**1. Meta Feature Types**

**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 | 1, 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, \* |
| Language |  |  | (S) TE | 1, 1 |
| Date Start | (DATSTA) |  | (S) TD | 1, 1 |

**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. Equipment**

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

**CamelCase:** Equipment

**Alias:**

**Super type:** AidsToNavigation

**Feature use type:** geographic

**Primitive:** point

**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 |

**2.3. 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:** point

**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, \* (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, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : Main European Inland Waterway Marking System  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulation  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, \* |
| 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, \* |

**2.4. Pile**

**Definition:** A long heavy timber or section of steel, wood, concrete, etc., forced into the earth or seafloor 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  8 : Mooring Post | 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, \* |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 0, 1 |
| Height | (HEIGHT) |  | RE | 0, 1 |

**2.5. 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, \* |
| 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, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | 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, \* |
| 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, \* |
| Height | (HEIGHT) |  | RE | 0, 1 |

**2.6. 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:** BOYCAR

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

**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 |

**2.7. 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 first response.

**CamelCase:** EmergencyWreckMarkingBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**2.8. Installation Buoy**

**Definition:** An installation buoy is a buoy used for loading tankers with gas or oil.

**CamelCase:** InstallationBuoy

**Alias:** BOYINB

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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).

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Installation Buoy | (CATINB) | 1 : Catenary Anchor Leg Mooring  2 : Single Buoy Mooring | EN | 1, 1 |

**2.9. Isolated Danger Buoy**

**Definition:** An isolated danger buoy is a buoy moored on or above an isolated danger of limited extent, which has navigable water all around it.

**CamelCase:** IsolatedDangerBuoy

**Alias:** BOYISD

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

**2.10. Lateral Buoy**

**Definition:** 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.

**CamelCase:** LateralBuoy

**Alias:** BOYLAT

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Light, fog signal, radar reflector and retro-reflector are separate objects.

**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 |

**2.11. 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, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | 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, \* |
| 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, \* |

**2.12. 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, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | 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, \* |
| 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, \* |

**2.13. Mooring Buoy**

**Definition:** A buoy secured to the bottom by permanent moorings with means for mooring a vessel by use of its anchor chain or mooring lines.

**CamelCase:** MooringBuoy

**Alias:**

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**2.14. 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 |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | 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, \* |
| 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, \* |

**2.15. Safe Water Buoy**

**Definition:** A safe water buoy is used to indicate that there is navigable water around the mark.

**CamelCase:** SafeWaterBuoy

**Alias:** BOYSAW

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Topmark, light, fog signal, radar reflector and retro-reflector are separate objects.

**2.16. Special Purpose/General Buoy**

**Definition:** 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.

**CamelCase:** SpecialPurposeGeneralBuoy

**Alias:** BOYSPP

**Super type:** GenericBuoy

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Light, fog signal, radar reflector and retro-reflector are separate objects.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Special Purpose Mark | (CATSPM) | 1 : Firing Danger Area 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, \* |

**2.17. 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 |
| Orientation |  |  | C | 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, \* |

**Feature Bindings:**

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

**2.18. 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) |  | BO | 1, 1 |
| Depth Range Minimum Value | (DRVAL1) |  | RE | 0, 1 |
| Maximal Permitted Draught | (lg\_drt) |  | RE | 0, 1 |
| Orientation |  |  | C | 1, 1 |
| Orientation Uncertainty |  |  | (S) RE | 0, 1 |
| Orientation Value | (ORIENT) |  | (S) RE | 1, 1 |
| Quality of Vertical Measurement | (QUASOU) | 1 : Depth Known  2 : Depth or Least Depth Unknown  3 : Doubtful Sounding  4 : Unreliable Sounding  5 : No Bottom Found at Value Shown  6 : Least Depth Known  7 : Least Depth Unknown, Safe Clearance at Value Shown  8 : Value Reported (Not Surveyed)  9 : Value Reported (Not Confirmed)  10 : Maintained Depth  11 : Not Regularly Maintained | EN | 0, \* |
| Vertical Uncertainty | (VERACC)  (SOUACC) |  | C | 0, 1 |
| Uncertainty Fixed | (POSACC)  (SOUACC)  (VERACC) |  | (S) RE | 1, 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)  46 : International Great Lakes Datum 2020  47 : Sea Floor  48 : Sea Surface  49 : Hydrographic Zero | EN | 0, 1 |

