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# Application Schema Types

## Feature Types

### «FeatureType» Aggregation

content of categoryOfAggregation should be put in information attribute when converting to S-57.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | IALA\_categoryOfAggregation | [1] | IALA\_categoryOfAggregation |  |

**Inherited Attributes**

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| Aggregations | *Label:* Aggregation  *Role:* peer  *Multiplicity:* 0..\* | *Label:* AidsToNavigation  *Role:* peer  *Multiplicity:* 0..\* |  |

### «FeatureType» AidsToNavigation

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | idCode | [1] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |

**Inherited Attributes**

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| Aggregations | *Label:* Aggregation  *Role:* peer  *Multiplicity:* 0..\* | *Label:* AidsToNavigation  *Role:* peer  *Multiplicity:* 0..\* |  |
| Associations | *Label:* Association  *Role:* peer  *Multiplicity:* 0..\* | *Label:* AidsToNavigation  *Role:* peer  *Multiplicity:* 0..\* |  |

### «FeatureType» Association

content of categoryOfAssociation should be put in information attribute when converting to S-57.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | IALA\_categoryOfAssociation | [1] | IALA\_categoryOfAssociation |  |

**Inherited Attributes**

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| Associations | *Label:* Association  *Role:* peer  *Multiplicity:* 0..\* | *Label:* AidsToNavigation  *Role:* peer  *Multiplicity:* 0..\* |  |

### «FeatureType» BeaconCardinal

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfCardinalMark | [1] | categoryOfCardinalMark |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | beaconShape | [1] | beaconShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | elevation | [0..1] | real | Definition:  The altitude of the ground level of an object, measured from a specified vertical datum.  Minimum Value: 0  References:  INT 1: IC 10-13; IH 20;  M-4: 352.1-2; 302.2; 405;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  47 for an elevation of 47 metres |
| Attribute | height | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text | Definition:  The individual name of an object. |
| Attribute | objectNameInNationalLanguage | [0..1] | text | Indication:  Name of object (c...):string of national language characters  Format:  c...  Remarks:  The attribute object name in national language encodes the individual name of an object in the specified national language. |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BeaconIsolatedDanger

Definition:

A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to

navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

An isolated danger beacon is a beacon erected on an isolated danger of limited extent, which has

navigable water all around it. (UKHO NP735, 5th Edition)

**Attributes**

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | beaconShape | [1] | beaconShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | elevation | [0..1] | real | Definition:  The altitude of the ground level of an object, measured from a specified vertical datum.  Minimum Value: 0  References:  INT 1: IC 10-13; IH 20;  M-4: 352.1-2; 302.2; 405;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  47 for an elevation of 47 metres |
| Attribute | height | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text | Definition:  The individual name of an object. |
| Attribute | objectNameInNationalLanguage | [0..1] | text | Indication:  Name of object (c...):string of national language characters  Format:  c...  Remarks:  The attribute object name in national language encodes the individual name of an object in the specified national language. |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BeaconLateral

Definition:

A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to

navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

A lateral beacon is used to indicate the port or starboard hand side of the route to be followed. They

are generally used for well defined channels and are used in conjunction with a conventional direction

of buoyage. (UKHO NP 735, 5th Edition)

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfLateralMark | [1] | categoryOfLateralMark |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | beaconShape | [1] | beaconShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | elevation | [0..1] | real | Definition:  The altitude of the ground level of an object, measured from a specified vertical datum.  Minimum Value: 0  References:  INT 1: IC 10-13; IH 20;  M-4: 352.1-2; 302.2; 405;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  47 for an elevation of 47 metres |
| Attribute | height | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text | Definition:  The individual name of an object. |
| Attribute | objectNameInNationalLanguage | [0..1] | text | Indication:  Name of object (c...):string of national language characters  Format:  c...  Remarks:  The attribute object name in national language encodes the individual name of an object in the specified national language. |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BeaconSafeWater

Definition:

A safe water beacon is a prominent specially constructed object forming a conspicuous mark as a

fixed aid to navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

A safe water beacon may be used to indicate that there is navigable water around the mark. (UKHO

NP735, 5th Edition)

**Attributes**

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | beaconShape | [1] | beaconShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | elevation | [0..1] | real | Definition:  The altitude of the ground level of an object, measured from a specified vertical datum.  Minimum Value: 0  References:  INT 1: IC 10-13; IH 20;  M-4: 352.1-2; 302.2; 405;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  47 for an elevation of 47 metres |
| Attribute | height | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text | Definition:  The individual name of an object. |
| Attribute | objectNameInNationalLanguage | [0..1] | text | Indication:  Name of object (c...):string of national language characters  Format:  c...  Remarks:  The attribute object name in national language encodes the individual name of an object in the specified national language. |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BeaconSpecialPurposeGeneral

Definition:

A beacon is a prominent specially constructed object forming a conspicuous mark as a fixed aid to

navigation or for use in hydrographic survey (IHO Dictionary, S-32, 5th Edition, 420).

A special purpose beacon is primarily used to indicate an area or feature, the nature of which is

apparent from reference to a chart, Sailing Directions or Notices to Mariners. (UKHO NP 735, 5th

Edition)

Beacon in general: A beacon whose appearance or purpose is not adequately known.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfSpecialPurposeMark | [1..\*] | categoryOfSpecialPurposeMark |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | beaconShape | [1] | beaconShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | elevation | [0..1] | real | Definition:  The altitude of the ground level of an object, measured from a specified vertical datum.  Minimum Value: 0  References:  INT 1: IC 10-13; IH 20;  M-4: 352.1-2; 302.2; 405;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  47 for an elevation of 47 metres |
| Attribute | height | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text | Definition:  The individual name of an object. |
| Attribute | objectNameInNationalLanguage | [0..1] | text | Indication:  Name of object (c...):string of national language characters  Format:  c...  Remarks:  The attribute object name in national language encodes the individual name of an object in the specified national language. |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BuoyCardinal

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfCardinalMark | [1] | categoryOfCardinalMark |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | buoyShape | [1] | buoyShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | IALA\_typeOfBuoy | [0..1] | text | Types of light buoy e.g. LANBY-100, LS-35, LL-30, LL-28, LL-26, LL-26(M), LL-24, LS-24, LSP-24, LT-10  Types 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-17S(S) |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfconstuction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | radarConspicious | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BuoyInstallation

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfInstallationBuoy | [1] | categoryOfInstallationBuoy |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | buoyShape | [1] | buoyShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | IALA\_typeOfBuoy | [0..1] | text | Types of light buoy e.g. LANBY-100, LS-35, LL-30, LL-28, LL-26, LL-26(M), LL-24, LS-24, LSP-24, LT-10  Types 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-17S(S) |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfconstuction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | radarConspicious | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BuoyIsolatedDanger

**Attributes**

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | buoyShape | [1] | buoyShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | IALA\_typeOfBuoy | [0..1] | text | Types of light buoy e.g. LANBY-100, LS-35, LL-30, LL-28, LL-26, LL-26(M), LL-24, LS-24, LSP-24, LT-10  Types 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-17S(S) |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfconstuction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | radarConspicious | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BuoyLateral

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfLateralMark | [1] | categoryOfLateralMark |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | buoyShape | [1] | buoyShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | IALA\_typeOfBuoy | [0..1] | text | Types of light buoy e.g. LANBY-100, LS-35, LL-30, LL-28, LL-26, LL-26(M), LL-24, LS-24, LSP-24, LT-10  Types 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-17S(S) |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfconstuction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | radarConspicious | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BuoySafeWater

**Attributes**

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | buoyShape | [1] | buoyShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | IALA\_typeOfBuoy | [0..1] | text | Types of light buoy e.g. LANBY-100, LS-35, LL-30, LL-28, LL-26, LL-26(M), LL-24, LS-24, LSP-24, LT-10  Types 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-17S(S) |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfconstuction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | radarConspicious | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» BuoySpecialPurposeGeneral

Definition:

A buoy is a floating object moored to the bottom in a particular place, as an aid to navigation or for

other specific purposes. (IHO Dictionary, S-32, 5th Edition, 565).

