IEHG

RECOMMENDED INLAND ENC VALIDATION CHECKS

Edition 2.43.5 corr2 rev1 January 202043

Based on Special Publication S-58 Ed. 6.0.04.2 of IHO and Ed. 2.43 of the IENC Product Specification (Ed. 2.4.13.5 of the Encoding Guide for Inland ENCs)

Page intentionally left blank

CONTENTS

Page intentionally left blank

1. INTRODUCTION

This document was previously Appendix B1, Annex C of S-57 Edition 3.1. It specifies the checks that, at a minimum, producers of IENC validation tools should include in their validation software. This software will be used by hydrographic offices to help ensure that their IENC data are compliant with the Inland ECDIS Standard, Section 2 Product Specification for Inland ENCs. The checklist has been compiled for the IHO from lists of checks provided by a number of hydrographic offices and software companies. The document will be maintained by means of new editions.

IENC validation software checks that the data are in conformance with the Inland ECDIS Standard IENC Product Specification. Any violations are categorised as either "errors" or "warnings". "**Errors**" are defined as more serious discrepancies or violations. For example, the data may not conform to one of the mandatory requirements of the IENC Product Specification. "**Warnings**" identify less serious violations or suspicious data. An example would be the apparent location of a building in the sea. The various checks in this document have been categorised with these definitions in mind.

In order to assist software developers, those checks that have been removed from all previous editions of S58 have been retained in Edition 4.2 as struck out text strings.

The Revision 1 of edition 2.4.0 is based on the version 6.0.0 of S-58 and the comments of Frank Hippmann who realized the recommended validation checks 2.4 in the IENC Analyzer (Product of Seven C's).

Note: Within this document the word "overlap" is used. In the context of this document, this means:

- for two objects of type Area, that their geometric primitives have a certain area in common (there is no overlap when they touch at a point or along an edge),
- for an object of type Line and an object of type Area, that the line object has a part of one of its edges lying within the geometric primitive of the area object (there is no overlap when they touch at a point or along an edge).

LIST OF INLAND ENC VALIDATION CHECKS

2.1 Checks relating to S-57 and Inland ENC Data Structure

No	Check	Conformity to:	Cat
	DATA STRUCTURE		
1	Check that no part of an edge is duplicated (i.e. a pair of coordinates identical for two edges).	Part 2 (2.2.1.2)	W
2	Check that all VE edges have a beginning node and an end node.	Part 2 (2.2.1.2)	E
3	Check that the record identifier NAME is unique within the file.	Part 3 (2.2)	E
4	Check that Record Name RCNM contains only the values in table 2.2.	Part 3 (2.2.1)	E
5	Check that the Record Identification Number RCID is in the range 1 to 2^{32}-2.	Part 3 (2.2.2)	E
~~6~~	~~Check the CRC of every file~~	~~Part 3 (3.4)~~	~~E~~
7	Check that all objects have legal AGEN, FIDN and FIDS subfield values.	Part 3 (4.3.1) and (4.3.2)	E
8	Check that an attribute code does not repeat for a single object.	Part 3 (4.4), (4.5) and (5.1.2)	E
9	For line objects, check that ORNT = 1 [forward] or 2 [reverse], USAG = 255 [null], and MASK = 1 [mask], 2 [show] or 255 [masking is not relevant].	Part 3 (4.7.2) and Appendix B.1 (3.8)	E
10	For point objects, check that ORNT = 255 [direction is not relevant], USAG = 255 [null], and MASK = 255 [masking is not relevant].	Part 3 (4.7.1)	E
11	Check that all segments with USAG = 3 [exterior boundary truncated by the data limit] are linked to an object M_COVR.	Part 3 (4.7.3.3)	E
12	Check that all feature objects except C_(collection) have a FSPT.	Part 3 (4.7)	E
13	Check that for linear features comprising multiple edges, the vector records making up the linear feature are referenced sequentially and that the end node of a vector record is the same as the start node of the following vector record.	Part 3 (4.7.2)	W
14	Check for any area object having outer and inner boundaries that two of these boundaries do not share more than one node.	Part 3 (4.7.3)	E
15	Check that the first and last edges bounding an area meet at a common connected node.	Part 3 (4.7.3.1)	E
16	Check that area outer boundaries are encoded clockwise.	Part 3 (4.7.3.2)	E
17	Check that area inner boundaries are encoded counter clockwise.	Part 3 (4.7.3.2)	E
18	Check that all areas are defined by: • Only one outer boundary (referenced first), • Optional zero or more inner boundaries which are closed, sequential and with proper use of USAG.	Part 3 (4.7.3.2) and (4.7.3.3)	E
19	Check that all spatial edges which coincide with data limit borders (i.e. limits of M_COVR with CATCOV = 1 [coverage available]) are using USAG = 3 [Exterior boundary truncated by the data limit]	Part 3 (4.7.3.3)	W
20	Check that geometry primitive is compatible with object	Product Specification for	E

	class.	Inland ENCs, Part 3 (5.1.1) and Supplement No2 Ch.4 (3.3.1)	
21	Check that all vector record pointer (VRPT) fields are pointed to by an edge vector record.	Part 3 (5.1.3)	E
22	Check for correct sequence of begin/end nodes for edges.	Part 3 (5.1.3.2)	E
23	Check that only SG2D and SG3D coordinates are used in files.	Part 3 (5.1.4)	E
24	Check that soundings are coordinate type SG3D with X, Y and Z values.	Part 3 (5.1.4.1)	E

25	• Check that the beginning and end of an edge are explicitly encoded as connected nodes. • Check that the geometry of the connected node is not part of an edge. • Check that edges directly reference their begin/end nodes using the vector record pointer.	Part 3 (5.1.4.4)	E
26	Check that values in subfields are within the allowable range where applicable: • Subfield value ranges according to S-57 format description. • Legal ranges for attribute values (for attribute values of type "float", the resolution given in the format statement by the integer part (e.g. **XX**.X) must not be checked). *(see check 91)*	Part 3 (7.2.2.1), (7.3) and Inland ENC Feature Catalogue.	E
27	Check all formatted subfields in S-57.	Part 3 (7.2.2.2)	E
28	Check that the count of records in DSSI is correct.	Part 3 (7.3.1.2)	E
29	Check for valid index position for updating in FFPC-NFPT, FSPC-NSPT, SGCC-CCNC, and VRPC-NVPT.	Part 3 (7.6.5) (7.6.7), (7.7.1.5) and (7.7.1.3)	E
30	Check for valid index position for updating in FFPC-FFIX, FSPC-FSIX, SGCC-CCIX, and VRPC-VPIX.	Part 3 (7.7.1.5), (7.6.5), (7.6.7) and (7.7.1.3)	E
31	For all edges, check that all SG2D coordinates are different from the start and end node coordinates.	Part 3 (7.7.1.6)	E
32	Check that record updates refer to a valid record NAME.	Part 3 (8.3.2)	E
33	Check that any attribute update refers to a valid record NAME and attribute label.	Part 3 (8.3.3)	E
34	Check that pointer index updating refers to a valid record NAME and index within pointer fields FFPT, FSPT and VRPT.	Part 3 (8.3.4)	E
35	Check if record version RVER is out of sequence for objects.	Part 3 (8.4.2.1) and (8.4.3.1)	E
36	For record updates for feature/vector updates, check that if it is • DELETE: the record does not contain further fields, or • MODIFY/INSERT: the record contains more information about the update.	Part 3 (8.4.2.2) and (8.4.3.1)	E
37	Check that update and base data have the same lexical level.	Part 3 (8.4.2.2a)	E
38	Check that an update record only contains one FFPC field [8.4.2.3], and one VRPC field [8.4.3.2b], and one FSPC field [8.4.2.4], and one SGCC field [8.4.3.3].	See references in the column to the left.	E
39	Check for connectivity of line segments in an edge after	Part 3 (8.4.3.3)	E

	updating.		
40	Check that any two feature objects of type Line satisfying all of the following conditions are chained together: • both objects are encoded with the same class and attribute values, • both objects refer to linear features for which all referenced edges are encoded with the same spatial attribute values, • linear features of both objects have one (or two) common connected node(s) which is (are) a beginning node or an end node of each linear feature, • each common connected node is not shared by more than two objects satisfying the three above conditions.	Logical consistency	W
41	Check that all areas are closed.	Logical consistency	E
42	Check that VE edges linked to Group 1 objects appear twice with different ORNT values, or are linked to objects M_COVR with CATCOV = 1 [coverage available].	Logical consistency	E
43			
44	Check that all values (except the shallowest and deepest) DRVAL1 and DRVAL2 of DEPARE and depare of type area are also values of VALDCO.	Logical consistency EG 1.3.1 – I11-e, I11-f, I12-g, I12-h	W
45	Check that no edge is shared by two or more line objects of the same object class, except for objects from the following list which may share geometry if they are populated with different attribute values: berths, cblohd, CBLSUB, CONVYR, convyr, FERYRT, feryrt, MORFAC, NAVLNE, PIPSOL, RECTRC.	Logical consistency	W
46	Check for any object having both attributes DATEND and DATSTA encoded with explicit values that DATEND is the same or later than DATSTA.	Logical consistency	E
47	Check for any LIGHTS object having SECTR1 encoded that SECTR2 is also encoded (with a different value) and vice versa.	Logical consistency	E
48	Check for any M_SREL object having SCVAL1 and SCVAL2 encoded that the value of SCVAL1 has been set to a larger scale than SCVAL2 (i.e. attribute value for SCVAL1 is smaller than attribute value for SCVAL2).	Logical consistency	E
49	Check for any object having DRVAL1 and DRVAL2 encoded that DRVAL1 is smaller than or equal to DRVAL2.	Logical consistency	E
50	Check that all the nodes that compose the geometry of any RECTRC with CATTRK=1 [based on a system of fixed marks] or NAVLNE are on a straight line.	Logical consistency	W
51	Check that no edge is shared by a COALNE object and a SLCONS/slcons object of type line or by a COALNE object and a SLCONS/slcons object of the type area covered by a LNDARE and having WATLEV/watlev undefined or encoded with the values (2) [always dry] or (1) [partly submerged at high water]	Logical consistency	W
52			
53	Check that any SLOGRD object is covered by a LNDARE object of type Area. Check that any SLOTOP object is covered by a LNDARE object of type Area or is on its border.	Appendix B1, Annex A (4.7.4, 4.7.5, 4.8.4)	E
54	Check for any CRANES, cranes, BUISGL, LNDMRK or	Logical consistency	W

	SILTNK object, and for any DAYMAR object which is not a slave in a master/slave relationship or part of an overlay cell: • if it is of type Area, that it is covered by a LNDARE, bridge, FLODOC, flodoc, PONTON or ponton object of type Area, • if it is of type Point, that: - it is situated within a LNDARE, bridge, FLODOC, flodoc, PONTON or ponton object of type Area, or - it is coincident with one LNDARE, PILPNT, PYLONS, SLCONS, UWTROC or uwtroc object of type Point, or - it is situated on a COALNE, DAMCON, LNDARE, SLCONS or slcons object of type Line.		
55	Check that no line or point LNDARE object is situated within a LNDARE object of type Area, except for cases where it is covered by a LAKARE, RIVERS, lokbsn or CANALS object.	Logical consistency	W
56	Check that any BUAARE object is covered by a LNDARE object of type Area or is coincident with a LNDARE of type point.	Logical consistency	W
57	Check for any COALNE object which does not share spatial geometry with a LNDARE or SLCONS object that it is not situated within a LNDARE object of type Area, or that it does not have a LNDARE object of type Area on both sides.	Logical consistency	W

58			
59	Check that no OBSTRN object of type Line bounds an OBSTRN object of type Area.	Logical consistency	W
60	Check that no CBLSUB object is situated within a LNDARE object of type Area.	Logical consistency	W
61	Check for any object with WATLEV or watlev = 3 [always under water/submerged]: • if it is of type Line or Area, that: - it is not within or overlaps an intertidal area (DEPARE with DRVAL2 ≤ 0), or - it is not within or overlaps a LNDARE object of type Area, • if it is of type Point, that: - it is not within an intertidal area, or - it is not within a LNDARE object of type Area, or - it is not coincident with a LNDARE object of type point, or - it is not situated on a LNDARE object of type line.	Logical consistency	W
62	Check for all PONTON, ponton, HULKES, hulkes, flodoc or FLODOC objects of type Area that no edge of their limits shares the geometry of a line COALNE, slcons or SLCONS object, except when this edge also shares the geometry of a LNDARE object of type Area.	Logical consistency	W
63	Check that no RECTRC object overlaps or intersects a linear or area object LNDARE, PONTON, ponton, HULKES, hulkes, FLODOC, flodoc or other objects having WATLEV/watlev = 1 [partly submerged at high water] or 2 [always dry].	Logical consistency	E