**Feature Bindings:**

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

**2.19. 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:** NEWOBJ

**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, \* |

**2.20. 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:** GenericBuoy

**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 Area 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, \* |
| 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 |
| Orientation Value | (ORIENT) |  | (S) RE | 1, 1 |

**2.21. 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.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| AtoN Number |  |  | TE | 1, 1 |

**Feature Bindings:**

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

**Feature use type:** geographic

**Primitive:** point

**Remarks:** No remarks.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Fog Signal | (CATFOG) | 1 : Explosive  2 : Diaphone  3 : Siren  4 : Nautophone  5 : Reed  6 : Tyfon  7 : Bell  8 : Whistle  9 : Gong  10 : Horn | 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, \* |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**2.23. Radar Reflector**

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

**CamelCase:** RadarReflector

**Alias:** RADRFL

**Super type:** GenericBuoy

**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, \* |

**2.24. 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, \* |
| 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, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 0, 1 |
| Height | (HEIGHT) |  | RE | 0, 1 |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : Main European Inland Waterway Marking System  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulation  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, \* |
| Vertical Length | (VERLEN) |  | 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, \* |

**2.25. 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:** GenericBuoy

**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 |
| Sector Limit One | (SECTR1) |  | C | 0, 1 |
| Sector Bearing | (SECTR1)  (SECTR2) |  | (S) RE | 1, 1 |
| Sector Line Length |  |  | (S) RE | 0, 1 |
| Value of Nominal Range | (VALNMR) |  | RE | 0, 1 |

**2.26. 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:** GenericBuoy

**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, \* |

**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 |

**2.27. 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** |
| 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, \* |
| 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, \* |
| Exhibition Condition of Light | (EXCLIT) | 1 : Light Shown Without Change of Character  2 : Daytime Light  3 : Fog Light  4 : Night Light | EN | 0, 1 |
| Value of Nominal Range | (VALNMR) |  | RE | 0, 1 |
| Flare Bearing |  |  | IN | 0, 1 |
| Multiplicity of Features |  |  | C | 0, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**2.28. Retroreflector**

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

**CamelCase:** Retroreflector

**Alias:** RETRFL

**Super type:** GenericBuoy

**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 : Main European Inland Waterway Marking System  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulation  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, \* |

**2.29. 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** |
| 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, \* |
| Signal Generation | (SIGGEN) | 1 : Automatically  2 : By Wave Action  3 : By Hand  4 : By Wind  5 : Radio Activated  6 : Call Activated | EN | 0, 1 |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : Main European Inland Waterway Marking System  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulation  15 : Paraguay-Parana Waterway - Brazilian Complementary Aids | EN | 0, 1 |
| Major Light |  |  | BO | 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 |
| 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, \* |
| Value of Nominal Range | (VALNMR) |  | RE | 0, 1 |
| Multiplicity of Features |  |  | C | 0, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**2.30. 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:** LIGHTS Fog Detector 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** |
| 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 |

**2.31. 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, \* |
| Signal Generation | (SIGGEN) | 1 : Automatically  2 : By Wave Action  3 : By Hand  4 : By Wind  5 : Radio Activated  6 : Call Activated | EN | 0, 1 |
| Marks Navigational - System Of | (MARSYS) | 1 : IALA A  2 : IALA B  9 : No System  10 : Other System  11 : Main European Inland Waterway Marking System  12 : Russian Inland Waterway Regulations  13 : Brazilian National Inland Waterway Regulation  15 : Paraguay-Parana Waterway - Brazilian Complementary Aids | 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, \* |
| Number of Features |  |  | (S) IN | 0, 1 |

**2.32. 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:** BCNCAR

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Light, fog signal, radar reflector and retro-reflector are separate objects.