A special purpose buoy is primarily used to indicate an area or feature, the nature of which is

apparent from reference to a chart, Sailing Directions or Notices to Mariners. (UKHO NP 735, 5th

Edition)

Buoy in general: A buoy whose appearance or purpose is not adequately known.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfSpecialPurposeMark | [1..\*] | categoryOfSpecialPurposeMark |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | buoyShape | [1] | buoyShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | IALA\_typeOfBuoy | [0..1] | text | Types of light buoy e.g. LANBY-100, LS-35, LL-30, LL-28, LL-26, LL-26(M), LL-24, LS-24, LSP-24, LT-10  Types 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-17S(S) |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfconstuction | [0..\*] | natureOfConstruction |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | radarConspicious | [0..1] | radarConspicuous |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» Daymark

To simplify things, Daymark can only be equipment in this model. If Daymark is in navigable water, it should be associated with a pile or another appropriate structure feature instance.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfSpecialPurposeMark | [0..1] | categoryOfSpecialPurposeMark |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | elevation | [0..1] | real | Definition:  The altitude of the ground level of an object, measured from a specified vertical datum.  Minimum Value: 0  References:  INT 1: IC 10-13; IH 20;  M-4: 352.1-2; 302.2; 405;  Indication:  Unit: defined in the dataset metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  47 for an elevation of 47 metres |
| Attribute | height | [0..1] | real |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text | Indication:  Name of object (c...):string of national language characters  Format:  c...  Remarks:  The attribute object name in national language encodes the individual name of an object in the specified national language. |
| Attribute | objectName | [0..1] | text | Definition:  The individual name of an object. |
| Attribute | status | [0..\*] | status |  |
| Attribute | topmarkDaymarkShape | [1] | topmarkDaymarkShape |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» Equipment

If structure is unknown, a pile feature instance should be used and all co-located equipment should be associated to the pile.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| SpatialAttribute | *Label:* Equipment  *Role:*  *Multiplicity:* | *Label:* GM\_Point  *Role:*  *Multiplicity:* |  |
| StructureEquipment | *Label:* StructureObject  *Role:* parent  *Multiplicity:* | *Label:* Equipment  *Role:* child  *Multiplicity:* 0..\* |  |

### «FeatureType» FogSignal

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | categoryOfFogSignal | [1] | categoryOfFogSignal |  |
|  | signalFrequency | [0..1] | int |  |
|  | signalGeneration | [0..1] | signalGeneration |  |
|  | signalGroup | [0..1] | text |  |
|  | signalPeriod | [0..1] | real |  |
|  | signalSequence | [0..1] | text |  |
|  | status | [0..\*] | status |  |
|  | valueOfMaximumRange | [0..1] | real |  |
|  | IALA\_signalOutput | [0..1] | real | Given in dB |
|  | IALA\_typeOfBattery | [0..1] | text | Given in dB |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» GenericBeacon

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | beaconShape | [1] | beaconShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
| Attribute | elevation | [0..1] | real | Definition:  The altitude of the ground level of an object, measured from a specified vertical datum.  Minimum Value: 0  References:  INT 1: IC 10-13; IH 20;  M-4: 352.1-2; 302.2; 405;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  47 for an elevation of 47 metres |
| Attribute | height | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | objectNameInNationalLanguage | [0..1] | text | Indication:  Name of object (c...):string of national language characters  Format:  c...  Remarks:  The attribute object name in national language encodes the individual name of an object in the specified national language. |
| Attribute | objectName | [0..1] | text | Definition:  The individual name of an object. |
| Attribute | status | [0..\*] | status |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» GenericBuoy

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | buoyShape | [1] | buoyShape |  |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | radarConspicious | [0..1] | radarConspicuous |  |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | natureOfconstuction | [0..\*] | natureOfConstruction |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalLength | [0..1] | real | Definition:  The total vertical length of an object.  References:  INT 1: IE 5; IL 21.3;  M-4: 303;  Minimum Value: 0  Indication:  Unit:defined in the data set metadata, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  24.5 for a vertical length of 24.5 metres.  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. |
| Attribute | IALA\_typeOfBuoy | [0..1] | text | Types of light buoy e.g. LANBY-100, LS-35, LL-30, LL-28, LL-26, LL-26(M), LL-24, LS-24, LSP-24, LT-10  Types 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-17S(S) |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» IALA\_EnvironmentObservationEquipment

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | status | [0..\*] | status |  |
|  | height | [0..1] | real |  |
|  | IALA\_typeOfEnvironmentObservationEquipment | [1..\*] | text |  |
|  | IALA\_typeOfBattery | [0..1] | text |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» Landmark

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfLandmark | [1..\*] | categoryOfLandmark |  |
| Attribute | colour | [0..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | visuallyConspicuous | [1] | visuallyConspicuous |  |
| Attribute | elevation | [0..1] | real |  |
| Attribute | function | [0..\*] | function |  |
| Attribute | height | [0..1] | real |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real |  |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |
| Attribute | verticalLength | [0..1] | real |  |
| Attribute | IALA\_mannedStructure | [0..1] | boolean |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| SpatialAttribute | *Label:* Landmark  *Role:*  *Multiplicity:* | *Label:* GM\_CompositeCurve  *Role:*  *Multiplicity:* 0..1 |  |
| SpatialAttribute | *Label:* Landmark  *Role:*  *Multiplicity:* | *Label:* GM\_Surface  *Role:*  *Multiplicity:* 0..1 |  |

### «FeatureType» Light

Acronym: LIGHTS Code: 75

Light LIGHTS 75

Definition:

A luminous or lighted aid to navigation. (adapted from IHO Dictionary, S-32, 5th Edition, 2766)

References:

INT 1: IP 1-30.3, 40-65;

M-4: 470-473.5; 475-475.7; 476-478,5;

Remarks:

A light may be fixed on a buoy, beacon, tower etc. These are separate objects.