Kommentiert [HC1]: Include also lower case watlev

64	Check that no point or area achare object is situated within or overlaps another object with attribute RESTRN or restrn containing value 1 [anchoring prohibited].	Logical consistency	W
65	Check that LIGHTS objects in the same spatial position whose sectors overlap each other have at least one of the values encoded differently for these attributes: CATLIT, EXCLIT, LITCHR, SIGPER or SIGGRP. Remark: This check must not be applied to LIGHTS objects with STATUS 4 [not in use], STATUS 6 [reserved] or STATUS 11 [extinguished]	Logical consistency	W
~~66~~	~~Check for any SOUNDG having the value (1) or nothing for EXPSOU that any depth value is situated within a DEPARE or a DRGARE of the corresponding range.~~ *See new checks 1768 and 1769*	~~Logical consistency~~	~~W~~
67	Check that no object is duplicated (same class, same attribute description and same geometry).	Data structure	W
68	~~Check if there is an update to an object without the corresponding text/graphic file.~~		W
~~69~~	~~Check that the Agency Code of feature objects is valid.~~	~~Appendix A, Annex A~~	~~W~~
70			
71	Check that no object of type Area (except for objects where all of the edges have USAG = 3) has all of its edges masked (i.e. USAG = 3 [exterior boundary truncated by the data limit] or MASK = 1 [mask]). Check that no object of type Line has any of it's edges masked (i.e. MASK = 1 [mask]).	Logical consistency	W
72	Check that no loop exists in the graph of hierarchical relationships (e.g. no master object is slave of its own slave, ...).	Logical consistency	W
73	Check that no attribute value contains a leading or a trailing space and no attribute of type List contains any space.	Logical consistency	W

74	Check for any floating DEPCNT object (i.e. which does not share any edge with a Group 1 object) which is within an area DEPARE object, that DRVAL2 >VALDCO >DRVAL1 Remark: This check must only be applied if both DRVAL1 and DRVAL2 for the DEPARE object are encoded with explicit and different attribute values.	Logical consistency	E
75	Check for any floating DEPCNT object (i.e. which does not share any edge with a Group 1 object) which is within an area DRGARE object, that VALDCO > DRVAL1. Remark: This check must only be applied if DRVAL1 for the DRGARE object is encoded with an explicit value.	Logical consistency	W
76	Check that no DEPCNT object is within a FLODOC, HULKES, LNDARE or PONTON object of type Area.	Logical consistency	E
77	Check that no DEPCNT object crosses another DEPCNT object.	Logical consistency	E
78	Check for any area object that no boundary crosses itself.	Topology	E
79	Check for any line object that no component edges of a line object cross without a connected node at the crossing point.	Topology	W

Kommentiert [HW2]: Include additional values of STATUS 6 (reserved) and 11 (extinguished). Cf. S-58 Ed. 6.0.0.

Formatiert: Englisch (Vereinigtes Königreich)

Kommentiert [HW3]: This check has been removed from S-58, as it is possible to update a feature without having to update the corresponding text or picture file.

80	Check that no area object has incorrect boundary nesting. i.e. at least one of the following cases detected: • An internal boundary is completely within an internal boundary; • An internal boundary is completely outside an external boundary; • An external boundary is completely within an internal boundary.	Topology	E
81	Check that no spot sounding coincides with another spot sounding (of the same or different depth).	Topology	E
82	Check that no linear or area object is using the same edge more than once.	Topology	E
83	Check that no node coincides with another node (connected or isolated).	Topology	W
84	Check that no physically isolated node is marked as connected (and vice versa).	Part 3 (2.2.1)	E
85	Check that all AGEN subfield values (in DSID and FOID fields) in an update (ER) file are identical to the AGEN subfield values in the DSID base (EN) file.	Part 3 (4.3.1) and (7.3.1.1)	E
86	Check that any feature record of type Point (including sounding feature record) only references one vector record.	Part 3 (4.7.1)	W E
87	Check for edges with degenerated geometry (when consecutive vertices coincide).	Part 3 (4.7.2)	E
88	For area features, check that ORNT = 1 [forward] or 2 [reverse], USAG = 1 [exterior], 2 [interior] or 3 [exterior boundary truncated by the data limit] and MASK = 1 [mask], 2 [show] or 255 [masking is not relevant].	Part 3 (4.7.3)	E
89	Check that no master object references the same object as slave more than once and that no slave object is referenced by more than one master object.	Part 3 (6.3)	E
90	Check the conformity of the DDR (Data Descriptive Record). (In a catalogue file, it only contains the description of the catalogue file structure. In an EN file, it only contains the description of the base cell file structure. In an ER file, it only contains the description of the update cell file structure).	Part 3 (7) and Part 3 (A.2)	W
91	Check for all attribute values of type "float", that the number of digits in the integer part is smaller than or equal to the number of digits given in the format statement (e.g. **XX**.X).	Part 3 (7.2.2.1), (7.3) and Appendix A, Chapter 2.	W
92	Check for any update (ER) file having RUIN = 3 [modify] in the FRID field, that the FOID field for the modified object is identical in the base (EN) and update (ER) files.	Part 3 (8.4.2)	E
93	Check for any object with WATLEV = 4 [covers and uncovers] or 5 [awash] or watlev = 4 [covers and uncovers]: • if it is of type Line or Area, that: - it is not within or overlaps a LNDARE object of type Area, • if it is of type Point, that: - it is not within a LNDARE object of type Area, or - it is not coincident with a LNDARE object of type point, or - it is not situated on a LNDARE object of type line.	Logical consistency	W
94	Check that no ER file contains instructions for the FSPC	Logical consistency	E

Kommentiert [HW4]: This is a serious error. It only occurs if there is a bug in the production software. It should be categorises at least as an error.

Kommentiert [HC5]: Also consider lower case watlev = 4

	field to modify a FSPT field of a feature object to a value that it already contains.		
i1	Check that only LNDMRK objects having CATLMK = 18 [windmill] or 19 [windmotor], have been encoded with CONDTN = 4 [wingless].	Logical consistency	W

2.2 Checks relating to the Inland ENC Product Specification edition 2.43

	Inland ENC PRODUCT SPECIFICATION		
500	Check that all data are within the cell limits.	2.2	E
501			
502	Check that the dataset file contains no more than 5 megabytes of data.	2.2	W
503	Check that all objects in a cell have a unique FOID.	3.1	~~E~~ W
504	Check for all prohibited object classes for Inland ENC.	3.2	E
505	Check for mandatory meta object classes.	3.4 and Inland ENC Encoding Guide	E
506	Check that mandatory subfields in EN and ER files contain a value (which may be a missing attribute value in the ATVL subfield of the ATTF field).	3.5.1 and Part 3 (2.1)	E
507	Check for all mandatory attributes.	3.5.2 and Inland ENC Encoding Guide and Inland ENC Feature Catalogue	E
508	Check that COLPAT is encoded for every object (except LIGHTS) with more than one COLOUR. Check that no object with a value for COLPAT has only one COLOUR.	3.5.2 Logical consistency	E
509	Check for all the following cases that the mandatory attribute has a value: CTNARE: INFORM DEPARE: DRVAL1 and DRVAL2 depare: DRVAL1 and DRVAL2 DEPCNT: VALDCO m_sdat: verdat m_vdat: verdat m_nsys: marsys Remark: For these objects, the above mandatory attributes are meaningless without values.	3.5.2 and Inland ENC Encoding Guide and Inland ENC Feature Catalogue	W
510			
511	Check that all S-57 attributes, that are not mentioned in the Inland ENC Feature Catalogue, are not used"	IENC Feature Catalogue	E
512	Check for numeric attribute values (i.e. of type float ('F') or integer('I')) padded with non-significant zeroes.	3.5.4	E
513	Check that an attribute on an individual Geo object does not have the same value as the general value defined by the meta object.	3.5.6	E
~~514~~	~~Check that no use of cartographic objects has been made.~~	~~3.6~~	~~E~~
515	Check that all edges with USAG = 3 [exterior boundary, truncated by the data limit] have MASK = 255 [null].	3.8	E

516	Check that all master/slave relations are valid. • If the master object is of type point, check that the slave object is sharing the same node as the master object. • If the master object is of type line, check that the slave object is situated on the line covered by the master object. • If the master object is of type area, check that the slave object is situated within or on the boundary of the area covered by the master object. NOTE: bridge, CRANES, cranes, FLODOC, flodoc, HULKES, hulkes, PONTON, ponton, OBSTRN, PYLONS, SILTNK and WRECKS objects must be considered as possible structure objects.	3.9 and Inland ENC Encoding Guide	W
517	For a collection feature record: • Check that it references at least two other feature objects. • Check that it does not reference itself. • Check that PRIM = 255 [no geometry]. • Check that there is only one master relationship per collection feature – all others must be slaves. • Check that if a relationship is peer, then all other features in the collection are peer.	3.9 and Inland ENC Encoding Guide	E
518	Check that all feature objects belong to the correct group: • Check for all Group 1 objects having a Geometric Primitive of type Area, that the GROUP subfield [GRUP] of the Feature Record Identifier [FRID] is set to (1) [Group 1]. • Check for all others feature objects that the GROUP subfield [GRUP] of the Feature Record Identifier [FRID] is set to (2) [Group 2].	3.10 IENC Product Specification 3.10.1	E
519	Check Group 1 coverage and consistency in cells of usage 1 to 9.	3.10.1 and Inland ENC Encoding Guide	E
520	Check that the use of international character sets complies with ENC Prod Spec: • Check that the general text in the ATTF field is lexical level (0) [NB see right for explanation], with appropriate encoding of DSSI-ATTF. • Check that the general text in the NATF field is lexical levels (0), (1) or (2) with appropriate encoding of DSSI-NATF. • If attribute NINFOM contains data, check that corresponding INFORM contains data: or report an error if they do not contain data. • Report an error if lexical level (2) is used anywhere else than in the NATF field. The report should contain a statement if international character sets are used and the invoking sequence, so that a check can be made on the language used. • Check the consistency between the use of international characters and the encoding of DSSI-AALL/NALL. • Check that the UT and FT are encoded at the lexical level specified and used for that field. • Check that all national language attributes are	3.11 and 3.5.5 Inland ENC Encoding Guide	E

	encoded in the Feature Record National Attribute (NATF) field. • Check that all feature object attributes (non national) are encoded in the Feature Record Attribute (ATTF) field.		
521	Check that OBJNAM and NOBJNM values, or INFORM and NINFOM values, are different for any particular object.	3.11.1	W
522	Check that if NOBJNM is encoded, then OBJNAM has also been encoded.	3.11.1 Inland ENC Encoding Guide	W
523	Check that HDAT = 2 [WGS 84].	4.1	E
524	Check that DUN I = 1 [metres] or 3 [feet].	4.4 Inland ENC Product Specification 4.4	E
525	Check that PUN I = 1 [metres] or 4 [feet].	4.4 Inland ENC Product Specification 4.4	E
526	Check that COUN = 1 [latitude/longitude].	4.4	E
527	Check that all files referenced by TXTDSC, NTXTDS and PICREP attributes exist.	5.4.1 and 5.6.4	E
528	Check for existence of a catalogue file.	5.4.1	E
529	Check that volume names are in accordance with the Inland ENC Product Specification.	5.4.2	E
530	Check that the directory structure for physical media is in accordance with the Inland ENC Product Specification. • An ENC_ROOT directory must exist in the first volume.	5.4.3	E
531	Check that file names are in accordance with the Inland ENC Product Specification.	5.6.1, 5.6.2 and 5.6.3	E
532	Check that text and graphic file names are unique, with extension (e.g. .TXT, .HTM, .XML, .JPG and .TIF) for new editions and re-issues.	5.6.4	W
533	Check that the DSID-UADT subfield is not used in an ER file.	5.7	E
534	Check that a delete cell message only contains the DSID field with EDTN = 0.	5.7	E
535	Check that the CRC value computed on the received file is the same as the CRC value transmitted.	5.9.1	E
536	Check that only fields that have a repetition factor repeat.	6.1.3	E
537	Check that the format of the catalogue file is correct.	6.2	E
538	Check that CADT-IMPL = “BIN”.	6.2.2	E
539	Check that DSID-PROF subfield value is either 1 [EN] or 2 [ER].	6.3 and 6.4	E
540	Check that mandatory records, fields and subfields for EN and ER files are included and contain data and that prohibited records, fields and subfields are not used.	6.3 and 6.4	E
541	Check that the SIGGRP format is correct for all LIGHTS, except for fixed LIGHTS, which must not have a value for SIGGRP.	Inland ENC Encoding Guide	E
542	Check that any attribute value SIGGRP starts and finishes with a bracket.	Inland ENC Encoding Guide	E
543			
544	Check that any area covered by a M_COVR object with CATCOV = 2 [no coverage available] does not contain any other object.	2.2 and Inland ENC Encoding Guide	E
545	Check that each object has a valid object class code as	3.2 and	E