**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 |

**2.33. Isolated Danger Beacon**

**Definition:** An isolated danger beacon is a beacon erected on an isolated danger of limited extent, which has navigable water all around it.

**CamelCase:** IsolatedDangerBeacon

**Alias:** BCNISD

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Light, fog signal, radar reflector and retro-reflector are separate objects.

**2.34. Landmark**

**Definition:** Any 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, \* |
| 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, \* |
| Radar Conspicuous | (CONRAD) |  | BO | 0, 1 |
| Visual Prominence | (CONVIS) | 1 : Visually Conspicuous  2 : Not Visually Conspicuous  3 : Prominent | EN | 1, 1 |
| 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  49 : Roof Above Navigable Water  50 : Building Above Navigable Water | 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, \* |
| 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, \* |
| Height | (HEIGHT) |  | RE | 0, 1 |

**2.35. Lateral Beacon**

**Definition:** 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.

**CamelCase:** LateralBeacon

**Alias:** BCNLAT

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Light, fog signal, radar reflector and retro-reflector are separate objects.

**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 |

**2.36. 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:** noGeometry

**Remarks:** No remarks.

**2.37. Safe Water Beacon**

**Definition:** A safe water beacon is used to indicate that there is navigable water around the mark.

**CamelCase:** SafeWaterBeacon

**Alias:** BCNSAW

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Light, fog signal, radar reflector and retro-reflector are separate objects.

**2.38. Special Purpose/General Beacon**

**Definition:** 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.

**CamelCase:** SpecialPurposeGeneralBeacon

**Alias:** BCNSPP

**Super type:** GenericBeacon

**Feature use type:** geographic

**Primitive:** point

**Remarks:** 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). Light, fog signal, radar reflector and retro-reflector are separate features.

**Attribute Bindings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-10x Attribute** | **S-57 Acronym** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Category of Special Purpose Mark | (CATSPM) | 1 : Firing Danger Area 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, \* |

**2.39. 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, \* |

**2.40. 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, \* |

**2.41. 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, \* |

**2.42. 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 |  |  | TE | 0, 1 |
| MMSI Code |  |  | TE | 1, 1 |
| Status | (STATUS) |  | EN | 0, \* |

**2.43. 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 |

**2.44. 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 |

**2.45. 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, \* |

**2.46. 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, \* |

**3. Carto Feature Types**

**4. Information Types**

**4.1. 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 |

**5. Simple Attributes**

**5.1. 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 | . |

**5.2. 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 | . |

**5.3. 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 | . |

**5.4. 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 | . |

**5.5. 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 | . |

**5.6. 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 | . |

**5.7. 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 | . |

**5.8. 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 | . |

**5.9. 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.

**5.10. Seasonal Action Required**

**Definition:** -

**CamelCase:** SeasonalActionRequired

**Alias:**

**Value type:** text

**Remarks:** -

**5.11. IsSlatted**

**Definition:** -

**CamelCase:** isSlatted

**Alias:**

**Value type:** boolean

**Remarks:** -

**5.12. Vertical Accuracy**

**Definition:** -

**CamelCase:** verticalAccuracy

**Alias:**

**Value type:** real

**Remarks:** -

**5.13. 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. |

**5.14. 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 | - |

**5.15. 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 | - |

**5.16. 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 | - |

**5.17. 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.

**5.18. 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:** No remarks.

**5.19. 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.

**5.20. 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.

**5.21. 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.

**5.22. Pictorial Representation**

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

**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).

**5.23. AtoN Number**

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

**CamelCase:** AtoNNumber

**Alias:**

**Value type:** text

**Remarks:** No remarks.

**5.24. 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. |

**5.25. 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 feature, 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. |