Distinction: beacon, cardinal; beacon, isolated danger; beacon, lateral; beacon, safe water;

beacon special purpose/general; buoy, cardinal; buoy, installation; buoy, isolated

danger; buoy, lateral; buoy, safe water; buoy, special purpose/general; light

vessel; light float;

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfLight | [0..\*] | categoryOfLight |  |
| Attribute | colour | [1] | colour |  |
| Attribute | exhibitionConditionOfLight | [0..1] | exhibitionConditionOfLight |  |
| Attribute | height | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres.  Remarks:  Height must not be used for floating objects. |
| Attribute | lightCharacteristic | [1] | lightCharacteristic |  |
| Attribute | lightVisibility | [0..\*] | lightVisibility |  |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | multiplicityOfLights | [0..1] | int | Definition:  The number of lights of identical character that exist as a co-located group.  Minimum Value: 2  Indication:  Unit: none  Resolution: 1  Format:  xx  Example:  5 |
| Attribute | objectNameInNationalLanguage | [0..1] | text | Indication:  Name of object (c...):string of national language characters  Format:  c...  Remarks:  The attribute object name in national language encodes the individual name of an object in the specified national language. |
| Attribute | objectName | [0..1] | text | Definition:  The individual name of an object. |
| Attribute | orientation | [0..1] | real |  |
| Attribute | sectorLimitOne | [0..1] | int |  |
| Attribute | sectorLimitTwo | [0..1] | int |  |
| Attribute | signalGroup | [0..1] | text | Definition:  The number of signals, the combination of signals or the morse character(s) within one period of full  sequence.  References:  INT 1: IP 10.2-9; IR 20, 22;  M-4: 453; 453.1-4; 471.2;  Indication:  The signal group of a light is encoded using brackets to separate the individual groups. A group of  signals may be a single number, a chain of numbers separated by "+", a sequence of up to 4 letters  or a letter and a number.  A fixed light has no signal group.  Where no specific signal group is given for one of the light characteristics, this should be shown by  an empty pair of brackets.  Format:  (c)(c)...  Examples:  Light characteristic SIGGRP Indication  VQ(6)+LFl -> (6)(1)  Fl+LFl (2+3) -> (1)(2+3)  Fl(2)+Lfl(3) -> (2)(3)  FFl -> ()(1)  Mo(AA) -> (AA)  AlFl(2W+1R) -> (2+1)  AlLFlWR -> (2)  FOcW -> ()(1)  AlOc(4)WR -> (4) |
| Attribute | signalPeriod | [0..1] | real | Definition:  The time occupied by an entire cycle of intervals of light and eclipse.  References:  INT 1: IP 12; IR 20, 22;  M-4: 453.5; 471.5;  Minimum Value: 0  Indication:  Unit: second (s)  Resolution: 0.01 s  Format:  xx.xx  Example:  12 for an interval of 12 seconds.  Remarks:  No remarks. |
| Attribute | signalSequence | [0..1] | text | Definition:  The sequence of times occupied by intervals of light and eclipse for all >light characteristics=except  for occulting where the sequence of times is occupied by intervals of eclipse and light.  Indication:  Unit for value of intervals: second (s)  resolution: 0.01 s  Format:  LL.L + (EE.E)  Example:  00.8+(02.2)+00.8+(05.2)  The above example encodes a signal sequence with two intervals of light and two intervals of eclipse.  For occulting lights, the >signal sequence=is indicated using a fixed format to encode the values of  intervals of eclipse (E) and (L).  Format:  (EE.E)+LL.L  Example:  (00.8)+02.2+(00.8)+05.2)  The above example encodes a signal sequence with two intervals of eclipse and two intervals of light.  Remarks:  The >signal sequence=for all >light characteristics=except for occulting is indicated using a fixed format  to encode the value of intervals of light (L) and eclipse (E). |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | valueOfNominalRange | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres.  Remarks:  Height must not be used for floating objects. |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |
| Attribute | IALA\_typeOfLight | [0..1] | text | Types of Light : e.g. Bulb type(250mm, 300mm, 400mm), LED type(Integral type, 200, 200HI, 250, 300, 350) |
| Attribute | IALA\_typeOfBattery | [0..1] | text | Types of storage battery for light e.g. Hi-Ca 100, PS-250E, LDA-400, VGS-350 |
| Attribute | IALA\_valueOfGeographicalRange | [0..1] | real |  |
| Attribute | IALA\_valueOfLuminousRange | [0..1] | real |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» LightFloat

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
| Attribute | horizontalAccuracy | [0..1] | real |  |
| Attribute | horizontalLength | [0..1] | real |  |
| Attribute | horizontalWidth | [0..1] | real |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real |  |
| Attribute | verticalLength | [0..1] | real |  |
| Attribute | IALA\_mannedStructure | [0..1] | boolean |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» LightVessel

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. Also called light ship. (IHO

Dictionary, S-32, 5th Edition, 2828,2829)

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | colour | [1..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
| Attribute | horizontalAccuracy | [0..1] | real |  |
| Attribute | horizontalLength | [0..1] | real |  |
| Attribute | horizontalWidth | [0..1] | real |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real |  |
| Attribute | verticalLength | [0..1] | real |  |
| Attribute | IALA\_mannedStructure | [0..1] | boolean |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» NavigationLine

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfNavigationLine | [1] | categoryOfNavigationLine |  |
| Attribute | orientation | [1] | real |  |
| Attribute | status | [0..\*] | status |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| SpatialAttribute | *Label:* NavigationLine  *Role:*  *Multiplicity:* | *Label:* GM\_CompositeCurve  *Role:*  *Multiplicity:* |  |
| RangeSystem | *Label:* RecommendedTrack  *Role:* navigableTrack  *Multiplicity:* 0..\* | *Label:* NavigationLine  *Role:* navigationLine  *Multiplicity:* 1..\* |  |

### «FeatureType» OffshorePlatform

Definition:

A permanent offshore structure, either fixed or floating, used in the production of oil or natural gas.

(IHO Dictionary, S-32, 5th Edition, 3895)

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfOffshorePlatform | [0..\*] | categoryOfOffshorePlatform |  |
| Attribute | colour | [0..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
| Attribute | height | [0..1] | real |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | product | [0..\*] | product |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real |  |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |
| Attribute | verticalLength | [0..1] | real |  |
| Attribute | IALA\_mannedStructure | [0..1] | boolean |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| SpatialAttribute | *Label:* OffshorePlatform  *Role:*  *Multiplicity:* | *Label:* GM\_Surface  *Role:*  *Multiplicity:* 0..1 |  |

### «FeatureType» Pile

Definition:

A long heavy timber or section of steel, wood, concrete, etc.. forced into the earth which may serve as a support, as for a pier, or a free standing pole within a marine environment. (Adapted from IHO

Dictionary, S-32, 5th Edition, 3840)

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfPile | [0..1] | categoryOfPile |  |
| Attribute | colour | [0..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
| Attribute | height | [0..1] | real |  |
| Attribute | verticalAccuracy | [0..1] | real |  |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |
| Attribute | verticalLength | [0..1] | real |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» RadarReflector

Definition:

A device capable of, or intended for, reflecting radar signals. (IHO Dictionary, S-32, 5th Edition, 4147)