	defined by the Inland ENC Feature Catalogue	Inland ENC Feature Catalogue	
546	Check that each attribute has a valid attribute class code as defined by the Inland ENC Feature Catalogue.	3.2 and Inland ENC Feature Catalogue	E
547	Check that no object contains attributes outside the list of permissible attributes for the object's class (as defined in the Inland ENC Feature Catalogue) for the specified object.	3.2 and Inland ENC Feature Catalogue	E
548	Check that M_COVR meta objects provide exhaustive non-overlapping coverage of the whole cell.	3.4 and Inland ENC Encoding Guide	E
549	Check that all DEPARE, depare and DRGARE objects are covered by M_QUAL objects without gaps or overlaps. (This check may only be used outside of Europe)	3.4 and Inland ENC Encoding Guide	E
550			

551	Check that text attribute values do not use format effecting (C0) characters (C0 as defined in S-57 Part 3, Annex B). Check that the delete character is only used in the update mechanism (i.e. in records with RUIN = 3 [modify]).	3.5.5	E
~~552~~	~~Check for any object that has been encoded with one of the new attribute values introduced in S-57 Edition 3.1 that INFORM contains a description of the enumerate value.~~	~~3.5.7~~	~~E~~
553	Check that no Group 1 object contains the attributes DATSTA , DATEND, PERSTA or PEREND	3.10.1 and logical consistency	E
554	Check for any edge used by only one M_COVR object with CATCOV = 1 [coverage available], that it is also shared with one, and only one, Group 1 object.	3.10.1	E
555	Check that the order of data in each base or update file is correct.	6.1.1	E
556	Check for the limits of data set files given in the Catalogue Directory field (CATD) of the catalogue file (subfields SLAT, WLON, NLAT, ELON): 1. That the limits for base cell files are identical to the furthest coordinates of M_COVR geometry found in the corresponding base cell files. 2. That the limits for update cell files are identical to the limits of the base cell file to which they apply.	5.6.3, 6.2.2 and logical consistency	E
557	Check that any SIGSEQ attribute value conforms to the correct structure (i.e. string content in accordance with format specification).	Inland ENC Encoding Guide	E
558	Check for any object having SIGSEQ encoded that the value of SIGPER is equal to the sum of intervals of light and intervals of eclipse described by SIGSEQ.	Inland ENC Encoding Guide and logical consistency	E
559	Check that no STATUS attribute value contains an impossible combination: • 3 [recommended] with 4 [not in use]; • 4 [not in use] with 9 [mandatory]; • 16 [watched] with 17 [un-watched]; • 8 [private] with 14 [public].	Inland ENC Encoding Guide and logical consistency	W
560	Check that all feature objects in a data set having the same FOID have the same description (same object class and attribute values) and are of type Line or Area.	3.1	E
~~561~~	~~Check that all feature objects in a data set having the~~	~~3.1~~	~~E~~

	same FOID are not part of a collection object or a master/slave relationship.		
562			

563	Check for any RESARE object that has been encoded with values (27) [Environmentally Sensitive Sea Area (ESSA)] and/or (28) [Particularly Sensitive Sea Area (PSSA)] for CATREA, that at least one of the attributes INFORM or TXTDSC contains the meaning of the value. The text must commence with the meaning of the value (i.e. Environmentally Sensitive Sea Area (ESSA) or Particularly Sensitive Sea Area (PSSA).	Supplement No1 Ch.4 (3.5.7.1)	E
564	Check for any base (EN) or update (ER) file containing at least one object of the following list: ARCSLN, ASLXIS, NEWOBJ, or RESARE having CATREA = 27 [Environmentally Sensitive Sea Area (ESSA)] or 28 [Particularly Sensitive Sea Area (PSSA)], • that it contains the following subfield values in the DSID field: - (03.1) for the STED subfield, - (2.0) for the PRED subfield, • that it has the text "STED:3.1.1;" included in the COMT subfield of the DSID field.	Supplement No1 Ch.4 (6.3.2.1 and 6.4.2.1)	E
565	Check for any update (ER) file applying to a base (EN) file which has the text "STED:3.1.1;" included in the COMT subfield of the DSID field, • that it contains the following subfield values in the DSID field: - (03.1) for the STED subfield, - (2.0) for the PRED subfield, • that it has the text "STED:3.1.1;" included in the COMT subfield of the DSID field.	Supplement No1 Ch.4 (6.4.2.1)	E
566			

2.3 Checks relating to Inland ECDIS

	Inland ECDIS		
1000	Check that the file extension is sequential until a new edition of the base set is issued.	Inland ENC Product Specification	E
1001	Check if DSID-UPDN is out of sequence.	Inland ENC Product Specification	E
1002	Check for proper usage of file extension, EDTN, UPDN, UADT and ISDT for re-issues of an ENC.	Inland ENC Product Specification	E
1003	Check that EDTN starts one higher than the previous edition number.	Inland ENC Product Specification	E
1004	Check that the file names of a base set and the re-issue are identical.	Inland ENC Product Specification	E
	See check 1797		
i1001	Check that all external files in an exchange set are referenced by a dataset in the same exchange set.	Inland ENC Product Specification	W

2.4 Checks relating to the Inland ENC Encoding Guide

	Inland ENC Encoding Guide		
		Appendix B.1-Annex A	
1500	Check that certain area objects do not overlap for logical reasons: • LNDARE and SBDARE. • LNDARE and CBLARE, achare, achbrt, FAIRWY, TWRTPT, lokbsn, lkbspt.	Logical consistency, IENC EG 4.8.14	W
~~1501~~	~~Check that no M_HDAT objects exist.~~	~~2.1.1~~	~~E~~
1502			
1503	Check that no object has an attribute value for verdat without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLRorVERCOP. Exceptions are m_vdat and m_sdat objects (subject to their own QA tests).	IENC EG C.1.4/C.1.5	W
1504	Check that the value in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM) is not null.	Logical consistency	E
1505	Check that there are no m_vdat objects which have an attribute value for verdat equal to that given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM).	IENC EG C.1.5	E
1506	Check that all Geo objects which have attribute values relative to a Height Datum and which cross a m_vdat object boundary are split at that boundary.	IENC EG C.1.5	E
1507	Check that no m_vdat objects overlap one another.	IENC EG C.1.5	E
1508	Check that no m_sdat objects overlap one another.	IENC EG C.1.4	E
~~1509~~	~~Check that no VERDAT attribute exists for the objects DEPARE DEPCNT, DRGARE, OBSTRN, SOUNDG, UWTROC, or WRECKS.~~	~~2.1.3~~	~~E~~
1510	Check that the value in the Sounding Datum subfield (SDAT) of the Data Set Parameter field (DSPM) is not null.	Logical consistency	E
1511	Check that there are no m_sdat objects, that have an attribute value for verdat equal to that given in the Sounding Datum subfield (SDAT) of the Data Set Parameter field (DSPM).	IENC EG C.1.4	E
1512	Check that all SOUNDG objects and all those objects that have at least one of VALSOU, VALDCO, WATLEV, watlev, DRVAL1 or DRVAL2 encoded with an explicit value and which cross a m_sdat object boundary are split at that boundary.	IENC EG C 1.4 / I 1.8	E
1513			
~~1514~~	~~Check that no M_UNIT objects exist~~	~~2.1.4~~	~~E~~
1515	Check that if an object contains a value for the attributes DATEND, DATSTA, PEREND, PERSTA, SORDAT, SUREND or SURSTA, that this value conforms to ISO 8601:1988.	IENC EG B.J	E
~~1516~~	~~Check that any Group 2 seasonal/periodic object (if the object class is concerned at once by the attributes STATUS, PERSTA and PEREND) with the attribute STATUS containing the value (5) [periodic/intermittent] also has the start and end of the active period encoded in PERSTA and PEREND, and vice versa.~~	~~IENC EG B.J~~	~~W~~

Kommentiert [HC6]: Reference to 4.8.14 is not relevant

Formatiert: Zentriert

Formatiert: Durchgestrichen

1517			
1518	Check that the value of the Producing agency subfield (AGEN) of the Data Set Identification field (DSID) is correct, and that it is the same as the first two characters of the data set file name.	IENC PS 6.3.2.1	E
~~1519~~	~~Check that no M_PROD objects exist.~~	~~2.2.1~~	~~E~~

1520	Check that the value of the Edition Number (EDTN) subfield of the Data Set Identification field (DSID) is correct.	IENC PS 5.7	E
1521	Check that the value of the Update Number (UPDN) subfield of the Data Set Identification field (DSID) is correct, and that it is equivalent to the extension of the data set file name, except in the case of a re-issue; in which case, it should be equal to the last update number.	IENC PS 5.7	E
1522	Check that the value of the Update application date (UADT) subfield of the Data Set Identification field (DSID) is correct for data sets with a file name extension of ".000", or that it is null in all other cases.	IENC PS 5.7	E
1523	Check that the value of the Issue date (ISDT) subfield of the Data Set Identification field (DSID) is correct, and that for data sets with a file name extension of ".000" it is greater than or equal to the value of the Update application date (UADT) subfield.	PS 5.7	E
1524			
1525			
1526			
~~1527~~	~~Check that any DRVAL2 attribute value for M_QUAL objects is greater than or equal to the maximum depth to which the CATZOC category for that M_QUAL object indicates.~~	~~2.2.3.1~~	~~E~~
~~1528~~	~~Check that if there is an attribute value for TECSOU for a given M_QUAL object, that only one sounding technique has been used within that M_QUAL object coverage.~~	~~2.2.3.1~~	~~E~~
1529	Check that no object falling within a given M_QUAL object coverage has an attribute value for TECSOU that is equivalent to an attribute value for TECSOU on the M_QUAL object.	IENC EG C.1.2/ C.1.6/ C.1.7 IENC PS 3.5.6	E For US/ RU
1530	Check that no object falling within a given M_QUAL object coverage has an attribute value for SOUACC that is equivalent to the SOUACC or CATZOC attributes for the M_QUAL object.	IENC EG C.1.2/ C.1.6/ C.1.7 IENC PS 3.5.6	E For US/ RU
1531	Check that no M_QUAL object has attribute values for POSACC, SOUACC, QUASOU or TECSOU which are equivalent to or degrade the accuracy indicated by the attribute value of CATZOC.	IENC EG C.1.2/ C.1.6/ C.1.7 IENC PS 3.5.6	E For US/ RU
1532	Check that if there is an attribute value for SURSTA for a given M_QUAL object that it relates to the oldest survey of two or more surveys for that M_QUAL object	IENC EG C.1.2	E For US/ RU