**5.26. Radar Conspicuous**

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

**CamelCase:** radarConspicuous

**Alias:** CONRAD

**Value type:** boolean

**Remarks:** No remarks.

**5.27. 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 | Main European Inland Waterway Marking System | Navigational aids as required in international, national or regional regulations that contain the same navigational aids as the European Code for Inland Waterways of UNECE, or if there is no regulation for a waterway, navigational aids as recommended in the European Code for Inland Waterways of UNECE |
| 12 | Russian Inland Waterway Regulations | Navigational aids conform to the Russian inland waterway regulations. |
| 13 | Brazilian National Inland Waterway Regulation | Navigational aids conform to the Brazilian national inland waterway regulation |
| 15 | Paraguay-Parana Waterway - Brazilian Complementary Aids | Navigational aids conform to the Brazilian complementary aids on the Paraguay-Parana waterway. |

**5.28. 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. |

**5.29. 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. |

**5.30. 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.

**5.31. 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 seabed. |
| 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 seabed. |
| 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. |
| 8 | Mooring Post | A post where to which something (such as a craft) can be moored. |

**5.32. 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 an object 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. |

**5.33. Height**

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

**CamelCase:** height

**Alias:** HEIGHT

**Value type:** real

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

**5.34. 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. |

**5.35. 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. |

**5.36. 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. |

**5.37. Category of Installation Buoy**

**Definition:** Classification of fixed installation buoy.

**CamelCase:** categoryOfInstallationBuoy

**Alias:** CATINB

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Catenary Anchor Leg Mooring | 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 | Single Buoy Mooring | A large mooring buoy used by tankers to load and unload in port approaches or in offshore oil and gas fields. |

**5.38. 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. |

**5.39. 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 seabed. 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 seabed, and at its upper end to a mooring buoy by a chain or wire. |
| 6 | Mooring Tower | A platform secured to the seabed 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 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 seabed by a flexible pipeline and cables. |
| 11 | Floating Oil Tank | A floating structure, anchored to the seabed, for storing oil. |

**5.40. 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. |

**5.41. 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. |

**5.42. 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

**Value type:** boolean

**Remarks:** No remarks.

**5.43. 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.

**5.44. 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.

**5.45. 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. |

**5.46. 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 measured 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 measured 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 measured 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. |
| 18 | Mechanically Swept | The given area was determined to be free from navigational dangers to a certain depth by towing a line or object below the surface at the desired depth; or least depth(s) and position(s) within an area was identified using the same technique. |

**5.47. Effective Intensity**

**Definition:** -

**CamelCase:** effectiveIntensity

**Alias:**

**Value type:** real

**Remarks:** -

**5.48. Peak Intensity**

**Definition:** -

**CamelCase:** peakIntensity

**Alias:**

**Value type:** real

**Remarks:** -

**5.49. 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. |
| 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 somewhat 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. |
| 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. |
| 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) |
| 46 | International Great Lakes Datum 2020 | The 2020 update to the International Great Lakes Datum, the official reference system used to measure water level heights in the Great Lakes, connecting channels, and the St. Lawrence River system. |
| 47 | Sea Floor | The bottom of the ocean and seas where there is a generally smooth gentle gradient. Also referred to as sea bed (sometimes seabed or sea-bed), and sea bottom. |
| 48 | Sea Surface | A two-dimensional (in the horizontal plane) field representing the air-sea interface, with high-frequency fluctuations such as wind waves and swell, but not astronomical tides, filtered out. |
| 49 | Hydrographic Zero | A vertical reference near the lowest astronomical tide (LAT), below which the sea level falls only very exceptionally. |

**5.50. 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.

**5.51. File Reference**

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

**CamelCase:** fileReference

**Alias:** TXTDSC NTXTDS

**Value type:** text

**Remarks:** No remarks.

**5.52. 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.

**5.53. Time of Day Start**

**Definition:** The time corresponding to the start of an active period.

**CamelCase:** timeOfDayStart

**Alias:**

**Value type:** time

**Remarks:** The time of day start must be encoded using 2 digits for the hour (hh), 2 digits for the minutes(mm) and 2 digits for the seconds (ss). This conforms to ISO 8601:2004.

