Entry Prohibited Mark  51 : Work in Progress Mark  52 : Mark With Unknown Purpose  53 : Wellhead Mark  54 : Channel Separation Mark  55 : Marine Farm Mark  56 : Artificial Reef Mark  57 : Ice Mark  58 : Nature Reserve Mark  59 : Fish Aggregating Device  60 : Wreck Mark  61 : Customs Mark  62 : Causeway Mark  63 : Wave Recorder  64 : Jetski Prohibited | EN | 1, \* |

**2.46. Dangerous Feature**

**Definition:** -

**CamelCase:** DangerousFeature

**Alias:**

**Super type:**

**Feature use type:** geographic

**Primitive:** point

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Information | (INFORM) |  | C | 0, \* |
| Interoperability Identifier |  |  | UN | 0, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Dangerous Feature Association | **DangerousFeature** | danger | 0, \* | **AtonAssociation** | markingAton | 1, \* |

**2.47. Aton Aggregation**

**Definition:** Used to identify an aggregation of two or more objects. This aggregation may be named content of categoryOfAggregation should be put in information attribute when converting to S-57.

**CamelCase:** AtonAggregation

**Alias:**

**Super type:**

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category Of Aggregation |  | 1 : leading line  3 : measured distance  2 : range system | CL | 1, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Aton Aggregations | **AtonAggregation** | peerAtonAggregation | 0, \* | **AidsToNavigation** | atonAggregationBy | 0, \* |

**2.48. Aton Association**

**Definition:** Used to identify an association between two or more objects. The association may be named content of categoryOfAssociation should be put in information attribute when converting to S-57

**CamelCase:** AtonAssociation

**Alias:**

**Super type:**

**Feature use type:** geographic

**Primitive:** noGeometry

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category Of Association |  | 1 : channel markings  2 : danger markings | CL | 1, 1 |

**Feature Bindings:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Association Name** | **Association Ends** | | | | | |
| **Class** | **Role** | **Mult** | **Class** | **Role** | **Mult** |
| Asso | Dangerous Feature Association | **AtonAssociation** | markingAton | 1, \* | **DangerousFeature** | danger | 0, \* |
| Asso | Aton Associations | **AtonAssociation** | peerAtonAssociation | 0, \* | **AidsToNavigation** | atonAssociationBy | 0, \* |

**3. Carto Feature Types**

**4. Information Types**

**4.1. AtoN Fixing Method**

**Definition:** Method used for fixing the position of an aid to navigation.

**CamelCase:** AtoNFixingMethod

**Alias:**

**Super type:**

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Reference Point |  |  | TE | 0, 1 |
| Horizontal Datum | (HORDAT) | 1 : WGS 72  2 : WGS 84  3 : European 1950  4 : Potsdam Datum  5 : Adindan  6 : Afgooye  7 : Ain el Abd 1970  8 : Anna 1 Astro 1965  9 : Antigua Island Astro 1943  10 : Arc 1950  11 : Arc 1960  12 : Ascension Island 1958  13 : Astro Beacon 'E' 1945  14 : Astro DOS 71/4  15 : Astro Tern Island (FRIG) 1961  16 : Astronomical Station 1952  17 : Australian Geodetic 1966  18 : Australian Geodetic 1984  19 : Ayabelle Lighthouse  20 : Bellevue (IGN)  21 : Bermuda 1957  22 : Bissau  23 : Bogota Observatory  24 : Bukit Rimpah  25 : Camp Area Astro  26 : Campo Inchauspe 1969  27 : Canton Astro 1966  28 : Cape Datum  29 : Cape Canaveral  30 : Carthage  31 : Chatam Island Astro 1971  32 : Chua Astro  33 : Corrego Alegre  34 : Dabola  35 : Djakarta (Batavia)  36 : DOS 1968  37 : Easter Island 1967  38 : European 1979  39 : Fort Thomas 1955  40 : Gan 1970  41 : Geodetic Datum 1949  42 : Graciosa Base SW 1948  43 : Guam 1963  44 : Gunung Segara  45 : GUX 1 Astro  46 : Herat North  47 : Hjorsey 1955  48 : Hong Kong 1963  49 : Hu-Tzu-Shan  50 : Indian  51 : Indian 1954  52 : Indian 1975  53 : Ireland 1965  54 : ISTS 061 Astro 1968  55 : ISTS 073 Astro 1969  56 : Johnston Island 1961  57 : Kandawala  58 : Kerguelen Island 1949  59 : Kertau 1968  60 : Kusaie Astro 1951  61 : L. C. 5 Astro 1961  62 : Leigon  63 : Liberia 1964  64 : Luzon  65 : Mahe 1971  66 : Massawa  67 : Merchich  68 : Midway Astro 1961  69 : Minna  70 : Montserrat Island Astro 1958  71 : M'poraloko  72 : Nahrwan  73 : Naparima, BWI  74 : North American 1927  75 : North American 1983  76 : Observatorio Meteorologico 1939  77 : Old Egyptian 1907  78 : Old Hawaiian  79 : Oman  80 : Ordnance Survey of Great Britain 1936  81 : Pico de las Nieves  82 : Pitcairn Astro 1967  83 : Point 58  84 : Pointe Noire 1948  85 : Porto Santo 1936  86 : Provisional South American 1956  87 : Provisional South Chilean 1963  88 : Puerto Rico  89 : Qatar National  90 : Qornoq  91 : Reunion  92 : Rome 1940  93 : Santo (DOS) 1965  94 : Sao Braz  95 : Sapper Hill 1943  96 : Schwarzeck  97 : Selvagem Grande 1938  98 : South American 1969  99 : South Asia  100 : Tananarive Observatory 1925  101 : Timbalai 1948  102 : Tokyo  103 : Tristan Astro 1968  104 : Viti Levu 1916  105 : Wake-Eniwetok 1960  106 : Wake Island Astro 1952  107 : Yacare  108 : Zanderij  109 : American Samoa 1962  110 : Deception Island  111 : Indian 1960  112 : Indonesian 1974  113 : North Sahara 1959  114 : Pulkovo 1942  116 : S-JTSK  117 : Voirol 1950  118 : Average Terrestrial System 1977  119 : Compensation Geodesique du Quebec 1977  120 : Finnish (KKJ)  121 : Ordnance Survey of Ireland  122 : Revised Kertau  123 : Revised Nahrwan  124 : GGRS 76 (Greece)  125 : Nouvelle Triangulation de France  126 : RT 90 (Sweden)  127 : Geocentric Datum of Australia  128 : BJZ54 (A954 Beijing Coordinates)  129 : Modified BJZ54  130 : GDZ80  131 : Local Datum | EN | 0, 1 |
| Source Date | (SORDAT) |  | DA | 1, 1 |
| Positioning Procedure |  |  | TE | 1, 1 |

**4.2. Aton Status Information**

**Definition:** -

**CamelCase:** AtonStatusInformation

**Alias:**

**Super type:**

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Change Details |  |  | C | 1, 1 |
| Change Types |  | 1 : Advanced notice of changes  2 : Discrepancy  3 : Proposed changes  4 : Temporary changes | EN | 0, 1 |

**4.3. Positioning Information**

**Definition:** Information about how a position was obtained. (proposed by CCG)

**CamelCase:** PositioningInformation

**Alias:**

**Super type:**

**Remarks:** -

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Positioning Device |  |  | TE | 1, 1 |
| NMEAString |  |  | (S) TE | 1, 1 |

**4.4. Spatial Quality**

**Definition:** The indication of the quality of the locational information for features in a dataset.

**CamelCase:** SpatialQuality

**Alias:**

**Super type:**

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Quality of Horizontal Measurement | (QUAPOS) | 1 : Surveyed  2 : Unsurveyed  3 : Inadequately Surveyed  4 : Approximate  5 : Position Doubtful  6 : Unreliable  7 : Reported (Not Surveyed)  8 : Reported (Not Confirmed)  9 : Estimated  10 : Precisely Known  11 : Calculated | EN | 0, 1 |
| Uncertainty Variable Factor |  |  | (S) RE | 0, 1 |

**5. Simple Attributes**

**5.1. Category Of Association**

**Definition:** named associations between two or more aids to navigation and/or navigationally relevant features

**CamelCase:** CategoryOfAssociation

**Alias:**

**Value type:** S100\_CodeList

**Remarks:** -

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | channel markings | - |
| 2 | danger markings | - |

**5.2. Seasonal Action Required**

**Definition:** -

**CamelCase:** SeasonalActionRequired

**Alias:**

**Value type:** text

**Remarks:** -

**5.3. Counter Weight Type**

**Definition:** -

**CamelCase:** counterWeightType

**Alias:**

**Value type:** text

**Remarks:** -

**5.4. Swivel Type**

**Definition:** -

**CamelCase:** swivelType

**Alias:**

**Value type:** text

**Remarks:** -

**5.5. Legs Details**

**Definition:** -

**CamelCase:** legsDetails

**Alias:**

**Value type:** text

**Remarks:** -

**5.6. BridleLink Type**

**Definition:** -

**CamelCase:** bridleLinkType

**Alias:**

**Value type:** text

**Remarks:** -

**5.7. Sinker Type**

**Definition:** -

**CamelCase:** sinkerType

**Alias:**

**Value type:** text

**Remarks:** -

**5.8. Effective Intensity**

**Definition:** -

**CamelCase:** effectiveIntensity

**Alias:**

**Value type:** real

**Remarks:** -

**5.9. Peak Intensity**

**Definition:** -

**CamelCase:** peakIntensity

**Alias:**

**Value type:** real

**Remarks:** -

**5.10. Weight**

**Definition:** -

**CamelCase:** weight

**Alias:**

**Value type:** real

**Remarks:** -

**5.11. Cable Length**

**Definition:** Total length of a cable.

**CamelCase:** cableLength

**Alias:**

**Value type:** real

**Remarks:** -

**5.12. Diameter**

**Definition:** -

**CamelCase:** diameter

**Alias:**

**Value type:** real

**Remarks:** -

**5.13. Horizontal Accuracy**

**Definition:** -

**CamelCase:** horizontalAccuracy

**Alias:**

**Value type:** real

**Remarks:** -

**5.14. Manufactorer**

**Definition:** -

**CamelCase:** manufactorer

**Alias:**

**Value type:** text

**Remarks:** -

**5.15. IsSlatted**

**Definition:** -

**CamelCase:** isSlatted

**Alias:**

**Value type:** boolean

**Remarks:** -

**5.16. Candela**

**Definition:** -

**CamelCase:** candela

**Alias:**

**Value type:** real

**Remarks:** -

**5.17. Vertical Accuracy**

**Definition:** -

**CamelCase:** verticalAccuracy

**Alias:**

**Value type:** real

**Remarks:** -

**5.18. Category Of Installation Buoy**

**Definition:** Classification of fixed installation buoy

**CamelCase:** categoryOfInstallationBuoy

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | catenary anchor leg mooring (CALM) | incorporates a large buoy which remains on the surface at all times and is moored by 4 or more anchors. Mooring hawsers and cargo hoses lead from a turntable on top of the buoy, so that the buoy does not turn as the ship swings to wind and stream. |
| 2 | catenary anchor leg mooring (CALM) | a mooring structure used by tankers to load and unload in port approaches or in offshore oil and gas fields. The size of the structure can vary between a large mooring buoy and a manned floating structure. Also known as single point mooring (SPM) |

**5.19. Quality of Horizontal Measurement**

**Definition:** The degree of reliability attributed to a position.

**CamelCase:** qualityOfHorizontalMeasurement

**Alias:** QUAPOS

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Surveyed | The position(s) was(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. |
| 2 | Unsurveyed | Survey data is does not exist or is very poor. |
| 3 | Inadequately Surveyed | Not surveyed to modern standards; or due to its age, scale, or positional or vertical uncertainties is not suitable to the type of navigation expected in the area. |
| 4 | Approximate | A position that is considered to be less than third-order accuracy, but is generally considered to be within 30.5 metres of its correct geographic location. Also may apply to an object whose position does not remain fixed. |
| 5 | Position Doubtful | Of uncertain position. The expression is used principally on charts to indicate that a wreck, shoal, etc., has been reported in various positions and not definitely determined in any. |
| 6 | Unreliable | A feature's position has been obtained from questionable or unreliable data. |
| 7 | 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. |
| 8 | Reported (Not Confirmed) | An object whose position has been reported and its position has not been confirmed. |
| 9 | Estimated | The most probable position of an object determined from incomplete data or data of questionable accuracy. |
| 10 | Precisely Known | A position that is of a known value, such as the position of an anchor berth or other defined object. |
| 11 | Calculated | A position that is computed from data. |

**5.20. Positioning Device**

**Definition:** -

**CamelCase:** positioningDevice

**Alias:**

**Value type:** text

**Remarks:** -

**5.21. Change Types**

**Definition:** -

**CamelCase:** ChangeTypes

**Alias:**

**Value type:** enumeration

**Remarks:** -

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Advanced notice of changes | - |
| 2 | Discrepancy | - |
| 3 | Proposed changes | - |
| 4 | Temporary changes | - |

**5.22. Height Length Units**

**Definition:** Units of measure of waterway distances. (IHO Registry)

**CamelCase:** heightLengthUnits

**Alias:**

**Value type:** enumeration

**Remarks:** -

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Metres | - |
| 2 | Feet | - |
| 3 | Kilometres | - |
| 4 | Hectometres | - |
| 5 | Statute Miles | - |
| 6 | Nautical Miles | - |

**5.23. Positioning Procedure**

**Definition:** -

**CamelCase:** positioningProcedure

**Alias:**

**Value type:** text

**Remarks:** -

**5.24. Horizontal Datum**

**Definition:** Horizontal reference surface or the reference coordinate system used for geodetic control in the calculation of coordinates of points on the earth.