Kommentiert [HC7]: M_QUAL does not have attribute QUASOU

	coverage.		
1533			
1534			
1535			
1536			
1537			
1538			

1539			
~~1540~~	~~Check that SORIND has not been used for encoding the SURATH.~~	~~2.2.3.2 and 2.2.5.1~~	~~E~~
1541			
1542			
~~1543~~	~~Check that no object falling within a given M_ACCY object coverage has an attribute value for QUAPOS that is equivalent to the QUAPOS attribute for the M_ACCY object.~~	~~2.2.4.1~~	~~E~~
1544			
1545			
1546			
~~1547~~	~~Check that any bathymetric or hydrographic object that is of Point geometric type with an attribute value for SORIND has a corresponding attribute value for SORDAT, and that the values are different to those given by SORIND and SORDAT of the overlying M_SREL.~~	~~2.2.5.1~~	~~W~~
1548	Check that any non-bathymetric object, which has an attribute value for SORIND has a corresponding attribute value for SORDAT.	IENC EG B.B / C.1.7 IENC PS 3.5.6	W For EU/US
1549	Check that the value in the Compilation Scale of data subfield (CSCL) of the Data Set Parameter field (DSPM) is not null.	IENC PS 6.3.2.3	E
1550			
1551			
~~1552~~	~~Check that no object contains the attribute SCAMAX.~~	~~2.2.7~~	~~E~~
1553	Check that any value of SCAMIN is set to a scale value smaller than or equal to the compilation scale of the data for the area.	Logical consistency	E
1554	Check that no Group 1 area objects and no meta objects have been encoded with the attribute SCAMIN.	IENC EG C.1, D.1.4, G.3.7, G.3.11, G.3.14, I.1.3, I.1.5, I.1.6, I.1.7, I.1.9	E
~~1555~~	~~Check that no attribute value for INFORM and NINFOM contains formatting characters (C0 as defined in S-57 Part 3, Annex B).~~ *(see check 551)*	~~2.3~~	~~E~~
1556	Check that any text files forming part of the dataset are Hypertext Metafiles (HTM), text (TXT), or Standardized External XML files (XML).	IENC EG B, B	E
1557			
1558			
1559			
1560			

1561			
1562			

1563	Check that any RIVERS, CANALS or LAKARE objects are covered by a LNDARE object of type Area.	IENC EG D.1.1/ D.1.2/ D.1.5	E
1564			
1565	Check for all LNDARE objects of type Area that any edge of the limits shares the geometry of at least one object of the following list: • linear objects: COALNE, SLCONS, slcons, GATCON, gatcon, DAMCON. • area objects: M_COVR, GATCON, gatcon, DAMCON, RIVERS, TUNNEL, DRYDOC, CANALS, LAKARE, lokbsn, DOCARE, LNDARE. • area objects with WATLEV = 1 [partly submerged at high water]or 2 [always dry] SLCONS, slcons, MORFAC, WRECKS, OBSTRN, PYLONS, UWTROC,. • area objects with watlev = 1 [partly submerged at high water]or 2 [always dry] or 8 [above mean water level]: slcons, uwtroc	Logical consistency, IENC EG	W
1566	Check that no edge of a COALNE or linear, SLCONS or slcons object bounds an area RIVERS, CANALS, LAKARE DOCARE, DRYDOC lokbsn, hulkes, ponton or flodoc object, except when this edge is also shared by a boundary of a DEPARE, depare, DRGARE, PONTON, FLODOC or HULKES object	Logical consistency, IENC EG	W
1567			
1568	Check that any SLCONS and slcons objects of type Area are covered by a LNDARE, DEPARE or depare object of type Area.	IENC EG G.2	E
1569	Check that any SLCONS objects of type Area with WATLEV = 3 [always under water/submerged], 4 [covers and uncovers] or 5 [awash] are covered by DEPARE and/or depare objects of type Area.	IENC EG G.2	E
i1501	Check that any slcons objects of type Area with watlev = 3 [always under water/submerged], 4 [covers and uncovers] or 9 [below mean water level] are covered by DEPARE, and/or depare objects of type Area.	IENC EG G.2	E
1570			
1571			
1572			
1573	Check that any DRYDOC object is covered by a LNDARE object of type Area.	IENC EG G.3.6	E
~~1574~~	~~Check that no DRYDOC object is bounded (except for the gate) by a separate object SLCONS or COALNE.~~	~~4.6.6.1~~	~~E~~
1575			
i1502	Check that there are no flodoc objects, that have an attribute value for verdat equal to that given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM) or in the verdat attribute of the Meta object m_vdat.	EG G.3.7	E
~~1576~~	~~Check that no DOCARE object is bounded (except for the gate) by a separate object SLCONS or COALNE.~~	~~4.6.6.3~~	~~E~~
1577			
1578			
~~1579~~	~~Check that no GATCON object has an attribute value for VERACC without an attribute value for VERCLR.~~	~~4.6.6.4~~	~~E~~

1580	Check that any area GATCON object is covered by a DEPARE or ~~a~~ depare, UNSARE, DRGARE or LNDARE object of type Area.	IENC EG G.4.5	E
i1503	Check that any area gatcon object is covered by a DEPARE or a depare object of type Area.	IENC EG G.4.5	W For EU
i1504	Check that there are no gatcon objects, that have an attribute value for verdat equal to that given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM) or in the verdat attribute of the Meta object m_vdat.	EG G.4.5	E For EU
1581			
i1505	Check that any area lokbsn object is covered by a DEPARE or a depare object of type Area.	EG G.4.3	E
i1506	Check that all objects which belong to one lock (lokbsn or lkbspt) must be combined to one aggregation area (C_AGGR.)	EG G.4.3/ G.4.4	E
i1507	Check that all lokbsn objects have a value for the attributes horcll and horclw.	EG G.4.3	E
1582			
1583			
1584	Check that any area MORFAC object with a WATLEV attribute value of 2 [always dry] is covered by a LNDARE object of type Area.	IENC EG G.3.12	E
i1508	Check that any MORFAC object shares only one SEAARE object.	IENC EG G.3.13	E
1585			
1586			
i1509	Check that any ponton object of type Area is covered by a DEPARE or depare object of type Area.	IENC EG G.3.11	E W
1587			
i1510	Check that any hulkes object of type Area is covered by a DEPARE or depare object of type Area.	IENC EG G.3.14	E W
~~1588~~	~~Check that no object CRANES has an attribute value for VERACC without an attribute value for VERCLR.~~	~~4.6.9.3~~	~~E~~
1589			
1590	Check that any LNDRGN object is covered (partially or entirely) by a LNDARE object of type Area (or contains a point or a line LNDARE).	IENC EG B.E/ D.2.2	W
1591			
1592			
1593			
1594			
1595	Check that no SLOTOP object with a value of (6) [cliff] for the attribute CATSLO shares the same geo-spatial position and geometry as a COALNE object.	logical consistency	W
~~1596~~	~~Check that no SLOGRD object with a value of (6) for the attribute CATSLO shares the same geo-spatial position and geometry as a COALNE object.~~	~~4.7.5~~	~~W~~
1597	Check that no RIVERS object shares the same geo-spatial position and geometry as a SEAARE object.	IENC EG D.1.1/ D.1.2	E
1598			
1599			
1600			
1601			
1602	Check that no LAKARE object shares the same geo-spatial position and geometry as a SEAARE object.	IENC EG D.1.5	E
~~1603~~	~~Check that no LAKSHR objects exist.~~	~~4.7.8~~	~~E~~

Kommentiert [HC8]: S-58 Ed. 6.1.0 also allows UNSARE, DRGARE and LNDARE

Kommentiert [HC9]: Change Request 360

Kommentiert [HC10]: Change Request 361

1604			
1605			
1606			

1607			
1608			
1609	Check that no CANALS object shares the same geo-spatial position and geometry as a SEAARE object.	IENC EG D.1.1, D.1.3	E
1610			
1611			
1612	Check that any TUNNEL object is covered by LNDARE, DEPARE, depare or DRGARE objects.	IENC EG G.1.7	W
1613			
1614	Check that no TUNNEL object has any other non-hydrographic object (RAILWY, ROADWY etc) encoded within it.	IENC EG G 1.7	E
~~1615~~	~~Check that no object TUNNEL has an attribute value for VERACC without an attribute value for VERCLR.~~	~~4.8.3~~	~~E~~
1616			
1617	Check that any DAMCON object of type Area is covered by a LNDARE object of type Area.	IENC EG G.4.2	E
1618			
1619	Check that any DYKCON object of type Area is covered by a LNDARE object of type Area.	IENC EG G.2.1	E
1620	Check for any edge of a DYKCON object which is shared by both a LNDARE object of type area and a DEPARE, depare, or DRGARE object of type area, that it is also shared by a linear SLCONS or slcons object without a value for CATSLC or catslc.	IENC EG G.2.1	E
~~1621~~	~~Check that no ROADWY object has a value of (7) for the attribute CATROD.~~	~~4.8.8~~	~~W~~
~~1622~~	~~Check that no object BRIDGE has an attribute value for VERACC without an attribute value for at least one of VERCLR, VERCCL or VERCOP.~~	~~4.8.10~~	~~E~~
1623	Check that if an object bridge overlaps navigable water, its supports are encoded as PYLONS with a value of (4) [bridge pylon/tower] or (5) [bridge pier] for the attribute CATPYL.	IENC EG G.1.10	E
i1511	Check that all objects of a bridge (pylons, lights, sistat ..) which belong to one bridge must be combined to one aggregation area (C_AGGR.)	IENC EG G.1/ R.2.1	E
i1512	Check that there are no bridge objects, that have an attribute value for verdat equal to that given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM) or in the verdat attribute of the Meta object m_vdat.	IENC EG G.1	E
i1557	If the notmrk is a bridge notmrk (catnmk=12,13,44,45,46,47 or 50) then it must have the attribute ORIENT defined. If the notmrk with attribute catnmk = 50 (value name E.1) is not positioned at a bridge, then ORIENT is not required.	IENC EG O.3.2	E
~~1624~~	~~Check that no object CONVYR has an attribute value for VERACC without an attribute value for VERCLR.~~	~~4.8.11~~	~~E~~
1625	Check that, if one of the component objects (AIRARE) of an airfield is encoded using a collection object, that only C_ASSO is used.		W
1626			
1627			

Kommentiert [HC11]: Change Request 368

1628			
1629			
1630			
1631			
1632			
1633			
1634			
1635			
1636			
1637	Check that any PYLONS object of type Area with a WATLEV attribute value of 1 [partly submerged at high water]or 2 [always dry] is covered by a LNDARE object of type Area.	IENC EG G.1.10	E
1638	Check that any picture files that form part of the ENC are according IENC format description.	IENC EG B.B IENC PS 5.6.4	E
1639			
1640			
1641	Check that no UWTROC or uwtroc object shares the same spatial position as a SOUNDG object.	IENC EG J.1.1	E
1642			
~~1643~~	~~Check that where depth contours merge, a DEPARE (type Line) object is created, and that the value for VALDCO on the DEPCNT object is equal to the value for DRVAL1 on the DEPARE object.~~	~~5.4.1 and 5.4.3~~	~~W~~
1644			
~~1645~~	~~Check that the overall succession of DRVAL1 and DRVAL2 in the whole maritime area is continuous.~~	~~5.4.3~~	~~W~~
1646			
1647			
1648			
1649			
1650	.		
1651			
1652			
1653			
1654			
1655			
1656			
1657	~~Check for any UWTROC object that the combination of attribute values corresponds to the following table.~~	~~6.1.2~~	~~W~~

For each UWTROC feature object where the values of VALSOU, QUASOU, WATLEV, TECSOU and SOUACC are not as defined in the table below (additional values may be encoded)	Possible illogical attribute values for UWTROC object.	Amend to logical attribute combination for UWTROC object.	6.1.2, S-58	W