**5.54. Time of Day End**

**Definition:** The time corresponding to the end of an active period.

**CamelCase:** timeOfDayEnd

**Alias:**

**Value type:** time

**Remarks:** The time of day end must be encoded using 2 digits for the hour (hh), 2 digits for the minutes(mm) and 2 digits for the seconds (ss). This conforms to ISO 8601:2004.

**5.55. 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.

**5.56. 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.

**5.57. Name Usage**

**Definition:** Classification of the type and display level of the name of a feature in an end-user system.

**CamelCase:** nameUsage

**Alias:**

**Value type:** enumeration

**Remarks:** No remarks.

**Listed Values:**

|  |  |  |
| --- | --- | --- |
| **Code** | **Label** | **Definition** |
| 1 | Default Name Display | The name is intended to be displayed when the end-user system is set to the default name/text display setting. |
| 2 | Alternate Name Display | The name is intended to be displayed when the end-user system is set to an alternate name/text display setting, for example an alternate language. |
| 3 | No Chart Display | The name or text is not intended to be displayed. |

**5.58. Name**

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

**CamelCase:** name

**Alias:** OBJNAM NOBJNM

**Value type:** text

**Remarks:** No remarks.

**5.59. Installation Date**

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

**CamelCase:** installationDate

**Alias:**

**Value type:** date

**Remarks:** No remarks.

**5.60. 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.

**5.61. 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 flood lights, 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. |

**5.62. 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 Area 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 seaplanes 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 or adrift. |
| 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. |

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

**Definition:** -

**CamelCase:** CategoryOfSyntheticAISAidtoNavigation

**Alias:**

**Value type:** enumeration

**Remarks:** -

**Listed Values:**

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

**5.64. 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. |

**5.65. 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 | - |

**5.66. 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. |
| 2 | Cone (Point Down) | Is where the vertex points down. |
| 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, its ends being parallel circles). |
| 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. |
| 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) | A bundle of rods or twigs. A besom, point up is where the thicker (untied) end of the besom is at the bottom. |
| 16 | Besom (Point Down) | A bundle of rods or twigs. 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) | A horizontal rectangle is where the two longer opposite sides are standing horizontally. |
| 21 | Rectangle (Vertical) | A rectangle is a plane figure with four right angles and four straight sides, opposite sides being parallel and equal in length. A vertical rectangle is where the two longer opposite sides are standing vertically. |
| 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. |

**5.67. 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. 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. |

**5.69. 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.

**5.70. 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. |

**5.71. 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.

**5.72. 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.

**5.73. 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 | Differential GNSS is implemented by placing a GNSS monitor receiver at a precisely known location. Instead of computing a navigation fix, the monitor determines the range error to every GNSS satellite it can track. These ranging errors are then transmitted to local users where they are applied as corrections before computing the navigation result. |
| 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 | 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 AIS shore station for use by competent authorities to provide AIS service, manage the data link and enable effective ship to shore / shore to ship transmission of information. |

**5.74. 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.

**5.75. 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 be in line to be visible. |

**5.76. 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. |

**5.77. Flare Bearing**

**Definition:** The bearing about which the light flare symbol is rotated to be displayed in ECDIS.

**CamelCase:** flareBearing

**Alias:**

**Value type:** integer

**Remarks:** The initial flare bearing is calculated by ENC production software systems. The attribute flare bearing may also be populated manually to cartographically align the light flare along, for example, a transit or leading line (noting that the in such cases the bearing to be encoded will be the reciprocal (+/- 180 degrees) of the bearing encoded for the navigational line).