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

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | height | [0..1] | real |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real |  |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» RadarTransponderBeacon

Definition:

A transponder beacon transmitting a coded signal on radar frequency, permitting an interrogating craft to determine the bearing and range of the transponder. Also called racon. (IHO Dictionary, S-32, 5th Edition, 4137)

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfRadarTransponderBeacon | [1] | categoryOfRadarTransponderBeacon |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | radarWaveLength | [0..1] | text |  |
| Attribute | sectorLimitOne | [0..1] | int |  |
| Attribute | sectorLimitTwo | [0..1] | int |  |
| Attribute | signalGroup | [0..1] | text |  |
| Attribute | signalSequence | [0..1] | text |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | valueOfNominalRange | [0..1] | real |  |
| Attribute | IALA\_typeOfBattery | [0..1] | text |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» RecommendedTrack

Definition:

A track recommended to all or only certain vessels. (IHO Dictionary, S-32, 5th Edition, 5576)

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | categoryOfRecommendedTrack | [0..1] | categoryOfRecommendedTrack |  |
| Attribute | depthRangeMinimumValue | [0..1] | real |  |
| Attribute | depthRangeMaximumValue | [0..1] | real |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | orientation | [1] | real |  |
| Attribute | qualityOfSoundingMeasurement | [0..\*] | qualityOfSoundingMeasurement |  |
| Attribute | soundingAccuracy | [0..1] | real |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | techniqueOfSoundingMeasurement | [0..\*] | techniqueOfSoundingMeasurement |  |
| Attribute | trafficFlow | [0..1] | trafficFlow |  |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| RangeSystem | *Label:* RecommendedTrack  *Role:* navigableTrack  *Multiplicity:* 0..\* | *Label:* NavigationLine  *Role:* navigationLine  *Multiplicity:* 1..\* |  |
| SpatialAttribute | *Label:* RecommendedTrack  *Role:*  *Multiplicity:* | *Label:* GM\_CompositeCurve  *Role:*  *Multiplicity:* |  |

### «FeatureType» RetroReflector

Definition:

A means of distinguishing unlighted marks at night. Retro-reflective material is secured to the mark in a particular pattern to reflect back light. (Adapted from the UKHO NP735, 5th Edition).

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | colour | [0..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | height | [0..1] | real |  |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real |  |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

### «FeatureType» SiloTank

Definition:

An enclosed container, used for storage (Digital Geographic Information Working Group, Oct.87)

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | buildingShape | [0..1] | buildingShape |  |
| Attribute | categoryOfSiloTank | [0..1] | categoryOfSiloTank |  |
| Attribute | colour | [0..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | condition | [0..1] | condition |  |
| Attribute | radarConspicuous | [0..1] | radarConspicuous |  |
| Attribute | visuallyConspicuous | [0..1] | visuallyConspicuous |  |
| Attribute | elevation | [0..1] | real |  |
| Attribute | height | [0..1] | real |  |
| Attribute | natureOfConstruction | [0..\*] | natureOfConstruction |  |
| Attribute | objectNameInNationalLanguage | [0..1] | text |  |
| Attribute | objectName | [0..1] | text |  |
| Attribute | product | [0..1] | product |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | verticalAccuracy | [0..1] | real |  |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |
| Attribute | verticalLength | [0..1] | real |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| SpatialAttribute | *Label:* SiloTank  *Role:*  *Multiplicity:* | *Label:* GM\_Surface  *Role:*  *Multiplicity:* 0..1 |  |

### «FeatureType» StructureObject

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_aidAvailabilityCategory | [1] | IALA\_aidAvailabilityCategory |  |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| StructureEquipment | *Label:* StructureObject  *Role:* parent  *Multiplicity:* | *Label:* Equipment  *Role:* child  *Multiplicity:* 0..\* |  |
| SpatialAttribute | *Label:* StructureObject  *Role:*  *Multiplicity:* | *Label:* GM\_Point  *Role:*  *Multiplicity:* 0..1 |  |
|  | *Label:* contactAddress  *Role:*  *Multiplicity:* 0..1 | *Label:* StructureObject  *Role:*  *Multiplicity:* |  |

### «FeatureType» 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)

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | colour | [0..\*] | colour |  |
| Attribute | colourPattern | [0..\*] | colourPattern |  |
| Attribute | height | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres.  Remarks:  Height must not be used for floating objects. |
| Attribute | marksNavigationalSystemOf | [0..1] | marksNavigationalSystemOf |  |
| Attribute | status | [0..\*] | status |  |
| Attribute | topmarkDaymarkShape | [1] | topmarkDaymarkShape |  |
| Attribute | verticalAccuracy | [0..1] | real | Expected input:  The one-dimensional error.  The error is assumed to be positive and negative. The plus/minus character shall not be encoded.  Definition:  The best estimate of the vertical accuracy of heights, vertical distances and vertical clearances,  excluding sounding measurements.  Minimum value: 0  Indication:  Unit: defined in the HUNI subfield of the DSPM record or in the HUNITS attribute of  the M\_UNIT meta object class, e.g. metre (m)  Resolution: 0.1 m or 0.1 ft  Format:  xx.x  Example:  1.2 for an error of 1.2 metres. |
| Attribute | verticalDatum | [0..1] | verticalDatum |  |
| Attribute | verticalLength | [0..1] | real | Definition:  The value of the vertical distance to the highest point of the object, measured from a specified vertical  datum.  Minimum Value: 0  References:  INT 1: IC 14; IE 4; IK 10-11;  M-4: 302; 352.4; 421.1-2;  Indication:  Unit: defined in the data set metadata  Resolution: 0.1 m or 0.1 ft  Format:  xxx.x  Example:  73 for a height of 73 metres.  Remarks:  Height must not be used for floating objects. |

**Inherited Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | IALA\_remotelyMonitored | [0..1] | boolean |  |
|  | IALA\_remoteMonitoringSystem | [0..\*] | text |  |
| Attribute | dateEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | dateStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | IALA\_AtoNMaintenanceRecord | [0..1] | URI |  |
| Attribute | IALA\_inspectionFrequency | [0..1] | text |  |
| Attribute | IALA\_inspectionRequirements | [0..1] | text |  |
| Attribute | IALA\_installationDate | [0..1] | S100\_TruncatedDate |  |
| Attribute | idCode | [1] | text |  |
| Attribute | information | [0..\*] | text | max 300 characters |
| Attribute | informationInNationalLanguage | [0..\*] | text | max 300 characters |
| Attribute | periodEnd | [0..1] | S100\_TruncatedDate |  |
| Attribute | periodStart | [0..1] | S100\_TruncatedDate |  |
| Attribute | pictorialRepresentation | [0..1] | text | file reference to text file |
| Attribute | ScaleMinimum | [0..1] | int |  |
| Attribute | sourceDate | [0..1] | dateTime |  |
| Attribute | sourceIndication | [0..1] | text | Definition:  Information about the source of the object.  Indication:  country (c2): Two letter code according to ISO 3166 (refer to Annex A to S-57 Appendix A)  authority (c2): A string of two alphanumeric characters (refer to Annex A to S-57 Appendix A),  e.g. German Bundesamt für Seeschiffahrt und Hydrographie = DE; US National  Imagery and Mapping Agency = U1.  procedure (c4): digitized = digi  scanned = scan  alpha/numeric input = alph  Format:  c2,c2,c4 (mandatory)  Example:  DK,D1,digi |
| Attribute | textualDescription | [0..1] | text | file reference to text file |
| Attribute | textualDescriptionInNationalLanguage | [0..1] | text | file reference to text file |