VALSOU	QUASOU	WATLEV	TECSOU SOUACC
unknown	2 OR undefined	3, 4 OR 5	Not Present

Kommentiert [HC12]: For consistency use the values tabulated in S-58 check 1657

		2 OR undefined	unknown	Not Present	
	< 0	1, 3, 4, 6, 8, 9 OR undefined	4	notNull	
		7	4	Not Present	
	0	1, 3, 4, 6, 8, 9 OR undefined	5	notNull	
		7	5	Not Present	
	> 0	1, 3, 4, 6, 8, 9 OR undefined	3	notNull	
		7	3	Not Present	
	~~VALSOU~~			~~WATLEV~~	
	~~unknown~~			~~3, 4 or 5~~	
				~~unknown~~	
	~~< 0~~			~~4~~	
	~~0~~			~~5~~	
	~~> 0~~			~~3~~	
i1514	Check for any uwtroc object that the combination of attribute values corresponds to the following table.				
	VALSOU			watlev	
	Unknown < 0 0 > 0			1,2,3,4,8,9, unknown 4,8 5,8,9 3,8,9	
1658					
1659					
1660					
1661					
1662	Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or depare object of type Area.			IENC EG J.2.1	E
i1515	Check that no area hrbbsn object is covered by a LNDARE object of type Area.			IENC EG G.3.10	E
i1516	Check that any area lkbspt object is covered by a DEPARE or depare object of type Area.			IENC EG G.4.4	E
i1523	Check that there are no wtwprf objects, that have an attribute value for verdat equal to that given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM) or in the verdat attribute of the Meta object m_vdat.			IENC EG I.3.5	E
i1524	Check that no object wtwprf has an attribute value for HEIGHT without an attribute value for reflev.			IENC EG I.3.5	E

i1537	Check that there are no boylat objects, that have an attribute value for marsys equal to that given in the marsys attribute of the Meta object m_nsys.	IENC EG O.1.2	E
i1539	Check, if any bcnlat object shares the same geo-spatial position and geometry as a DAYMAR, that the DAYMAR object is encoded as the slave object.	IENC EG O.2.1	E
i1545	Check that any tisdge object is associated (using the collection object C_ASSO with the other objects of the facility).	IENC EG T.1.1	W

<table>
<tr><td>1663</td><td colspan="6">~~Check for any WRECKS object that the combination of attribute values corresponds to the following table.~~

~~"undefined" means that no value is encoded.~~
~~"any value" means,~~
~~- for mandatory attribute: any predefined value or unknown value,~~
~~- for optional attribute: any predefined value or undefined.~~

~~Other attributes which do not appear in the table may be encoded.~~</td><td>~~IENC EG J.2.1~~</td><td>W</td></tr>
<tr><td></td><td colspan="6">For each WRECKS feature object where the attribute values do not correspond to the table below.</td><td>WRECKS object with illogical attribute combination.</td><td>Amend attributes in accordance with the logical values defined in the table.</td><td>6.2.1</td></tr>
<tr><td></td><td>VALSOU</td><td>WATLEV</td><td>CATWRK</td><td>QUASOU</td><td>HEIGHT</td><td>TECSOU SOUACC</td><td colspan="2"></td></tr>
<tr><td></td><td rowspan="3">Undefined</td><td>3 or ~~unknown~~ undefined</td><td>1, 2, 3 or unknown</td><td>2 or undefined</td><td>not Present</td><td>Undefined</td><td colspan="2"></td></tr>
<tr><td></td><td>4 or 5</td><td>Any value</td><td>2 or undefined</td><td>not Present</td><td>undefined</td><td colspan="2"></td></tr>
<tr><td></td><td>1 or 2</td><td>4 or 5 or unknown</td><td>undefined</td><td>Any value</td><td>undefined</td><td colspan="2"></td></tr>
<tr><td></td><td rowspan="3">unknown</td><td>3 or ~~unknown~~ undefined</td><td>1, 2, 3 or ~~not encoded~~unknown</td><td>2 or undefined</td><td>not Present</td><td>undefined</td><td colspan="2"></td></tr>
<tr><td></td><td>4 or 5</td><td>Any value</td><td>2 or undefined</td><td>not Present</td><td>undefined</td><td colspan="2"></td></tr>
<tr><td></td><td>1 or 2</td><td>4~~, or~~ 5 or ~~not encoded~~unknown</td><td>undefined</td><td>Any value</td><td>undefined</td><td colspan="2"></td></tr>
<tr><td></td><td rowspan="2"><0</td><td>4</td><td>Any value</td><td>7</td><td>not Present</td><td>undefined</td><td colspan="2"></td></tr>
<tr><td></td><td>4</td><td>Any value</td><td>1, 3, 4, 6, 8, 9 or undefined</td><td>not Present</td><td>Any value</td><td colspan="2"></td></tr>
<tr><td></td><td rowspan="2">0</td><td>5</td><td>1, 2, 3 or unknown</td><td>7</td><td>not Present~~Any value~~</td><td>undefined</td><td colspan="2"></td></tr>
<tr><td></td><td>5</td><td>Any value</td><td>1, 3, 4, 6, 8, 9 or undefined</td><td>not Present</td><td>Any value</td><td colspan="2"></td></tr>
<tr><td></td><td rowspan="2">> 0</td><td>3</td><td>1, 2, 3 or ~~undefined~~unknown</td><td>7</td><td>not Present</td><td>undefined</td><td colspan="2"></td></tr>
<tr><td></td><td>3</td><td>1, 2, 3 or ~~undefined~~unknown</td><td>1, 3, 4, 6, 8, 9 or undefined</td><td>not Present</td><td>Any value</td><td colspan="2"></td></tr>
<tr><td>i1548</td><td colspan="6">Check that WRECKS object has attribute CATWRK and attribute SCAMIN with value (22000(EU)) or (45000(US)).</td><td>IENC EG J.2.1</td><td>E</td></tr>
<tr><td>i1549</td><td colspan="6">Check that any WRECKS object with WATLEV = 3</td><td>IENC EG</td><td>E</td></tr>
</table>

Kommentiert [HC13]: For consistency use the values tabulated in S-58 check 1663

	[always under water/submerged] has attribute VALSOU.	J.2.1	
1664			
1665			
1666			
1667			
1668			
1669	Check for any OBSTRN object that the combination of attribute values corresponds to the following table. Other attributes which do not appear in the table may be encoded.	IENC EG J.3.1	W

VALSOU	WATLEV			
unknown	3, 4, 5 or unknown			
	1 or 2			
	7			
VALSOU < 0	4			
	4			
VALSOU = 0	5			
VALSOU > 0	3			
	3			

1670	Check where a WRECKS or OBSTRN area includes other WRECKS or OBSTRN point objects, that the encoded values of the attributes QUASOU, SOUACC, TECSOU, VALSOU and WATLEV for the area object are identical to the values for the shallowest point object.	IENC EG J.3.1	W
1671	Check for any line object whose geometry is coincident with the geometry of an area object of the same class and attribute values except for attributes SORIND, SORDAT and SCAMIN.	Logical consistency	E
1672	Check for the occurrence of any point object lying inside an area object of the same class and attribute values, except for LNDARE, WRECKS and OBSTRN objects.	Logical consistency	E

1673			
1674			
1675			
~~1676~~	~~Check that any RESARE object having a value of (24) for the attribute CATREA also has a value of (13) for the attribute RESTRN.~~	~~9.1.2~~	~~W~~
1677			
1678			
1679	Check for any object that attributes of type enumerated ('E'), float ('F'), integer ('I') or code string ('A') contain only one value.		E
~~1680~~	~~Check that no RECTRC object contains a value of (3) for the attribute STATUS.~~	~~10.1.1~~	~~W~~
1681	Check for any one way RECTRC object of type Line with a value for ORIENT encoded, that the direction of digitizing is consistent (i.e. deviation less than 5 degrees) with the direction of the traffic flow (as encoded in ORIENT).	IENC EG L.1.2	E
1682			
1683			

1684			
1685			
1686			
1687			
1688			
1689			
1690			
1691			
1692			
1693			

1694			
1695			
1696			
1697			
1698			
1699			
1700			
1701			
1702			
1703	~~Check for any CBLSUB object, if the attribute CATCBL is encoded, that the value is (1) [power line], (3) [transmission line] (4) [telephone], (5) [telegraph] or (6) [mooring cable/chain].~~ only optional now)	IENC EG K.1.1	E
1704	Check that any cblohd object has attribute VERCLR with meaningful value~~, attribute catcbl with value (1) [power line], (3) [transmission line], (4) [telephone], (5) [telegraph], (6) [mooring cable/chain] or (7) [ferry cable].~~	IENC EG G.1.8	E
~~1705~~	~~Check that no CBLOHD object contains an attribute value for VERACC, without an attribute value for at least one of VERCLR or VERCSA.~~	~~11.5.2~~	~~E~~
1706			
1707	~~Check that any CBLARE object has the attribute CATCBL with value (1) [power line], (3) [transmission line], (4) [telephone], (5) [telegraph] or 6 [mooring cable/chain~~) (only optional now) ~~and attribute RESTRN with value (1).~~ (only optional now)	IENC EG K.1.2	E
1708			
1709			
~~1710~~	~~Check that no PIPOHD object has an attribute value for VERACC without an attribute value for VERCLR.~~	~~11.6.3~~	~~E~~
~~1711~~	~~Check that no PIPOHD object has an attribute value for VERDAT without an attribute value for VERCLR.~~	~~11.6.3~~	~~E~~
1712			
1713			
~~1714~~	~~Check that any OBSTRN object that has a value of (2) for the attribute CATOBS also has a value of (4) for the attribute STATUS.~~	~~11.7.1 and 6.2.2~~	~~W~~
1715			
1716			
1717			
1718			

Kommentiert [HC14]: This should be handled by check

1719			
1720			
1721			
1722	Check that any navigational aid equipment object is a slave to a navigational aid structure object or another navigational aid equipment object. When two objects (including one DAYMAR/daymar) contained in the list of structure objects are part of the navigational aid, then the DAYMAR/daymar object must be considered as an equipment object. NOTE: CRANES, FLODOC, HULKES, hulkes, PONTON, pontoon, OBSTRN, PYLONS, SILTNK, boylat, slcons and WRECKS objects must be considered as possible structure objects, in addition to the list given in Annex A (12.1.1) of S-57. Only one object can be coded as master in a master/slave relation.	IENC EG N.1, O.1, O.2, O.4, P.1, Q.1	W
1723	Check that all point objects comprising a navigational aid are pointing to the same point spatial object.	IENC EG N.1, O.1, O.2, O.4, P.1, Q.1	E
1724	Check that no navigational aid equipment object contains a value for OBJNAM equivalent to the OBJNAM value of the master object.	IENC EG O.1, O.2, O.4, P.1	W
1725			
1726	Check that the entire area of the data set is covered by one or more m_nsys objects, with a value for the attribute marsys indicating the buoyage system in operation.	IENC EG C.1.3	E
1727	Check that no m_nsys object overlaps any other m_nsys object .	IENC EG C.1.3	E
1728			

Kommentiert [HC15]: Lower case boylat and slcons are possible structure objects and lower case daymar is also a possible equipment object

1729	Check for any geo object forming part of a navigational aid (buoy or beacon), that the combination of characteristics for structure, topmark and lights conforms to CEVNI, Russian inland waterway regulatios or the IALA system being used (given in marsys or MARSYS of the geo object or, if not encoded, in marsys of the meta-object m_nsys). This check must not be applied to objects having a value of (9) [no system] or (10) [other system] for the attribute MARSYS, and to slave objects if the master object has a value of (9) [no system] or (10) [other system] for the attribute MARSYS. Optional attributes may be either encoded or undefined. Mandatory attributes must be encoded with explicit values (i.e. not "unknown").	IENC EG C.1.3	W
1730			
1731			

1732			
1733			
1734			
1735			
1736			
1737			
1738			
1739			
1740			
1741			
1742			
1743	Check that no Buoy object contains a value for the attribute marsys that is identical to the value for marsys within the object m_nsys that covers the Buoy object.	IENC EG O.1	E
1744			
1745			
1746			
1747			
1748			
1749			
1750			
1751	Check that no LIGHTS object has a value for ORIENT without a value of (1) [directional function] for CATLIT.	IENC EG N.1	E
1752	Check that no LIGHTS object with a value of (1) [fixed] for LITCHR contains the attributes SIGGRP, SIGPER and SIGSEQ.	IENC EG N.1	E
~~1753~~	~~Check that no LIGHTS object has an attribute value for VERDAT without an attribute value for HEIGHT.~~	~~12.8.1~~	~~E~~
1754			
1755			
1756	Check that no LIGHTS object having a value of (4) [leading light] for the attribute CATLIT has a value for ORIENT, unless CATLIT also contains a value of (1) [directional function].	IENC EG N.1	E
1757			
1758			
1759			
1760			
1761			
1762			
1763	Check that the Relationship Indicator [RIND] subfield of the Feature Record to Feature object Pointer [FFPT] field for any C_ASSO or C_AGGR object is set to (3) [peer].	15 and Appendix B.1 (3.9)	E
~~1764~~	~~Check that no permanent object with a value of (1) [permanent] for the attribute STATUS has PERSTA and/or PEREND encoded.~~	~~logical consistency~~	~~E~~
1765			
1766	Check for any attribute PICREP, TXTDSC and NTXTDS that the attribute value only contains one file name.	IENC EG B	E
1767			
1768		5.3	W
1769			