**CamelCase:** horizontalDatum

**Alias:** HORDAT

**Value type:** enumeration

**Remarks:** All necessary information for conversion of geographic coordinates from most of the Geodetic Datums in the above list to WGS-84 is contained in the 'User's Handbook on Datum Transformations involving WGS-84', prepared by the US Defense Mapping Agency and which is available from the IHB as IHO Publication S-60 (English and French Versions), along with an associated standard datum transformation software on floppy disk called 'MADTRAN'.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | WGS 72 | A standard for use in cartography, geodesy, and satellite navigation including GPS. This standard includes the definition of the coordinate system's fundamental and derived constants, the ellipsoidal (normal) Earth Gravitational Model (EGM), a description of the associated World Magnetic Model (WMM), and a current list of local datum transformations. The WGS 72 is based on selected satellite, surface gravity and astrogeodetic data available through 1972. |
| 2 | WGS 84 | A standard for use in cartography, geodesy, and satellite navigation including GPS. This standard includes the definition of the coordinate system's fundamental and derived constants, the ellipsoidal (normal) Earth Gravitational Model (EGM), a description of the associated World Magnetic Model (WMM), and a current list of local datum transformations. WGS 84 is the reference coordinate system used by the Global Positioning System. |
| 3 | European 1950 | A geodetic datum first defined in 1950 suitable for use in Europe - west: Andorra; Cyprus; Denmark - onshore and offshore; Faroe Islands - onshore; France - offshore; Germany - offshore North Sea; Gibraltar; Greece - offshore; Israel - offshore; Italy including San Marino and Vatican City State; Ireland offshore; Malta; Netherlands - offshore; North Sea; Norway including Svalbard - onshore and offshore; Portugal - mainland - offshore; Spain - onshore; Turkey - onshore and offshore; United Kingdom UKCS offshore east of 6W including Channel Islands (Guernsey and Jersey). Egypt - Western Desert; Iraq - onshore; Jordan. European Datum 1950 references the International 1924 ellipsoid and the Greenwich prime meridian. European Datum 1950 origin is Fundamental point: Potsdam (Helmert Tower). Latitude: 5222'51.4456"N, longitude: 1303'58.9283"E (of Greenwich). European Datum 1950 is a geodetic datum for Topographic mapping, geodetic survey. |
| 4 | Potsdam Datum | A geodetic datum first defined in 1990 suitable for use in Germany - Thuringen. Potsdam Datum/83 references the Bessel 1841 ellipsoid and the Greenwich prime meridian. Potsdam Datum/83 origin is Fundamental point: Rauenberg. Latitude: 5227'12.021"N, longitude: 1322'04.928"E (of Greenwich). This station was destroyed in 1910 and the station at Potsdam substituted as the fundamental point. Potsdam Datum/83 is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from BKG via EuroGeographics. http://crs.bkg.bund.de PD/83 is the realisation of DHDN in Thuringen. It is the resultant of applying a transformation derived at 13 points on the border between East and West Germany to Pulkovo 1942/83 points in Thuringen. |
| 5 | Adindan | A geodetic datum first defined in 1958 suitable for use in Eritrea; Ethiopia; South Sudan; Sudan. Adindan references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Adindan origin is Fundamental point: Station 15; Adindan. Latitude: 2210'07.110"N, longitude: 3129'21.608"E (of Greenwich). Adindan is a geodetic datum for Topographic mapping. It was defined by information from US Coast and Geodetic Survey via Geophysical Reasearch vol 67 #11, October 1962. The 12th parallel traverse of 1966-70 (Point 58 datum, code 6620) is connected to the Blue Nile 1958 network in western Sudan. This has given rise to misconceptions that the Blue Nile network is used in west Africa. |
| 6 | Afgooye | A geodetic datum first defined in and suitable for use in Somalia - onshore. Afgooye references the Krassowsky 1940 ellipsoid and the Greenwich prime meridian. Afgooye is a geodetic datum for Topographic mapping. |
| 7 | Ain el Abd 1970 | A geodetic datum first defined in 1970 and suitable for use in Bahrain, Kuwait and Saudi Arabia - onshore. Ain el Abd 1970 references the International 1924 ellipsoid and the Greenwich prime meridian. Ain el Abd 1970 origin is Fundamental point: Ain El Abd. Latitude: 2814'06.171"N, longitude: 4816'20.906"E (of Greenwich). Ain el Abd 1970 is a geodetic datum for Topographic mapping. |
| 8 | Anna 1 Astro 1965 | A geodetic datum first defined in 1965 suitable for use in Cocos (Keeling) Islands - onshore. Cocos Islands 1965 references the Australian National Spheroid ellipsoid and the Greenwich prime meridian. Cocos Islands 1965 origin is Fundamental point: Anna 1. Cocos Islands 1965 is a geodetic datum for Military and topographic mapping It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 9 | Antigua Island Astro 1943 | A geodetic datum first defined in 1943 suitable for use in Antigua island - onshore. Antigua 1943 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Antigua 1943 origin is Fundamental point: station A14. Antigua 1943 is a geodetic datum for Topographic mapping. It was defined by information from Ordnance Survey of Great Britain. |
| 10 | Arc 1950 | A geodetic datum first defined in 1950 suitable for use in Botswana; Malawi; Zambia; Zimbabwe. Arc 1950 references the Clarke 1880 (Arc) ellipsoid and the Greenwich prime meridian. Arc 1950 origin is Fundamental point: Buffelsfontein. Latitude: 3359'32.000"S, longitude: 2530'44.622"E (of Greenwich). Arc 1950 is a geodetic datum for Topographic mapping, geodetic survey. |
| 11 | Arc 1960 | A geodetic datum first defined in 1960 suitable for use in Kenya; Tanzania; Uganda. Arc 1960 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Arc 1960 origin is Fundamental point: Buffelsfontein. Latitude: 3359'32.000"S, longitude: 2530'44.622"E (of Greenwich). Arc 1960 is a geodetic datum for Topographic mapping, geodetic survey. |
| 12 | Ascension Island 1958 | A geodetic datum first defined in 1958 suitable for use in St Helena, Ascension and Tristan da Cunha - Ascension Island - onshore. Ascension Island 1958 references the International 1924 ellipsoid and the Greenwich prime meridian. Ascension Island 1958 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 13 | Astro Beacon 'E' 1945 | Astro beacon 'E' 1945 |
| 14 | Astro DOS 71/4 | A geodetic datum first defined in 1971 suitable for use in St Helena, Ascension and Tristan da Cunha - St Helena Island - onshore. Astro DOS 71 references the International 1924 ellipsoid and the Greenwich prime meridian. Astro DOS 71 origin is Fundamental point: DOS 71/4, Ladder Hill Fort, latitude: 1555'30"S, longitude: 543'25"W (of Greenwich). Astro DOS 71 is a geodetic datum for Geodetic control, military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000) and St. Helena Government, Environment and Natural Resources Directorate (ENRD). |
| 15 | Astro Tern Island (FRIG) 1961 | A geodetic datum first defined in 1961 suitable for use in United States (USA) - Hawaii - Tern Island and Sorel Atoll. Tern Island 1961 references the International 1924 ellipsoid and the Greenwich prime meridian. Tern Island 1961 origin is Fundamental point: station FRIG on tern island, station B4 on Sorol Atoll. Tern Island 1961 is a geodetic datum for Military and topographic mapping It was defined by information from DMA / NIMA / NGA TR8350.2 (original 1987 first edition and 3rd edition, Amendment 1, 3 January 2000). Two independent astronomic determinations considered to be consistent through adoption of common transformation to WGS 84 (see tfm code 15795). |
| 16 | Astronomical Station 1952 | Astronomical station 1952. |
| 17 | Australian Geodetic 1966 | A geodetic datum first defined in 1966 suitable for use in Australia - onshore and offshore. Papua New Guinea - onshore. Australian Geodetic Datum 1966 references the Australian National Spheroid ellipsoid and the Greenwich prime meridian. Australian Geodetic Datum 1966 origin is Fundamental point: Johnson Memorial Cairn. Latitude: 2556'54.5515"S, longitude: 13312'30.0771"E (of Greenwich). Australian Geodetic Datum 1966 is a geodetic datum for Topographic mapping. It was defined by information from Australian Map Grid Technical Manual. National Mapping Council of Australia Technical Publication 7; 1972. |
| 18 | Australian Geodetic 1984 | A geodetic datum first defined in 1984 suitable for use in Australia - Queensland, South Australia, Western Australia, federal areas offshore west of 129E. Australian Geodetic Datum 1984 references the Australian National Spheroid ellipsoid and the Greenwich prime meridian. Australian Geodetic Datum 1984 origin is Fundamental point: Johnson Memorial Cairn. Latitude: 2556'54.5515"S, longitude: 13312'30.0771"E (of Greenwich). Australian Geodetic Datum 1984 is a geodetic datum for Topographic mapping. It was defined by information from "GDA technical manual v2\_2", Intergovernmental Committee on Surveying and Mapping. www.anzlic.org.au/icsm/gdtm/ Uses all data from 1966 adjustment with additional observations, improved software and a geoid model. |
| 19 | Ayabelle Lighthouse | A geodetic datum suitable for use in Djibouti - onshore and offshore. Ayabelle Lighthouse references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Ayabelle Lighthouse origin is Fundamental point: Ayabelle Lighthouse. Ayabelle Lighthouse is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 20 | Bellevue (IGN) | A geodetic datum first defined in 1960 suitable for use in Vanuatu - southern islands - Aneityum, Efate, Erromango and Tanna. Bellevue references the International 1924 ellipsoid and the Greenwich prime meridian. Bellevue is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). Datum covers all the major islands of Vanuatu in two different adjustment blocks, but practical usage is as given in the area of use. |
| 21 | Bermuda 1957 | A geodetic datum first defined in 1957 suitable for use in Bermuda - onshore. Bermuda 1957 references the Clarke 1866 ellipsoid and the Greenwich prime meridian. Bermuda 1957 origin is Fundamental point: Fort George base. Latitude 3222'44.36"N, longitude 6440'58.11"W (of Greenwich). Bermuda 1957 is a geodetic datum for Topographic mapping. It was defined by information from Various oil industry sources. |
| 22 | Bissau | A geodetic datum first defined in and is suitable for use in Guinea-Bissau - onshore. Bissau references the International 1924 ellipsoid and the Greenwich prime meridian. Bissau origin is Bissau is a geodetic datum for Topographic mapping. It was defined by information from NIMA TR8350.2 ftp://164.214.2.65/pub/gig/tr8350.2/changes.pdf. |
| 23 | Bogota Observatory | A geodetic datum first defined in 1975 suitable for use in Colombia - mainland and offshore Caribbean. Bogota 1975 references the International 1924 ellipsoid and the Greenwich prime meridian. Bogota 1975 origin is Fundamental point: Bogota observatory. Latitude: 435'56.570"N, longitude: 7404'51.300"W (of Greenwich). Bogota 1975 is a geodetic datum for Topographic mapping. It was defined by information from Instituto Geografico Agustin Codazzi (IGAC) special publication no. 1, 4th edition (1975) "Geodesia: Resultados Definitvos de Parte de las Redes Geodesicas Establecidas en el Pais". Replaces 1951 adjustment. Replaced by MAGNA-SIRGAS (datum code 6685). |
| 24 | Bukit Rimpah | A geodetic datum suitable for use in Indonesia - Banga and Belitung Islands. Bukit Rimpah references the Bessel 1841 ellipsoid and the Greenwich prime meridian. Bukit Rimpah origin is 200'40.16"S, 10551'39.76"E (of Greenwich). Bukit Rimpah is a geodetic datum for Topographic mapping. |
| 25 | Camp Area Astro | A geodetic datum suitable for use in Antarctica - McMurdo Sound, Camp McMurdo area. Camp Area Astro references the International 1924 ellipsoid and the Greenwich prime meridian. Camp Area Astro is a geodetic datum for Geodetic and topographic survey. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 26 | Campo Inchauspe 1969 | A geodetic datum suitable for use in Argentina - mainland onshore and Atlantic offshore Tierra del Fuego. Campo Inchauspe references the International 1924 ellipsoid and the Greenwich prime meridian. Campo Inchauspe origin is Fundamental point: Campo Inchauspe. Latitude: 3558'16.56"S, longitude: 6210'12.03"W (of Greenwich). Campo Inchauspe is a geodetic datum for Topographic mapping. It was defined by information from NIMA http://earth-info.nima.mil/ |
| 27 | Canton Astro 1966 | A geodetic datum first defined in 1966 suitable for use in Kiribati - Phoenix Islands: Kanton, Orona, McKean Atoll, Birnie Atoll, Phoenix Seamounts. Phoenix Islands 1966 references the International 1924 ellipsoid and the Greenwich prime meridian. Phoenix Islands 1966 is a geodetic datum for Military and topographic mapping It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 28 | Cape Datum | A geodetic datum suitable for use in Botswana; Lesotho; South Africa - mainland; Swaziland. Cape references the Clarke 1880 (Arc) ellipsoid and the Greenwich prime meridian. Cape origin is Fundamental point: Buffelsfontein. Latitude: 3359'32.000"S, longitude: 2530'44.622"E (of Greenwich). Cape is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from Private Communication, Directorate of Surveys and Land Information, Cape Town. |
| 29 | Cape Canaveral | A geodetic datum first defined in 1963 suitable for use in North America - onshore - Bahamas and USA - Florida (east). Cape Canaveral references the Clarke 1866 ellipsoid and the Greenwich prime meridian. Cape Canaveral origin is Fundamental point: Central 1950. Latitude: 28 29'32.36555"N, longitude 80 34'38.77362"W (of Greenwich). Cape Canaveral is a geodetic datum for US space and military operations. It was defined by information from US NGS and DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 30 | Carthage | A geodetic datum first defined in 1925 suitable for use in Tunisia - onshore and offshore. Carthage references the Clarke 1880 (IGN) ellipsoid and the Greenwich prime meridian. Carthage origin is Fundamental point: Carthage. Latitude: 40.9464506g = 3651'06.50"N, longitude: 8.8724368g E of Paris = 1019'20.72"E (of Greenwich). Carthage is a geodetic datum for Topographic mapping. Fundamental point astronomic coordinates determined in 1878. |
| 31 | Chatam Island Astro 1971 | A geodetic datum first defined in 1971 suitable for use in New Zealand - Chatham Islands group - onshore. Chatham Islands Datum 1971 references the International 1924 ellipsoid and the Greenwich prime meridian. Chatham Islands Datum 1971 is a geodetic datum for Geodetic survey, topographic mapping, engineering survey. It was defined by information from Office of Surveyor General (OSG) Technical Report 14, June 2001. Replaced by Chatham Islands Datum 1979 (code 6673). |
| 32 | Chua Astro | A geodetic datum suitable for use in Brazil - south of 18S and west of 54W, plus Distrito Federal. Paraguay - north. Chua references the International 1924 ellipsoid and the Greenwich prime meridian. Chua origin is Fundamental point: Chua. Latitude: 1945'41.160"S, longitude: 4806'07.560"W (of Greenwich). Chua is a geodetic datum for Geodetic survey. It was defined by information from NIMA http://earth-info.nima.mil/. The Chua origin and associated network is in Brazil with a connecting traverse through northern Paraguay. It was used in Brazil only as input into the Corrego Allegre adjustment and for government work in Distrito Federal. |
| 33 | Corrego Alegre | A geodetic datum first defined in 1972 suitable for use in Brazil - onshore - west of 54W and south of 18S; also south of 15S between 54W and 42W; also east of 42W. Corrego Alegre 1970-72 references the International 1924 ellipsoid and the Greenwich prime meridian. Corrego Alegre 1970-72 origin is Fundamental point: Corrego Alegre. Latitude: 1950'14.91"S, longitude: 4857'41.98"W (of Greenwich). Corrego Alegre 1970-72 is a geodetic datum for Topographic mapping, geodetic survey. Superseded by SAD69. It was defined by information from IBGE. Replaces 1961 adjustment (datum code 1074). NIMA gives coordinates of origin as latitude: 1950'15.14"S, longitude: 4857'42.75"W; these may refer to 1961 adjustment. |
| 34 | Dabola | A geodetic datum first defined in 1981 suitable for use in Guinea - onshore. Dabola 1981 references the Clarke 1880 (IGN) ellipsoid and the Greenwich prime meridian. Dabola 1981 is a geodetic datum for Topographic mapping. It was defined by information from IGN Paris. |
| 35 | Djakarta (Batavia) | A geodetic datum suitable for use in Indonesia - onshore Java and Bali. Batavia (Jakarta) references the Bessel 1841 ellipsoid and the Jakarta prime meridian. Batavia (Jakarta) origin is Fundamental point: Longitude at Batavia astronomical station. Latitude: 607'39.522"S, longitude: 000'00.0"E (of Jakarta). Latitude and azimuth at Genuk. Batavia (Jakarta) is a geodetic datum for Topographic mapping. |
| 36 | DOS 1968 | DOS 1968. |
| 37 | Easter Island 1967 | A geodetic datum first defined in 1967 suitable for use in Chile - Easter Island onshore. Easter Island 1967 references the International 1924 ellipsoid and the Greenwich prime meridian. Easter Island 1967 is a geodetic datum for Military and topographic mapping, +/- 25 meters in each component. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 38 | European 1979 | A geodetic datum first defined in 1979 suitable for use in Europe - west. European Datum 1979 references the International 1924 ellipsoid and the Greenwich prime meridian. European Datum 1979 origin is Fundamental point: Potsdam (Helmert Tower). Latitude: 5222'51.4456"N, longitude: 1303'58.9283"E (of Greenwich). European Datum 1979 is a geodetic datum for Scientific network. Replaced by 1987 adjustment. |
| 39 | Fort Thomas 1955 | Fort Thomas 1955 datum. |
| 40 | Gan 1970 | A geodetic datum first defined in 1970 suitable for use in Maldives - onshore. Gan 1970 references the International 1924 ellipsoid and the Greenwich prime meridian. Gan 1970 is a geodetic datum for Topographic mapping. It was defined by information from Various industry sources. In some references incorrectly named "Gandajika 1970". |
| 41 | Geodetic Datum 1949 | A geodetic datum first defined in 1949 suitable for use in New Zealand - North Island, South Island, Stewart Island - onshore and nearshore. New Zealand Geodetic Datum 1949 references the International 1924 ellipsoid and the Greenwich prime meridian. New Zealand Geodetic Datum 1949 origin is Fundamental point: Papatahi. Latitude: 4119' 8.900"S, longitude: 17502'51.000"E (of Greenwich). New Zealand Geodetic Datum 1949 is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from Land Information New Zealand. http://www.linz.govt.nz/rcs/linz/pub/web/root/core/SurveySystem/GeodeticInfo/GeodeticDatums/nzgd2000factsheet/index.jsp. Replaced by New Zealand Geodetic Datum 2000 (code 6167) from March 2000. |
| 42 | Graciosa Base SW 1948 | Graciosa Base SW 1948 datum. |
| 43 | Guam 1963 | A geodetic datum first defined in 1963 suitable for use in Guam - onshore. Guam 1963 references the Clarke 1866 ellipsoid and the Greenwich prime meridian. Guam 1963 origin is Fundamental point: Tagcha. Latitude: 1322'38.49"N, longitude: 14445'51.56"E (of Greenwich). Guam 1963 is a geodetic datum for Topographic mapping. It was defined by information from US National Geospatial Intelligence Agency (NGA). http://earth-info.nga.mil/ Replaced by NAD83(HARN) |
| 44 | Gunung Segara | A geodetic datum suitable for use in Indonesia - Kalimantan - onshore east coastal area including Mahakam delta coastal and offshore shelf areas. Gunung Segara references the Bessel 1841 ellipsoid and the Greenwich prime meridian. Gunung Segara origin is Station P5 (Gunung Segara). Latitude 032'12.83"S, longitude 11708'48.47"E (of Greenwich). Gunung Segara is a geodetic datum for Topographic mapping. It was defined by information from TotalFinaElf. |
| 45 | GUX 1 Astro | GUX 1 Astro datum. |
| 46 | Herat North | A geodetic datum suitable for use in Afghanistan. Herat North references the International 1924 ellipsoid and the Greenwich prime meridian. Herat North origin is Fundamental point: Herat North. Latitude: 3423'09.08"N, longitude: 6410'58.94"E (of Greenwich). Herat North is a geodetic datum for Topographic mapping. It was defined by information from NIMA http://earth-info.nima.mil/. |
| 47 | Hjorsey 1955 | A geodetic datum first defined in 1955 suitable for use in Iceland - onshore. Hjorsey 1955 references the International 1924 ellipsoid and the Greenwich prime meridian. Hjorsey 1955 origin is Fundamental point: Latitude: 6431'29.26"N, longitude: 2222'05.84"W (of Greenwich). Hjorsey 1955 is a geodetic datum for 1/50,000 scale topographic mapping. It was defined by information from Landmaelingar Islands (National Survey of Iceland). |
| 48 | Hong Kong 1963 | A geodetic datum first defined in 1963 suitable for use in China - Hong Kong - onshore and offshore. Hong Kong 1963 references the Clarke 1858 ellipsoid and the Greenwich prime meridian. Hong Kong 1963 origin is Fundamental point: Trig "Zero", 38.4 feet south along the transit circle of the Kowloon Observatory. Latitude 2218'12.82"N, longitude 11410'18.75"E (of Greenwich). Hong Kong 1963 is a geodetic datum for Topographic mapping and hydrographic charting. It was defined by information from Survey and Mapping Office, Lands Department. http://www.info.gov.hk/landsd/. Replaced by Hong Kong 1963(67) for military purposes only in 1967. Replaced by Hong Kong 1980. |
| 49 | Hu-Tzu-Shan | A geodetic datum first defined in 1950 suitable for use in Taiwan, Republic of China - onshore - Taiwan Island, Penghu (Pescadores) Islands. Hu Tzu Shan 1950 references the International 1924 ellipsoid and the Greenwich prime meridian. Hu Tzu Shan 1950 origin is Fundamental point: Hu Tzu Shan. Latitude: 2358'32.34"N, longitude: 12058'25.975"E (of Greenwich). Hu Tzu Shan 1950 is a geodetic datum for Topographic mapping. It was defined by information from NIMA US NGA, http://earth-info.nga.mil/GandG/index.html |
| 50 | Indian | Indian datum. |
| 51 | Indian 1954 | A geodetic datum first defined in 1954 suitable for use in Myanmar (Burma) - onshore; Thailand - onshore. Indian 1954 references the Everest 1830 (1937 Adjustment) ellipsoid and the Greenwich prime meridian. Indian 1954 origin is Extension of Kalianpur 1937 over Myanmar and Thailand. Indian 1954 is a geodetic datum for Topographic mapping. |
| 52 | Indian 1975 | A geodetic datum first defined in 1975 suitable for use in Thailand - onshore plus offshore Gulf of Thailand. Indian 1975 references the Everest 1830 (1937 Adjustment) ellipsoid and the Greenwich prime meridian. Indian 1975 origin is Fundamental point: Khau Sakaerang. Indian 1975 is a geodetic datum for Topographic mapping. |
| 53 | Ireland 1965 | A geodetic datum first defined in 1975 suitable for use in Ireland - onshore. United Kingdom (UK) - Northern Ireland (Ulster) - onshore. Ireland 1965 references the Airy Modified 1849 ellipsoid and the Greenwich prime meridian. Ireland 1965 origin is Adjusted to best mean fit 9 stations of the OSNI 1952 primary adjustment in Northern Ireland plus the 1965 values of 3 stations in the Republic of Ireland. Ireland 1965 is a geodetic datum for Geodetic survey, topographic mapping and engineering survey. It was defined by information from "The Irish Grid - A Description of the Co-ordinate Reference System" published by Ordnance Survey of Ireland, Dublin and Ordnance Survey of Northern Ireland, Belfast. Differences from the 1965 adjustment (datum code 6299) are: average difference in Eastings 0.092m; average difference in Northings 0.108m; maximum vector difference 0.548m. |
| 54 | ISTS 061 Astro 1968 | A geodetic datum first defined in 1968 suitable for use in South Georgia and the South Sandwich Islands - South Georgia onshore. ISTS 061 Astro 1968 references the International 1924 ellipsoid and the Greenwich prime meridian. ISTS 061 Astro 1968 origin is Fundamental point: ISTS 061. ISTS 061 Astro 1968 is a geodetic datum for Military and topographic mapping It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 55 | ISTS 073 Astro 1969 | A geodetic datum first defined in 1969 suitable for use in British Indian Ocean Territory - Chagos Archipelago - Diego Garcia. ISTS 073 Astro 1969 references the International 1924 ellipsoid and the Greenwich prime meridian. ISTS 073 Astro 1969 origin is Fundamental point: ISTS 073. ISTS 073 Astro 1969 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 56 | Johnston Island 1961 | A geodetic datum first defined in 1961 suitable for use in United States Minor Outlying Islands - Johnston Island. Johnston Island 1961 references the International 1924 ellipsoid and the Greenwich prime meridian. Johnston Island 1961 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 57 | Kandawala | A geodetic datum first defined in 1930 suitable for use in Sri Lanka - onshore. Kandawala references the Everest 1830 (1937 Adjustment) ellipsoid and the Greenwich prime meridian. Kandawala origin is Fundamental point: Kandawala. Latitude: 714'06.838"N, longitude: 7952'36.670"E. Kandawala is a geodetic datum for Topographic mapping. It was defined by information from Abeyratne, Featherstone and Tantrigoda in Survey Review vol. 42 no. 317 (July 2010). |
| 58 | Kerguelen Island 1949 | A geodetic datum first defined in 1949 suitable for use in French Southern Territories - Kerguelen onshore. References the International 1924 ellipsoid and the Greenwich prime meridian. Origin is K0 1949. Is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from IGN Paris. |
| 59 | Kertau 1968 | A geodetic datum first defined in 1968 suitable for use in Malaysia - West Malaysia onshore and offshore east coast; Singapore - onshore and offshore. Kertau 1968 references the Everest 1830 Modified ellipsoid and the Greenwich prime meridian. Kertau 1968 origin is Fundamental point: Kertau. Latitude: 327'50.710"N, longitude: 10237'24.550"E (of Greenwich). Kertau 1968 is a geodetic datum for Geodetic survey, cadastre. It was defined by information from Defence Geographic Centre. Replaces MRT48 and earlier adjustments. Adopts metric conversion of 39.370113 inches per metre. Not used for 1969 metrication of RSO grid - see Kertau (RSO) (code 6751). |
| 60 | Kusaie Astro 1951 | A geodetic datum first defined in 1951 suitable for use in Federated States of Micronesia - Kosrae (Kusaie). Kusaie 1951 references the International 1924 ellipsoid and the Greenwich prime meridian. Kusaie 1951 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 61 | L. C. 5 Astro 1961 | L. C. 5 Astro 1961 datum. |
| 62 | Leigon | A geodetic datum suitable for use in Ghana - onshore and offshore. Leigon references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Leigon origin is Fundamental point: GCS Station 121, Leigon. Latitude: 538'52.27"N, longitude: 011'46.08"W (of Greenwich). Leigon is a geodetic datum for Topographic mapping. It was defined by information from Ordnance Survey International. Replaced Accra datum (code 6168) from 1978. Coordinates at Leigon fundamental point defined as Accra datum values for that point. |
| 63 | Liberia 1964 | A geodetic datum first defined in 1964 suitable for use in Liberia - onshore. Liberia 1964 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Liberia 1964 origin is Fundamental point: Robertsfield. Latitude: 613'53.02"N, longitude: 1021'35.44"W (of Greenwich). Liberia 1964 is a geodetic datum for Topographic mapping. It was defined by information from NIMA http://earth-info.nima.mil/. |
| 64 | Luzon | A geodetic datum first defined in 1911 suitable for use in Philippines - onshore. Luzon references the Clarke 1866 ellipsoid and the Greenwich prime meridian. Luzon origin is Fundamental point: Balacan. Latitude: 1333'41.000"N, longitude: 12152'03.000"E (of Greenwich). Luzon is a geodetic datum for Topographic mapping. It was defined by information from Coast and Geodetic Survey Replaced by Philippine Reference system of 1992 (datum code 6683). |
| 65 | Mahe 1971 | A geodetic datum first defined in 1971 suitable for use in Seychelles - Mahe Island. Mahe 1971 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Mahe 1971 origin is Fundamental point: Station SITE. Latitude: 440'14.644"S, longitude: 5528'44.488"E (of Greenwich). Mahe 1971 is a geodetic datum for US military survey. It was defined by information from Clifford Mugnier's September 2007 PE&RS "Grids and Datums" article on Seychelles (www.asprs.org/resources/grids/). South East Island 1943 (datum code 1138) used for topographic mapping, cadastral and hydrographic survey. |
| 66 | Massawa | A geodetic datum suitable for use in Eritrea - onshore and offshore. Massawa references the Bessel 1841 ellipsoid and the Greenwich prime meridian. Massawa is a geodetic datum for Topographic mapping. |
| 67 | Merchich | A geodetic datum first defined in 1922 suitable for use in Morocco - onshore. Merchich references the Clarke 1880 (IGN) ellipsoid and the Greenwich prime meridian. Merchich origin is Fundamental point: Merchich. Latitude: 3326'59.672"N, longitude: 733'27.295"W (of Greenwich). Merchich is a geodetic datum for Topographic mapping. |
| 68 | Midway Astro 1961 | A geodetic datum first defined in 1961 suitable for use in United States Minor Outlying Islands - Midway Islands - Sand Island and Eastern Island. Midway 1961 references the International 1924 ellipsoid and the Greenwich prime meridian. Midway 1961 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 69 | Minna | A geodetic datum suitable for use in Nigeria - onshore and offshore. Minna references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Minna origin is Fundamental point: Minna base station L40. Latitude: 938'08.87"N, longitude: 630'58.76"E (of Greenwich). Minna is a geodetic datum for Topographic mapping. It was defined by information from NIMA http://earth-info.nima.mil/. |