**5.78. 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. |

**5.79. 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.

**5.80. 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. |

**5.81. 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. |

**5.82. 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 | An establishment for teaching and learning (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. |
| 49 | Roof Above Navigable Water | A roof that is extending above navigable water, e.g. to protect open cargo holds from rain during loading and unloading. Depending on the vertical clearance vessels can pass under the roof above navigable water. |
| 50 | Building Above Navigable Water | The part of a building on land that is extending above navigable water. Depending on the vertical clearance vessels can pass under the building above navigable water. |

**5.83. 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.

**5.84. Sector Arc Extension**

**Definition:** An indication that the default radius of a sector arc is to be extended by 5mm.

**CamelCase:** sectorArcExtension

**Alias:**

**Value type:** boolean

**Remarks:** No remarks.

**5.85. 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.

**5.86. 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.

**5.87. Orientation Uncertainty**

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

**CamelCase:** orientationUncertainty

**Alias:**

**Value type:** real

**Remarks:** No remarks.

**5.88. 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.

**5.89. 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.

**5.90. 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.

**5.91. 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 an appearance of light 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 continuously, 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. |

**5.92. 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.

**5.93. 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.

**5.94. 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.

**5.95. 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.

**5.96. 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:** real

**Remarks:** No remarks.

**5.97. 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.

**5.98. 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. |

**5.99. 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.

**6. Complex Attributes**

**6.1. 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 |

**6.2. 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 |

**6.3. 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 |

**6.4. 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** |
| Language |  |  | TE | 1, 1 |
| Name | (OBJNAM)  (NOBJNM) |  | TE | 1, 1 |
| Name Usage |  | 1 : Default Name Display  2 : Alternate Name Display  3 : No Chart Display | EN | 0, 1 |

**6.5. 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 |
| Time of Day End |  |  | TI | 0, 1 |
| Time of Day Start |  |  | TI | 0, 1 |

**6.6. 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 |

**6.7. 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, 99 (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 Arc Extension |  |  | BO | 0, 1 |

**6.8. Multiplicity of Features**

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

**6.9. 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 |

**6.10. 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 |

**6.11. 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 |

**6.12. 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, 10 (ordered) |
| Signal Period | (SIGPER) |  | RE | 0, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**6.13. 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, 10 |
| 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, 99 (ordered) |
| Directional Character |  |  | (S) C | 0, 1 |
| Signal Status |  | 1 : Lit/Sound  2 : Eclipsed/Silent | (S) EN | 1, 1 |