**Associations**

## Information Types

### «InformationType» SpatialUncertainty

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | qualityOfPosition | [0..1] | qualityOfPosition |  |
|  | positionalAccuracy | [0..1] | real |  |

**Inherited Attributes**

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
| SpatialQuality | *Label:* SpatialUncertainty  *Role:*  *Multiplicity:* 0..1 | *Label:* GM\_CompositeCurve  *Role:*  *Multiplicity:* |  |
| SpatialQuality | *Label:* SpatialUncertainty  *Role:*  *Multiplicity:* 0..1 | *Label:* GM\_Point  *Role:*  *Multiplicity:* |  |
| SpatialQuality | *Label:* GM\_Surface  *Role:*  *Multiplicity:* | *Label:* SpatialUncertainty  *Role:*  *Multiplicity:* 0..1 | (unintentionally created in the reverse direction?) |

## Complex Attributes

### «ComplexAttributeType» contactAddress

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
|  | deliveryPoint | [0..\*] | text |  |
|  | cityName | [0..1] | text |  |
|  | administrativeDivision | [0..1] | text |  |
|  | country | [0..1] | text |  |
|  | postalCode | [0..1] | text |  |

**Inherited Attributes**

**Associations**

| *Association name* | *Source* | *Target* | *Notes* |
| --- | --- | --- | --- |
|  | *Label:* contactAddress  *Role:*  *Multiplicity:* 0..1 | *Label:* StructureObject  *Role:*  *Multiplicity:* |  |

## CodeLists

### «S100\_CodeList» IALA\_categoryOfAggregation

codelist type: open enumeration

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | leading line |  |
| Literal | range system |  |

### «S100\_CodeList» IALA\_categoryOfAssociation

codelist type: open enumeration

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | channel markings |  |
| Literal | danger markings |  |

## Enumerated Types

### «Enumeration» IALA\_aidAvailabilityCategory

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | Category 1 |  |
| Literal | Category 2 |  |
| Literal | Category 3 |  |

### «Enumeration» beaconShape

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | stake, pole, perch, post |  |
| Literal | withy |  |
| Literal | beacon tower |  |
| Literal | lattice beacon |  |
| Literal | pile beacon |  |
| Literal | cairn |  |
| Literal | buoyant beacon |  |

### «Enumeration» buildingShape

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | high-rise building |  |
| Literal | pyramid |  |
| Literal | cylindrical |  |
| Literal | spherical |  |
| Literal | cubic |  |

### «Enumeration» buoyShape

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | conical (nun, ogival) |  |
| Literal | can (cylindrical) |  |
| Literal | spherical |  |
| Literal | pillar |  |
| Literal | spar (spindle) |  |
| Literal | barrel (tun) |  |
| Literal | super-buoy |  |
| Literal | ice buoy |  |

### «Enumeration» categoryOfCardinalMark

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | north cardinal mark |  |
| Literal | east cardinal mark |  |
| Literal | south cardinal mark |  |
| Literal | west cardinal mark |  |

### «Enumeration» categoryOfFogSignal

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | explosive |  |
| Literal | diaphone |  |
| Literal | siren |  |
| Literal | nautophone |  |
| Literal | reed |  |
| Literal | tyfon |  |
| Literal | bell |  |
| Literal | whistle |  |
| Literal | gong |  |
| Literal | horn |  |

### «Enumeration» categoryOfInstallationBuoy

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | catenary anchor leg mooring (CALM) |  |
| Literal | single buoy mooring (SBM or SPM) |  |

### «Enumeration» categoryOfLandmark

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | cairn |  |
| Literal | cemetery |  |
| Literal | chimney |  |
| Literal | dish aerial |  |
| Literal | flagstaff (flagpole) |  |
| Literal | flare stack |  |
| Literal | mast |  |
| Literal | windsock |  |
| Literal | monument |  |
| Literal | column (pillar) |  |
| Literal | memorial plaque |  |
| Literal | obelisk |  |
| Literal | statue |  |
| Literal | cross |  |
| Literal | dome |  |
| Literal | radar scanner |  |
| Literal | tower |  |
| Literal | windmill |  |
| Literal | windmotor |  |
| Literal | spire/minaret |  |
| Literal | large rock or boulder on land |  |

### «Enumeration» categoryOfLateralMark

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | port-hand lateral mark |  |
| Literal | starboard-hand lateral mark |  |
| Literal | preferred channel to starboard lateral mark |  |
| Literal | preferred channel to port lateral mark |  |

### «Enumeration» categoryOfLight

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | directional function |  |
| Literal | leading light |  |
| Literal | aero light |  |
| Literal | air obstruction light |  |
| Literal | fog detector light |  |
| Literal | flood light |  |
| Literal | strip light |  |
| Literal | subsidiary light |  |
| Literal | spotlight |  |
| Literal | front |  |
| Literal | rear |  |
| Literal | lower |  |
| Literal | upper |  |
| Literal | moiré effect |  |
| Literal | emergency |  |
| Literal | bearing light |  |
| Literal | horizontally disposed |  |
| Literal | vertically disposed |  |

### «Enumeration» categoryOfNavigationLine

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | clearing line |  |
| Literal | transit line |  |
| Literal | leading line bearing a recommended track |  |

### «Enumeration» categoryOfOffshorePlatform

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | oil derrick/rig |  |
| Literal | production platform |  |
| Literal | observation/research platform |  |
| Literal | articulated loading platform (ALP) |  |
| Literal | single anchor leg mooring (SALM) |  |
| Literal | mooring tower |  |
| Literal | artificial island |  |
| Literal | floating production, storage and off-loading vessel (FPSO) |  |
| Literal | accommodation platform |  |
| Literal | navigation, communication and control buoy (NCCB) |  |

### «Enumeration» categoryOfPile

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | stake |  |
| Literal | post |  |
| Literal | tripodal |  |

### «Enumeration» categoryOfRadarTransponderBeacon

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | ramark, radar beacon transmitting continuously |  |
| Literal | racon, radar transponder beacon |  |
| Literal | leading racon/radar transponder beacon |  |

### «Enumeration» categoryOfRecommendedTrack

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | based on a system of fixed marks |  |
| Literal | not based on a system of fixed marks |  |

### «Enumeration» categoryOfSiloTank

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | silo in general |  |
| Literal | tank in general |  |
| Literal | grain elevator |  |
| Literal | water tower |  |