| 70 | Montserrat Island Astro 1958 | A geodetic datum first defined in 1958 suitable for use in Montserrat - onshore. Montserrat 1958 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Montserrat 1958 origin is Fundamental point: station M36. Montserrat 1958 is a geodetic datum for Topographic mapping. It was defined by information from Ordnance Survey of Great Britain. |
| 71 | M'poraloko | A geodetic datum suitable for use in Gabon - onshore and offshore. M'poraloko references the Clarke 1880 (IGN) ellipsoid and the Greenwich prime meridian. M'poraloko is a geodetic datum for Topographic mapping. |
| 72 | Nahrwan | A geodetic datum first defined in 1934 suitable for use in Iraq - onshore; Iran - onshore northern Gulf coast and west bordering southeast Iraq. Nahrwan 1934 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Nahrwan 1934 origin is Fundamental point: Nahrwan south base. Latitude: 3319'10.87"N, longitude: 4443'25.54"E (of Greenwich). Nahrwan 1934 is a geodetic datum for Oil exploration and production. It was defined by information from Various industry sources. This adjustment later discovered to have a significant orientation error. In Iran replaced by FD58. In Iraq, replaced by Karbala 1979. |
| 73 | Naparima, BWI | A geodetic datum first defined in 1972 suitable for use in Trinidad and Tobago - Tobago - onshore. Naparima 1972 references the International 1924 ellipsoid and the Greenwich prime meridian. Naparima 1972 origin is Fundamental point: Naparima. Latitude: 1016'44.860"N, longitude: 6127'34.620"W (of Greenwich). Naparima 1972 is a geodetic datum for Topographic mapping. It was defined by information from Ordnance Survey International. Naparima 1972 is an extension of the Naparima 1955 network of Trinidad to include Tobago. |
| 74 | North American 1927 | A geodetic datum first defined in 1927 suitable for use in North and central America; Antigua and Barbuda; Bahamas; Belize; British Virgin Islandss. Usage shall be onshore only except that onshore and offshore shall apply to Canada east coast (New Brunswick; Newfoundland and Labrador; Prince Edward Island; Quebec). Cuba. Mexico (Gulf of Mexico and Caribbean coasts only). USA Alaska. USA Gulf of Mexico (Alabama; Florida; Louisiana; Mississippi; Texas). USA East Coast. Bahamas onshore plus offshore over internal continental shelf only. North American Datum 1927 references the Clarke 1866 ellipsoid and the Greenwich prime meridian. North American Datum 1927 origin is Fundamental point: Meade's Ranch. Latitude: 3913'26.686"N, longitude: 9832'30.506"W (of Greenwich). North American Datum 1927 is a geodetic datum for Topographic mapping. In United States (USA) and Canada, replaced by North American Datum 1983 (NAD83) (code 6269) ; in Mexico, replaced by Mexican Datum of 1993 (code 1042). |
| 75 | North American 1983 | A geodetic datum first defined in 1986 suitable for use in North America - onshore and offshore: Canada; Puerto Rico; United States (USA); US Virgin Islands; British Virgin Islands. North American Datum 1983 references the GRS 1980 ellipsoid and the Greenwich prime meridian. North American Datum 1983 origin is Origin at geocentre. North American Datum 1983 is a geodetic datum for Topographic mapping. Although the 1986 adjustment included connections to Greenland and Mexico, it has not been adopted there. In Canada and US, replaced NAD27. |
| 76 | Observatorio Meteorologico 1939 | A geodetic datum first defined in 1939 suitable for use in Portugal - western Azores onshore - Flores, Corvo. Azores Occidental Islands 1939 references the International 1924 ellipsoid and the Greenwich prime meridian. Azores Occidental Islands 1939 origin is Fundamental point: Observatario Meteorologico Flores. Azores Occidental Islands 1939 is a geodetic datum for Topographic mapping. It was defined by information from Instituto Geografico e Cadastral Lisbon via EuroGeographics; http://crs.bkg.bund.de/crs-eu/. |
| 77 | Old Egyptian 1907 | A geodetic datum first defined in 1907 suitable for use in Egypt - onshore and offshore. Egypt 1907 references the Helmert 1906 ellipsoid and the Greenwich prime meridian. Egypt 1907 origin is Fundamental point: Station F1 (Venus). Latitude: 3001'42.86"N, longitude: 3116'33.60"E (of Greenwich). Egypt 1907 is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. |
| 78 | Old Hawaiian | A geodetic datum suitable for use in United States (USA) - Hawaii - main islands onshore. Old Hawaiian references the Clarke 1866 ellipsoid and the Greenwich prime meridian. Old Hawaiian origin is Fundamental point: Oahu West Base Astro. Latitude: 2118'13.89"N, longitude 15750'55.79"W (of Greenwich). Old Hawaiian is a geodetic datum for Topographic mapping. It was defined by information from http://www.ngs.noaa.gov/ (NADCON readme file). Hawaiian Islands were never on NAD27 but rather on Old Hawaiian Datum. NADCON conversion program provides transformation from Old Hawaiian Datum to NAD83 (original 1986 realization) but making the transformation appear to user as if from NAD27. |
| 79 | Oman | A geodetic datum first defined in 2013 suitable for use in Oman - onshore and offshore. Oman National Geodetic Datum 2014 references the GRS 1980 ellipsoid and the Greenwich prime meridian. Oman National Geodetic Datum 2014 origin is 20 stations of the Oman primary network tied to ITRF2008 at epoch 2013.15. Oman National Geodetic Datum 2014 is a geodetic datum for Geodetic Survey. It was defined by information from National Survey Authority, Sultanate of Oman. Replaces WGS 84 (G874). |
| 80 | Ordnance Survey of Great Britain 1936 | A geodetic datum first defined in 1936 suitable for use in United Kingdom (UK) - offshore to boundary of UKCS within 4946'N to 6101'N and 733'W to 333'E; onshore Great Britain (England, Wales and Scotland). Isle of Man onshore. OSGB 1936 references the Airy 1830 ellipsoid and the Greenwich prime meridian. OSGB 1936 origin is Prior to 2002, fundamental point: Herstmonceux, Latitude: 5051'55.271"N, longitude: 020'45.882"E (of Greenwich). From April 2002 the datum is defined through the application of the OSTN transformation from ETRS89. OSGB 1936 is a geodetic datum for Topographic mapping. It was defined by information from Ordnance Survey of Great Britain. The average accuracy of OSTN compared to the old triangulation network (down to 3rd order) is 0.1m. With the introduction of OSTN15, the area for OSGB 1936 has effectively been extended from Britain to cover the adjacent UK Continental Shelf. |
| 81 | Pico de las Nieves | A geodetic datum suitable for use in Spain - Canary Islands onshore. Pico de las Nieves 1984 references the International 1924 ellipsoid and the Greenwich prime meridian. Pico de las Nieves 1984 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). Replaces Pico de las Nieves 1968 (PN68). Replaced by REGCAN95. |
| 82 | Pitcairn Astro 1967 | A geodetic datum first defined in 1967 suitable for use in Pitcairn - Pitcairn Island. Pitcairn 1967 references the International 1924 ellipsoid and the Greenwich prime meridian. Pitcairn 1967 origin is Fundamental point: Pitcairn Astro. Latitude: 2504'06.87"S, longitude: 13006'47.83"W (of Greenwich). Pitcairn 1967 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). Replaced by Pitcairn 2006. |
| 83 | Point 58 | A geodetic datum first defined in 1969 suitable for use in Senegal - central, Mali - southwest, Burkina Faso - central, Niger - southwest, Nigeria - north, Chad - central. All in proximity to the parallel of latitude of 12N. Point 58 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Point 58 origin is Fundamental point: Point 58. Latitude: 1252'44.045"N, longitude: 358'37.040"E (of Greenwich). Point 58 is a geodetic datum for Geodetic survey. It was defined by information from IGN Paris. Used as the basis for computation of the 12th Parallel traverse conducted 1966-70 from Senegal to Chad and connecting to the Blue Nile 1958 (Adindan) triangulation in Sudan. |
| 84 | Pointe Noire 1948 | Pointe Noire 1948 datum. |
| 85 | Porto Santo 1936 | A geodetic datum first defined in 1936 suitable for use in Portugal - Madeira, Porto Santo and Desertas islands - onshore. Porto Santo 1936 references the International 1924 ellipsoid and the Greenwich prime meridian. Porto Santo 1936 origin is SE Base on Porto Santo island. Porto Santo 1936 is a geodetic datum for Topographic mapping. It was defined by information from Instituto Geografico e Cadastral Lisbon http://www.igeo.pt Replaced by 1995 adjustment (datum code 6663). For Selvagens see Selvagem Grande (code 6616). |
| 86 | Provisional South American 1956 | A geodetic datum first defined in 1956 suitable for use in Aruba - onshore; Bolivia; Bonaire - onshore; Brazil - offshore - Amazon Cone shelf; Chile - onshore north of 4330'S; Curacao - onshore; Ecuador - mainland onshore; Guyana - onshore; Peru - onshore; Venezuela - onshore. Provisional South American Datum 1956 references the International 1924 ellipsoid and the Greenwich prime meridian. Provisional South American Datum 1956 origin is Fundamental point: La Canoa. Latitude: 834'17.170"N, longitude: 6351'34.880"W (of Greenwich). Provisional South American Datum 1956 is a geodetic datum for Topographic mapping. Same origin as La Canoa datum. |
| 87 | Provisional South Chilean 1963 | A geodetic datum first defined in 1963 suitable for use in Argentina and Chile - Tierra del Fuego, onshore. Hito XVIII 1963 references the International 1924 ellipsoid and the Greenwich prime meridian. Hito XVIII 1963 origin is Chile-Argentina boundary survey. Hito XVIII 1963 is a geodetic datum for Geodetic survey. It was defined by information from Various oil company records. Used in Tierra del Fuego. |
| 88 | Puerto Rico | A geodetic datum first defined in 1901 suitable for use in Puerto Rico, US Virgin Islands and British Virgin Islands - onshore. Puerto Rico references the Clarke 1866 ellipsoid and the Greenwich prime meridian. Puerto Rico origin is Fundamental point: Cardona Island Lighthouse. Latitude:1757'31.40"N, longitude: 6638'07.53"W (of Greenwich). Puerto Rico is a geodetic datum for Topographic mapping. It was defined by information from Ordnance Survey of Great Britain and http://www.ngs.noaa.gov/ (NADCON readme file). NADCON conversion program provides transformation from Puerto Rico Datum to NAD83 (original 1986 realization) but making the transformation appear to user as if from NAD27. |
| 89 | Qatar National | A geodetic datum first defined in 1995 suitable for use in Qatar - onshore. Qatar National Datum 1995 references the International 1924 ellipsoid and the Greenwich prime meridian. Qatar National Datum 1995 origin is defined by transformation from WGS 84 - see coordinate operation code 1840. Qatar National Datum 1995 is a geodetic datum for Topographic mapping. It was defined by information from Qatar Centre for Geographic Information. |
| 90 | Qornoq | A geodetic datum first defined in 1927 suitable for use in Greenland - west coast onshore. Qornoq 1927 references the International 1924 ellipsoid and the Greenwich prime meridian. Qornoq 1927 origin is Fundamental point: Station 7008. Latitude: 6431'06.27"N, longitude: 5112'24.86"W (of Greenwich). Qornoq 1927 is a geodetic datum for Topographic mapping. It was defined by information from Kort & Matrikelstyrelsen, Copenhagen. Origin coordinates from NIMA http://earth-info.nima.mil/. |
| 91 | Reunion | A geodetic datum first defined in 1947 suitable for use in Reunion - onshore. Reunion 1947 references the International 1924 ellipsoid and the Greenwich prime meridian. Reunion 1947 origin is Fundamental point: Piton des Neiges (Borne). Latitude: 2105'13.119"S, longitude: 5529'09.193"E (of Greenwich). Reunion 1947 is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from IGN Paris. Replaced by RGR92 (datum code 6627). |
| 92 | Rome 1940 | A geodetic datum first defined in and is suitable for use in Italy - onshore and offshore; San Marino, Vatican City State. Monte Mario (Rome) references the International 1924 ellipsoid and the Rome prime meridian. Monte Mario (Rome) origin is Fundamental point: Monte Mario. Latitude: 4155'25.51"N, longitude: 000' 00.00"E (of Rome). Monte Mario (Rome) is a geodetic datum for Topographic mapping. Replaced Genova datum, Bessel 1841 ellipsoid, from 1940. |
| 93 | Santo (DOS) 1965 | A geodetic datum first defined in 1965 suitable for use in Vanuatu - northern islands - Aese, Ambrym, Aoba, Epi, Espiritu Santo, Maewo, Malo, Malkula, Paama, Pentecost, Shepherd and Tutuba. Santo 1965 references the International 1924 ellipsoid and the Greenwich prime meridian. Santo 1965 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). Datum covers all the major islands of Vanuatu in two different adjustment blocks, but practical usage is as given in the area of use. |
| 94 | Sao Braz | A geodetic datum first defined in 1995 suitable for use in Portugal - eastern Azores onshore - Sao Miguel, Santa Maria, Formigas. Azores Oriental Islands 1995 references the International 1924 ellipsoid and the Greenwich prime meridian. Azores Oriental Islands 1995 origin is Fundamental point: Forte de So Bras. Origin and orientation constrained to those of the 1940 adjustment. Azores Oriental Islands 1995 is a geodetic datum for Topographic mapping. It was defined by information from Instituto Geografico e Cadastral Lisbon; http://www.igeo.pt/ Classical and GPS observations. Replaces 1940 adjustment (datum code 6184). |
| 95 | Sapper Hill 1943 | A geodetic datum first defined in 1943 suitable for use in Falkland Islands (Malvinas) - onshore. Sapper Hill 1943 references the International 1924 ellipsoid and the Greenwich prime meridian. Sapper Hill 1943 is a geodetic datum for Topographic mapping. |
| 96 | Schwarzeck | A geodetic datum suitable for use in Namibia - onshore and offshore. Schwarzeck references the Bessel Namibia (GLM) ellipsoid and the Greenwich prime meridian. Schwarzeck origin is Fundamental point: Schwarzeck. Latitude: 2245'35.820"S, longitude: 1840'34.549"E (of Greenwich). Fixed during German South West Africa-British Bechuanaland boundary survey of 1898-1903. Schwarzeck is a geodetic datum for Topographic mapping. It was defined by information from Private Communication, Directorate of Surveys and Land Information, Cape Town. |
| 97 | Selvagem Grande 1938 | A geodetic datum suitable for use in Portugal - Selvagens islands (Madeira province) - onshore. Selvagem Grande references the International 1924 ellipsoid and the Greenwich prime meridian. Selvagem Grande is a geodetic datum for Topographic mapping. It was defined by information from Instituto Geografico e Cadastral Lisbon http://www.igeo.pt. |
| 98 | South American 1969 | A geodetic datum first defined in 1969 suitable for use in Brazil - onshore and offshore. In rest of South America - onshore north of approximately 45S and Tierra del Fuego. South American Datum 1969 references the GRS 1967 Modified ellipsoid and the Greenwich prime meridian. South American Datum 1969 origin is Fundamental point: Chua. Geodetic latitude: 1945'41.6527"S; geodetic longitude: 4806'04.0639"W (of Greenwich). (Astronomic coordinates: Latitude 1945'41.34"S +/- 0.05", longitude 4806'07.80"W +/- 0.08"). South American Datum 1969 is a geodetic datum for Topographic mapping. It was defined by information from DMA 1974. SAD69 uses GRS 1967 ellipsoid but with 1/f to exactly 2 decimal places. In Brazil only, replaced by SAD69(96) (datum code 1075). |
| 99 | South Asia | South Asia datum. |
| 100 | Tananarive Observatory 1925 | A geodetic datum first defined in 1925 suitable for use in Madagascar - onshore and nearshore. Tananarive 1925 references the International 1924 ellipsoid and the Greenwich prime meridian. Tananarive 1925 origin is Fundamental point: Tananarive observatory. Latitude: 1855'02.10"S, longitude: 4733'06.75"E (of Greenwich). Tananarive 1925 is a geodetic datum for Topographic mapping. It was defined by information from IGN Paris. |
| 101 | Timbalai 1948 | A geodetic datum first defined in 1948 suitable for use in Brunei - onshore and offshore; Malaysia - East Malaysia (Sabah; Sarawak) - onshore and offshore. Timbalai 1948 references the Everest 1830 (1967 Definition) ellipsoid and the Greenwich prime meridian. Timbalai 1948 origin is Fundamental point: Station P85 at Timbalai. Latitude: 517' 3.548"N, longitude: 11510'56.409"E (of Greenwich). Timbalai 1948 is a geodetic datum for Topographic mapping. It was defined by information from Defence Geographic Centre. In 1968, the original adjustment was densified in Sarawak and extended to Sabah. |
| 102 | Tokyo | A geodetic datum first defined in 1918 suitable for use in Japan - onshore; North Korea - onshore; South Korea - onshore. Tokyo references the Bessel 1841 ellipsoid and the Greenwich prime meridian. Tokyo origin is Fundamental point: Nikon-Keido-Genten. Latitude: 3539'17.5148"N, longitude: 13944'40.5020"E (of Greenwich). Longitude derived in 1918. Tokyo is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from Geographic Survey Institute; Japan; Bulletin 40 (March 1994). Also http://vldb.gsi.go.jp/sokuchi/datum/tokyodatum.html. In Japan, replaces Tokyo 1892 (code 1048) and replaced by Japanese Geodetic Datum 2000 (code 6611). In Korea used only for geodetic applications before being replaced by Korean 1985 (code 6162). |
| 103 | Tristan Astro 1968 | A geodetic datum first defined in 1968 suitable for use in St Helena, Ascension and Tristan da Cunha - Tristan da Cunha island group including Tristan, Inaccessible, Nightingale, Middle and Stoltenhoff Islands. Tristan 1968 references the International 1924 ellipsoid and the Greenwich prime meridian. Tristan 1968 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 104 | Viti Levu 1916 | A geodetic datum first defined in 1912 suitable for use in Fiji - Viti Levu island. Viti Levu 1912 references the Clarke 1880 (international foot) ellipsoid and the Greenwich prime meridian. Viti Levu 1912 Latitude origin was obtained astronomically at station Monavatu = 1753'28.285"S, longitude origin was obtained astronomically at station Suva = 17825'35.835"E. Viti Levu 1912 is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from Clifford J. Mugnier in Photogrammetric Engineering and Remote Sensing, October 2000, www.asprs.org. For topographic mapping, replaced by Fiji 1956. For other purposes, replaced by Fiji 1986. |
| 105 | Wake-Eniwetok 1960 | A geodetic datum first defined in 1960 suitable for use in Marshall Islands - onshore. Wake atoll onshore. Marshall Islands 1960 references the Hough 1960 ellipsoid and the Greenwich prime meridian. Marshall Islands 1960 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 106 | Wake Island Astro 1952 | A geodetic datum first defined in 1952 suitable for use in Wake atoll - onshore. Wake Island 1952 references the International 1924 ellipsoid and the Greenwich prime meridian. Wake Island 1952 is a geodetic datum for Military and topographic mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 107 | Yacare | A geodetic datum suitable for use in Uruguay - onshore. Yacare references the International 1924 ellipsoid and the Greenwich prime meridian. Yacare origin is Fundamental point: Yacare. Latitude: 3035'53.68"S, longitude: 5725'01.30"W (of Greenwich). Yacare is a geodetic datum for Topographic mapping. It was defined by information from NIMA http://earth-info.nima.mil/ |
| 108 | Zanderij | A geodetic datum suitable for use in Suriname - onshore and offshore. Zanderij references the International 1924 ellipsoid and the Greenwich prime meridian. Zanderij is a geodetic datum for Topographic mapping. |
| 109 | American Samoa 1962 | A geodetic datum first defined in 1962 suitable for use in American Samoa - Tutuila, Aunu'u, Ofu, Olesega and Ta'u islands. American Samoa 1962 references the Clarke 1866 ellipsoid and the Greenwich prime meridian. American Samoa 1962 origin is Fundamental point: Betty 13 eccentric. Latitude: 1420'08.34"S, longitude: 17042'52.25"W (of Greenwich). American Samoa 1962 is a geodetic datum for Topographic mapping. It was defined by information from NIMA TR8350.2 revision of January 2000. Oil industry sources for origin description details. |
| 110 | Deception Island | A geodetic datum suitable for use in Antarctica - South Shetland Islands - Deception Island. Deception Island references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Deception Island is a geodetic datum for Military and scientific mapping. It was defined by information from DMA / NIMA / NGA TR8350.2 (3rd edition, Amendment 1, 3 January 2000). |
| 111 | Indian 1960 | A geodetic datum suitable for use in Cambodia - onshore; Vietnam - onshore and offshore Cuu Long basin. Indian 1960 references the Everest 1830 (1937 Adjustment) ellipsoid and the Greenwich prime meridian. Indian 1960 origin is DMA extension over IndoChina of the Indian 1954 network adjusted to better fit local geoid. Indian 1960 is a geodetic datum for Topographic mapping. Also known as Indian (DMA Reduced). |
| 112 | Indonesian 1974 | A geodetic datum first defined in 1974 suitable for use in Indonesia - onshore. Indonesian Datum 1974 references the Indonesian National Spheroid ellipsoid and the Greenwich prime meridian. Indonesian Datum 1974 origin is Fundamental point: Padang. Latitude: 056'38.414"S, longitude: 10022' 8.804"E (of Greenwich). Ellipsoidal height 3.190m, gravity-related height 14.0m above mean sea level. Indonesian Datum 1974 is a geodetic datum for Topographic mapping. It was defined by information from Bakosurtanal 1979 paper by Jacob Rais. Replaced by DGN95. |
| 113 | North Sahara 1959 | A geodetic datum first defined in 1959 suitable for use in Algeria - onshore and offshore. Nord Sahara 1959 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Nord Sahara 1959 origin is Coordinates of primary network readjusted on ED50 datum and then transformed conformally to Clarke 1880 (RGS) ellipsoid. Nord Sahara 1959 is a geodetic datum for Topographic mapping. It was defined by information from "Le System Geodesique Nord-Sahara"; IGN Paris Adjustment includes Morocco and Tunisia but use only in Algeria. Within Algeria the adjustment is north of 32N but use has been extended southwards in many disconnected projects, some based on independent astro stations rather than the geodetic network. |
| 114 | Pulkovo 1942 | A geodetic datum first defined in 1942 suitable for use in Armenia; Azerbaijan; Belarus; Estonia - onshore; Georgia - onshore; Kazakhstan; Kyrgyzstan; Latvia - onshore; Lithuania - onshore; Moldova; Russian Federation - onshore; Tajikistan; Turkmenistan; Ukraine - onshore; Uzbekistan. Pulkovo 1942 references the Krassowsky 1940 ellipsoid and the Greenwich prime meridian. Pulkovo 1942 origin is Fundamental point: Pulkovo observatory. Latitude: 5946'18.550"N, longitude: 3019'42.090"E (of Greenwich). Pulkovo 1942 is a geodetic datum for Topographic mapping. |
| 116 | S-JTSK | A geodetic datum suitable for use in Czech Republic; Slovakia. System Jednotne Trigonometricke Site Katastralni references the Bessel 1841 ellipsoid and the Greenwich prime meridian. System Jednotne Trigonometricke Site Katastralni origin is Modification of Austrian MGI datum, code 6312. System Jednotne Trigonometricke Site Katastralni is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from Research Institute for Geodesy Topography and Cartography (VUGTK); Prague. S-JTSK = System of the Unified Trigonometrical Cadastral Network. |
| 117 | Voirol 1950 | Voirol 1950 datum. |
| 118 | Average Terrestrial System 1977 | A geodetic datum first defined in 1977 suitable for use in Canada - New Brunswick; Nova Scotia; Prince Edward Island. Average Terrestrial System 1977 references the Average Terrestrial System 1977 ellipsoid and the Greenwich prime meridian. Average Terrestrial System 1977 is a geodetic datum for Topographic mapping. It was defined by information from New Brunswick Geographic Information Corporation land and water information standards manual. In use from 1979. |
| 119 | Compensation Geodesique du Quebec 1977 | Compensation Geodesique du Quebec 1977. |
| 120 | Finnish (KKJ) | A geodetic datum first defined in 1966 suitable for use in Finland - onshore. Kartastokoordinaattijarjestelma (1966) references the International 1924 ellipsoid and the Greenwich prime meridian. Kartastokoordinaattijarjestelma (1966) origin is Adjustment with fundamental point SF31 based on ED50 transformed to best fit the older VVJ adjustment. Kartastokoordinaattijarjestelma (1966) is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from National Land Survey of Finland; http://www.maanmittauslaitos.fi. Adopted in 1970. |
| 121 | Ordnance Survey of Ireland | A geodetic datum first defined in 1952 suitable for use in United Kingdom (UK) - Northern Ireland (Ulster) - onshore. OSNI 1952 references the Airy 1830 ellipsoid and the Greenwich prime meridian. OSNI 1952 origin is Position fixed to the coordinates from the 19th century Principle Triangulation of station Divis. Scale and orientation controlled by position of Principle Triangulation stations Knocklayd and Trostan. OSNI 1952 is a geodetic datum for Geodetic survey and topographic mapping. It was defined by information from Ordnance Survey of Northern Ireland. Replaced by Geodetic Datum of 1965 alias 1975 Mapping Adjustment or TM75 (datum code 6300). |
| 122 | Revised Kertau | A geodetic datum first defined in 1969 suitable for use in Malaysia - West Malaysia; Singapore. Kertau (RSO) references the Everest 1830 (RSO 1969) ellipsoid and the Greenwich prime meridian. Kertau (RSO) is a geodetic datum for Metrication of RSO grid. It was defined by information from Defence Geographic Centre. Adopts metric conversion of 0.914398 metres per yard exactly. This is a truncation of the Sears 1922 ratio. |
| 123 | Revised Nahrwan | A geodetic datum first defined in 1967 suitable for use in Arabian Gulf; Qatar - offshore; United Arab Emirates (UAE) - Abu Dhabi; Dubai; Sharjah; Ajman; Fujairah; Ras Al Kaimah; Umm Al Qaiwain - onshore and offshore. Nahrwan 1967 references the Clarke 1880 (RGS) ellipsoid and the Greenwich prime meridian. Nahrwan 1967 origin is Fundamental point: Nahrwan south base. Latitude: 3319'10.87"N, longitude: 4443'25.54"E (of Greenwich). Nahrwan 1967 is a geodetic datum for Topographic mapping. In Iraq, replaces Nahrwan 1934. |
| 124 | GGRS 76 (Greece) | A geodetic datum first defined in 1987 suitable for use in Greece - onshore. Greek Geodetic Reference System 1987 references the GRS 1980 ellipsoid and the Greenwich prime meridian. Greek Geodetic Reference System 1987 origin is Fundamental point: Dionysos. Latitude 3804'33.8"N, longitude 2355'51.0"E of Greenwich; geoid height 7.0 m. Greek Geodetic Reference System 1987 is a geodetic datum for Topographic mapping. It was defined by information from L. Portokalakis; Public Petroleum Corporation of Greece. Replaced (old) Greek datum. Oil industry work based on ED50. |
| 125 | Nouvelle Triangulation de France | A geodetic datum first defined in 1895 suitable for use in France - onshore - mainland and Corsica. Nouvelle Triangulation Francaise references the Clarke 1880 (IGN) ellipsoid and the Greenwich prime meridian. Nouvelle Triangulation Francaise origin is Fundamental point: Pantheon. Latitude: 4850'46.522"N, longitude: 220'48.667"E (of Greenwich). Nouvelle Triangulation Francaise is a geodetic datum for Topographic mapping. |
| 126 | RT 90 (Sweden) | A geodetic datum first defined in 1982 suitable for use in Sweden - onshore and offshore. Rikets koordinatsystem 1990 references the Bessel 1841 ellipsoid and the Greenwich prime meridian. Rikets koordinatsystem 1990 is a geodetic datum for Geodetic survey, cadastre, topographic mapping, engineering survey. It was defined by information from National Land Survey of Sweden Replaces RT38 adjustment (datum code 6308). |
| 127 | Geocentric Datum of Australia | A geodetic datum first defined in 1994 suitable for use in Australia including Lord Howe Island, Macquarie Islands, Ashmore and Cartier Islands, Christmas Island, Cocos (Keeling) Islands, Norfolk Island. All onshore and offshore. Geocentric Datum of Australia 1994 references the GRS 1980 ellipsoid and the Greenwich prime meridian. Geocentric Datum of Australia 1994 origin is ITRF92 at epoch 1994.0. Geocentric Datum of Australia 1994 is a geodetic datum for Topographic mapping, geodetic survey. It was defined by information from Australian Surveying and Land Information Group Internet WWW page. http://www.auslig.gov.au/geodesy/datums/gda.htm#specs Coincident with WGS84 to within 1 metre. |
| 128 | BJZ54 (A954 Beijing Coordinates) | A geodetic datum first defined in 1954 suitable for use in China - onshore. Beijing 1954 references the Krassowsky 1940 ellipsoid and the Greenwich prime meridian. Beijing 1954 origin is Pulkovo, transferred through Russian triangulation. Beijing 1954 is a geodetic datum for Topographic mapping. It was defined by information from Chinese Science Bulletin, 2009, 54:2714-2721 Scale determined through three baselines in northeast China. Discontinuities at boundaries of adjustment blocks. From 1982 replaced by Xian 1980 and New Beijing. |
| 129 | Modified BJZ54 | Modified BJZ54 datum. |
| 130 | GDZ80 | GDZ80 datum. |
| 131 | Local Datum | An arbitrary datum defined by a local harbour authority, from which levels and tidal heights are measured by this authority. |