**6.14. 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 |

**6.15. 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 |

**6.16. 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) RE | 0, 1 |

**6.17. 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 |  |  | RE | 0, 1 |

**6.18. 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 |  |  | RE | 0, 1 |

**6.19. Signal Sequence**

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

**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 |

**6.20. 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 |

**7. Roles**

**7.1. Parent**

**Definition:** -

**CamelCase:** parent

**Alias:**

**Remarks:** No remarks.

**7.2. Child**

**Definition:** -

**CamelCase:** child

**Alias:**

**Remarks:** No remarks.

**7.3. Virtual AIS Broadcast By**

**Definition:** -

**CamelCase:** virtualAISbroadcastBy

**Alias:**

**Remarks:** No remarks.

**7.4. Synthetic AIS Broadcast By**

**Definition:** -

**CamelCase:** syntheticAISbroadcastBy

**Alias:**

**Remarks:** No remarks.

**7.5. Physical AIS Broadcast By**

**Definition:** -

**CamelCase:** physicalAISbroadcastBy

**Alias:**

**Remarks:** No remarks.

**7.6. Peer Aton Aggregation**

**Definition:** -

**CamelCase:** peerAtonAggregation

**Alias:**

**Remarks:** No remarks.

**7.7. Peer Aton Association**

**Definition:** -

**CamelCase:** peerAtonAssociation

**Alias:**

**Remarks:** No remarks.

**7.8. Navigable Track**

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

**CamelCase:** navigableTrack

**Alias:**

**Remarks:** No remarks.

**7.9. Danger**

**Definition:** -

**CamelCase:** danger

**Alias:**

**Remarks:** No remarks.

**7.10. Topmark Part**

**Definition:** -

**CamelCase:** topmarkPart

**Alias:**

**Remarks:** No remarks.

**7.11. Status Part**

**Definition:** -

**CamelCase:** Statuspart

**Alias:**

**Remarks:** No remarks.

**7.12. Virtual AIS Broadcasts**

**Definition:** -

**CamelCase:** virtualAISbroadcasts

**Alias:**

**Remarks:** No remarks.

**7.13. Synthetic AIS Broadcasts**

**Definition:** -

**CamelCase:** syntheticAISbroadcasts

**Alias:**

**Remarks:** No remarks.

**7.14. Physical AIS Broadcasts**

**Definition:** -

**CamelCase:** physicalAISbroadcasts

**Alias:**

**Remarks:** No remarks.

**7.15. Aton Aggregation By**

**Definition:** -

**CamelCase:** atonAggregationBy

**Alias:**

**Remarks:** No remarks.

**7.16. Aton Association By**

**Definition:** -

**CamelCase:** atonAssociationBy

**Alias:**

**Remarks:** No remarks.

**7.17. 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.

**7.18. Marking Aton**

**Definition:** -

**CamelCase:** markingAton

**Alias:**

**Remarks:** No remarks.

**7.19. Buoy Part**

**Definition:** -

**CamelCase:** buoyPart

**Alias:**

**Remarks:** No remarks.

**8. Information Associations**

**8.1. Aton Status**

**Definition:**

**CamelCase:** Atonstatus

**Alias:**

**Remarks:** -

**Role:** Status Part

**Role:**

**9. Feature Associations**

**9.1. Buoy Topmark**

**Definition:**

**CamelCase:** BuoyTopmark

**Alias:**

**Remarks:** -

**Role:** Topmark Part

**Role:** Buoy Part

**9.2. Structure Equipment**

**Definition:**

**CamelCase:** StructureEquipment

**Alias:**

**Remarks:** -

**Role:** Parent

**Role:** Child

**9.3. Physical AIS**

**Definition:**

**CamelCase:** PhysicalAIS

**Alias:**

**Remarks:** -

**Role:** Physical AIS Broadcast By

**Role:** Physical AIS Broadcasts

**9.4. Synthetic AIS**

**Definition:**

**CamelCase:** SyntheticAIS

**Alias:**

**Remarks:** -

**Role:** Synthetic AIS Broadcast By

**Role:** Synthetic AIS Broadcasts

**9.5. Virtual AIS**

**Definition:**

**CamelCase:** VirtualAIS

**Alias:**

**Remarks:** -

**Role:** Virtual AIS Broadcast By

**Role:** Virtual AIS Broadcasts

**9.6. Aton Aggregations**

**Definition:**

**CamelCase:** AtonAggregations

**Alias:**

**Remarks:** -

**Role:** Peer Aton Aggregation

**Role:** Aton Aggregation By

**9.7. Aton Associations**

**Definition:**

**CamelCase:** AtonAssociations

**Alias:**

**Remarks:** -

**Role:** Peer Aton Association

**Role:** Aton Association By

**9.8. Range System**

**Definition:**

**CamelCase:** RangeSystem

**Alias:**

**Remarks:** -

**Role:** Navigable Track

**Role:** Navigation Line

**9.9. Dangerous Feature Association**

**Definition:**

**CamelCase:** DangerousFeatureAssociation

**Alias:**

**Remarks:** -

**Role:** Danger

**Role:** Marking Aton