Formatiert: Durchgestrichen

1770			
1771	Check for any edge which is shared by a DEPCNT		W

	(VALDCO) and two area DEPARE (DRVAL1, DRVAL2), but by no line DEPARE, that: • (Maximum value of DRVAL2) > VALDCO > (Minimum value of DRVAL1), and • (Minimum value of DRVAL2) = VALDCO ≥ ~~(Maximum value of DRVAL1).~~	Logical consistency	
1772			
1773			
1774			
1775	Check for any equipment object (see UOC 12.1.1) which is situated within a DEPARE, depare or DRGARE, that: • it has a navigational aid structure as master, or • it shares the same spatial object as a point FLODOC, HULKES, LNDARE, PONTON or PYLONS object, or • it is situated on a line CBLOHD, cblohd, CONVYR, convyr, COALNE, DAMCON (with CATDAM = 3 [flood barrage]), FLODOC, flodoc, LNDARE, MORFAC, PIPOHD, pipohd, PONTON, ponton, slcons or SLCONS object.	IENC EG N.1, O.1, O.2	W
1776	Check that any LIGHTS object having value 7 or 9 for LITCHR is encoded with the corresponding value for SIGGRP: • LITCHR = 7 [isophase], then SIGGRP = (1) • LITCHR = 9 [interrupted quick-flashing], then SIGGRP = ()	IENC EG N.1	W
1777	Check that all the pointers of any collection object in a cell reference objects that exist in that cell.		W
1778			
1779	Check that no area DEPARE object has DRVAL1 equal to DRVAL2.	IENC EG I.1 and logical consistency	E
1780			
1781	Check that any BUISGL or LNDMRK object which is part of a master/slave relationship and references	BUISGL or LNDMRK object with al slave LIGHTS object	~~IENC EG E.1, F.1~~Set FUNCTN to 33 (light support) for BUISGL or	IENC EG E.1, F.1	W

	a LIGHTS object as slave and CATLIT is Not equal to 6 (air obstruction light) or 8 (flood light) or 9 (strip light) and FUNCTN does not contain, has a value of (33) [light support] for the attribute FUNCTN.	without FUNCTN = 33 (light support)	LNDMRK		
1782					
1783	Check that no object of type Area with: - WATLEV or watlev = 4 [covers and uncovers] overlaps a DEPARE or depare object with DRVAL1 >= 0. - WATLEV = 5 [awash] overlaps a DEPARE or depare object with DRVAL1 > 0.	logical consistency			W
1784	Check for any spatial object that no attribute HORDAT, POSACC, or QUAPOS is populated with a missing value (unknown).	logical consistency			W
1785					
1786	Check that any objects of type Area with WATLEV or watlev = 2 [always dry] are covered by LNDARE objects of type Area.	logical consistency			W
1787	Check for any objects NAVLNE and RECTRC sharing an edge that they have the same or reciprocal attribute value for ORIENT.	logical consistency			W
1788	Check that when one object NAVLNE and one object RECTRC share an edge, they belong to the same C_AGGR object.	Logical consistency			W
1789	Check for any object NAVLNE and RECTRC of type Line with a value for ORIENT encoded, that the orientation of the spatial geometry is consistent (i.e. deviation less than 5 degrees) with the attribute value (or the reciprocal value) encoded in ORIENT.	Logical consistency			W
1790	Check for any LIGHTS having ORIENT encoded with an explicit value, that:	Logical consistency			W

Kommentiert [HC16]: Include also lower case watlev

Kommentiert [HC17]: Include also lower case watlev

	• SECTR1 and SECTR2 are not populated, or • it is not aggregated to a RECTRC or a NAVLNE in a collection object C_AGGR, or • the structure object which is the master of this LIGHTS in a master/slave relationship is not aggregated to a RECTRC or a NAVLNE in a collection object C_AGGR.		
1791	Check for any NAVLNE having CATNAV = 3 [leading line bearing a recommended track] that a RECTRC with CATTRK = 1 [based on a system of fixed marks] shares a part of the line geometry used for the NAVLNE, and vice versa.	Logical consistency	W
1792	Check that no cell crosses the 180° meridian.	Encoding Bulletin EB18	W
1793			
1794	Check for any LIGHTS object having CATLIT = 1 [directional function] and which is a slave in a master/slave relationship, that the master object is not a BOYCAR, BOYLAT, BOYSAW or BOYSPP.	Logical consistency	W
1795	Check for any master object in a master/slave relationship containing temporal attribution (DATEND, DATSTA, PEREND, PERSTA) that its slave objects also contain the same temporal attributes.	Logical consistency	W
1796			
1797	Check that none of the following feature object and geometric primitive combinations, which do not display in inland ECDIS, are present in the dataset: - bridge of type point; - DAMCON of type point; - PIPSOL of type point; - ROADWY of type point; - TUNNEL of type point.		
i1550	For any DEPARE and depare with QUASOU=2	IENC EG I.1.9	W

Formatiert: Hervorheben

Kommentiert [HC18]: Include also lower case depare

Formatiert: Hervorheben

	(depth unknown). Check that DRVAL1=UNKNOWN if the DEPARE is bounded by a COALNE, whose edges have attribute QUAPOS=4		
i1551	For any DEPARE and depare with QUASOU=2 (depth unknown). Check that DRVAL1=0 if the DEPARE is bounded by a COALNE, whose edges have attribute QUAPOS not equal 4	IENC EG I.1.9	W
i1552	For any DEPARE and depare with QUASOU=8 (reported), Check that at least one of DRVAL1 or DRVAL2 are encoded.	Logical consistency	E
i1553	Check that any **curent** feature has populated at least one of the velocity attributes: **curvhw, curvlw, curvmw, curvow**	Logical consistency	W
i1554	Check that any **curent** feature with geometric primitive = Area has a value for attribute direction of impact (**dirimp)**	IENC EG H.1.1	W
i1555	Check that any **curent** feature with geometric primitive = Point has a value for attribute ORIENT	IENC EG H.1.1	W
i1556	Check that if feature **curent** has water level name attribute entered then the corresponding velocity attribute must also be encoded: **hignam** must have **curvhw** **lownam** must have **curvlw** **meanam** must have **curvmw** **othnam** must have **curvow**	IENC EG H.1.1	E

Kommentiert [HC19]: Bei COALNE ist ein Attribut QUAPOS nicht vorhanden und macht auch keinen Sinn. Regel überprüfen

Formatiert: Hervorheben

Formatiert: Hervorheben

Kommentiert [HC20]: Include also lower case depare

Formatiert: Hervorheben

Kommentiert [HC21]: Include also lower case depare

2.5 Checks relating to allowable attribute values for particular object classes

2000	Check for any object that attributes only contain allowable values listed in the following table for the given object class. x-y-z allowable values (alone or in a list) * all the pre-defined attribute values as listed in the IENC Feature Catalogue are allowed. # the attribute is mandatory, and the missing value (Unknown) is allowed. (#) the attribute is mandatory, but the missing value (Unknown) is prohibited (no logical sense).	logical consistency	W

Attribute	**Object Class**	code	Allowable attribute values
BCNSHP		2	(1,2,3,4,5)
	BCNISD	6	* #
	BCNLAT	7	1,~~5~~ #
	bcnlat	17028	1,5 #
BOYSHP		4	(1,2,3,4,5,6,8)
	BOYCAR	14	* #
	BOYISD	16	4,5 #
	BOYLAT	17	* #
	BOYSAW	18	* #
	BOYSPP	19	* #
	boylat	17029	* #
BURDEP		5	numerical, 1 decimal digit
	TUNNEL	151	* m
CATAIR		7	(1,2,4,6)
	AIRARE	2	*
CATBRG		9	(1,3,4,5,7,9,12,13)
	bridge	17011	* #
CATBUA		10	(1,2,3,4,5)
	BUAARE	13	*
CATCAM		13	(1,2,3,4)
	BOYCAR	14	* #
CATCBL		11	(1,3,4,5,6)
	CBLARE	20	*
	CBLSUB	22	*
CATCOA		15	(1,2,3,4,5,6,7,8,9,10,11)
	COALNE	30	*

CATCON		17	(2)
	CONVYR	34	* #
	convyr	17034	* #

CATCOV		18	(1,2)
	M_COVR	302	* (#)

CATCRN		19	(2,3,4,5)
	CRANES	35	*
	cranes	17030	*

CATDAM		20	(1,2,3)
	DAMCON	38	* #

CATDIS		21	(1,2,3,4)
	dismar	17004	* #

CATDPG		23	(2,4,5)
	DMPGRD	48	* #

CATFNC		24	(1,4)
	FNCLNE	52	* #

CATFOG		27	(1,2,3,4,5,6,7,8,9,10)
	FOGSIG	58	* #
CATFRY		25	(1,2)
	FERYRT	53	* #

CATGAT		29	(2,4)
	GATCON	61	4 #
	gatcon	17031	* #

CATHAF		30	(5)
	HRBFAC	64	* #

CATHLK		31	(1,2,3,4,5)
	HULKES	65	* #

CATLAM		36	(1,2,3,4)
	BCNLAT	7	* 1,2 #
	BOYLAT	17	* #

CATLIT		37	(1,4,5,6,12,13,14,15)
	LIGHTS	75	*

CATLND		34	(2,9,11,12)
	LNDRGN	73	*

CATLMK		35	(1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21)
	LNDMRK	74	* #

CATMFA		38	(1,2,3,4)
	MARCUL	82	* #

Kommentiert [JNE22]: In FC IES 2.4 attribute values 1 – 22, in EG IES 2.4 attribute values 1-21

CATMOR		40	(1,3,4, 5,7)
	MORFAC	84	* #
CATNAV		41	(1,2,3)
	NAVLNE	85	*
CATOBS		42	(1,2,3,4,5,6,7,8,9,10,11)
	OBSTRN	86	*
CATOLB		44	(1,2)
	OILBAR	89	*
CATPIP		47	(2,3,4,6)
	PIPARE	92	*
	PIPSOL	94	*
	pipohd	17024	* #
CATPRA		48	(1,2,3,4,5,6,7,8,9,10)
	PRDARE	97	*
CATPYL		49	(1,2,3,4,5)
	PYLONS	98	* #
CATRAS		51	(1)
	RADSTA	102	* #
CATREA		56	(4,5,9,12,19,22,23,25,26)
	RESARE	112	12
	resare	17005	*
CATROD		57	(1,2,3,4)
	ROADWY	116	* #
CATRTB		52	(1,2,3)
	RTPBCN	103	* #
CATRUN		58	(1,2)
	RUNWAY	117	*
CATSEA		59	(5,12,13,51,52,53,54,57,58,59)
	SEAARE	119	*
CATSIL		63	(1,2,3,4)
	SILTNK	125	*
CATSCF		65	(1 – 33)
	SMCFAC	128	* #
CATSLC		60	(1,2,4,5,6,7,8,9,10,11,12,13,14,15,16)
	SLCONS	122	* #
CATSLO		64	(2,3,6)

	SLOGRD	127	2,3 #
	SLOTOP	126	* #

CATSPM		66	(6,10,12,37,39,41,45,50,54,55)
	BOYSPP	19	* #

CATTRK		54	(1,2)
	RECTRC	109	* #

CATTSS		67	(1,2)
	TSEZNE	150	* #

CATVEG		68	(6,11,13)
	VEGATN	155	* #
CATWAT		69	(6)
	WATTUR	156	* #

CATWRK		71	(1,2,3,4,5)
	WRECKS	159	* #

CATZOC		72	(1,2,3,4,5,6)
	M_QUAL	308	*
CLSDEF		18027	free text
	NEWOBJ	18005	* #
CLSNAM		18028	free text
	NEWOBJ	18005	* #

COLOUR		75	(1,2,3,4,5,6,7,8,9,10,11,12,13)
	BCNISD	6	(2,3) #
	BCNLAT	7	* (1,2,3,4) #
	BOYCAR	14	* #
	BOYISD	16	(2,3) #
	BOYLAT	17	* * #
	BOYSAW	18	* #
	BOYSPP	19	* #
	DAYMAR	39	* #
	LIGHTS	75	* #
	TOPMAR	144	* #
	bcnlat	17028	* #
	boylat	17029	* #
	daymar	17035	* #

COLPAT		76	(1,2,3,4,5,6)
	BCNISD	6	1 #
	BCNLAT	7	1 #*
	BOYCAR	14	*
	BOYISD	16	1 #
	BOYLAT	17	*
	BOYSAW	18	* #
	BOYSPP	19	*

	DAYMAR	39	*
	TOPMAR	144	*
	bcnlat	17028	*
	boylat	17029	*
	daymar	17035	*

COMCHA		77	~~free text~~format = "[[XXXX]:[XXXX]:...]"
	comare	17055	* #
	rdocal	17017	* #

Formatiert: Standard, Zeilenabstand: Mindestens 0,05 Pt.