**5.25. Reference Point**

**Definition:** -

**CamelCase:** referencePoint

**Alias:**

**Value type:** text

**Remarks:** -

**5.26. Signal Status**

**Definition:** The indication of an element of a signal sequence being a period of light/sound or eclipse/silence.

**CamelCase:** signalStatus

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Lit/Sound | The indication of an element of a signal sequence being a period of light or sound. |
| 2 | Eclipsed/Silent | The indication of an element of a signal sequence being a period of eclipse or silence. |

**5.27. Signal Duration**

**Definition:** The time occupied by a single instance of light/sound or eclipse/silence in a signal sequence.

**CamelCase:** signalDuration

**Alias:**

**Value type:** real

**Remarks:** No remarks.

**5.28. Flare Bearing**

**Definition:** -

**CamelCase:** flareBearing

**Alias:**

**Value type:** integer

**Remarks:** No remarks.

**5.29. Sector Line Length**

**Definition:** A sector is the part of a circle between two straight lines drawn from the centre to the circumference. Sector line length specifies the displayed length of the line, in ground units, defining the limit of the sector.

**CamelCase:** sectorLineLength

**Alias:**

**Value type:** integer

**Remarks:** No remarks.

**5.30. Sector Bearing**

**Definition:** A sector is the part of a circle between two straight lines drawn from the centre to the circumference. Sector bearing specifies the limit of the sector.

**CamelCase:** sectorBearing

**Alias:** SECTR1 SECTR2

**Value type:** real

**Remarks:** The values given to the common limits of adjacent sectors should be identical. The orientation of bearing is from seaward to the central object. This conforms with the method used in 'List of Lights' publications. A generic term such as 'to shore' cannot be used; a specific bearing must be encoded. Where a light sector limit is defined as 'to the shore', it should be encoded using a value that ensures that, when the limit is drawn, it will fall entirely on land.

**5.31. Wave Length Value**

**Definition:** The distance between two successive peaks (or other points of identical phase) on an electromagnetic wave.

**CamelCase:** waveLengthValue

**Alias:** Radar Wave Length

**Value type:** real

**Remarks:** No remarks.

**5.32. Radar Band**

**Definition:** The band code character of the electromagnetic spectrum within which radar wave lengths lie.

**CamelCase:** radarBand

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.33. Number of Features**

**Definition:** The number of features of identical character that exist as a co-located group.

**CamelCase:** numberOfFeatures

**Alias:**

**Value type:** integer

**Remarks:** No remarks.

**5.34. Multiplicity Known**

**Definition:** The number of features of identical character that exist as a co-located group is or is not known.

**CamelCase:** multiplicityKnown

**Alias:**

**Value type:** boolean

**Remarks:** No remarks.

**5.35. Sector Extension**

**Definition:** Distance in screen millimetres (mm) by which a sector arc is extended beyond the default.

**CamelCase:** sectorExtension

**Alias:**

**Value type:** boolean

**Remarks:** The sector extension is calculated by ENC production software systems.

**5.36. Moire Effect**

**Definition:** A short range (up to 2km) type of directional light. Sodium lighting gives a yellow background to a screen on which a vertical black line will be seen by an observer on the centre line.

**CamelCase:** moireEffect

**Alias:**

**Value type:** boolean

**Remarks:** No remarks.

**5.37. Category of Cable**

**Definition:** Classification of the cable based on the services provided.

**CamelCase:** categoryOfCable

**Alias:** CATCBL

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Power Line | A cable that transmits or distributes electrical power. |
| 3 | Transmission Line | Multiple un-insulated cables usually supported by steel lattice towers. Such features are generally more prominent than normal power lines. |
| 4 | Telephone | A cable that transmits telephone signals. |
| 5 | Telegraph | An apparatus, system or process for communication at a distance by electric transmission over wire. |
| 6 | Mooring Cable | A chain or very strong fibre or wire rope used to anchor or moor vessels or buoys. |
| 7 | Ferry | A vessel for transporting passengers, vehicles, and/or goods across a stretch of water, especially as a regular service. |
| 8 | Fibre Optic Cable | A cable made of glass or plastic fiber designed to guide light along its length, fibre optic cables are widely used in fiber-optic communication, which permits transmission over longer distances and at higher data rates than other forms of communication. |

**5.38. Shackle Type**

**Definition:** Types of shackle.

**CamelCase:** ShackleType

**Alias:**

**Value type:** enumeration

**Remarks:** -

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | forelock shackles | - |
| 2 | clenching shackles | - |
| 3 | bolt shackles | - |
| 4 | screw pin shackles | - |
| 5 | kenter shackle | - |
| 6 | quick release link | - |

**5.39. Category of Pile**

**Definition:** Classification of pile, driven into the earth as a foundation or support for a structure.

**CamelCase:** categoryOfPile

**Alias:** CATPLE

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Stake | An elongated wood or metal pole embedded in the seabed to serve as a marker or support. |
| 3 | Post | A vertical piece of timber, metal or concrete forced into the earth or sea bed. |
| 4 | Tripodal | A single structure comprising 3 or more piles held together (sections of heavy timber, steel or concrete), and forced into the earth or sea bed. |
| 5 | Piling | A number of piles, usually in a straight line, and usually connected or bolted together. |
| 6 | Area of Piles | A number of piles, usually in a straight line, but not connected by structural members. |
| 7 | Pipe | A vertical hollow cylinder of metal, wood, or other material forced into the earth or seabed. |

**5.40. Category of Silo/Tank**

**Definition:** Classification based on the product for which a silo or tank is used.

**CamelCase:** categoryOfSiloTank

**Alias:** CATSIL

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Silo in General | A large storage structure used for storing loose materials. |
| 2 | Tank in General | A fixed structure for storing liquids. |
| 3 | Grain Elevator | A storage building for grain. Usually a tall frame, metal or concrete structure with an especially compartmented interior. |
| 4 | Water Tower | A tower supporting an elevated storage tank of water. |

**5.41. Building Shape**

**Definition:** The specific shape of the building.

**CamelCase:** buildingShape

**Alias:** BUISHP

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 5 | High-Rise Building | A building having many storeys. |
| 6 | Pyramid | A polyhedron of which one face is a polygon of any number of sides, and the other faces are triangles with a common vertex. |
| 7 | Cylindrical | Shaped like a cylinder, which is a solid geometrical figure generated by straight lines fixed in direction and describing with one of its points a closed curve, especially a circle. |
| 8 | Spherical | Shaped like a sphere, which is a body the surface of which is at all points equidistant from the centre. |
| 9 | Cubic | A shape the sides of which are six equal squares; a regular hexahedron. |

**5.42. Product**

**Definition:** The various substances which are transported, stored or exploited.

**CamelCase:** product

**Alias:** PRODCT

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Oil | A thick, slippery liquid that will not dissolve in water, usually petroleum based in the context of storage tanks. |
| 2 | Gas | A substance with particles that can move freely, usually a fuel substance in the context of storage tanks. |
| 3 | Water | A colourless, odourless, tasteless liquid that is a compound of hydrogen and oxygen. |
| 4 | Stone | A general term for rock and rock fragments ranging in size from pebbles and gravel to boulders or large rock masses. |
| 5 | Coal | A hard black mineral that is burned as fuel. |
| 6 | Ore | A solid rock or mineral from which metal is obtained. |
| 7 | Chemicals | Any substance obtained by or used in a chemical process. |
| 8 | Drinking Water | Water that is suitable for human consumption. |
| 9 | Milk | A white fluid secreted by female mammals as food for their young. |
| 10 | Bauxite | A mineral from which aluminum is obtained. |
| 11 | Coke | A solid substance obtained after gas and tar have been extracted from coal, used as a fuel. |
| 12 | Iron Ingots | An oblong lump of cast iron metal. |
| 13 | Salt | Sodium chloride obtained from mines or by the evaporation of sea water. |
| 14 | Sand | Loose material consisting of small but easily distinguishable, separate grains, between 0.0625 and 2.000 millimetres in diameter. |
| 15 | Timber | Wood prepared for use in building or carpentry. |
| 16 | Sawdust/Wood Chips | Powdery fragments of wood made in sawing timber or coarse chips produced for use in manufacturing pressed board. |
| 17 | Scrap Metal | Discarded metal suitable for being reprocessed. |
| 18 | Liquefied Natural Gas | Natural gas that has been liquefied for ease of transport by cooling the gas to -162 Celsius. |
| 19 | Liquefied Petroleum Gas | A compressed gas consisting of flammable light hydrocarbons and derived from petroleum. |
| 20 | Wine | The fermented juice of grapes. |
| 21 | Cement | A substance made of powdered lime and clay, mixed with water. |
| 22 | Grain | A small hard seed, especially that of any cereal plant such as wheat, rice, corn, rye etc. |
| 23 | Electricity | Electric charge or current. |
| 24 | Ice | The solid form of water. |
| 25 | Clay | (Particles of less than 0.002mm); stiff, sticky earth that becomes hard when baked. |

**5.43. Category of Offshore Platform**

**Definition:** Classification of an offshore raised structure.

**CamelCase:** categoryOfOffshorePlatform

**Alias:** CATOFP

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Oil Rig | A temporary mobile structure, either fixed or floating, used in the exploration stages of oil and gas fields. |
| 2 | Production Platform | A term used to indicate a permanent offshore structure equipped to control the flow of oil or gas. It does not include entirely submarine structures. |
| 3 | Observation/Research Platform | A platform from which one's surroundings or events can be observed, noted or recorded such as for scientific study. |
| 4 | Articulated Loading Platform | A metal lattice tower, buoyant at one end and attached at the other by a universal joint to a concrete filled base on the sea bed. The platform may be fitted with a helicopter platform, emergency accommodation and hawser/hose retrieval. |
| 5 | Single Anchor Leg Mooring | A rigid frame or tube with a buoyancy device at its upper end , secured at its lower end to a universal joint on a large steel or concrete base resting on the sea bed, and at its upper end to a mooring buoy by a chain or wire. |
| 6 | Mooring Tower | A platform secured to the sea bed and surmounted by a turntable to which ships moor. |
| 7 | Artificial Island | A man-made structure usually built for the exploration or exploitation of marine resources, marine scientific research, tidal observations, etc. |
| 8 | Floating Production, Storage and Off-Loading Vessel | An offshore oil/gas facility consisting of a moored tanker/barge by which the product is extracted, stored and exported. |
| 9 | Accommodation Platform | A platform used primarily for eating, sleeping and recreation purposes. |
| 10 | Navigation, Communication and Control Buoy | A floating structure with control room, power and storage facilities, attached to the sea bed by a flexible pipeline and cables. |
| 11 | Floating Oil Tank | A floating structure, anchored to the seabed, for storing oil. |

**5.44. Horizontal Width**

**Definition:** A measurement of the shorter of two linear axis.

**CamelCase:** horizontalWidth

**Alias:** HORWID

**Value type:** real

**Remarks:** No remarks.

**5.45. Horizontal Length**

**Definition:** A measurement of the longer of two linear axis.

**CamelCase:** horizontalLength

**Alias:** HORLEN

**Value type:** real

**Remarks:** No remarks.

**5.46. Category of Cardinal Mark**

**Definition:** The four quadrants (north, east, south and west) are bounded by the true bearings NW-NE, NE-SE, SE-SW and SW-NW taken from the point of interest. A cardinal mark is named after the quadrant in which it is placed. The name of the cardinal mark indicates that it should be passed to the named side of the mark.

**CamelCase:** categoryOfCardinalMark

**Alias:** CATCAM

**Value type:** enumeration

**Remarks:** Cardinal marks are used in conjunction with the compass to indicate where a mariner will find safe navigable water.Cardinal marks do not have a distinctive shape but are normally pillar or spar. They are always painted in yellow and black horizontal bands and their distinctive double cone top-marks are always black. (Note that such top-marks are encoded as separate TOPMAR objects). Cardinal marks may also have a special system of flashing white lights and if such lights are fitted they are encoded as separate LIGHTS objects.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | North Cardinal Mark | Quadrant bounded by the true bearing NW-NE taken from the point of interest; it should be passed to the north side of the mark. |
| 2 | East Cardinal Mark | Quadrant bounded by the true bearing NE-SE taken from the point of interest. It should be passed to the east side of the mark. |
| 3 | South Cardinal Mark | Quadrant bounded by the true bearing SE-SW taken from the point of interest; it should be passed to the south side of the mark. |
| 4 | West Cardinal Mark | Quadrant bounded by the true bearing SW-NW taken from the point of interest; it should be passed to the west side of the mark. |

**5.47. Type of Light**

**Definition:** Type of light equipment.

**CamelCase:** typeOfLight

**Alias:**

**Value type:** text

**Remarks:** For example bulb type (250mm, 300mm, 400mm), LED type (integral type, 200, 200HI, 250, 300, 350).

**5.48. NMEAString**

**Definition:** NMEA string captured from the positioning device.(proposed by CCG)

**CamelCase:** NMEAString

**Alias:**

**Value type:** text

**Remarks:** .

**5.49. Light Characteristic**

**Definition:** The distinct character, such as fixed, flashing, or occulting, which is given to each light to avoid confusion with neighbouring ones.

**CamelCase:** lightCharacteristic

**Alias:** LITCHR Character of Light

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Fixed | A signal light that shows continuously, in any given direction, with constant luminous intensity and colour. |
| 2 | Flashing | A rhythmic light in which the total duration of light in a period is clearly shorter than the total duration of darkness and all the appearances of light are of equal duration. |
| 3 | Long-Flashing | A single-flashing light in which a single flash of not less than two seconds duration is regularly repeated. |
| 4 | Quick-Flashing | A rhythmic light in which flashes are repeated at a rate of not less than 50 flashes per minutes but less than 80 flashes per minutes. It may be: - Continuous quick-flashing: A quick-flashing light in which a flash is regularly repeated. - Group quick-flashing: A quick-flashing light in which a group of two or more flashes, which are specified in number, is regularly repeated. |
| 5 | Very Quick-Flashing | A rhythmic light in which flashes are repeated at a rate of not less than 80 flashes per minute but less than 160 flashes per minute. It may be:- Continuous very quick-flashing: A very quick-flashing light in which a flash is regularly repeated.- Group very quick-flashing: A very quick-flashing light in which a group of two or more flashes, which are specified in number, is regularly repeated. |
| 6 | Continuous Ultra Quick-Flashing | A rhythmic light in which flashes are regularly repeated at a rate of not less than 160 flashes per minute. |
| 7 | Isophased | A light with all durations of light and darkness equal. |
| 8 | Occulting | A rhythmic light in which the total duration of light in a period is clearly longer than the total duration of darkness and all the eclipses are of equal duration. It may be: - Single-occulting: An occulting light in which an eclipse is regularly repeated. - Group-occulting: An occulting light in which a group of two or more eclipses, which are specified in number, is regularly repeated. - Composite group-occulting: An occulting light in which a sequence of groups of one or more eclipses, which are specified in number, is regularly repeated, and the groups comprise different numbers of eclipses. |
| 9 | Interrupted Quick Flashing | A quick light in which the sequence of flashes is interrupted by regularly repeated eclipses of constant and long duration. |
| 10 | Interrupted Very Quick Flashing | A light in which the very rapid alterations of light and darkness are interrupted at regular intervals by eclipses of long duration. |
| 11 | Interrupted Ultra Quick-Flashing | A light in which the ultra quick flashes (160 or more per minute) are interrupted at regular intervals by eclipses of long duration. |
| 12 | Morse | A rhythmic light in which appearances of light of two clearly different durations are grouped to represent a character or characters in the Morse code. |
| 13 | Fixed and Flash | A rhythmic light in which a fixed light is combined with a flashing light of higher luminous intensity. |
| 14 | Flash and Long-Flash | A rhythmic light in which a flashing light is combined with a long-flashing light of higher luminous intensity. |
| 15 | Occulting and Flash | A rhythmic light in which an occulting light is combined with a flashing light of higher luminous intensity. |
| 16 | Fixed and Long-Flash | A rhythmic light in which a fixed light is combined with a long-flashing light of higher luminous intensity. |
| 17 | Occulting Alternating | An alternating light in which the total duration of light in each period is clearly longer than the total duration of darkness and in which the intervals of darkness (occultations) are all of equal duration. |
| 18 | Long-Flash Alternating | An alternating single-flashing light in which an appearance of light of not less than two seconds duration is regularly repeated. |
| 19 | Flash Alternating | An alternating rhythmic light in which the total duration of light in a period is clearly shorter than the total duration of darkness and all the appearances of light are of equal duration. |
| 20 | Group Alternating | Occulting light in which the occultations are combined in groups, each group including the same number of occultations, and in which the groups are repeated at regular intervals. |
| 25 | Quick-Flash Plus Long-Flash | A rhythmic light in which a group of quick flashes is followed by one or more long flashes in a regularly repeated sequence with a regular periodicity. |
| 26 | Very Quick-Flash Plus Long-Flash | A rhythmic light in which a group of very quick flashes is followed by one or more long flashes in a regularly repeated sequence with a regular periodicity. |
| 27 | Ultra Quick-Flash Plus Long-Flash | A rhythmic light in which a group of ultra quick flashes is followed by one or more long flashes in a regularly repeated sequence with a regular periodicity. |
| 28 | Alternating | A signal light that shows, in any given direction, two or more colours in a regularly repeated sequence with a regular periodicity. |
| 29 | Fixed and Alternating Flashing | A rhythmic light in which a fixed light is combined with a flashing light of higher luminous intensity and different colour. |

**5.50. Category Of Power Source**

**Definition:** -

**CamelCase:** CategoryOfPowerSource

**Alias:**

**Value type:** enumeration

**Remarks:** -

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | battery | - |
| 2 | generator | - |
| 3 | solar panel | - |
| 4 | electrical service | - |

**5.51. Category Of Synthetic AIS Aid To Navigation**

**Definition:** -

**CamelCase:** CategoryOfSyntheticAISAidtoNavigation

**Alias:**

**Value type:** enumeration

**Remarks:** -

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | predicted | - |
| 2 | monitored | - |

**5.52. Category Of Physical AIS Aid To Navigation**

**Definition:** -

**CamelCase:** CategoryOfPhysicalAISAidToNavigation

**Alias:**

**Value type:** enumeration

**Remarks:** -

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Physical AIS Type 1 | - |
| 2 | Physical AIS Type 2 | - |
| 3 | Physical AIS Type 3 | - |

**5.53. Virtual AIS Aid to Navigation Type**

**Definition:** A purpose of a virtual AIS Aid to Navigation.

**CamelCase:** virtualAISAidToNavigationType

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | North Cardinal | Indicates that it should be passed to the north side of the aid. |
| 2 | East Cardinal | Indicates that it should be passed to the east side of the aid. |
| 3 | South Cardinal | Indicates that it should be passed to the south side of the aid. |
| 4 | West Cardinal | Indicates that it should be passed to the west side of the aid. |
| 5 | Port Lateral | Indicates the port boundary of a navigational channel or suggested route when proceeding in the conventional direction of buoyage. |
| 6 | Starboard Lateral | Indicates the starboard boundary of a navigational channel or suggested route when proceeding in the conventional direction of buoyage. |
| 7 | Preferred Channel to Port | At a point where a channel divides, when proceeding in the conventional direction of buoyage, the preferred channel (or primary route) is indicated by a modified port-hand lateral mark. |
| 8 | Preferred Channel to Starboard | At a point where a channel divides, when proceeding in the conventional direction of buoyage, the preferred channel (or primary route) is indicated by a modified starboard-hand lateral mark. |
| 9 | Isolated Danger | A mark used alone to indicate a dangerous reef or shoal. The mark may be passed on either hand. |
| 10 | Safe Water | Indicates that there is navigable water around the mark. |
| 11 | Special Purpose | A special purpose aid is primarily used to indicate an area or feature, the nature of which is apparent from reference to a chart, Sailing Directions or Notice to Mariners |
| 12 | New Danger Marking | A mark used to indicate the existence of a recently identified new danger, such as a wreck. |

**5.54. MMSI Code**

**Definition:** The Maritime Mobile Service Identity (MMSI) Code is formed of a series of nine digits which are transmitted over the radio path in order to uniquely identify ship stations, ship earth stations,coast stations, coast earth stations, and group calls. These identities are formed in such a way that the identity or part thereof can be used by telephone and telex subscribers connected to the general telecommunications network principally to call ships automatically.

**CamelCase:** mMSICode

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.55. Category of Radar Transponder Beacon**

**Definition:** Classification of radar transponder beacon based on functionality.

**CamelCase:** categoryOfRadarTransponderBeacon

**Alias:** CATRTB

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Ramark, Radar Beacon Transmitting Continuously | A radar marker beacon which continuously transmits a signal appearing as a radial line on a radar screen, the line indicating the direction of the beacon. Ramarks are intended primarily for marine use. The name 'ramark' is derived from the words radar marker. |
| 2 | Racon, Radar Transponder Beacon | A radar beacon which returns a coded signal which provides identification of the beacon, as well as range and bearing. The range and bearing are indicated by the location of the first character received on the radar screen. The name 'racon' is derived from the words radar beacon. |
| 3 | Leading Racon/Radar Transponder Beacon | A radar beacon that may be used (in conjunction with at least one other radar beacon) to indicate a leading line. |

**5.56. Topmark/Daymark Shape**

**Definition:** The shape a topmark or daymark exhibits.

**CamelCase:** topmarkDaymarkShape

**Alias:** TOPSHP

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Cone (Point Up) | Is where the vertex points up. A cone is a solid figure generated by straight lines drawn from a fixed point (the vertex) to a circle in a plane not containing the vertex. Cones are commonly used as International Association of Lighthouse Authorities - IALA topmarks, lateral. |
| 2 | Cone (Point Down) | Is where the vertex points down. A cone is a solid figure generated by straight lines drawn from a fixed point (the vertex) to a circle in a plane not containing the vertex. Cones are commonly used as International Association of Lighthouse Authorities - IALA topmarks, lateral. |
| 3 | Sphere | A curved surface all points of which are equidistant from a fixed point within, called the centre. |
| 4 | 2 Spheres | Two spheres, one above the other. Two black spheres are commonly used as an International Association of Lighthouse Authorities - IALA topmark (isolated danger). |
| 5 | Cylinder | A solid geometrical figure generated by straight lines fixed in direction and describing with one of point a closed curve, especially a circle (in which case the figure is circular cylinder, it's ends being parallel circles). Cylinders are commonly used as International Association of Lighthouse Authorities - IALA topmarks lateral. |
| 6 | Board | Usually of rectangular shape, made from timber or metal and used to provide a contrast with the natural background of a daymark. The actual daymark is often painted on to this board. |
| 7 | X-Shaped | Having a shape or a cross-section like the capital letter X. An x-shape as an International Association of Lighthouse Authorities - IALA topmark should be 3 dimensional in shape. It is made of at least three crossed bars. |
| 8 | Upright Cross | A cross with one vertical member and one horizontal member; that is, similar in shape to the character '+'. |
| 9 | Cube (Point Up) | A cube standing on one of its vertexes. A cube is a solid contained by six equal squares, a regular hexahedron. |
| 10 | 2 Cones (Point to Point) | 2 cones, one above the other, with their vertices together in the centre. |
| 11 | 2 Cones (Base to Base) | 2 cones, one above the other, with their bases together in the centre and their vertices pointing up and down. |
| 12 | Rhombus | A plane figure having four equal sides and equal opposite angles (two acute and two obtuse); an oblique equilateral parallelogram. |
| 13 | 2 Cones (Points Upward) | 2 cones, one above the other, with their vertices pointing up. |
| 14 | 2 Cones (Points Downward) | 2 cones, one above the other, with their vertices pointing down. |
| 15 | Besom (Point Up) | Besom: A bundle of rods or twigs. Perch: A staff placed on top of a buoy, rock or shoal as a mark for navigation. A besom, point up is where the thicker (untied) end of the besom is at the bottom. |
| 16 | Besom (Point Down) | Besom: A bundle of rods or twigs. Perch: A staff placed on top of a buoy, rock or shoal as a mark for navigation. A besom, point down is where the thinner (tied) end of the besom is at the bottom. |
| 17 | Flag | A flag mounted on a short pole. |
| 18 | Sphere Over a Rhombus | A sphere located above a rhombus. |
| 19 | Square | A plane figure with four right angles and four equal straight sides. |
| 20 | Rectangle (Horizontal) | Where the two longer opposite sides are standing horizontally. A rectangle is a plane figure with four right angles and four straight sides, opposite sides being parallel and equal in length. |
| 21 | Rectangle (Vertical) | Where the two longer opposite sides are standing vertically. A rectangle is a plane figure with four right angles and four straight sides, opposite sides being parallel and equal in length. |
| 22 | Trapezium (Up) | A quadrilateral having one pair of opposite sides parallel, and which stands on its longer parallel side. |
| 23 | Trapezium (Down) | A quadrilateral having one pair of opposite sides parallel, and which stands on its shorter parallel side. |
| 24 | Triangle (Point Up) | A figure having three angles and three sides, and which has a vertex at the top. |
| 25 | Triangle (Point Down) | A figure having three angles and three sides, and which has a side at the top. |
| 26 | Circle | A perfectly round plane figure whose circumference is everywhere equidistant from its centre. |
| 27 | Two Upright Crosses (One Over the Other) | Two upright crosses, generally vertically disposed one above the other. |
| 28 | T-Shape | Having a shape like the capital letter T. |
| 29 | Triangle Pointing Up Over a Circle | A triangle, vertex uppermost, located above a circle. |
| 30 | Upright Cross Over a Circle | An upright cross located above a circle. |
| 31 | Rhombus Over a Circle | A rhombus located above a circle. |
| 32 | Circle Over a Triangle Pointing Up | A circle located over a triangle, vertex uppermost. |
| 33 | Other Shape (See Shape Information) | An uncommon and/or non-standardized shape as textually described using an associated attribute. |
| 34 | Tubular | Having the form of or consisting of a tube. |