### «Enumeration» categoryOfSpecialPurposeMark

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | firing danger area mark |  |
| Literal | target mark |  |
| Literal | marker ship mark |  |
| Literal | degaussing range mark |  |
| Literal | barge mark |  |
| Literal | cable mark |  |
| Literal | spoil ground mark |  |
| Literal | outfall mark |  |
| Literal | ODAS (Ocean-Data-Acquisition-System) |  |
| Literal | recording mark |  |
| Literal | seaplane anchorage mark |  |
| Literal | recreation zone mark |  |
| Literal | private mark |  |
| Literal | mooring mark |  |
| Literal | LANBY (Large Automatic Navigational Buoy) |  |
| Literal | leading mark |  |
| Literal | measured distance mark |  |
| Literal | notice mark |  |
| Literal | TSS mark (Traffic Separation Scheme) |  |
| Literal | anchoring prohibited mark |  |
| Literal | berthing prohibited mark |  |
| Literal | overtaking prohibited mark |  |
| Literal | two-way traffic prohibited mark |  |
| Literal | reduced wake mark |  |
| Literal | speed limit mark |  |
| Literal | stop mark |  |
| Literal | general warning mark |  |
| Literal | sound ship's siren mark |  |
| Literal | restricted vertical clearance mark |  |
| Literal | maximum vessel's draught mark |  |
| Literal | restricted horizontal clearance mark |  |
| Literal | strong current warning mark |  |
| Literal | berthing permitted mark |  |
| Literal | overhead power cable mark |  |
| Literal | channel edge gradient mark |  |
| Literal | telephone mark |  |
| Literal | ferry crossing mark |  |
| Literal | pipeline mark |  |
| Literal | anchorage mark |  |
| Literal | clearing mark |  |
| Literal | control mark |  |
| Literal | diving mark |  |
| Literal | refuge beacon |  |
| Literal | foul ground mark |  |
| Literal | yachting mark |  |
| Literal | heliport mark |  |
| Literal | GPS mark |  |
| Literal | seaplane landing mark |  |
| Literal | entry prohibited mark |  |
| Literal | work in progress mark |  |
| Literal | mark with unknown purpose |  |
| Literal | wellhead mark |  |
| Literal | channel separation mark |  |
| Literal | marine farm mark |  |
| Literal | artificial reef mark |  |

### «Enumeration» colour

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | white |  |
| Literal | black |  |
| Literal | red |  |
| Literal | green |  |
| Literal | blue |  |
| Literal | yellow |  |
| Literal | grey |  |
| Literal | brown |  |
| Literal | amber |  |
| Literal | violet |  |
| Literal | orange |  |
| Literal | magenta |  |
| Literal | pink |  |

### «Enumeration» colourPattern

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | horizontal stripes |  |
| Literal | vertical stripes |  |
| Literal | diagonal stripes |  |
| Literal | squared |  |
| Literal | stripes (direction unknown) |  |
| Literal | border stripe |  |

### «Enumeration» condition

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | under construction |  |
| Literal | ruined |  |
| Literal | under reclamation |  |
| Literal | wingless |  |
| Literal | planned construction |  |

### «Enumeration» exhibitionConditionOfLight

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | light shown without change of character |  |
| Literal | daytime light |  |
| Literal | fog light |  |
| Literal | night light |  |

### «Enumeration» function

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | harbour-master's office |  |
| Literal | custom office |  |
| Literal | health office |  |
| Literal | hospital |  |
| Literal | post office |  |
| Literal | hotel |  |
| Literal | railway station |  |
| Literal | police station |  |
| Literal | water-police station |  |
| Literal | pilot office |  |
| Literal | pilot lookout |  |
| Literal | bank office |  |
| Literal | headquarters for district control |  |
| Literal | transit shed/warehouse |  |
| Literal | factory |  |
| Literal | power station |  |
| Literal | administrative |  |
| Literal | educational facility |  |
| Literal | church |  |
| Literal | chapel |  |
| Literal | temple |  |
| Literal | pagoda |  |
| Literal | shinto shrine |  |
| Literal | buddhist temple |  |
| Literal | mosque |  |
| Literal | marabout |  |
| Literal | lookout |  |
| Literal | communication |  |
| Literal | television |  |
| Literal | radio |  |
| Literal | radar |  |
| Literal | light support |  |
| Literal | microwave |  |
| Literal | cooling |  |
| Literal | observation |  |
| Literal | timeball |  |
| Literal | clock |  |
| Literal | control |  |
| Literal | airship mooring |  |
| Literal | stadium |  |
| Literal | bus station |  |

### «Enumeration» lightCharacteristic

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | fixed |  |
| Literal | flashing |  |
| Literal | long-flashing |  |
| Literal | quick-flashing |  |
| Literal | very quick-flashing |  |
| Literal | ultra quick-flashing |  |
| Literal | isophased |  |
| Literal | occulting |  |
| Literal | interrupted quick-flashing |  |
| Literal | interrupted very quick-flashing |  |
| Literal | interrupted ultra quick-flashing |  |
| Literal | morse |  |
| Literal | fixed/flash |  |
| Literal | flash/long-flash |  |
| Literal | occulting/flash |  |
| Literal | fixed/long-flash |  |
| Literal | occulting alternating |  |
| Literal | long-flash alternating |  |
| Literal | flash alternating |  |
| Literal | group alternating |  |
| Literal | quick-flash plus long-flash |  |
| Literal | very quick-flash plus long-flash |  |
| Literal | ultra quick-flash plus long-flash |  |
| Literal | alternating |  |
| Literal | fixed and alternating flashing |  |

### «Enumeration» lightVisibility

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | high intensity |  |
| Literal | low intensity |  |
| Literal | faint |  |
| Literal | intensified |  |
| Literal | unintensified |  |
| Literal | visibility deliberately restricted |  |
| Literal | obscured |  |
| Literal | partially obscured |  |

### «Enumeration» marksNavigationalSystemOf

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | IALA A |  |
| Literal | IALA B |  |
| Literal | no system |  |
| Literal | other system |  |

### «Enumeration» natureOfConstruction

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | masonry |  |
| Literal | concreted |  |
| Literal | loose boulders |  |
| Literal | hard surfaced |  |
| Literal | unsurfaced |  |
| Literal | wooden |  |
| Literal | metal |  |
| Literal | glass reinforced plastic (GRP) |  |
| Literal | painted |  |

### «Enumeration» product

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | oil |  |
| Literal | gas |  |
| Literal | water |  |
| Literal | stone |  |
| Literal | coal |  |
| Literal | ore |  |
| Literal | chemicals |  |
| Literal | drinking water |  |
| Literal | milk |  |
| Literal | bauxite |  |
| Literal | coke |  |
| Literal | iron ingots |  |
| Literal | salt |  |
| Literal | sand |  |
| Literal | timber |  |
| Literal | sawdust/wood chips |  |
| Literal | scrap metal |  |
| Literal | liquified natural gas (LNG) |  |
| Literal | liquified petroleum gas (LPG) |  |
| Literal | wine |  |
| Literal | cement |  |
| Literal | grain |  |