CONDTN		81	(1,2,3,4,5)
	ADMARE	1	3
	AIRARE	2	1,2,3,5
	BCNISD	6	1,2,3,5
	BCNLAT	7	1,2,3,5
	BUAARE	13	1,2,3,5
	BUISGL	12	*
	CBLARE	20	1,2,3,5
	CONVYR	34	1,2,3,5
	CRANES	35	1,2,3,5
	DAMCON	38	1,2,3,5
	DAYMAR	39	1,2,3,5
	DRYDOC	47	1,2,3,5
	DYKCON	49	1,2,3,5
	FLODOC	57	1,2,3,5
	FNCLNE	52	1,2,3,5
	FRPARE	60	1,2,3,5
	GATCON	61	1,2,3,5
	HRBFAC	64	1,2,3,5
	HULKES	65	1,2,3,5
	LIGHTS	75	1,2,3,5
	LNDMRK	74	*
	LNDRGN	73	1,2,3,5
	MORFAC	84	1,2,3,5
	PILPNT	90	1,2,3,5
	PIPARE	92	1,2,3,5
	PIPSOL	94	1,2,3,5
	PONTON	95	1,2,3,5
	PRDARE	97	1,2,3,5
	PYLONS	98	1,2,3,5
	RAILWY	106	1,2,3,5
	ROADWY	116	1,2,3,5
	RTPBCN	103	1,2,3,5
	SEAARE	119	1,2,3,5
	SILTNK	125	1,2,3,5
	SLCONS	122	1,2,3,5
	SLOTOP	126	1,2,3,5
	SMCFAC	128	1,2,3,5
	TOPMAR	144	1,2,3,5
	TUNNEL	151	1,2,3,5
	bcnlat	17028	1,2,3,5
	bridge	17011	1,2,3,5
	bunsta	17054	1,2,3,5

	cblohd	17012	1,2,3,5
	convyr	17034	1,2,3,5
	cranes	17030	1,2,3,5
	daymar	17035	1,2,3,5
	excnst	17070	1,2,3,5
	flodoc	17025	1,2,3,5
	gatcon	17031	1,2,3,5
	hrbare	17014	1,2,3,5
	hrbbsn	17056	1,2,3,5
	hrbfac	17015	1,2,3,5
	hulkes	17020	1,2,3,5
	lkbspt	17058	1,2,3,5
	lokbsn	17016	1,2,3,5
	notmrk	17050	1,2,3,5
	pipohd	17024	1,2,3,5
	ponton	17021	1,2,3,5
	prtare	17059	1,2,3,5
	refdmp	17062	1,2,3,5
	slcons	17032	1,2,3,5
	sistat	17007	1,2,3,5
	sistaw	17008	1,2,3,5
	termnl	17064	1,2,3,5
	vehtrf	17069	1,2,3,5
	wtwgag	17067	1,2,3,5

CONRAD		82	(3)
	BCNISD	6	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	boylat	17029	*

CONVIS		83	(1,2)
	BUISGL	12	*
	LNDMRK	74	1* #
	PRDARE	97	*
	RUNWAY	117	*
	VEGATN	155	*

DATEND		85	numerical (CCYYMMDD)
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*

	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	~~**DEPARE**~~	~~42~~	Attribute deleted for this object class
	DEPCNT	43	*
	~~**DRGARE**~~	~~46~~	Attribute deleted for this object class
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	~~**FLODOC**~~	~~57~~	Attribute deleted for this object class
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	~~**HULKES**~~	~~65~~	Attribute deleted for this object class
	LAKARE	69	*
	LIGHTS	75	*
	~~**LNDARE**~~	~~71~~	Attribute deleted for this object class
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	~~**PONTON**~~	~~95~~	Attribute deleted for this object class
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*

	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UWTROC	153	*
	VEGATN	155	*
	WRECKS	159	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	bridge	17011	*
	boylat	17029	*
	bunsta	17054	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	~~**depare**~~	~~17003~~	Attribute deleted for this object class
	daymar	17035	*
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lg_sdm	18001	*
	lg_vsp	18002	*
	lkbspt	~~17028~~17058	*
	lokbsn	17016	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*

	wtwgag	17067	*
	wtwprf	17052	*

DATSTA		86	numerical (CCYYMMDD)
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	~~**DEPARE**~~	~~42~~	Attribute deleted for this object class
	DEPCNT	43	*
	~~**DRGARE**~~	~~46~~	Attribute deleted for this object class
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	~~**FLODOC**~~	~~57~~	Attribute deleted for this object class
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	~~**HULKES**~~	~~65~~	Attribute deleted for this object class
	LAKARE	69	*
	LIGHTS	75	*
	~~**LNDARE**~~	~~71~~	Attribute deleted for this object class
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	~~**PONTON**~~	~~95~~	Attribute deleted for this object class
	PRDARE	97	*

	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UWTROC	153	*
	VEGATN	155	*
	WRECKS	159	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	~~**depare**~~	~~17003~~	Attribute deleted for this object class
	daymar	17035	*
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lg_sdm	18001	*
	lg_vsp	18002	*
	lkbspt	~~17028~~17058	*
	lokbsn	17016	*
	notmrk	17050	*
	pipohd	17024	*

	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*
DMPGRD		48	Primitive P deleted

Formatiert: Hervorheben

DRVAL1		87	numerical, 2 decimal digits
	DEPARE	42	*_* m #
	DRGARE	46	*_* m
	DRYDOC	47	*_* m
	FLODOC	57	*_* m
	M_QUAL	308	*_* m
	RECTRC	109	* m
	berths	17010	* m
	depare	17003	* # m
	excnst	17070	* # m
	flodoc	17025	* m

DRVAL2		88	Numerical, 2 decimal digits
	DEPARE	42	*_*_m #
	RECTRC	109	* m
	depare	17003	* # m

ELEVAT		90	numerical, 2 decimal digits
	wtwgag	17067	* m

EXCLIT		92	(1,2,3,4)
	LIGHTS	75	*

EXPSOU		93	(1,2,3)
	MARCUL	82	*
	OBSTRN	86	*
	UWTROC	153	*
	WRECKS	159	*
	uwtroc	17033	*

FUNCTN		94	(2 – 42)
	BUISGL	12	*
	LNDMRK	74	*

HEIGHT		95	numerical, 2 decimal digits
	DYKCON	49	* m
	LIGHTS	75	*m
	vehtrf	17069	* # m
	wtwprf	17052	* m

HORCLR		98	numerical, 2 decimal digits
	DRYDOC	47	* m
	FLODOC	57	* m
	GATCON	61	* * m #
	TUNNEL	151	* m
	bridge	17011	* m
	flodoc	17025	* m
	gatcon	17031	* # m
	trnbsn	17065	* m

HORLEN		99	numerical, 2 decimal digits
	DRYDOC	47	* m
	FLODOC	57	* m
	flodoc	17025	* m
	hrbbsn	17056	* m
	lkbspt	17058	* m
	lokbsn	17016	* m

HORWID		100	numerical, 2 decimal digits
	DRYDOC	47	* m
	FLODOC	57	* m
	flodoc	17025	* m
	hrbbsn	17056	* m
	lkbspt	17058	* m
	lokbsn	17016	* m

INFORM		102	free text
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	* #
	DAMCON	38	*
	DAYMAR	39	*
	DEPARE	42	*

	DEPCNT	43	*
	DMPGRD	48	*
	DRGARE	46	*
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	FLODOC	57	*
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	HULKES	65	*
	LAKARE	69	*
	LIGHTS	75	*
	LNDARE	71	*
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	RUNWAY	117	*
	SBDARE	121	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	~~**UNSARE**~~	~~154~~	*attribute deleted for this object class
	UNSARE	154	*

Kommentiert [JNE23]: INFORM is missing in EG IES 2.4

	UWTROC	153	*
	VEGATN	155	*
	WATTUR	156	*
	WRECKS	159	*
	C_AGGR	400	*
	C_ASSO	401	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	c_brga	18003	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lkbspt	17058	*
	lokbsn	17016	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sensor	18004	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*
	~~**m_vdat**~~	~~17023~~	*

JRSDTN		103	(1,2,3)

	ADMARE	1	* #

LITCHR		107	(1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,25,26,27,28,29)
	LIGHTS	75	* #

LITVIS		108	(4)
	LIGHTS	75	*

MARSYS		109	(1,2)
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*

MLTYLT		110	numerical, min = 2
	LIGHTS	75	*

NATCON		112	(1,2,3,4,5,6,7,8,9)
	DAMCON	38	*
	MORFAC	84	*
	OBSTRN	86	1,2,3,4,6,7,8*
	ROADWY	116	4,5
	RUNWAY	117	4,5
	SLCONS	122	*
	slcons	17032	*

NATION		111	free text, 2 characters
	ADMARE	1	* #
	chkpnt	17027	* #
NATQUA		114	(1,2,3,4)
	SBDARE	121	*

NATSUR		113	(1,2,3,4,5,6,7,8,9,11,14,17,18)
	OBSTRN	86	9
	SBDARE	121	1,2,3,4,5,6,7,8,9,18
	SLOGRD	127	*
	SLOTOP	126	*
	UWTROC	153	* (5,9,11,14,18) m
	achare	17001	*
	achbrt	176000	*
	resare	17005	*
	uwtroc	17033	*(5,9,11,14,18)

NINFOM		300	free text
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*

	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	DEPARE	42	*
	DEPCNT	43	*
	DMPGRD	48	*
	DRGARE	46	*
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	FLODOC	57	*
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	HULKES	65	*
	LAKARE	69	*
	LIGHTS	75	*
	LNDARE	71	*
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*

	RTPBCN	103	*
	RUNWAY	117	*
	SBDARE	121	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	~~UNSARE~~	~~154~~	*attribute deleted for this object class
	UNSARE	154	*
	UWTROC	153	*
	VEGATN	155	*
	WATTUR	156	*
	WRECKS	159	*
	C_AGGR	400	*
	C_ASSO	401	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	c_brga	18003	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lkbspt	17058	*
	lokbsn	17016	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*

	resare	17005	*
	sensor	18004	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*
	~~**m_vdat**~~	~~17023~~	*

NOBJNM		301	free text
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	~~**DAMCON**~~	~~38~~	Attribute deleted for this object class
	DAMCON	38	*
	DAYMAR	39	*
	DMPGRD	48	*
	DRYDOC	47	*
	DRGARE	46	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	FLODOC	57	*
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	HULKES	65	*
	LAKARE	69	*
	LIGHTS	75	*
	LNDARE	71	*
	LNDMRK	74	*

	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	RUNWAY	117	*
	SBDARE	121	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UNSARE	154	*
	UWTROC	153	*
	VEGATN	155	*
	WATTUR	156	*
	WRECKS	159	*
	C_AGGR	400	*
	C_ASSO	401	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	c_brga	18003	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*

	curent	17019	*
	daymar	17035	*
	dismar	17004	*
	excnst	17070	*
	~~**excnst**~~	~~17010~~	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lkbspt	17058	*
	lokbsn	17016	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sensor	18004	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*
	~~**m_vdat**~~	~~17023~~	*attribute deleted for this object class