**5.57. Orientation Value**

**Definition:** The angular distance measured from true north to the major axis of the feature.

**CamelCase:** orientationValue

**Alias:** ORIENT

**Value type:** real

**Remarks:** No remarks.

**5.58. Category of Special Purpose Mark**

**Definition:** Classification of an aid to navigation which signifies some special purpose.

**CamelCase:** categoryOfSpecialPurposeMark

**Alias:** CATSPM

**Value type:** enumeration

**Remarks:** A mark may be a beacon, a buoy, a signpost or may take another form.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Firing Danger Mark | A mark used to indicate a firing danger area, usually at sea. |
| 2 | Target Mark | Any object toward which something is directed. The distinctive marking or instrumentation of a ground point to aid its identification on a photograph. |
| 3 | Marker Ship Mark | A mark marking the position of a ship which is used as a target during some military exercise. |
| 4 | Degaussing Range Mark | A mark used to indicate a degaussing range. |
| 5 | Barge Mark | A mark of relevance to barges. |
| 6 | Cable Mark | A mark used to indicate the position of submarine cables or the point at which they run on to the land. |
| 7 | Spoil Ground Mark | A mark used to indicate the limit of a spoil ground. |
| 8 | Outfall Mark | A mark used to indicate the position of an outfall or the point at which it leaves the land. |
| 9 | ODAS | Ocean Data Acquisition System. |
| 10 | Recording Mark | A mark used to record data for scientific purposes. |
| 11 | Seaplane Anchorage Mark | A mark used to indicate a seaplane anchorage. |
| 12 | Recreation Zone Mark | A mark used to indicate a recreation zone. |
| 13 | Private Mark | A privately maintained mark. |
| 14 | Mooring Mark | A mark indicating a mooring or moorings. |
| 15 | LANBY | A large buoy designed to take the place of a lightship where construction of an offshore light station is not feasible. |
| 16 | Leading Mark | Aids to navigation or other indicators so located as to indicate the path to be followed. Leading marks identify a leading line when they are in transit. |
| 17 | Measured Distance Mark | A mark forming part of a transit indicating one end of a measured distance. |
| 18 | Notice Mark | A notice board or sign indicating information to the mariner. |
| 19 | TSS Mark | A mark indicating a Traffic Separation Scheme. |
| 20 | Anchoring Prohibited Mark | A mark indicating an anchoring prohibited area. |
| 21 | Berthing Prohibited Mark | A mark indicating that berthing is prohibited. |
| 22 | Overtaking Prohibited Mark | A mark indicating that overtaking is prohibited. |
| 23 | Two-Way Traffic Prohibited Mark | A mark indicating a one-way route. |
| 24 | Reduced Wake Mark | A mark indicating that vessels must not generate excessive wake. |
| 25 | Speed Limit Mark | A mark indicating that a speed limit applies. |
| 26 | Stop Mark | A mark indicating the place where the bow of a ship must stop when traffic lights show red. |
| 27 | General Warning Mark | A mark indicating that special caution must be exercised in the vicinity of the mark. |
| 28 | Sound Ship's Siren Mark | A mark indicating that a ship should sound its siren or horn. |
| 29 | Restricted Vertical Clearance Mark | A mark indicating the minimum vertical space available for passage. |
| 30 | Maximum Vessel's Draught Mark | A mark indicating the maximum draught of vessel permitted. |
| 31 | Restricted Horizontal Clearance Mark | A mark indicating the minimum horizontal space available for passage. |
| 32 | Strong Current Warning Mark | A mark warning of strong currents. |
| 33 | Berthing Permitted Mark | A mark indicating that berthing is allowed. |
| 34 | Overhead Power Cable Mark | A mark indicating an overhead power cable. |
| 35 | Channel Edge Gradient Mark | A mark indicating the gradient of the slope of a dredge channel edge. |
| 36 | Telephone Mark | A mark indicating the presence of a telephone. |
| 37 | Ferry Crossing Mark | A mark indicating that a ferry route crosses the ship route; often used with a 'sound ship's siren' mark. |
| 39 | Pipeline Mark | A mark used to indicate the position of submarine pipelines or the point at which they run on to the land. |
| 40 | Anchorage Mark | A mark indicating an anchorage area. |
| 41 | Clearing Mark | A mark used to indicate a clearing line. |
| 42 | Control Mark | A mark indicating the location at which a restriction or requirement exists. |
| 43 | Diving Mark | A mark indicating that diving may take place in the vicinity. |
| 44 | Refuge Beacon | A mark providing or indicating a place of safety. |
| 45 | Foul Ground Mark | A mark indicating a foul ground. |
| 46 | Yachting Mark | A mark installed for use by yachtsmen. |
| 47 | Heliport Mark | A mark indicating an area where helicopters may land. |
| 48 | GNSS Mark | A mark indicating a location at which a GNSS position has been accurately determined. |
| 49 | Seaplane Landing Mark | A mark indicating an area where sea-planes land. |
| 50 | Entry Prohibited Mark | A mark indicating that entry is prohibited. |
| 51 | Work in Progress Mark | A mark indicating that work (generally construction) is in progress. |
| 52 | Mark With Unknown Purpose | A mark whose detailed characteristics are unknown. |
| 53 | Wellhead Mark | A mark indicating a borehole that produces or is capable of producing oil or natural gas. |
| 54 | Channel Separation Mark | A mark indicating the point at which a channel divides separately into two channels. |
| 55 | Marine Farm Mark | A mark indicating the existence of a fish, mussel, oyster or pearl farm/culture. |
| 56 | Artificial Reef Mark | A mark indicating the existence or the extent of an artificial reef. |
| 57 | Ice Mark | A mark, used year round, that may be submerged when ice passes through the area. |
| 58 | Nature Reserve Mark | A mark used to define the boundary of a nature reserve. |
| 59 | Fish Aggregating Device | A fish aggregating (or aggregation) device (FAD) is a man-made object used to attract ocean going pelagic fish such as marlin, tuna and mahi-mahi (dolphin fish). They usually consist of buoys or floats tethered to the ocean floor with concrete blocks. |
| 60 | Wreck Mark | A mark used to indicate the existence of a wreck. |
| 61 | Customs Mark | A mark used to indicate the existence of a customs checkpoint. |
| 62 | Causeway Mark | A mark used to indicate the existence of a causeway. |
| 63 | Wave Recorder | A surface following buoy used to measure wave activity. |
| 64 | Jetski Prohibited | A mark indicating a jetski prohibited area. |

**5.59. Estimated Range of Transmission**

**Definition:** The estimated range of a non-optical electromagnetic transmission.

**CamelCase:** estimatedRangeOfTransmission

**Alias:** ESTRNG

**Value type:** real

**Remarks:** The estimated range (distance) assumes 'in vacuo' transmission and a standard antenna height of 5 metres. Thus it gives a hint to the mariner whether they are likely to receive transmission at a certain distance from an object.

**5.60. Category of Radio Station**

**Definition:** Classification of radio services offered by a radio station.

**CamelCase:** categoryOfRadioStation

**Alias:** CATROS

**Value type:** enumeration

**Remarks:** A radiobeacon is a radio transmitter which emits a distinctive or characteristic signal on which a bearing may be taken.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Circular (Non-Directional) Marine or Aero-Marine Radiobeacon | A radio station which need not necessarily be manned, the emissions of which, radiated around the horizon, enable its bearing to be determined by means of the radio direction finder of a ship. |
| 2 | Directional Radiobeacon | A special type of radiobeacon station the emissions of which are intended to provide a definite track for guidance. |
| 3 | Rotating Pattern Radiobeacon | A special type of radiobeacon station emitting a beam of waves to which a uniform turning movement is given, the bearing of the station being determined by means of an ordinary listening receiver and a stop watch. Also referred to as a rotating loop radiobeacon. |
| 4 | Consol Beacon | A type of long range position fixing beacon. |
| 5 | Radio Direction-Finding Station | A radio station intended to determine only the direction of other stations by means of transmission from the latter. |
| 6 | Coast Radio Station Providing QTG Service | A radio station which is prepared to provide QTG service; that is to say, to transmit upon request from a ship a radio signal, the bearing of which can be taken by that ship. |
| 7 | Aeronautical Radiobeacon | A radio beacon designed for aeronautical use. |
| 8 | Decca | The Decca Navigator System is a high accuracy, short to medium range radio navigational aid intended for coastal and landfall navigation. |
| 9 | Loran C | A low frequency electronic position fixing system using pulsed transmissions at 100 Khz. |
| 10 | Differential GNSS | A radiobeacon transmitting DGPS correction signals. |
| 11 | Toran | An electronic position fixing system used mainly by aircraft. |
| 12 | Omega | A long-range radio navigational aid which operates within the VLF frequency band. The system comprises eight land based stations. |
| 13 | Syledis | A ranging position fixing system operating at 420-450 MHz over a range of up to 400 Km. |
| 14 | Chaika | Chaika is a low frequency electronic position fixing system using pulsed transmissions at 100 Khz. |
| 19 | Radio Telephone Station | The equipment needed at one station to carry on two way voice communication by radio waves only. |
| 20 | AIS Base Station | An onshore AIS unit that monitors traffic in the waterways. |

**5.61. Type of Environmental Observation Equipment**

**Definition:** Type of sensor used to observe the environment. For example Anemometer, fog monitor, etc.

**CamelCase:** typeOfEnvironmentalObservationEquipment

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.62. Value of Maximum Range**

**Definition:** The extreme distance at which an feature can be seen or a signal detected.

**CamelCase:** valueOfMaximumRange

**Alias:** VALMXR

**Value type:** real

**Remarks:** Does not apply to lights where the 'value of nominal range' should be used.

**5.63. Signal Period**

**Definition:** The time occupied by an entire cycle of intervals of light and eclipse.

**CamelCase:** signalPeriod

**Alias:** SIGPER

**Value type:** real

**Remarks:** No remarks.

**5.64. Signal Output**

**Definition:** Strength of signal output.

**CamelCase:** signalOutput

**Alias:**

**Value type:** real

**Remarks:** No remarks.

**5.65. Signal Group**

**Definition:** The number of signals, the combination of signals or the morse character(s) within one period of full sequence.

**CamelCase:** signalGroup

**Alias:** SIGGRP

**Value type:** text

**Remarks:** No remarks.

**5.66. Signal Frequency**

**Definition:** The frequency of a signal.

**CamelCase:** signalFrequency

**Alias:** SIGFRQ

**Value type:** integer

**Remarks:** No remarks.

**5.67. Category of Fog Signal**

**Definition:** Classification of the various means of generating the fog signal.

**CamelCase:** categoryOfFogSignal

**Alias:** CATFOG

**Value type:** enumeration

**Remarks:** The classification 'horn' is the generic term for fog signals 'nautophone', 'reed' and 'tyfon'.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Explosive | A signal produced by the firing of explosive charges. |
| 2 | Diaphone | A diaphone uses compressed air and generally emits a powerful low-pitched sound, which often concludes with a brief sound of suddenly lowered pitch, termed the 'grunt'. |
| 3 | Siren | A type of fog signal apparatus which produces sound by virtue of the passage of air through slots or holes in a revolving disk. |
| 4 | Nautophone | A horn having a diaphragm oscillated by electricity. |
| 5 | Reed | [1] A reed uses compressed air and emits a weak, high pitched sound. [2] Any of various water or marsh plants with a firm stem. (Concise Oxford English Dictionary) |
| 6 | Tyfon | A diaphragm horn which operates under the influence of compressed air or steam. |
| 7 | Bell | A ringing sound with a short range. |
| 8 | Whistle | A distinctive sound made by a jet of air passing through an orifice. The apparatus may be operated automatically, by hand or by air being forced up a tube by waves acting on a buoy. |
| 9 | Gong | A sound produced by vibration of a disc when struck. |
| 10 | Horn | A horn uses compressed air or electricity to vibrate a diaphragm and exists in a variety of types which differ greatly in their sound and power. |

**5.68. Value of Nominal Range**

**Definition:** The luminous range of a light in a homogenous atmosphere in which the meteorological visibility is 10 sea miles.

**CamelCase:** valueOfNominalRange

**Alias:** VALNMR

**Value type:** real

**Remarks:** No remarks.

**5.69. Value of Luminous Range**

**Definition:** The greatest distance at which a light can be seen merely as a function of its luminous intensity, the meteorological visibility, and the sensitivity of the observer's eye.

**CamelCase:** valueOfLuminousRange

**Alias:**

**Value type:** real

**Remarks:** No remarks.

**5.70. Value of Geographic Range**

**Definition:** The greatest distance at which a light can be seen as a function of the curvature of the earth and the heights of the light source and the observer.

**CamelCase:** valueOfGeographicRange

**Alias:**

**Value type:** real

**Remarks:** No remarks.

**5.71. Major Light**

**Definition:** A statement expressing if a light is considered to be a major light in terms of ECDIS display in a particular area.

**CamelCase:** majorLight

**Alias:**

**Value type:** boolean

**Remarks:** Major light is only intended to provide an indication to the ECDIS that the light is considered to be an important light in terms of its display. As such this is a cartographic attribute to aid the compiler in determining the most appropriate display for a light; it is not intended to be used as a formal classification method for lights.

**5.72. Light Visibility**

**Definition:** The specific visibility of a light, with respect to the light's intensity and ease of recognition.

**CamelCase:** lightVisibility

**Alias:** LITVIS

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | High Intensity | Non-marine lights with a higher power than marine lights and visible from well off shore (often 'Aero' lights). |
| 2 | Low Intensity | Non-marine lights with lower power than marine lights. |
| 3 | Faint | A decrease in the apparent intensity of a light which may occur in the case of partial obstructions. |
| 4 | Intensified | A light in a sector is intensified (that is, has longer range than other sectors). |
| 5 | Unintensified | A light in a sector is unintensified (that is, has shorter range than other sectors). |
| 6 | Visibility Deliberately Restricted | A light sector is deliberately reduced in intensity, for example to reduce its effect on a built-up area. |
| 7 | Obscured | Said of the arc of a light sector designated by its limiting bearings in which the light is not visible from seaward. |
| 8 | Partially Obscured | This value specifies that parts of the sector are obscured. |
| 9 | Visible in Line of Range | Lights that must in line to be visible. |

**5.73. Signal Generation**

**Definition:** The mechanism used to generate a fog or light signal.

**CamelCase:** signalGeneration

**Alias:** SIGGEN

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Automatically | Signal generation is initiated by a self regulating mechanism such as a timer or light sensor. |
| 2 | By Wave Action | The signal is generated by the motion of the sea surface such as a bell in a buoy. |
| 3 | By Hand | The signal is generated by a manually operated mechanism such as a hand cranked siren. |
| 4 | By Wind | The signal is generated by the motion of air such as a wind driven whistle. |
| 5 | Radio Activated | Activated by radio signal. |
| 6 | Call Activated | Activated by making a call to a manned station. |

**5.74. Exhibition Condition of Light**

**Definition:** The outward display of the light.

**CamelCase:** exhibitionConditionOfLight

**Alias:** EXCLIT

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Light Shown Without Change of Character | A light shown throughout the 24 hours without change of character. |
| 2 | Daytime Light | A light which is only exhibited by day. |
| 3 | Fog Light | A light which is exhibited in fog or conditions of reduced visibility. |
| 4 | Night Light | A light which is only exhibited at night. |

**5.75. Category of Light**

**Definition:** Classification of different light types.

**CamelCase:** categoryOfLight

**Alias:** CATLIT

**Value type:** enumeration

**Remarks:** All lights are considered to be marine lights unless the category of light indicates otherwise.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Directional Function | A light illuminating a sector of very narrow angle and intended to mark a direction to follow. |
| 4 | Leading Light | A light associated with other lights so as to form a leading line to be followed. |
| 5 | Aero Light | An aero light is established for aeronautical navigation and may be of higher power than marine lights and visible from well offshore. |
| 6 | Air Obstruction Light | A light marking an obstacle which constitutes a danger to air navigation. |
| 8 | Flood Light | A broad beam light used to illuminate a structure or area. |
| 9 | Strip Light | A light whose source has a linear form generally horizontal, which can reach a length of several metres. |
| 10 | Subsidiary Light | A light placed on or near the support of a main light and having a special use in navigation. |
| 11 | Spotlight | A powerful light focused so as to illuminate a small area. |
| 12 | Front | Term used with leading lights to describe the position of the light on the lead as viewed from seaward. |
| 13 | Rear | Term used with leading lights to describe the position of the light on the lead as viewed from seaward. |
| 14 | Lower | Term used with leading lights to describe the position of the light on the lead as viewed from seaward. |
| 15 | Upper | Term used with leading lights to describe the position of the light on the lead as viewed from seaward. |
| 17 | Emergency | A light available as a backup to a main light which will be illuminated should the main light fail. |
| 18 | Bearing Light | A light which enables its approximate bearing to be obtained without the use of a compass. |
| 19 | Horizontally Disposed | A group of lights of identical character and almost identical position, that are disposed horizontally. |
| 20 | Vertically Disposed | A group of lights of identical character and almost identical position, that are disposed vertically. |

**5.76. Traffic Flow**

**Definition:** Direction of vessels passing a reference point.

**CamelCase:** trafficFlow

**Alias:** TRAFIC

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Inbound | Traffic flow in a general direction toward a port or similar destination. |
| 2 | Outbound | Traffic flow in a general direction away from a port or similar point of origin. |
| 3 | One-Way | Traffic flow in one general direction only. |
| 4 | Two-Way | Traffic flow in two generally opposite directions. |

**5.77. Technique of Vertical Measurement**

**Definition:** Survey method used to obtain depth information.

**CamelCase:** techniqueOfVerticalMeasurement

**Alias:** TECSOU

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Found by Echo Sounder | The depth was determined by using an instrument that determines depth of water by measuring the time interval between emission of a sonic or ultrasonic signal and return of its echo from the bottom. |
| 2 | 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 seabed and generate a record of the seabed configuration. |
| 3 | Found by Multi Beam | 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. |
| 4 | Found by Diver | The depth was determined by a person skilled in the practice of diving. |
| 5 | Found by Lead Line | The depth was determined by using a line, graduated with attached marks and fastened to a sounding lead. |
| 6 | 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. |
| 7 | 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. |
| 8 | 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. |
| 9 | Found by Electromagnetic Sensor | The depth was determined by using an instrument that compares electromagnetic signals. |
| 10 | Photogrammetry | The science or art of obtaining reliable measurements from photographs. |
| 11 | Satellite Imagery | The depth was determined by using instruments placed aboard an artificial satellite. |
| 12 | Found by Levelling | The depth was determined by using levelling techniques to find the elevation of the point relative to a datum. |
| 13 | 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. |
| 14 | Computer Generated | The sounding was determined from a bottom model constructed using a computer. |
| 15 | Found by LIDAR | The depth was measured 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. |
| 16 | Synthetic Aperture Radar | A radar with a synthetic aperture antenna which is composed of a large number of elementary transducing elements. The signals are electronically combined into a resulting signal equivalent to that of a single antenna of a given aperture in a given direction. |
| 17 | Hyperspectral Imagery | Term used to describe the imagery derived from subdividing the electromagnetic spectrum into very narrow bandwidths. These narrow bandwidths may be combined with or subtracted from each other in various ways to form images useful in precise terrain or target analysis. |

**5.78. Quality of Vertical Measurement**

**Definition:** The reliability of the value of a sounding.

**CamelCase:** qualityOfVerticalMeasurement

**Alias:** QUASOU

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Depth Known | The depth from the chart datum to the seabed (or to the top of a drying feature) is known. |
| 2 | Depth or Least Depth Unknown | The depth from chart datum to the seabed, or the shoalest depth of the feature is unknown. |
| 3 | Doubtful Sounding | A depth that may be less than indicated. |
| 4 | Unreliable Sounding | A depth that is considered to be an unreliable value. |
| 5 | No Bottom Found at Value Shown | Upon investigation the bottom was not found at this depth. |
| 6 | Least Depth Known | The shoalest depth over a feature is of known value. |
| 7 | Least Depth Unknown, Safe Clearance at Value Shown | The least depth over a feature is unknown, but there is considered to be safe clearance at this depth. |
| 8 | Value Reported (Not Surveyed) | Depth value obtained from a report, but not fully surveyed. |
| 9 | Value Reported (Not Confirmed) | Depth value obtained from a report, which it has not been possible to confirm. |
| 10 | Maintained Depth | The depth at which a channel is kept by human influence, usually by dredging. |
| 11 | Not Regularly Maintained | Depths may be altered by human influence, but will not be routinely maintained. |

**5.79. Maximal Permitted Draught**

**Definition:** The maximal permitted draught of a vessel or convoy according to the particular article/clause of the applicable law/regulation.

**CamelCase:** maximalPermittedDraught

**Alias:** lg\_drt

**Value type:** real

**Remarks:** No remarks.

**5.80. Depth Range Minimum Value**

**Definition:** The minimum (shoalest) value of a depth range.

**CamelCase:** depthRangeMinimumValue

**Alias:** DRVAL1

**Value type:** real

**Remarks:** Where the area dries, the value is negative.

**5.81. Based On Fixed Marks**

**Definition:** A straight route (known as a recommended track, range or leading line), which comprises: a. at least two structures (usually beacons or daymarks) and/or natural features, which may carry lights and/or top-marks. The structures/features are positioned so that when observed to be in line, a vessel can follow a known bearing with safety. (Adapted from International Association of Lighthouse Authorities - IALA Aids to Navigation Guide, 1990); or b. a single structure or natural feature, which may carry lights and/or a topmark, and a specified bearing which can be followed with safety. (S-57 Edition 3.1, Appendix A Chapter 2, Page 2.72, November 2000, as amended).