### «Enumeration» qualityOfPosition

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | surveyed |  |
| Literal | unsurveyed |  |
| Literal | inadequately surveyed |  |
| Literal | approximate |  |
| Literal | position doubtful |  |
| Literal | unreliable |  |
| Literal | reported (not surveyed) |  |
| Literal | reported (not confirmed) |  |
| Literal | estimated |  |
| Literal | precisely known |  |
| Literal | calculated |  |

### «Enumeration» qualityOfSoundingMeasurement

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | depth known |  |
| Literal | depth unknown |  |
| Literal | doubtful sounding |  |
| Literal | unreliable sounding |  |
| Literal | no bottom found at value shown |  |
| Literal | least depth known |  |
| Literal | least depth unknown, safe clearance at value shown |  |
| Literal | value reported (not surveyed) |  |
| Literal | value reported (not confirmed) |  |
| Literal | maintained depth |  |
| Literal | not regularly maintained |  |

### «Enumeration» radarConspicuous

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | radar conspicuous |  |
| Literal | not radar conspicuous |  |
| Literal | radar conspicuous (has radar reflector) |  |

### «Enumeration» signalGeneration

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | automatically |  |
| Literal | by wave action |  |
| Literal | by hand |  |
| Literal | by wind |  |

### «Enumeration» status

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | permanent |  |
| Literal | occasional |  |
| Literal | recommended |  |
| Literal | not in use |  |
| Literal | periodic/intermittent |  |
| Literal | reserved |  |
| Literal | temporary |  |
| Literal | private |  |
| Literal | mandatory |  |
| Literal | extinguished |  |
| Literal | illuminated |  |
| Literal | historic |  |
| Literal | public |  |
| Literal | synchronized |  |
| Literal | watched |  |
| Literal | un-watched |  |
| Literal | existence doubtful |  |

### «Enumeration» techniqueOfSoundingMeasurement

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | found by echo-sounder |  |
| Literal | found by side scan sonar |  |
| Literal | found by multi-beam |  |
| Literal | found by diver |  |
| Literal | found by lead-line |  |
| Literal | swept by wire-drag |  |
| Literal | found by laser |  |
| Literal | swept by vertical acoustic system |  |
| Literal | found by electromagnetic sensor |  |
| Literal | photogrammetry |  |
| Literal | satellite imagery |  |
| Literal | found by levelling |  |
| Literal | swept by side-scan sonar |  |
| Literal | computer generated |  |

### «Enumeration» topmarkDaymarkShape

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | cone, point up |  |
| Literal | cone, point down |  |
| Literal | sphere |  |
| Literal | 2 spheres |  |
| Literal | cylinder (can) |  |
| Literal | board |  |
| Literal | x-shape (St. Andrew's cross) |  |
| Literal | upright cross (St George's cross) |  |
| Literal | cube, point up |  |
| Literal | 2 cones, point to point |  |
| Literal | 2 cones, base to base |  |
| Literal | rhombus (diamond) |  |
| Literal | 2 cones (points upward) |  |
| Literal | 2 cones (points downward) |  |
| Literal | besom, point up (broom or perch) |  |
| Literal | besom, point down (broom or perch) |  |
| Literal | flag |  |
| Literal | sphere over rhombus |  |
| Literal | square |  |
| Literal | rectangle, horizontal |  |
| Literal | rectangle, vertical |  |
| Literal | trapezium, up |  |
| Literal | trapezium, down |  |
| Literal | triangle, point up |  |
| Literal | triangle, point down |  |
| Literal | circle |  |
| Literal | two upright crosses (one over the other) |  |
| Literal | T-shape |  |
| Literal | triangle pointing up over a circle |  |
| Literal | upright cross over a circle |  |
| Literal | rhombus over a circle |  |
| Literal | circle over a triangle pointing up |  |
| Literal | other shape |  |

### «Enumeration» trafficFlow

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | inbound |  |
| Literal | outbound |  |
| Literal | one-way |  |
| Literal | two-way |  |

### «Enumeration» verticalDatum

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | Mean low water springs |  |
| Literal | Mean lower low water springs |  |
| Literal | Mean sea level |  |
| Literal | Lowest low water |  |
| Literal | Mean low water |  |
| Literal | Lowest low water springs |  |
| Literal | Approximate mean low water springs |  |
| Literal | Indian spring low water |  |
| Literal | Low water springs |  |
| Literal | Approximate lowest astronomical tide |  |
| Literal | Nearly lowest low water |  |
| Literal | Mean lower low water |  |
| Literal | Low water |  |
| Literal | Approximate mean low water |  |
| Literal | Approximate mean lower low water |  |
| Literal | Mean high water |  |
| Literal | Mean high water springs |  |
| Literal | High water |  |
| Literal | Approximate mean sea level |  |
| Literal | High water springs |  |
| Literal | Mean higher high water |  |
| Literal | Equinoctial spring low water |  |
| Literal | Lowest astronomical tide |  |
| Literal | Local datum |  |
| Literal | International Great Lakes Datum 1985 |  |
| Literal | Mean water level |  |
| Literal | Lower low water large tide |  |
| Literal | Higher high water large tide |  |
| Literal | Nearly highest high water |  |
| Literal | Highest astronomical tide (HAT) |  |

### «Enumeration» visuallyConspicuous

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | visually conspicuous |  |
| Literal | not visually conspicuous |  |

# Meta Features Schema Types

## Feature Types

### «Feature Class» DataCoverage

A geographical area that describes the coverage and extent of spatial types.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | maximumDisplayScale | [1] | maximumDisplayScale |  |
| Attribute | minimumDisplayScale | [1] | minimumDisplayScale |  |
| Spatial Attribute | geometry | [1..\*] | Surface | Permitted spatial primitives |

**Inherited Attributes**

**Associations**

### «Feature Class» LocalDirectionOfBuoyage

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

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Complex Attribute | orientation | [1] | orientation |  |
| Attribute | scaleMinimum | [0..1] | Integer |  |
| Spatial Attribute | geometry | [1..\*] | Surface | Permitted spatial primitives |

**Inherited Attributes**

**Associations**

### «Feature Class» NavigationalSystemOfMarks

An area within which a specific system of navigational marks applies.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | marksNavigationalSystemOf | [1] | MARSYS |  |
| Spatial Attribute | geometry | [1..\*] | Surface | Permitted spatial primitives |

**Inherited Attributes**

**Associations**

### «Feature Class» SoundingDatum

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

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | verticalDatum | [1] | verticalDatum |  |
| Spatial Attribute | geometry | [1..\*] | Surface | Permitted spatial primitives |

**Inherited Attributes**

**Associations**

### «Feature Class» VerticalDatum

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

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | verticalDatum | [1] | verticalDatum |  |
| Spatial Attribute | geometry | [1..\*] | Surface | Permitted spatial primitives |

**Inherited Attributes**

**Associations**

## Complex Attributes

### «ComplexAttributeType» orientation

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

Indication: The complex attribute provides the orientation value together with a measure of the uncertainty of the value.