**CamelCase:** basedOnFixedMarks

**Alias:** CATTRK = 1

**Value type:** boolean

**Remarks:** No remarks.

**5.82. Category of Navigation Line**

**Definition:** Classification of route guidance given to vessels.

**CamelCase:** categoryOfNavigationLine

**Alias:** CATNAV

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Clearing Line | A straight line that marks the boundary between a safe and a dangerous area or that passes clear of a navigational danger. |
| 2 | Transit Line | A line passing through one or more fixed marks. |
| 3 | Leading Line Bearing a Recommended Track | A line passing through one or more clearly defined objects, along the path of which a vessel can approach safely up to a certain distance off. |

**5.83. Category of Lateral Mark**

**Definition:** Classification of lateral marks in the IALA Buoyage System.

**CamelCase:** categoryOfLateralMark

**Alias:** CATLAM

**Value type:** enumeration

**Remarks:** There are two international buoyage regions, A and B, between which lateral marks differ. When top-marks, retro reflectors and/or lights are fitted to these marks, they are encoded as separate features.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Port-Hand Lateral Mark | Indicates the port boundary of a navigational channel or suggested route when proceeding in the "conventional direction of buoyage". |
| 2 | Starboard-Hand Lateral Mark | Indicates the starboard boundary of a navigational channel or suggested route when proceeding in the "conventional direction of buoyage". |
| 3 | Preferred Channel to Starboard Lateral Mark | At a point where a channel divides, when proceeding in the "conventional direction of buoyage", the preferred channel (or primary route) is indicated by a modified port-hand lateral mark. |
| 4 | Preferred Channel to Port Lateral Mark | At a point where a channel divides, when proceeding in the "conventional direction of buoyage", the preferred channel (or primary route) is indicated by a modified starboard-hand lateral mark. |
| 5 | Right-Hand Side of the Waterway | Indicates the right-hand side of the inland waterway. |
| 6 | Left-Hand Side of the Waterway | Indicates the left-hand side of the inland waterway. |
| 7 | Right-Hand Side of the Channel | Indicates the right-hand side of a channel of an inland waterway. |
| 8 | Left-Hand Side of the Channel | Indicates the left-hand side of a channel of an inland waterway. |
| 9 | Bifurcation of the Waterway | Indicates a bifurcation of the inland waterway. |
| 10 | Bifurcation of the Channel | Indicates a bifurcation of a channel of an inland waterway. |
| 11 | Channel Near the Right Bank | Indicates that the channel is near the right bank. |
| 12 | Channel Near the Left Bank | Indicates that the channel is near the left bank. |
| 13 | Channel Cross-Over to the Right Bank | Indicates that the channel crosses from the left to the right bank. |
| 14 | Channel Cross-Over to the Left Bank | Indicates that the channel crosses from the right to the left bank. |
| 15 | Danger Point or Obstacles at the Right-Hand Side | Indicates a danger point or obstacles at the right-hand side. |
| 16 | Danger Point or Obstacles at the Left-Hand Side | Indicates a danger point or obstacles at the left-hand side. |
| 17 | Turn Off at the Right-Hand Side | Indicates a turn off at the right-hand side. |
| 18 | Turn Off at the Left-Hand Side | Indicates a turn off at the left-hand side. |
| 19 | Junction at the Right-Hand Side | Indicates a junction at the right-hand side. |
| 20 | Junction at the Left-Hand Side | Indicates a junction at the left-hand side. |
| 21 | Harbour Entry at the Right-Hand Side | Indicates a harbour entry at the right-hand side. |
| 22 | Harbour Entry at the Left-Hand Side | Indicates a harbour entry at the left-hand side. |
| 23 | Bridge Pier Mark | Indicates a bridge pier in an inland waterway. |
| 24 | Entry From a Lake to a Narrower Waterway, Right Bank | Indicates the right bank of the entry from a lake or a lake-like expansion to a section of the waterway which is narrower. |
| 25 | Entry From a Lake to a Narrower Waterway, Left Bank | Indicates the left bank of the entry from a lake or a lake-like expansion to a section of the waterway which is narrower. |
| 26 | Change Bank | Change bank. |
| 27 | Continue Along Bank | Continue along bank. |

**5.84. Manned Structure**

**Definition:** An expression of the feature being permanently manned or not.

**CamelCase:** mannedStructure

**Alias:**

**Value type:** boolean

**Remarks:** No remarks.

**5.85. Vertical Datum**

**Definition:** The reference level used for expressing the vertical measurements of points on the earth's surface. Also called datum level, reference plane, levelling datum, datum for sounding reduction, datum for heights.

**CamelCase:** verticalDatum

**Alias:** VERDAT Datum Level Reference Plane Levelling Datum Datum for Sounding Reduction Datum for Heights

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Mean Low Water Springs | The average height of the low waters of spring tides. This level is used as a tidal datum in some areas. Also called spring low water. |
| 2 | Mean Lower Low Water Springs | The average height of lower low water springs at a place. |
| 3 | Mean Sea Level | 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. |
| 4 | Lowest Low Water | An arbitrary level conforming to the lowest tide observed at a place, or some what lower. |
| 5 | Mean Low Water | The average height of all low waters at a place over a 19-year period. |
| 6 | 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. |
| 7 | Approximate Mean Low Water Springs | An arbitrary level, usually within 0.3m from that of Mean Low Water Springs (MLWS). |
| 8 | Indian Spring Low Water | An arbitrary tidal datum approximating the level of the mean of the lower low water at spring tides. It was first used in waters surrounding India. |
| 9 | Low Water Springs | An arbitrary level, approximating that of mean low water springs (MLWS). |
| 10 | Approximate Lowest Astronomical Tide | An arbitrary level, usually within 0.3m from that of Lowest Astronomical Tide (LAT). |
| 11 | 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). |
| 12 | Mean Lower Low Water | The average height of the lower low waters at a place over a 19-year period. |
| 13 | Low Water | The lowest level reached at a place by the water surface in one oscillation. Also called low tide. |
| 14 | Approximate Mean Low Water | An arbitrary level, usually within 0.3m from that of Mean Low Water (MLW). |
| 15 | Approximate Mean Lower Low Water | An arbitrary level, usually within 0.3m from that of Mean Lower Low Water (MLLW). |
| 16 | Mean High Water | The average height of all high waters at a place over a 19-year period. |
| 17 | Mean High Water Springs | The average height of the high waters of spring tides. Also called spring high water. |
| 18 | High Water | The highest level reached at a place by the water surface in one oscillation. |
| 19 | Approximate Mean Sea Level | An arbitrary level, usually within 0.3m from that of Mean Sea Level (MSL). |
| 20 | High Water Springs | An arbitrary level, approximating that of mean high water springs (MHWS). |
| 21 | Mean Higher High Water | The average height of higher high waters at a place over a 19-year period. |
| 22 | Equinoctial Spring Low Water | The level of low water springs near the time of an equinox. |
| 23 | Lowest Astronomical Tide | The lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. |
| 24 | Local Datum | An arbitrary datum defined by a local harbour authority, from which levels and tidal heights are measured by this authority. |
| 25 | International Great Lakes Datum 1985 | A vertical reference system with its zero based on the mean water level at Rimouski/Pointe-au-Pere, Quebec, over the period 1970 to 1988. |
| 26 | Mean Water Level | The average of all hourly water levels over the available period of record. |
| 27 | Lower Low Water Large Tide | The average of the lowest low waters, one from each of 19 years of observations. |
| 28 | Higher High Water Large Tide | The average of the highest high waters, one from each of 19 years of observations. |
| 29 | Nearly Highest High Water | An arbitrary level approximating the highest water level observed at a place, usually equivalent to the high water springs. |
| 30 | Highest Astronomical Tide | The highest tidal level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. |
| 31 | Local Low Water Reference Level | Low water reference level of the local area. |
| 32 | Local High Water Reference Level | High water reference level of the local area. |
| 33 | Local Mean Water Reference Level | Mean water reference level of the local area. |
| 34 | Equivalent Height of Water (German GlW) | A low water level which is the result of a defined low water discharge - called "equivalent discharge". |
| 35 | Highest Shipping Height of Water (German HSW) | Upper limit of water levels where navigation is allowed. |
| 36 | Reference Low Water Level According to Danube Commission | The water level at a discharge, which is exceeded 94 % of the year within a period of 30 years. |
| 37 | Highest Shipping Height of Water According to Danube Commission | The water level at a discharge, which is exceeded 1% of the year within a period of 30 years. |
| 38 | Dutch River Low Water Reference Level (OLR) | The water level at a discharge, which is exceeded 95% of the year within a period of 20 years. |
| 39 | Russian Project Water Level | Conditional low water level with established probability. |
| 40 | Russian Normal Backwater Level | Highest water level derived from the upper backwater stream in watercourse or reservoir under the normal operational conditions. |
| 41 | Ohio River Datum | The Ohio River datum. |
| 43 | Dutch High Water Reference Level | Dutch High Water Reference Level. |
| 44 | Baltic Sea Chart Datum 2000 | The datum refers to each Baltic country's realization of the European Vertical Reference System (EVRS) with land-uplift epoch 2000, which is connected to the Normaal Amsterdams Peil (NAP). |
| 45 | Dutch Estuary Low Water Reference Level (OLW) | Dutch Estuary Low Water Reference Level (OLW) |

**5.86. Function**

**Definition:** A specific role that describes a feature.

**CamelCase:** function

**Alias:** FUNCTN

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 2 | Harbour-Masters Office | A local official who has charge of mooring and berthing of vessels, collecting harbour fees, etc. |
| 3 | Customs Office | Serves as a government office where customs duties are collected, the flow of goods are regulated and restrictions enforced, and shipments or vehicles are cleared for entering or leaving a country. |
| 4 | Health Office | The office which is charged with the administration of health laws and sanitary inspections. |
| 5 | Hospital | An institution or establishment providing medical or surgical treatment for the ill or wounded. |
| 6 | Post Office | The public department, agency or organisation responsible primarily for the collection, transmission and distribution of mail. |
| 7 | Hotel | An establishment, especially of a comfortable or luxurious kind, where paying visitors are provided with accommodation, meals and other services. |
| 8 | Railway Station | A building with platforms where trains arrive, load, discharge and depart. |
| 9 | Police Station | The headquarters of a local police force and that is where those under arrest are first charged. |
| 10 | Water-Police Station | The headquarters of a local water-police force. |
| 11 | Pilot Office | The office or headquarters of pilots; the place where the services of a pilot may be obtained. |
| 12 | Pilot Lookout | A distinctive structure or place on shore from which personnel keep watch upon events at sea or along the coast. |
| 13 | Bank Office | An office for custody, deposit, loan, exchange or issue of money. |
| 14 | Headquarters for District Control | The quarters of an executive officer (director, manager, etc.) with responsibility for an administrative area. |
| 15 | Transit Shed/Warehouse | A building or part of a building for storage of wares or goods. |
| 16 | Factory | A building or buildings with equipment for manufacturing; a workshop. |
| 17 | Power Station | A stationary plant containing apparatus for large scale conversion of some form of energy (such as hydraulic, steam, chemical or nuclear energy) into electrical energy. |
| 18 | Administrative | A building for the management of affairs. |
| 19 | Educational Facility | A building concerned with education (for example school, college, university, etc). |
| 20 | Church | A building for public Christian worship. |
| 21 | Chapel | A place for Christian worship other than a parish, cathedral or church, especially one attached to a private house or institution. |
| 22 | Temple | A building for public Jewish worship. |
| 23 | Pagoda | A Hindu or Buddhist temple or sacred building. |
| 24 | Shinto Shrine | A building for public Shinto worship. |
| 25 | Buddhist Temple | A building for public Buddhist worship. |
| 26 | Mosque | A Muslim place of worship. |
| 27 | Marabout | A shrine marking the burial place of a Muslim holy man. |
| 28 | Lookout | Keeping a watch upon events at sea or along the coast. |
| 29 | Communication | Transmitting and/or receiving electronic communication signals. |
| 30 | Television | A system for reproducing on a screen visual images transmitted (usually with sound) by radio signals. |
| 31 | Radio | Transmitting and/or receiving radio-frequency electromagnetic waves as a means of communication. |
| 32 | Radar | A method, system or technique of using beamed, reflected, and timed radio waves for detecting, locating, or tracking objects, and for measuring altitudes. |
| 33 | Light Support | A structure serving as a support for one or more lights. |
| 34 | Microwave | Broadcasting and receiving signals using microwaves. |
| 35 | Cooling | Generation of chilled liquid and/or gas for cooling purposes. |
| 36 | Observation | A place from which the surroundings can be observed but at which a watch is not habitually maintained. |
| 37 | Timeball | A visual time signal in the form of a ball. |
| 38 | Clock | Instrument for measuring time and recording hours. |
| 39 | Control | Used to control the flow of traffic within a specified range of an installation. |
| 40 | Airship Mooring | Equipment or structure to secure an airship. |
| 41 | Stadium | An arena for holding and viewing events. |
| 42 | Bus Station | A building where buses and coaches regularly stop to take on and/or let off passengers, especially for long-distance travel. |
| 43 | Passenger Terminal Building | A building within a terminal for the loading and unloading of passengers. |
| 44 | Sea Rescue Control | A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region. |
| 45 | Observatory | A building designed and equipped for making observations of astronomical, meteorological, or other natural phenomena. |
| 46 | Ore Crusher | A building or structure used to crush ore. |
| 47 | Boathouse | A building or shed, usually built partly over water, for sheltering a boat or boats. |
| 48 | Pumping Station | A facility to move solids, liquids or gases by means of pressure or suction. |

**5.87. Category of Landmark**

**Definition:** Classification of prominent cultural and natural features in the landscape.

**CamelCase:** categoryOfLandmark

**Alias:** CATLMK

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Cairn | A mound of stones, usually conical or pyramidal, raised as a landmark or to designate a point of importance in surveying. |
| 2 | Cemetery | A site and associated structures devoted to the burial of the dead. |
| 3 | Chimney | A vertical structure containing a passage or flue for discharging smoke and gases of combustion. |
| 4 | Dish Aerial | A parabolic aerial for the receipt and transmission of high frequency radio signals. |
| 5 | Flagstaff | A staff or pole on which flags are raised. |
| 6 | Flare Stack | A tall structure used for burning-off waste oil or gas. |
| 7 | Mast | A relatively tall structure usually held vertical by guy lines. |
| 8 | Windsock | A tapered fabric sleeve mounted so as to catch and swing with the wind, thus indicating the wind direction. |
| 9 | Monument | A structure erected and/or maintained as a memorial to a person and/or event. |
| 10 | Column/Pillar | A cylindrical or slightly tapering body of considerably greater length than diameter erected vertically. |
| 11 | Memorial Plaque | A slab of metal, usually ornamented, erected as a memorial to a person or event. |
| 12 | Obelisk | A tapering shaft usually of stone or concrete, square or rectangular in section, with a pyramidal apex. |
| 13 | Statue | A representation of a living being, sculptured, moulded, or cast in a variety of materials (for example: marble, metal, or plaster). |
| 14 | Cross | A monument, or other structure in form of a cross. |
| 15 | Dome | A landmark comprising a hemispherical or spheroidal shaped structure. |
| 16 | Radar Scanner | A device used for directing a radar beam through a search pattern. |
| 17 | Tower | A relatively tall, narrow structure that may either stand alone or may form part of another structure. |
| 18 | Windmill | A system of vanes attached to a tower and driven by wind (excluding wind turbines). |
| 19 | Windmotor | A modern structure for the use of wind power. |
| 20 | Spire/Minaret | A tall conical or pyramid-shaped structure often built on the roof or tower of a building, especially a church or mosque. |
| 21 | Large Rock or Boulder on Land | An isolated rocky formation or a single large stone. |
| 22 | Triangulation Mark | A recoverable point on the earth, whose geographic position has been determined by angular methods with geodetic instruments. A triangulation point is a selected point, which has been marked with a station mark, or it is a conspicuous natural or artificial feature. |
| 23 | Boundary Mark | A marker identifying the location of a surveyed boundary line. |
| 24 | Observation Wheel | Wheels with passenger cars mounted external to the rim and independently rotated by electric motors. |
| 25 | Torii | A form of decorative gateway or portal, consisting of two upright wooden posts connected at the top by two horizontal crosspieces, commonly found at the entrance to Shinto temples. |
| 26 | Bridge | (1) An elevated structure extending across or over the weather deck of a vessel, or part of such a structure. The term is sometimes modified to indicate the intended use, such as navigating bridge or signal bridge. (2) A structure erected over a depression or an obstacle such as a body of water, railroad, etc., to provide a roadway for vehicles or pedestrians. |
| 27 | Dam | A barrier to check or confine anything in motion; particularly one constructed to hold back water and raise its level to form a reservoir, or to prevent flooding. |

**5.88. Type of Buoy**

**Definition:** Type equipment used as a buoy in a particular installation.

**CamelCase:** typeOfBuoy

**Alias:**

**Value type:** text

**Remarks:** Types of light buoy; for example LANBY-100, LS-35, LL-30, LL-28, LL-26, LL-26(M), LL-24, LS-24, LSP-24, LT-10Types of buoy e.g. U-17C(P), U-17S(P), U-17C(S), U-17S(S), UR-17C(P), UR-17S(P), UR-17C(S), UR-17.

**5.89. Buoy Shape**

**Definition:** The principal shape and/or design of a buoy.

**CamelCase:** buoyShape

**Alias:** BOYSHP

**Value type:** enumeration

**Remarks:** The principal shapes are those recommended in the International Association of Lighthouse Authorities - IALA System.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Conical | The upper part of the body above the water-line, or the greater part of the superstructure, has approximately the shape or the appearance of a pointed cone with the point upwards. |
| 2 | Can | The upper part of the body above the water-line, or the greater part of the superstructure, has the shape of a cylinder, or a truncated cone that approximates to a cylinder, with a flat end uppermost. |
| 3 | Spherical | Shaped like a sphere, which is a body the surface of which is at all points equidistant from the centre. |
| 4 | Pillar | The upper part of the body above the water-line, or the greater part of the superstructure is a narrow vertical structure, pillar or lattice tower. |
| 5 | Spar | The upper part of the body above the water-line, or the greater part of the superstructure, has the form of a pole, or of a very long cylinder, floating upright. |
| 6 | Barrel | The upper part of the body above the water-line, or the greater part of the superstructure, has the form of a barrel or cylinder floating horizontally. |
| 7 | Superbuoy | A very large buoy designed to carry a signal light of high luminous intensity at a high elevation. |
| 8 | Ice Buoy | A specially constructed shuttle shaped buoy which is used in ice conditions. |

**5.90. Visual Prominence**

**Definition:** The extent to which a feature, either natural or artificial, is visible from seaward.

**CamelCase:** visualProminence

**Alias:** CONVIS

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Visually Conspicuous | Term applied to a feature either natural or artificial which is distinctly and notably visible from seaward. |
| 2 | Not Visually Conspicuous | An object that may be visible from seaward, but cannot be used as a fixing mark and is not conspicuous. |
| 3 | Prominent | Objects which are easily identifiable, but do not justify being classed as conspicuous. |

**5.91. Vertical Length**

**Definition:** The total vertical length of a feature.

**CamelCase:** verticalLength

**Alias:** VERLEN

**Value type:** real

**Remarks:** For floating objects: the vertical distance from the surface of water to the highest point of that object. For fixed objects: the vertical distance from seabed or ground to the highest point of that object. For objects on top of other objects: the vertical distance from the lowest to the highest point of that object. Vertical length measurements do not require a datum.

**5.92. Status**

**Definition:** The condition of an object at a given instant in time.

**CamelCase:** status

**Alias:** STATUS

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Permanent | Intended to last or function indefinitely. |
| 2 | Occasional | Acting on special occasions; happening irregularly. |
| 3 | Recommended | Presented as worthy of confidence, acceptance, use, etc. |
| 4 | Not in Use | Use has ceased, but the facility still exists intact; disused. |
| 5 | Periodic/Intermittent | Recurring at intervals. |
| 6 | Reserved | Set apart for some specific use. |
| 7 | Temporary | Meant to last only for a time. |
| 8 | Private | Administered by an individual or corporation, rather than a State or a public body. |
| 9 | Mandatory | Compulsory; enforced. |
| 11 | Extinguished | No longer lit. |
| 12 | Illuminated | Lit by floodlights, strip lights, etc. |
| 13 | Historic | Famous in history; of historical interest. |
| 14 | Public | Belonging to, available to, used or shared by, the community as a whole and not restricted to private use. |
| 15 | Synchronized | Occur at a time, coincide in point of time, be contemporary or simultaneous. |
| 16 | Watched | Looked at or observed over a period of time especially so as to be aware of any movement or change. |
| 17 | Unwatched | Usually automatic in operation, without any permanently-stationed personnel to superintend it. |
| 18 | Existence Doubtful | A feature that has been reported but has not been definitely determined to exist. |
| 19 | On Request | When you ask for it. |
| 20 | Drop Away | To become lower in level. |
| 21 | Rising | To become higher in level. |
| 22 | Increasing | Becoming larger in magnitude. |
| 23 | Decreasing | Becoming smaller in magnitude. |
| 24 | Strong | Not easily broken or destroyed. |
| 25 | Good | In a satisfactory condition to use. |
| 26 | Moderately | Fairly but not very. |
| 27 | Poor | Not as good as it could be or should. |
| 28 | Buoyed | Marked by buoys. |
| 29 | Fully Operational | Entire observation platform is operating in accordance with, or exceeding, manufacturer specifications. |
| 30 | Partially Operational | At least one instrument that is part of an observation platform is not operating to manufacturer specification. |
| 31 | Drifting | Floating platform at the mercy of environmental elements, whether intentional or not. |
| 32 | Broken | Fractured or in pieces. |
| 33 | Offline | Observation platform is intentionally not reporting an environmental observation. |
| 34 | Discontinued | Observation station, suite of instruments, or an individual instrument, for a particular location, has been removed and is no longer at the particular location. |
| 35 | Manual Observation | Observations made by a human observer. |
| 36 | Unknown Status | Status of an observation platform, suite of instruments, or individual instrument is not known or unspecified. |
| 37 | Confirmed | Made certain as to truth, accuracy, validity, availability, etc. |
| 38 | Candidate | Item selected for an action. |
| 39 | Under Modification | Item that is in the process of being modified. |
| 41 | Under Removal / Deletion | Item in the process of being removed or deleted. |
| 42 | Removed / Deleted | Item that has been removed or deleted. |
| 43 | Candidate for Modification | Item selected for modification. |

**5.93. Radar Conspicuous**

**Definition:** A feature which returns a strong radar echo.

**CamelCase:** radarConspicuous

**Alias:** CONRAD

**Value type:** boolean

**Remarks:** No remarks.

**5.94. Nature of Construction**

**Definition:** The building's primary construction material.

**CamelCase:** natureOfConstruction

**Alias:** NATCON

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Masonry | Constructed of stones or bricks, usually quarried, shaped, and mortared. |
| 2 | Concreted | Constructed of concrete, a material made of sand and gravel that is united by cement into a hardened mass used for roads, foundations, etc. |
| 3 | Loose Boulders | Constructed from large stones or blocks of concrete, often placed loosely for protection against waves or water turbulence. |
| 4 | Hard Surfaced | Constructed with a surface of hard material, usually a term applied to roads surfaced with asphalt or concrete. |
| 5 | Unsurfaced | Constructed with no extra protection, usually a term applied to roads not surfaced with a hard material. |
| 6 | Wooden | Constructed from wood. |
| 7 | Metal | Constructed from metal. |
| 8 | Glass Reinforced Plastic | Constructed from a plastic material strengthened with fibres of glass. |
| 9 | Painted | The application of paint to some other construction or natural feature. |
| 10 | Framework | Constructed from a lattice framework of, often diagonal, intersecting struts. |
| 11 | Latticed | A structure of crossed wooden or metal strips usually arranged to form a diagonal pattern of open spaces between the strips. |
| 12 | Glass | [1] Any artificial or natural substance having similar properties and composition, as fused borax, obsidian, or the like. [2] Something made of such a substance, as a windowpane. |
| 13 | Fiberglass | Constructed from fiberglass. |
| 14 | Plastic | Constructed from plastic. |

**5.95. Marks Navigational - System Of**

**Definition:** The system of navigational buoyage a region complies with.

**CamelCase:** marksNavigationalSystemOf

**Alias:** MARSYS

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | IALA A | Navigational aids conform to the International Association of Lighthouse Authorities - IALA A system. |
| 2 | IALA B | Navigational aids conform to the International Association of Lighthouse Authorities - IALA B system. |
| 9 | No System | Navigational aids do not conform to any defined system. |
| 10 | Other System | Navigational aids conform to a defined system other than International Association of Lighthouse Authorities - IALA. |
| 11 | CEVNI | CEVNI (European Code for Navigation on Inland Waterways) is the European code for rivers, canals land lakes in most of Europe. |
| 12 | Russian Inland Waterway Regulations | Navigational aids conform to the Russian inland waterway regulations. |
| 13 | Brazilian National Inland Waterway Regulations - Two Sides | Navigational aids conform to the Brazilian national inland waterway regulations for two sides. |
| 14 | Brazilian National Inland Waterway Regulations - Side Independent | Navigational aids conform to the Brazilian national inland waterway regulations - side independent. |
| 15 | Paraguay-Parana Waterway - Brazilian Complementary Aids | Navigational aids conform to the Brazilian complementary aids on the Paraguay-Parana waterway. |

**5.96. Height**

**Definition:** The value of the vertical distance to the highest point of the object, measured from a specified vertical datum.

**CamelCase:** height

**Alias:** HEIGHT

**Value type:** real

**Remarks:** Height must not be used for floating objects.

**5.97. Elevation**

**Definition:** The altitude of the ground level of an object, measured from a specified vertical datum.

**CamelCase:** elevation

**Alias:** ELEVAT

**Value type:** real

**Remarks:** No remarks.

**5.98. Colour Pattern**

**Definition:** A regular repeated design containing more than one colour.

**CamelCase:** colourPattern

**Alias:** COLPAT

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Horizontal Stripes | Straight bands or stripes of differing colours oriented horizontally. |
| 2 | Vertical Stripes | Straight bands or stripes of differing colours oriented vertically. |
| 3 | Diagonal Stripes | Straight bands or stripes of differing colours oriented diagonally (that is, not horizontally or vertically). |
| 4 | Squared | Often referred to as checker plate, where alternate colours are used to create squares similar to a chess or draught board. The pattern may be straight or diagonal. |
| 5 | Stripes (Direction Unknown) | Straight bands or stripes of differing colours oriented in an unknown direction. |
| 6 | Border Stripe | A band or stripe of colour which is displayed around the outer edge of the object, which may also form a border to an inner pattern or plain colour. |
| 7 | Single Colour | One solid colour of uniform coverage. |
| 8 | Rectangle | A four-sided shape that is made up of two pairs of parallel lines and that has four right angles, on a different coloured background. |
| 9 | Triangle | A shape that is made up of three lines and three angles, on a different coloured background. |

**5.99. Colour**

**Definition:** The property possessed by an object of producing different sensations on the eye as a result of the way it reflects or emits light.

**CamelCase:** colour

**Alias:** COLOUR

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | White | The achromatic object colour of greatest lightness characteristically perceived to belong to objects that reflect diffusely nearly all incident energy throughout the visible spectrum. |
| 2 | Black | The achromatic color of least lightness characteristically perceived to belong to objects that neither reflect nor transmit light. |
| 3 | Red | A color whose hue resembles that of blood or of the ruby or is that of the long-wave extreme of the visible spectrum. |
| 4 | Green | Of the color green. |
| 5 | Blue | A color whose hue is that of the clear sky or that of the portion of the color spectrum lying between green and violet. |
| 6 | Yellow | A color whose hue resembles that of ripe lemons or sunflowers or is that of the portion of the spectrum lying between green and orange. |
| 7 | Grey | Of the color grey. |
| 8 | Brown | Any of a group of colors between red and yellow in hue, of medium to low lightness, and of moderate to low saturation. |
| 9 | Amber | A variable color averaging a dark orange yellow. |
| 10 | Violet | Any of a group of colors of reddish-blue hue, low lightness, and medium saturation. |
| 11 | Orange | Any of a group of colors that are between red and yellow in hue. |
| 12 | Magenta | A deep purplish red. |
| 13 | Pink | Any of a group of colors bluish red to red in hue, of medium to high lightness, and of low to moderate saturation. |

**5.100. Beacon Shape**

**Definition:** Describes the characteristic geometric form of the beacon.

**CamelCase:** beaconShape

**Alias:** BCNSHP

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Stake, Pole, Perch, Post | An elongated wood or metal pole, driven into the ground or seabed, which serves as a navigational aid or a support for a navigational aid. |
| 2 | Withy | A tree without roots stuck or spoiled into the bottom of the sea to serve as a navigational aid. |
| 3 | Beacon Tower | A solid structure of the order of 10 metres in height used as a navigational aid. |
| 4 | Lattice Beacon | A structure consisting of strips of metal or wood crossed or interlaced to form a structure to serve as an aid to navigation or as a support for an aid to navigation. |
| 5 | Pile Beacon | A long heavy timber(s) or section(s) of steel, wood, concrete, etc., forced into the seabed to serve as an aid to navigation or as a support for an aid to navigation. |
| 6 | Cairn | A mound of stones, usually conical or pyramidal, raised as a landmark or to designate a point of importance in surveying. |
| 7 | Buoyant Beacon | A tall spar-like beacon fitted with a permanently submerged buoyancy chamber, the lower end of the body is secured to seabed sinker either by a flexible joint or by a cable under tension. |

**5.101. Date Start**

**Definition:** The earliest date on which an object (for example a buoy) will be present.

**CamelCase:** dateStart

**Alias:** DATSTA

**Value type:** S100\_TruncatedDate

**Remarks:** The Date Start should be encoded using 4 digits for the calendar year (YYYY), 2 digits for the month (MM) (for example April = 04) and 2 digits for the day (DD). When no specific month and/or day is required/known, indication of the month and/or day is omitted, and replaced with dashes (-). When no specific year is required (that is, the event or date range ends at the same time each year) the following two cases may be considered:- same day each year: ----MMDD- same month each year: ----MM--This conforms to ISO 8601: 2004. Date Start indicates the earliest date of an event or the start of a date range. It is used to indicate the start of a fixed date range, the start of a periodic date range, or the deployment or implementation of a feature at a specific date in the future.

**5.102. Date End**

**Definition:** The latest date on which an object (for example a buoy) will be present.

**CamelCase:** dateEnd

**Alias:** DATEND

**Value type:** S100\_TruncatedDate

**Remarks:** The Date End should be encoded using 4 digits for the calendar year (YYYY), 2 digits for the month (MM) (for example April = 04) and 2 digits for the day (DD). When no specific month and/or day is required/known, indication of the month and/or day is omitted, and replaced with dashes (-). When no specific year is required (that is, the event or date range ends at the same time each year) the following two cases may be considered:- same day each year: ----MMDD- same month each year: ----MM--This conforms to ISO 8601: 2004. Date End indicates the latest date of an event or the end of a date range. It is used to indicate the end of a fixed date range, the end of a periodic date range, or the removal or cancellation of a feature at a specific date in the future.

**5.103. Installation Date**

**Definition:** The date when an item was installed.

**CamelCase:** installationDate

**Alias:**

**Value type:** date

**Remarks:** No remarks.

**5.104. AtoN Number**

**Definition:** Identifier from a list of Aids to Navigation publication, such as List of Lights.

**CamelCase:** AtoNNumber

**Alias:**

**Value type:** URI

**Remarks:** -

**5.105. Interoperability Identifier**

**Definition:** A common unique identifier for entities which describe a single real-world feature, and which is used to identify instances of the feature in end-user systems where the feature may be included in multiple data product types.

**CamelCase:** interoperabilityIdentifier

**Alias:**

**Value type:** URN

**Remarks:** -

**5.106. ID Code**

**Definition:** Identification code as specified in predefined system. Also called identification number.

**CamelCase:** iDCode

**Alias:** Identification Number Identification Code

**Value type:** text

**Remarks:** No remarks.

**5.107. Scale Minimum**

**Definition:** The minimum scale at which the feature may be used for example for ECDIS presentation.

**CamelCase:** scaleMinimum

**Alias:** SCAMIN

**Value type:** integer

**Remarks:** The modulus of the scale is indicated, that is 1:1 250 000 is encoded as 1250000.

**5.108. Source Date**

**Definition:** The production date of the source; for example the date of measurement.

**CamelCase:** sourceDate

**Alias:** SORDAT

**Value type:** date

**Remarks:** No remarks.

**5.109. Source**

**Definition:** The publication, document, or reference work from which information comes or is acquired.

**CamelCase:** source

**Alias:**

**Value type:** text

**Remarks:** May be populated with the corresponding paper chart Notice to Mariners numbers, although other references are permitted.

**5.110. Pictorial Representation**

**Definition:** Indicates whether a pictorial representation of the feature is available.

**CamelCase:** pictorialRepresentation

**Alias:** PICREP

**Value type:** text

**Remarks:** The 'pictorial representation' could be a drawing or a photo. The string encodes the file name of an external graphic file (pixel/vector).

**5.111. Inspection Frequency**

**Definition:** A statement of how frequently an item is inspected.

**CamelCase:** inspectionFrequency

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.112. Inspection Requirements**

**Definition:** A statement of what requirements are in place for how inspection of an item is carried out.

**CamelCase:** inspectionRequirements

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.113. AtoN Maintenance Record**

**Definition:** A reference following the Uniform Resource Identifier (URI) principles to a record of maintenance.

**CamelCase:** aToNMaintenanceRecord

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.114. Display Name**

**Definition:** A statement expressing if a feature name is to be displayed in certain system display settings or not.

**CamelCase:** displayName

**Alias:**

**Value type:** boolean

**Remarks:** Where it is allowable to encode multiple instances of feature name for a single feature instance, only one feature name instance can indicate that the name is to be displayed (display name set to True).

**5.115. Name**

**Definition:** The individual name of a feature.

**CamelCase:** name

**Alias:** OBJNAM

**Value type:** text

**Remarks:** No remarks.

**5.116. Aid Availability Category**

**Definition:** A Category denoting the significance of an Aid to Navigation, expressed in terms of the probability that an AtoN or system of AtoN, as defined by the Competent Authority, is performing its specified function at any randomly chosen time. This is expressed as a percentage of total time that an AtoN or system of AtoN should be performing their specified function.

**CamelCase:** aidAvailabilityCategory

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Category 1 | An AtoN or system of AtoN that is considered by the Competent Authority to be of vital navigational significance. |
| 2 | Category 2 | An AtoN or system of AtoN that is considered by the Competent Authority to be of important navigational significance. |
| 3 | Category 3 | An AtoN or system of AtoN that is considered by the Competent Authority to be of necessary navigational significance. |

**5.117. Condition**

**Definition:** The various conditions of buildings and other constructions.

**CamelCase:** condition

**Alias:** CONDTN

**Value type:** enumeration

**Remarks:** The default 'condition' should be considered to be completed, undamaged and working normally.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Under Construction | Being built but not yet capable of function. |
| 2 | Ruined | A structure in a decayed or deteriorated condition resulting from neglect or disuse, or a damaged structure in need of repair. |
| 3 | Under Reclamation | An area of the sea, a lake or the navigable part of a river that is being reclaimed as land, usually by the dumping of earth and other material. |
| 4 | Wingless | A windmill or wind turbine from which the vanes or turbine blades are missing. |
| 5 | Planned Construction | Detailed planning has been completed but construction has not been initiated. |

**5.118. Remote Monitoring System**

**Definition:** Classification or name of system used to remotely monitor a feature.

**CamelCase:** remoteMonitoringSystem

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.119. Delivery Point**

**Definition:** Details of where post can be delivered such as the apartment, name and/or number of a street, building or PO Box.

**CamelCase:** deliveryPoint

**Alias:** DELPNT

**Value type:** text

**Remarks:** No remarks.

**5.120. City Name**

**Definition:** The name of a town or city.

**CamelCase:** cityName

**Alias:** CITYNM

**Value type:** text

**Remarks:** No remarks.

**5.121. Administrative Division**

**Definition:** A generic term for an administrative region within a country at a level below that of the sovereign state.

**CamelCase:** administrativeDivision

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.122. Country Name**

**Definition:** The name of a nation.

**CamelCase:** countryName

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.123. Postal Code**

**Definition:** Known in various countries as a postcode, or ZIP code, the postal code is a series of letters and/or digits that identifies each postal delivery area.

**CamelCase:** postalCode

**Alias:** POSCOD Postcode ZIP Code

**Value type:** text

**Remarks:** No remarks.

**5.124. Category Of Aggregation**

**Definition:** named aggregations between two or more aids to navigation and/or navigationally relevant features

**CamelCase:** CategoryOfAggregation

**Alias:**

**Value type:** S100\_CodeList

**Remarks:** -

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | leading line | - |
| 3 | measured distance | - |
| 2 | range system | - |

**5.125. Text**

**Definition:** A non-formatted digital text string.

**CamelCase:** text

**Alias:** INFORM NINFOM

**Value type:** text

**Remarks:** Should be used, for example, to hold the information that is for short cautionary or explanatory notes. Therefore, text populated in text must not exceed 300 characters. Text may be in English, or in a national language. No formatting of text is possible within text. If formatted text, or text strings exceeding 300 characters, is required, then an alternate concept should be used.

**5.126. Language**

**Definition:** The method of human communication, either spoken or written, consisting of the use of words in a structured and conventional way.

**CamelCase:** language

**Alias:**

**Value type:** text

**Remarks:** The language is encoded by a 3 character code following ISO 639-2/T.

**5.127. Headline**

**Definition:** Words set at the head of a passage or page to introduce or categorize.

**CamelCase:** headline

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.128. File Reference**

**Definition:** The file name of an externally referenced text file.

**CamelCase:** fileReference

**Alias:** TXTDSC NTXTDS

**Value type:** text

**Remarks:** No remarks.

**5.129. File Locator**

**Definition:** The location of a fragment of text or other information in a support file.

**CamelCase:** fileLocator

**Alias:**

**Value type:** text

**Remarks:** Application schemas must describe how the associated file is identified. The associated file will commonly be named in a file reference co-attribute of the same complex attribute. Each DCEG must specify requirements for the format of the associated file and the semantics of file locator. For example, the value of file locator may be an HTML ID in an HTML file, line number in a text file) or a bookmark in a PDF file.

**5.130. Uncertainty Variable Factor**

**Definition:** The factor to be applied to the variable component of an uncertainty equation so as to provide the best estimate of the variable horizontal or vertical accuracy component for positions, depths, heights, vertical distances and vertical clearances.

**CamelCase:** uncertaintyVariableFactor

**Alias:**

**Value type:** real

**Remarks:** No remarks.

**5.131. Uncertainty Fixed**

**Definition:** The best estimate of the fixed horizontal or vertical accuracy component for positions, depths, heights, vertical distances and vertical clearances.

**CamelCase:** uncertaintyFixed

**Alias:** POSACC SOUACC VERACC

**Value type:** real

**Remarks:** No remarks.

**5.132. Information in National Language**

**Definition:** Textual information in national language characters.

**CamelCase:** informationInNationalLanguage

**Alias:** NINFOM

**Value type:** text

**Remarks:** Encodes any textual information about an object using a specified national language. The textual information could be, for example, a list, a table or a text. This should be used, for example, to hold the information that is shown on paper charts by cautionary and explanatory notes.

**5.133. Horizontal Distance Uncertainty**

**Definition:** The best estimate of the horizontal accuracy of horizontal clearances and distances.

**CamelCase:** horizontalDistanceUncertainty

**Alias:** HORACC

**Value type:** real

**Remarks:** The error is assumed to be positive and negative. The plus/minus character must not be encoded.

**5.134. Orientation Uncertainty**

**Definition:** The best estimate of the accuracy of a bearing.

**CamelCase:** orientationUncertainty

**Alias:**

**Value type:** real

**Remarks:** No remarks.

**5.135. Category of Temporal Variation**

**Definition:** An assessment of the likelihood of change over time.

**CamelCase:** categoryOfTemporalVariation

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Extreme Event | Indication of the possible impact of a significant event (for example hurricane, earthquake, volcanic eruption, landslide, etc), which is considered likely to have changed the seafloor or landscape significantly. |
| 2 | Likely to Change and Significant Shoaling Expected | Continuous or frequent change (for example river siltation, sand waves, seasonal storms, icebergs, etc) that is likely to result in new significant shoaling. |
| 3 | Likely to Change But Significant Shoaling Not Expected | Continuous or frequent change (for example sand wave shift, seasonal storms, icebergs, etc) that is not likely to result in new significant shoaling. |
| 4 | Likely to Change | Continuous or frequent change to non-bathymetric features (for example river siltation, glacier creep/recession, sand dunes, buoys, marine farms, etc). |
| 5 | Unlikely to Change | Significant change to the seafloor is not expected. |
| 6 | Unassessed | Not having been assessed. |

**5.136. Maximum Display Scale**

**Definition:** The value considered by the Data Producer to be the maximum (largest) scale at which the data is to be displayed before it can be considered to be “grossly overscaled”.

**CamelCase:** maximumDisplayScale

**Alias:**

**Value type:** integer

**Remarks:** No remarks.

**5.137. Minimum Display Scale**

**Definition:** The smallest intended viewing scale for the data.

**CamelCase:** minimumDisplayScale

**Alias:**

**Value type:** integer

**Remarks:** No remarks.

**5.138. Aton Commissioning**

**Definition:** .

**CamelCase:** atonCommissioning

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Buoy establishment | . |
| 2 | Light establishment | . |
| 3 | Beacon establishment | . |
| 4 | Audible signal establishment | . |
| 5 | Fog signal establishment | . |
| 6 | AIS transmitter establishment | . |
| 7 | V-AIS establishment | . |
| 8 | RACON establishment | . |
| 9 | DGPS station establishment | . |
| 10 | eLORAN station establishment | . |
| 11 | DGLONASS station establishment | . |
| 12 | e-Chayka station establishment | . |
| 13 | EGNOS establishment | . |

**5.139. Aton Removal**

**Definition:** .

**CamelCase:** atonRemoval

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Buoy removal | . |
| 2 | Buoy temporary removal | . |
| 3 | Light removal | . |
| 4 | Light temporary removal | . |
| 5 | Beacon removal | . |
| 6 | Beacon temporary removal | . |
| 7 | Fog signal removal | . |
| 8 | Fog signal temporary removal | . |
| 9 | Audible signal removal | . |
| 10 | Audible signal temporary removal | . |
| 11 | V-AIS removal | . |
| 12 | V-AIS temporary removal | . |
| 13 | RACON signal removal | . |
| 14 | RACON temporary removal | . |
| 15 | DGPS removal | . |
| 16 | DGPS temporary removal | . |
| 17 | EGNOS removal | . |
| 18 | EGNOS temporary removal | . |
| 19 | LORAN C station removal | . |
| 20 | LORAN C station temporary removal | . |
| 21 | eLORAN removal | . |
| 22 | eLORAN temporary removal | . |
| 23 | Chayka station removal | . |
| 24 | Chayka station temporary removal | . |
| 25 | e-Chayka station removal | . |
| 26 | e-Chayka station temporary removal | . |

**5.140. Aton Replacement**

**Definition:** .

**CamelCase:** atonReplacement

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Buoy change | . |
| 2 | Buoy temporary change | . |
| 3 | Light change | . |
| 4 | Light temporary change | . |
| 5 | Sector light change | . |
| 6 | Sector light temporary change | . |
| 7 | Beacon change | . |
| 8 | Beacon temporary change | . |
| 9 | Fog signal change | . |
| 10 | Fog signal temporary change | . |
| 11 | Audible signal change | . |
| 12 | Audible signal temporary change | . |
| 13 | V-AIS change | . |
| 14 | V-AIS temporary change | . |
| 15 | RACON signal change | . |
| 16 | RACON temporary change | . |

**5.141. Fixed Aton Change**

**Definition:** .

**CamelCase:** fixedAtonChange

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Beacon missing | . |
| 2 | Beacon damaged | . |
| 3 | Light beacon Unlit | . |
| 4 | Light beacon Unreliable | . |
| 5 | Light beacon Not synchronized | . |
| 6 | Light beacon damaged | . |
| 7 | Beacon topmark missing | . |
| 8 | Beacon topmark damaged | . |
| 9 | Beacon daymark unreliable | . |
| 10 | Floodlit beacon Unlit | . |
| 11 | Beacon restored to normal | . |

**5.142. Floating Aton Change**

**Definition:** .

**CamelCase:** floatingAtonChange

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Buoy adrift | . |
| 2 | Buoy damaged | . |
| 3 | Buoy daymark unreliable | . |
| 4 | Buoy destroyed | . |
| 5 | Buoy missing | . |
| 6 | Buoy move | . |
| 7 | Buoy off position | . |
| 8 | Buoy re-establishment | . |
| 9 | Buoy restored to normal | . |
| 10 | Buoy topmark damaged | . |
| 11 | Buoy topmark missing | . |
| 12 | Buoy will be withdrawn | . |
| 13 | Buoy withdrawn | . |
| 14 | Decommissioned for winter | . |
| 15 | Lifted for Winter | . |
| 16 | Light buoy Light damaged | . |
| 17 | Light buoy Light not synchronized | . |
| 18 | Light buoy Light unlit | . |
| 19 | Light buoy Light unreliable | . |
| 20 | Marine Aids to Navigation unreliable | . |
| 21 | Recommissioned for navigation season | . |
| 22 | Replaced by Winter Spar | . |
| 23 | Seasonal decommissioning complete | . |
| 24 | Seasonal decommissioning in progress | . |
| 25 | Seasonal recommissioning complete | . |
| 26 | Seasonal recommissioning in progress | . |

**5.143. Audible Signal Aton Change**

**Definition:** .

**CamelCase:** audibleSignalAtonChange

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Audible signal out of service | . |
| 2 | Fog signal out of service | . |
| 3 | Audible signal operating properly | . |
| 4 | Fog signal operating properly | . |

**5.144. Lighted Aton Change**

**Definition:** .

**CamelCase:** lightedAtonChange

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Light unlit | . |
| 2 | Light unreliable | . |
| 3 | Light re-establishment | . |
| 4 | Light range reduced | . |
| 5 | Light without rhythm | . |
| 6 | Light out of synchronization | . |
| 7 | Light daymark unreliable | . |
| 8 | Light operating properly | . |
| 9 | Sector light Sector obscured | . |
| 10 | Front leading/range light Unlit | . |
| 11 | Rear leading/range light Unlit | . |
| 12 | Front leading/range light Unreliable | . |
| 13 | Rear leading/range light Unreliable | . |
| 14 | Front leading/range light Light range reduced | . |
| 15 | Rear leading/range light Light range reduced | . |
| 16 | Front leading/range light without rhythm | . |
| 17 | Rear leading/range light without rhythm | . |
| 18 | Leading/range lights out of synchronization | . |
| 19 | Front leading/range beacon Unreliable | . |
| 20 | Rear leading/range beacon Unreliable | . |
| 21 | Front leading/range light is operating properly | . |
| 22 | Rear leading/range light is operating properly | . |
| 23 | Front leading/range beacon restored to normal | . |
| 24 | Rear leading/range beacon restored to normal | . |

**5.145. Electronic Aton Change**

**Definition:** .

**CamelCase:** electronicAtonChange

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | AIS transmitter out of service | . |
| 2 | AIS transmitter unreliable | . |
| 3 | AIS transmitter operating properly | . |
| 4 | V-AIS out of service | . |
| 5 | V-AIS unreliable | . |
| 6 | V-AIS operating properly | . |
| 7 | RACON out of service | . |
| 8 | RACON unreliable | . |
| 9 | RACON operating properly | . |
| 10 | DGPS out of service | . |
| 11 | DGPS operating properly | . |
| 12 | DGPS unreliable | . |
| 13 | LORAN C operating properly | . |
| 14 | LORAN C unreliable | . |
| 15 | LORAN C out of service | . |
| 16 | eLORAN operating properly | . |
| 17 | eLORAN unreliable | . |
| 18 | eLORAN out of service | . |
| 19 | DGLOANSS operating properly | . |
| 20 | DGLOANSS unreliable | . |
| 21 | DGLOANSS out of service | . |
| 22 | Chayka operating properly | . |
| 23 | Chayka unreliable | . |
| 24 | Chayka out of service | . |
| 25 | e-Chayka operating properly | . |
| 26 | e-Chayka unreliable | . |
| 27 | e-Chayka out of service | . |
| 28 | EGNOS operating properly | . |
| 29 | EGNOS unreliable | . |
| 30 | EGNOS out of service | . |

**5.146. Positioning Equipment**

**Definition:** .

**CamelCase:** positioningEquipment

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | DGPS Receiver | . |
| 2 | GLONASS Receiver | . |
| 3 | GPS Receiver | . |
| 4 | GPS/WAAS Receiver | . |

**6. Complex Attributes**

**6.1. Contact Address**

**Definition:** Direction or superscription of a letter, package, etc., specifying the name of the place to which it is directed, and optionally a contact person or organisation who should receive it.

**CamelCase:** contactAddress

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Delivery Point | (DELPNT) |  | TE | 0, 1 |
| City Name | (CITYNM) |  | TE | 0, 1 |
| Administrative Division |  |  | TE | 0, 1 |
| Country Name |  |  | TE | 0, 1 |
| Postal Code | (POSCOD)  (Postcode)  (ZIP Code) |  | TE | 0, 1 |

**6.2. Directional Character**

**Definition:** A directional light is a light illuminating a sector of very narrow angle and intended to mark a direction to follow.

**CamelCase:** directionalCharacter

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Moire Effect |  |  | BO | 0, 1 |
| Orientation Value | (ORIENT) |  | (S) RE | 1, 1 |

**6.3. Feature Name**

**Definition:** Provides the name of an entity, defines the national language of the name, and provides the option to display the name at various system display settings.

**CamelCase:** featureName

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Display Name |  |  | BO | 0, 1 |
| Language |  |  | TE | 0, 1 |
| Name | (OBJNAM) |  | TE | 1, 1 |

**6.4. Fixed Date Range**

**Definition:** An active period of a single fixed event or occurrence, as the date range between discrete start and end dates.