**Attributes**

| *Role Name* | *Name* | *Multiplicity* | *Data type* | *Description / Remarks* |
| --- | --- | --- | --- | --- |
| Attribute | orientationUncertainty | [0..1] | Real | The best estimate of the accuracy of a bearing |
| Attribute | orientationValue | [1] | Real | The angular distance measured from true north to the major axis of the feature. |

**Inherited Attributes**

**Associations**

## Enumerated Attribute Types

### MARSYS

Definition required

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | IALA A | Navigational aids conform to the International Association of Lighthouse Authorities - IALA A system. |
| Literal | IALA B | Navigational aids conform to the International Association of Lighthouse Authorities - IALA B system. |
| Literal | no system | Navigational aids do not conform to any defined system |
| Literal | other system | Navigational aids conform to a system other than International Association of Lighthouse Authorities - IALA |
| Literal | CEVNI | Definition required |

### maximumDisplayScale

The largest intended viewing scale for the data.

*Indication*: The modulus of the scale is indicated, that is 1:90 000 is encoded as 90000. **maximum display scale** provides a reference for the user selected viewing scale in the ECDIS at which the overscale warning will be displayed if there is no larger maximum display scale ENC dataset available, as well as the ECDIS scale when the cell is loaded.

*Remarks*: For example, based on the scale of the paper chart that was used for the ENC compilation. This attribute is only used in conjunction with the meta feature **Data Coverage** which is used to define polygons of equal largest intended viewing scale. **maximum display scale** should therefore not be confused with the attribute **scale maximum**.

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | 1000 |  |
| Literal | 2000 |  |
| Literal | 3000 |  |
| Literal | 4000 |  |
| Literal | 8000 |  |
| Literal | 12000 |  |
| Literal | 22000 |  |
| Literal | 45000 |  |
| Literal | 90000 |  |
| Literal | 180000 |  |
| Literal | 350000 |  |
| Literal | 700000 |  |
| Literal | 1500000 |  |
| Literal | 3500000 |  |
| Literal | 10000000 |  |

### minimumDisplayScale

The smallest intended viewing scale for the data.

*Indication*: The modulus of the scale is indicated, that is 1:90 000 is encoded as 90000. **maximum display scale** provides a reference for the user selected viewing scale in the ECDIS at which the overscale warning will be displayed if there is no larger maximum display scale ENC dataset available, as well as the ECDIS scale when the cell is loaded.

*Remarks*: This attribute is only used in conjunction with the meta feature **Data Coverage** which is used to define polygons of equal smallest intended viewing scale. **minimum display scale** should therefore not be confused with the attribute **scale minimum**.

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | 2000 |  |
| Literal | 3000 |  |
| Literal | 4000 |  |
| Literal | 8000 |  |
| Literal | 12000 |  |
| Literal | 22000 |  |
| Literal | 45000 |  |
| Literal | 90000 |  |
| Literal | 180000 |  |
| Literal | 350000 |  |
| Literal | 700000 |  |
| Literal | 1500000 |  |
| Literal | 3500000 |  |
| Literal | 10000000 |  |

### verticalDatum

Definition required

**Listed Values**

| *Role Name* | *Name* | *Description / Remarks* |
| --- | --- | --- |
| Literal | Mean low water springs | (MLWS) - the average height of the low waters of spring tides. Also called spring low water. |
| Literal | Mean lower low water springs | (MLLWS) - the average height of lower low water springs at a place. |
| Literal | Mean sea level | (MSL) - the average height of the surface of the sea at a tide station for all stages  of the tide over a 19-year period, usually determined from hourly height readings measured from a fixed predetermined reference level. |
| Literal | Lowest low water | An arbitrary level conforming to the lowest tide observed at a place, or somewhat lower. |
| Literal | Mean low water | (MLW) - the average height of all low waters at a place over a 19-year period. |
| Literal | 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. |
| Literal | Approximate mean low water springs | An arbitrary level, usually within ± 0.3m from that of mean low water springs (MLWS). |
| Literal | Indian spring low water | (ISLW) - an arbitrary tidal datum approximating the level of the mean of the lower low water at spring tides. Also called Indian tidal plane.(IHO Dictionary – S-32).  A tidal datum approximating the lowest water level observed at a place, originated by G.H. Darwin for the tides of India at a level below MSL being equal to the sum of amplitudes of the harmonic constituents M2, S2, K1 and O1; usually below that of the lower low water at spring tides. Also called Indian tide plane. (Hydrographic Service, Royal Australian Navy). |
| Literal | Low water springs | An arbitrary level, approximating that of mean low water springs (MLWS). |
| Literal | Approximate lowest astronomical tide | An arbitrary level, usually within ± 0.3m from that of lowest astronomical tide (LAT). |
| Literal | 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). |
| Literal | Mean lower low water | (MLLW) - the average height of the lower low waters at a place over a 19-year period. |
| Literal | Low water | An approximation of mean low water adopted as the reference level for a limited area, irrespective of better determinations at a later date. Used mostly in harbour and river engineering. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.239, November 2000).  Used in inland (non-tidal) waters. It is generally defined as a level which the daily mean water level would fall below less than 5% of the time and by no more than 0.2 metres during the navigation season. A single level surface is usually chosen as the low water datum for a whole lake. On a river, low water datum is a sloping surface which approximates the river surface at a low state. (Canadian Hydrographic Service) |
| Literal | Approximate mean low water | An arbitrary level, usually within ± 0.3m from that of mean low water (MLW). |
| Literal | Approximate mean lower low water | An arbitrary level, usually within ± 0.3m from that of mean lower low water (MLLW). |
| Literal | Mean high water | (MHW) - The average height of all high waters at a place over a 19-year period. |
| Literal | Mean high water springs | (MHWS) - The average height of the high waters of spring tides. Also called spring high water. |
| Literal | High water | The highest level reached at a place by the water surface in one tidal cycle. Also called high tide. |
| Literal | Approximate mean sea level | An arbitrary level, usually within ± 0.3m from that of mean sea level (MSL). |
| Literal | High water springs | An arbitrary level, approximating that of mean high water springs (MHWS). |
| Literal | Mean higher high water | (MHHW) - The average height of higher high waters at a place over a 19-year period. |
| Literal | Equinoctial spring low water | The level of low water springs near the time of an equinox. |
| Literal | Lowest astronomical tide | (LAT) - the lowest tide level which can be predicted to occur under average meterological conditions and under any combination of astronomical conditions. |
| Literal | Local datum | An arbitrary datum defined by a local harbour authority, from which levels and tidal heights are measured by this authority. |
| Literal | International great lakes datum 1985 | (IGLD 1985) - A vertical reference system with its zero based on the mean water level at Rimouski/Pointe-au-Père, Quebec, over the period 1970 to 1988. |
| Literal | Mean water level | The average of all hourly water levels over the available period of record. |
| Literal | Lower low water large tide | (LLWLT) - The average of the lowest low waters, one from each of 19 years of observations. |
| Literal | Higher high water large tide | (HHWLT) - The average of the highest high waters, one from each of 19 years of observations. |
| Literal | Nearly highest high water | An arbitrary level approximating the highest water level observed at a place, usually equivalent to the high water springs. |
| Literal | Highest astronomical tide (HAT) | (HAT) - the highest tidal level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. |