**CamelCase:** fixedDateRange

**Alias:**

**Remarks:** Dates must be encoded in the format YYYYMMDD; using 4 digits for the calendar year (YYYY) and, optionally, 2 digits for the month (MM) (for example April = 04) and 2 digits for the day (DD). When no specific month and/or day is required/known, the values are replaced with dashes (-). The date range of a recurring event or occurrence must be encoded using periodicDateRange.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Date End | (DATEND) |  | TD | 0, 1 |
| Date Start | (DATSTA) |  | TD | 0, 1 |

**6.5. Light Sector**

**Definition:** A sector is the part of a circle between two straight lines drawn from the centre to the circumference.

**CamelCase:** lightSector

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | EN | 1, \* (ordered) |
| Directional Character |  |  | C | 0, 1 |
| Moire Effect |  |  | (S) BO | 0, 1 |
| Orientation |  |  | (S) C | 1, 1 |
| Orientation Uncertainty |  |  | (S) RE | 0, 1 |
| Orientation Value | (ORIENT) |  | (S) RE | 1, 1 |
| Sector Extension |  |  | BO | 0, 1 |

**6.6. Multiplicity of Features**

**Definition:** The number of features of identical character that exist as a colocated group.

**CamelCase:** multiplicityOfFeatures

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Multiplicity Known |  |  | BO | 1, 1 |
| Number of Features |  |  | IN | 0, 1 |

**6.7. Orientation**

**Definition:** (1) The angular distance measured from true north to the major axis of the feature. (2) In ECDIS, the mode in which information on the ECDIS is being presented. Typical modes include: north-up - as shown on a nautical chart, north is at the top of the display; Ships head-up - based on the actual heading of the ship, (e.g. Ships gyrocompass); course-up display - based on the course or route being taken.

**CamelCase:** orientation

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Orientation Uncertainty |  |  | RE | 0, 1 |
| Orientation Value | (ORIENT) |  | RE | 1, 1 |

**6.8. Periodic Date Range**

**Definition:** The active period of a recurring event or occurrence.

**CamelCase:** periodicDateRange

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Date End | (DATEND) |  | TD | 1, 1 |
| Date Start | (DATSTA) |  | TD | 1, 1 |

**6.9. Radar Wave Length**

**Definition:** The distance between two successive peaks (or other points of identical phase) on an electromagnetic wave in the radar band of the electromagnetic spectrum.

**CamelCase:** radarWaveLength

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Radar Band |  |  | TE | 1, 1 |
| Wave Length Value | (RadarWaveLength) |  | RE | 1, 1 |

**6.10. Rhythm of Light**

**Definition:** The sequence of times occupied by intervals of light/sound and eclipse/silence for all light characteristics or sound signals.

**CamelCase:** rhythmOfLight

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Light Characteristic | (LITCHR)  (Character of Light) | 1 : Fixed  2 : Flashing  3 : Long-Flashing  4 : Quick-Flashing  5 : Very Quick-Flashing  6 : Continuous Ultra Quick-Flashing  7 : Isophased  8 : Occulting  9 : Interrupted Quick Flashing  10 : Interrupted Very Quick Flashing  11 : Interrupted Ultra Quick-Flashing  12 : Morse  13 : Fixed and Flash  14 : Flash and Long-Flash  15 : Occulting and Flash  16 : Fixed and Long-Flash  17 : Occulting Alternating  18 : Long-Flash Alternating  19 : Flash Alternating  20 : Group Alternating  25 : Quick-Flash Plus Long-Flash  26 : Very Quick-Flash Plus Long-Flash  27 : Ultra Quick-Flash Plus Long-Flash  28 : Alternating  29 : Fixed and Alternating Flashing | EN | 1, 1 |
| Signal Group | (SIGGRP) |  | TE | 0, 1 (ordered) |
| Signal Period | (SIGPER) |  | RE | 0, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**6.11. Sector Characteristics**

**Definition:** Describes the characteristics of a light sector.

**CamelCase:** sectorCharacteristics

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Light Characteristic | (LITCHR)  (Character of Light) | 1 : Fixed  2 : Flashing  3 : Long-Flashing  4 : Quick-Flashing  5 : Very Quick-Flashing  6 : Continuous Ultra Quick-Flashing  7 : Isophased  8 : Occulting  9 : Interrupted Quick Flashing  10 : Interrupted Very Quick Flashing  11 : Interrupted Ultra Quick-Flashing  12 : Morse  13 : Fixed and Flash  14 : Flash and Long-Flash  15 : Occulting and Flash  16 : Fixed and Long-Flash  17 : Occulting Alternating  18 : Long-Flash Alternating  19 : Flash Alternating  20 : Group Alternating  25 : Quick-Flash Plus Long-Flash  26 : Very Quick-Flash Plus Long-Flash  27 : Ultra Quick-Flash Plus Long-Flash  28 : Alternating  29 : Fixed and Alternating Flashing | EN | 1, 1 |
| Light Sector |  |  | C | 1, 1 |
| Colour | (COLOUR) | 1 : White  2 : Black  3 : Red  4 : Green  5 : Blue  6 : Yellow  7 : Grey  8 : Brown  9 : Amber  10 : Violet  11 : Orange  12 : Magenta  13 : Pink | (S) EN | 1, \* (ordered) |
| Directional Character |  |  | (S) C | 0, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**6.12. Sector Information**

**Definition:** Additional textual information about a light sector.

**CamelCase:** sectorInformation

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Language |  |  | TE | 0, 1 |
| Text | (INFORM)  (NINFOM) |  | TE | 1, 1 |

**6.13. Sector Limit**

**Definition:** A sector is the part of a circle between two straight lines drawn from the centre to the circumference. The sector limit specifies the limits of the sector In a clockwise direction around the central feature (for example a light).

**CamelCase:** sectorLimit

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sector Limit One | (SECTR1) |  | C | 1, 1 |
| Sector Line Length |  |  | (S) IN | 0, 1 |

**6.14. Sector Limit One**

**Definition:** A sector is the part of a circle between two straight lines drawn from the centre to the circumference. Sector limit one specifies the first limit of the sector. The order of sector limit one and sector limit two is clockwise around the central feature (for example a light).

**CamelCase:** sectorLimitOne

**Alias:** SECTR1

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sector Bearing | (SECTR1)  (SECTR2) |  | RE | 1, 1 |
| Sector Line Length |  |  | IN | 0, 1 |

**6.15. Sector Limit Two**

**Definition:** A sector is the part of a circle between two straight lines drawn from the centre to the circumference. Sector limit two specifies the second limit of the sector. The order of sector limit one and sector limit two is clockwise around the central feature (for example a light).

**CamelCase:** sectorLimitTwo

**Alias:** SECTR2

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sector Bearing | (SECTR1)  (SECTR2) |  | RE | 1, 1 |
| Sector Line Length |  |  | IN | 0, 1 |

**6.16. Shape Information**

**Definition:** Textual information about the shape of a non-standard topmark.

**CamelCase:** shapeInformation

**Alias:**

**Remarks:** No formatting of text is possible within shape information. If formatted text is required, then an associated text file referenced by the complex attribute textual description must be used.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Language |  |  | TE | 0, 1 |
| Text | (INFORM)  (NINFOM) |  | TE | 1, 1 |

**6.17. Signal Sequence**

**Definition:** The sequence of times occupied by intervals of light and eclipse for all light characteristics.

**CamelCase:** signalSequence

**Alias:** SIGSEQ

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Signal Duration |  |  | RE | 1, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | EN | 1, 1 |

**6.18. Spatial Accuracy**

**Definition:** Provides an indication of the vertical and horizontal positional uncertainty of bathymetric data, optionally within a specified date range.

**CamelCase:** spatialAccuracy

**Alias:**

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Fixed Date Range |  |  | C | 0, 1 |
| Date End | (DATEND) |  | (S) TD | 0, 1 |
| Uncertainty Variable Factor |  |  | (S) RE | 0, 1 |

**6.19. Cable Dimensions**

**Definition:** The dimensions of a cable to give its length and diameter.

**CamelCase:** CableDimensions

**Alias:**

**Remarks:** -

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Cable Length |  |  | RE | 1, 1 |
| Height Length Units |  | 1 : Metres  2 : Feet  3 : Kilometres  4 : Hectometres  5 : Statute Miles  6 : Nautical Miles | EN | 1, 1 |
| Diameter |  |  | RE | 1, 1 |

**6.20. Change Details**

**Definition:** -

**CamelCase:** ChangeDetails

**Alias:**

**Remarks:** -

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Aton Commissioning |  | 1 : Buoy establishment  2 : Light establishment  3 : Beacon establishment  4 : Audible signal establishment  5 : Fog signal establishment  6 : AIS transmitter establishment  7 : V-AIS establishment  8 : RACON establishment  9 : DGPS station establishment  10 : eLORAN station establishment  11 : DGLONASS station establishment  12 : e-Chayka station establishment  13 : EGNOS establishment | EN | 0, 1 |
| Aton Removal |  | 1 : Buoy removal  2 : Buoy temporary removal  3 : Light removal  4 : Light temporary removal  5 : Beacon removal  6 : Beacon temporary removal  7 : Fog signal removal  8 : Fog signal temporary removal  9 : Audible signal removal  10 : Audible signal temporary removal  11 : V-AIS removal  12 : V-AIS temporary removal  13 : RACON signal removal  14 : RACON temporary removal  15 : DGPS removal  16 : DGPS temporary removal  17 : EGNOS removal  18 : EGNOS temporary removal  19 : LORAN C station removal  20 : LORAN C station temporary removal  21 : eLORAN removal  22 : eLORAN temporary removal  23 : Chayka station removal  24 : Chayka station temporary removal  25 : e-Chayka station removal  26 : e-Chayka station temporary removal  27 : | EN | 0, 1 |
| Aton Replacement |  | 1 : Buoy change  2 : Buoy temporary change  3 : Light change  4 : Light temporary change  5 : Sector light change  6 : Sector light temporary change  7 : Beacon change  8 : Beacon temporary change  9 : Fog signal change  10 : Fog signal temporary change  11 : Audible signal change  12 : Audible signal temporary change  13 : V-AIS change  14 : V-AIS temporary change  15 : RACON signal change  16 : RACON temporary change | EN | 0, 1 |
| Fixed Aton Change |  | 1 : Beacon missing  2 : Beacon damaged  3 : Light beacon Unlit  4 : Light beacon Unreliable  5 : Light beacon Not synchronized  6 : Light beacon damaged  7 : Beacon topmark missing  8 : Beacon topmark damaged  9 : Beacon daymark unreliable  10 : Floodlit beacon Unlit  11 : Beacon restored to normal | EN | 0, 1 |
| Floating Aton Change |  | 1 : Buoy adrift  2 : Buoy damaged  3 : Buoy daymark unreliable  4 : Buoy destroyed  5 : Buoy missing  6 : Buoy move  7 : Buoy off position  8 : Buoy re-establishment  9 : Buoy restored to normal  10 : Buoy topmark damaged  11 : Buoy topmark missing  12 : Buoy will be withdrawn  13 : Buoy withdrawn  14 : Decommissioned for winter  15 : Lifted for Winter  16 : Light buoy Light damaged  17 : Light buoy Light not synchronized  18 : Light buoy Light unlit  19 : Light buoy Light unreliable  20 : Marine Aids to Navigation unreliable  21 : Recommissioned for navigation season  22 : Replaced by Winter Spar  23 : Seasonal decommissioning complete  24 : Seasonal decommissioning in progress  25 : Seasonal recommissioning complete  26 : Seasonal recommissioning in progress | EN | 0, 1 |
| Audible Signal Aton Change |  | 1 : Audible signal out of service  2 : Fog signal out of service  3 : Audible signal operating properly  4 : Fog signal operating properly | EN | 0, 1 |
| Lighted Aton Change |  | 1 : Light unlit  2 : Light unreliable  3 : Light re-establishment  4 : Light range reduced  5 : Light without rhythm  6 : Light out of synchronization  7 : Light daymark unreliable  8 : Light operating properly  9 : Sector light Sector obscured  10 : Front leading/range light Unlit  11 : Rear leading/range light Unlit  12 : Front leading/range light Unreliable  13 : Rear leading/range light Unreliable  14 : Front leading/range light Light range reduced  15 : Rear leading/range light Light range reduced  16 : Front leading/range light without rhythm  17 : Rear leading/range light without rhythm  18 : Leading/range lights out of synchronization  19 : Front leading/range beacon Unreliable  20 : Rear leading/range beacon Unreliable  21 : Front leading/range light is operating properly  22 : Rear leading/range light is operating properly  23 : Front leading/range beacon restored to normal  24 : Rear leading/range beacon restored to normal | EN | 0, 1 |
| Electronic Aton Change |  | 1 : AIS transmitter out of service  2 : AIS transmitter unreliable  3 : AIS transmitter operating properly  4 : V-AIS out of service  5 : V-AIS unreliable  6 : V-AIS operating properly  7 : RACON out of service  8 : RACON unreliable  9 : RACON operating properly  10 : DGPS out of service  11 : DGPS operating properly  12 : DGPS unreliable  13 : LORAN C operating properly  14 : LORAN C unreliable  15 : LORAN C out of service  16 : eLORAN operating properly  17 : eLORAN unreliable  18 : eLORAN out of service  19 : DGLOANSS operating properly  20 : DGLOANSS unreliable  21 : DGLOANSS out of service  22 : Chayka operating properly  23 : Chayka unreliable  24 : Chayka out of service  25 : e-Chayka operating properly  26 : e-Chayka unreliable  27 : e-Chayka out of service  28 : EGNOS operating properly  29 : EGNOS unreliable  30 : EGNOS out of service | EN | 0, 1 |

**6.21. Obscured Sector**

**Definition:** -

**CamelCase:** ObscuredSector

**Alias:**

**Remarks:** -

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Sector Limit |  |  | C | 1, 1 |
| Text | (INFORM)  (NINFOM) |  | (S) TE | 1, 1 |

**6.22. Sinker Dimensions**

**Definition:** The dimensions of a sinker/anchor to give its three dimensional shape measurements.

**CamelCase:** sinkerDimensions

**Alias:**

**Remarks:** -

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Height Length Units |  | 1 : Metres  2 : Feet  3 : Kilometres  4 : Hectometres  5 : Statute Miles  6 : Nautical Miles | EN | 1, 1 |
| Horizontal Length | (HORLEN) |  | RE | 0, 1 |
| Horizontal Width | (HORWID) |  | RE | 0, 1 |
| Vertical Length | (VERLEN) |  | RE | 0, 1 |

**6.23. Positioning Method**

**Definition:** A description of the method used to obtain a position.(proposed by CCG)

**CamelCase:** PositioningMethod

**Alias:**

**Remarks:** -

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Positioning Equipment |  | 1 : DGPS Receiver  2 : GLONASS Receiver  3 : GPS Receiver  4 : GPS/WAAS Receiver | EN | 1, 1 |
| NMEAString |  |  | TE | 1, 1 |

**6.24. Horizontal Position Uncertainty**

**Definition:** The best estimate of the accuracy of a position.

**CamelCase:** horizontalPositionUncertainty

**Alias:** POSACC

**Remarks:** The expected input is the maximum of the two-dimensional error. The error is assumed to be positive and negative.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Uncertainty Fixed | (POSACC)  (SOUACC)  (VERACC) |  | RE | 1, 1 |
| Uncertainty Variable Factor |  |  | RE | 0, 1 |

**6.25. Information**

**Definition:** Textual information about the feature. The information may be provided as a string of text or as a file name of a single external text file that contains the text.

**CamelCase:** information

**Alias:** INFORM

**Remarks:** At least one of the sub-attributes file reference or text must be populated.The sub-attribute file reference is generally used for long text strings or those that require formatting, however, there is no restriction on the type of text (except for lexical level) that can be held in files referenced by sub-attribute file reference.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| File Locator |  |  | TE | 0, 1 |
| File Reference | (TXTDSC)  (NTXTDS) |  | TE | 0, 1 |
| Headline |  |  | TE | 0, 1 |
| Language |  |  | TE | 1, 1 |
| Text | (INFORM)  (NINFOM) |  | TE | 0, 1 |

**6.26. Textual Description**

**Definition:** Encodes the file name of a single external text file that contains the text in a defined language, which provides additional textual information that cannot be provided using other allowable attributes for the feature.

**CamelCase:** textualDescription

**Alias:** TXTDSC

**Remarks:** No remarks.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| File Reference | (TXTDSC)  (NTXTDS) |  | TE | 1, 1 (ordered) |
| Language |  |  | TE | 0, 1 (ordered) |

**6.27. Vertical Uncertainty**

**Definition:** The best estimate of the vertical accuracy of depths, heights, vertical distances and vertical clearances.

**CamelCase:** verticalUncertainty

**Alias:** VERACC SOUACC

**Remarks:** Encodes the vertical uncertainty associated with any vertical measurement.

**SubAttribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Uncertainty Fixed | (POSACC)  (SOUACC)  (VERACC) |  | RE | 1, 1 |
| Uncertainty Variable Factor |  |  | RE | 0, 1 |

**7. Roles**

**7.1. Buoy Part**

**Definition:** -

**CamelCase:** buoyPart

**Alias:**

**Remarks:** No remarks.

**7.2. Topmark Part**

**Definition:** -

**CamelCase:** topmarkPart

**Alias:**

**Remarks:** No remarks.

**7.3. Peer Aton Association**

**Definition:** -

**CamelCase:** peerAtonAssociation

**Alias:**

**Remarks:** No remarks.

**7.4. Aton Association By**

**Definition:** -

**CamelCase:** atonAssociationBy

**Alias:**

**Remarks:** No remarks.

**7.5. Peer Aton Aggregation**

**Definition:** -

**CamelCase:** peerAtonAggregation

**Alias:**

**Remarks:** No remarks.

**7.6. Aton Aggregation By**

**Definition:** -

**CamelCase:** atonAggregationBy

**Alias:**

**Remarks:** No remarks.

**7.7. Physical AIS Broadcast By**

**Definition:** -

**CamelCase:** physicalAISbroadcastBy

**Alias:**

**Remarks:** No remarks.

**7.8. Physical AIS Broadcasts**

**Definition:** -

**CamelCase:** physicalAISbroadcasts

**Alias:**

**Remarks:** No remarks.

**7.9. Synthetic AIS Broadcast By**

**Definition:** -

**CamelCase:** syntheticAISbroadcastBy

**Alias:**

**Remarks:** No remarks.

**7.10. Synthetic AIS Broadcasts**

**Definition:** -

**CamelCase:** syntheticAISbroadcasts

**Alias:**

**Remarks:** No remarks.

**7.11. Virtual AIS Broadcast By**

**Definition:** -

**CamelCase:** virtualAISbroadcastBy

**Alias:**

**Remarks:** No remarks.

**7.12. Virtual AIS Broadcasts**

**Definition:** -

**CamelCase:** virtualAISbroadcasts

**Alias:**

**Remarks:** No remarks.

**7.13. Structure**

**Definition:** -

**CamelCase:** structure

**Alias:**

**Remarks:** No remarks.

**7.14. Equipment**

**Definition:** -

**CamelCase:** equipment

**Alias:**

**Remarks:** No remarks.

**7.15. Danger**

**Definition:** -

**CamelCase:** danger

**Alias:**

**Remarks:** No remarks.

**7.16. Marking Aton**

**Definition:** -

**CamelCase:** markingAton

**Alias:**

**Remarks:** No remarks.

**7.17. Peer**

**Definition:** The role given to an object of equal status in the relationship.

**CamelCase:** peer

**Alias:**

**Remarks:** No remarks.

**7.18. Aton Part**

**Definition:** -

**CamelCase:** Atonpart

**Alias:**

**Remarks:** No remarks.

**7.19. Hangs**

**Definition:** -

**CamelCase:** hangs

**Alias:**

**Remarks:** No remarks.

**7.20. Attached**

**Definition:** -

**CamelCase:** attached

**Alias:**

**Remarks:** No remarks.

**7.21. Connected**

**Definition:** -

**CamelCase:** connected

**Alias:**

**Remarks:** No remarks.

**7.22. Parent**

**Definition:** -

**CamelCase:** parent

**Alias:**

**Remarks:** No remarks.

**7.23. Fixing Method**

**Definition:** -

**CamelCase:** fixingMethod

**Alias:**

**Remarks:** No remarks.

**7.24. Broadcast By**

**Definition:** -

**CamelCase:** broadcastBy

**Alias:**

**Remarks:** No remarks.

**7.25. Navigable Track**

**Definition:** The role given to the navigable part of the navigation line.

**CamelCase:** navigableTrack

**Alias:**

**Remarks:** No remarks.

**7.26. Status Part**

**Definition:** -

**CamelCase:** Statuspart

**Alias:**

**Remarks:** No remarks.

**7.27. Holds**

**Definition:** -

**CamelCase:** holds

**Alias:**

**Remarks:** No remarks.

**7.28. Connected To**

**Definition:** -

**CamelCase:** connectedTo

**Alias:**

**Remarks:** No remarks.

**7.29. Child**

**Definition:** -

**CamelCase:** child

**Alias:**

**Remarks:** No remarks.

**7.30. Fixed By**

**Definition:** -

**CamelCase:** fixedBy

**Alias:**

**Remarks:** No remarks.

**7.31. Broadcasts**

**Definition:** -

**CamelCase:** broadcasts

**Alias:**

**Remarks:** No remarks.

**7.32. Navigation Line**

**Definition:** The role given to the navigation line(s) that is generally formed between two or more objects, or by one object and a bearing.

**CamelCase:** navigationLine

**Alias:**

**Remarks:** No remarks.

**8. Information Associations**

**8.1. Aton Status**

**Definition:**

**CamelCase:** Atonstatus

**Alias:**

**Remarks:** -

**Role:** Aton Part

**Role:** Status Part

**8.2. Fixing Status**

**Definition:**

**CamelCase:** fixingStatus

**Alias:**

**Remarks:** -

**Role:** Fixing Method

**Role:** Fixed By

**9. Feature Associations**

**9.1. Aton Status**

**Definition:**

**CamelCase:** Atonstatus

**Alias:**

**Remarks:** -

**Role:** Aton Part

**Role:** Status Part

**9.2. Dangerous Feature Association**

**Definition:**

**CamelCase:** DangerousFeatureAssociation

**Alias:**

**Remarks:** -

**Role:** Danger

**Role:** Marking Aton

**9.3. Aton Aggregations**

**Definition:**

**CamelCase:** AtonAggregations

**Alias:**

**Remarks:** -

**Role:** Peer Aton Aggregation

**Role:** Aton Aggregation By

**9.4. Aton Associations**

**Definition:**

**CamelCase:** AtonAssociations

**Alias:**

**Remarks:** -

**Role:** Peer Aton Association

**Role:** Aton Association By

**9.5. Swivel Connection**

**Definition:**

**CamelCase:** SwivelConnection

**Alias:**

**Remarks:** -

**Role:** Hangs

**Role:** Holds

**9.6. Cable Connection**

**Definition:**

**CamelCase:** CableConnection

**Alias:**

**Remarks:** -

**Role:** Attached

**Role:** Holds

**9.7. Shackle Connection**

**Definition:**

**CamelCase:** ShackleConnection

**Alias:**

**Remarks:** -

**Role:** Connected

**Role:** Connected To

**9.8. Bridle Connection**

**Definition:**

**CamelCase:** BridleConnection

**Alias:**

**Remarks:** -

**Role:** Hangs

**Role:** Holds

**9.9. Structure Equipment**

**Definition:**

**CamelCase:** StructureEquipment

**Alias:**

**Remarks:** -

**Role:** Parent

**Role:** Child

**9.10. Buoy Counter Weight**

**Definition:**

**CamelCase:** BuoyCounterWeight

**Alias:**

**Remarks:** -

**Role:** Attached

**Role:** Holds

**9.11. Range System**

**Definition:**

**CamelCase:** RangeSystem

**Alias:**

**Remarks:** -

**Role:** Navigable Track

**Role:** Navigation Line

**9.12. Buoy Topmark**

**Definition:**

**CamelCase:** BuoyTopmark

**Alias:**

**Remarks:** -

**Role:** Topmark Part

**Role:** Buoy Part

**9.13. Physical AIS**

**Definition:**

**CamelCase:** PhysicalAIS

**Alias:**

**Remarks:** -

**Role:** Physical AIS Broadcast By

**Role:** Physical AIS Broadcasts

**9.14. Synthetic AIS**

**Definition:**

**CamelCase:** SyntheticAIS

**Alias:**

**Remarks:** -

**Role:** Synthetic AIS Broadcast By

**Role:** Synthetic AIS Broadcasts

**9.15. Virtual AIS**

**Definition:**

**CamelCase:** VirtualAIS

**Alias:**

**Remarks:** -

**Role:** Virtual AIS Broadcast By

**Role:** Virtual AIS Broadcasts