NTXTDS		304	free text
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BUISGL	12	*
	BUUARE	13	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	CBLARE	20	*
	CBLSUB	22	*
	CANALS	23	*
	CTNARE	27	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*

Kommentiert [JNE24]: Not available in FC and EG with this attribute and code number

	DAMCON	38	*
	DAYMAR	39	*
	DRGARE	46	*
	DRYDOC	47	*
	DMPGRD	48	*
	DYKCON	49	*
	FAIRWY	51	*
	FNCLNE	52	*
	FERYRT	53	*
	FLODOC	57	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	HULKES	65	*
	LAKARE	69	*
	LNDARE	71	*
	LNDRGN	73	*
	LNDMRK	74	*
	LIGHTS	75	*
	MARCUL	82	*
	MORFAC	84	*
	M_NPUB	305	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RTPBCN	103	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RUNWAY	117	*
	SEAARE	119	*
	SBDARE	121	*
	SLCONS	122	*
	SILTNK	125	*
	SLOTOP	126	*
	SLOGRD	127	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UWTROC	153	*

	UNSARE	154	*
	VEGATN	155	*
	WATTUR	156	*
	WRECKS	159	*
	achbrt	17000	*
	achare	17001	*
	bcnlat	17028	*
	berths	17010	*
	bridge	17011	*
	c_brga	18003	*
	bunsta	17054	*
	boylat	17029	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	dismar	17004	*
	excnst	17070	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lokbsn	17016	*
	lkbspt	17058	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sensor	18004	*
	slcons	17032	*
	sistat	17007	*
	sistaw	17008	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*
	RSCSTA	111	*
	C_AGGR	400	*
	C_ASSO	401	*
	feryrt	17013	*
	~~**m_vdat**~~	~~17023~~	~~*~~

OBJNAM		116	free text
	ADMARE	1	* #
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	~~**DAMCON**~~	~~38~~	Attribute deleted for this object class
	DAMCON	38	*
	DAYMAR	39	*
	DMPGRD	48	*
	DRGARE	46	*
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	FLODOC	57	*
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	* #
	HULKES	65	*
	LAKARE	69	*
	LIGHTS	75	*
	LNDARE	71	*
	LNDMRK	74	*
	LNDRGN	73	* #
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*

	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RUNWAY	117	*
	SBDARE	121	*
	RSCSTA	111	*
	RTPBCN	103	*
	SEAARE	119	* #
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SOUNDG	129	*
	SMCFAC	128	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UNSARE	154	*
	UWTROC	153	*
	VEGATN	155	*
	WATTUR	156	*
	WRECKS	159	*
	C_AGGR	400	* #
	C_ASSO	401	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	c_brga	18003	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	dismar	17004	*
	~~**excnst**~~	~~17070~~	Attribute deleted for this object class
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lkbspt	17058	*
	lokbsn	17016	*
	notmrk	17050	*

	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sensor	18004	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	* #
	wtwgag	17067	*
	wtwprf	17052	*
	~~**m_vdat**~~	~~17023~~	*attribute deleted for this object class

ORIENT		117	numerical, 2 decimal digits
	LIGHTS	75	*
	NAVLNE	85	* #
	RECTRC	109	* #
	TWRTPT	152	* #
	curent	17019	*
	daymar	17035	*
	notmrk	17050	*
	rdocal	17017	* #

PEREND		118	numerical (CCYYMMDD)
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	~~**DEPARE**~~	~~42~~	Attribute deleted for this object class
	DEPCNT	43	*
	~~**DRGARE**~~	~~46~~	Attribute deleted for this object class

	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	~~**FLODOC**~~	~~57~~	Attribute deleted for this object class
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	~~**HULKES**~~	~~65~~	Attribute deleted for this object class
	LAKARE	69	*
	LIGHTS	75	*
	~~**LNDARE**~~	~~71~~	Attribute deleted for this object class
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	~~**PONTON**~~	~~95~~	Attribute deleted for this object class
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	~~**UNSARE**~~	~~154~~	*attribute deleted for this object class
	UWTROC	153	*
	VEGATN	155	*
	WRECKS	159	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*

Kommentiert [JNE25]: PEREND is not available in the EG IES 2.4
In FC IES 2.4 no allowable attribute values are defined

	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	~~**depare**~~	~~17003~~	Attribute deleted for this object class
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lg_sdm	18001	*
	lg_vsp	18002	*
	lkbspt	17058	*
	lokbsn	17016	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*
	~~**m_vdat**~~	~~17023~~	*attribute deleted for this object class

PERSTA		119	numerical (CCYYMMDD)
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*

	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	~~**DEPARE**~~	~~42~~	Attribute deleted for this object class
	DEPCNT	43	*
	~~**DRGARE**~~	~~46~~	Attribute deleted for this object class
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	~~**FLODOC**~~	~~57~~	Attribute deleted for this object class
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	~~**HULKES**~~	~~65~~	Attribute deleted for this object class
	LAKARE	69	*
	LIGHTS	75	*
	~~**LNDARE**~~	~~71~~	Attribute deleted for this object class
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	~~**PONTON**~~	~~95~~	Attribute deleted for this object class
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*

	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	~~UNSARE~~	~~154~~	*attribute deleted for this object class
	UWTROC	153	*
	VEGATN	155	*
	WRECKS	159	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	~~depare~~	~~17003~~	Attribute deleted for this object class
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lg_sdm	18001	*
	lg_vsp	18002	*
	lkbspt	17058	*
	lokbsn	17016	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*

Kommentiert [JNE26]: PERSTA is not available in the EG IES 2.4
In FC IES 2.4 no allowable attribute values are defined

	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*
	~~**m_vdat**~~	~~17023~~	*attribute deleted for this object class

PICREP		120	free text
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	DEPCNT	43	*
	DMPGRD	48	*
	DRGARE	46	*
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	FLODOC	57	*
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	HULKES	65	*
	LAKARE	69	*
	LIGHTS	75	*
	LNDARE	71	*
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*

	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	RUNWAY	117	*
	SBDARE	121	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UNSARE	154	*
	UWTROC	153	*
	VEGATN	155	*
	WATTUR	156	*
	WRECKS	159	*
	C_AGGR	400	*
	C_ASSO	401	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	c_brga	18003	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*

	hrbfac	17015	*
	hulkes	17020	*
	lkbspt	17058	*
	lokbsn	17016	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sensor	18004	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*

~~PILDST~~		~~121~~	deleted

POSACC		401	numerical,2 decimal digits
	M_QUAL	308	* m

PRODCT		123	(1,2,3,4,5,6,7,8,14,15,17,21,22)
	CONVYR	34	*
	PIPARE	92	*
	PIPSOL	94	*
	PRDARE	97	~~1,2,4,5,6,7,14,15,17,21,22~~ * no change
	SILTNK	125	*
	convyr	17034	*
	pipohd	17024	* #

QUAPOS		402	(4,10)
	M_SREL	310	*

QUASOU		125	(1,2,3,4,6,7,8,9,10,11)
	DEPARE	42	(1,2,8,10,11)
	M_SREL	310	(1,2,8,10,11) #
	MARCUL	82	(1,2,3,4,6,7,8,9)
	UNSARE	154	(2,8)
	UWTROC	153	(1,2,8,10,11)
	WRECKS	159	(1,2,8,10,11)
	berths	17010	(1,2,8,10,11)
	depare	17003	(1,2,8,10,11)
	uwtroc	17033	1,2,8,10,11

RADWAL		126	format = xx.x-b, xx.x-b,...(xx.x = value in meter, b =

Formatiert: Hervorheben

Formatiert: Hervorheben

			band)~~free text~~
	RTPBCN	103	**

RESTRN		131	(1,3,5,7,8,24,38)
	CBLARE	20	1,38
	~~DMPGRD~~	~~48~~	* no change
	PIPARE	92	1,38 #
	RESARE	112	1,7,8,38 #

SCAMIN		133	numerical, min = “1”
	ADMARE	1	* #
	AIRARE	2	* #
	BCNISD	6	* #
	BCNLAT	7	* #
	BOYCAR	14	* #
	BOYISD	16	* #
	BOYLAT	17	* #
	BOYSAW	18	* #
	BOYSPP	19	* #
	BUAARE	13	* #
	BUISGL	12	* #
	CANALS	23	* #
	CBLARE	20	* #
	CBLSUB	22	* #
	COALNE	30	* #
	CONVYR	34	* #
	CRANES	35	* #
	CTNARE	27	* #
	DAMCON	38	* #
	DAYMAR	39	* #
	DEPCNT	43	* #
	DMPGRD	48	* #
	DRYDOC	47	* #
	DYKCON	49	* #
	FAIRWY	51	* #
	FERYRT	53	* #
	FNCLNE	52	* #
	FOGSIG	58	* #
	FRPARE	60	* #
	GATCON	61	* #
	HRBFAC	64	* #
	HULKES	65	* #
	LAKARE	69	* #
	LIGHTS	75	* #
	~~LNDARE~~	~~71~~	* #attribute deleted for this object class
	LNDMRK	74	* #
	LNDRGN	73	* #
	MARCUL	82	* #
	MORFAC	84	* #
	NAVLNE	85	* #
	NEWOBJ	18005	* #
	OBSTRN	86	* #
	OILBAR	89	* #
	PILPNT	90	* #

Formatiert: Default, Zeilenabstand: einfach

Formatiert: Hervorheben

Kommentiert [JNE27]: According to FC SCAMIN is allowed, according to EG no SCAMIN available

	PIPARE	92	* #
	PIPSOL	94	* #
	~~PONTON~~	~~95~~	* #attribute deleted for this object class
	PRDARE	97	* #
	PYLONS	98	* #
	RADSTA	102	* #
	RAILWY	106	* #
	RECTRC	109	* #
	RESARE	112	* #
	RIVERS	114	* #
	ROADWY	116	* #
	RSCSTA	111	* #
	RTPBCN	103	* #
	RUNWAY	117	* #
	SBDARE	121	* #
	SEAARE	119	* #
	SILTNK	125	* #
	SLCONS	122	* #
	SLOGRD	127	* #
	SLOTOP	126	* #
	SMCFAC	128	* #
	SOUNDG	129	* #
	TOPMAR	144	* #
	TSEZNE	150	* #
	TUNNEL	151	* #
	TWRTPT	152	* #
	UWTROC	153	* #
	VEGATN	155	* #
	WATTUR	156	* #
	WRECKS	159	* #
	C_AGGR	400	*
	C_ASSO	401	* #
	achare	17001	* #
	achbrt	17000	* #
	bcnlat	17028	* #
	berths	17010	* #
	boylat	17029	* #
	bridge	17011	* #
	bunsta	17054	* #
	cblohd	17012	* #
	chkpnt	17027	* #
	comare	17055	* #
	convyr	17034	* #
	cranes	17030	* #
	curent	17019	* #
	daymar	17035	* #
	dismar	17004	* #
	excnst	17070	* #
	feryrt	17013	* #
	flodoc	17025	* #
	gatcon	17031	* #
	hrbare	17014	* #
	hrbbsn	17056	* #
	hrbfac	17015	* #

	hulkes	17020	* #
	lkbspt	17058	* #
	lokbsn	17016	* #
	notmrk	17050	* #
	pipohd	17024	* #
	ponton	17021	* #
	prtare	17059	* #
	rdocal	17017	* #
	refdmp	17062	* #
	resare	17005	* #
	sensor	18004	* #
	sistat	17007	* #
	sistaw	17008	* #
	slcons	17032	* #
	termnl	17064	* #
	trnbsn	17065	* #
	uwtroc	17033	* #
	vehtrf	17069	* #
	wtware	17066	* #
	wtwaxs	17051	* #
	wtwgag	17067	* #
	wtwprf	17052	* #

SECTR1		136	numerical, 2 decimal digits
	LIGHTS	75	*

SECTR2		137	numerical, 2 decimal digits
	LIGHTS	75	*

SIGFRQ		139	numerical
	FOGSIG	58	*

SIGGEN		140	(1,2)
	FOGSIG	58	*

SIGGRP		141	format = "(c)(c)..."„e.g., (), (2), (2+1)free text
	FOGSIG	58	**
	LIGHTS	75	*
	RTPBCN	103	*

SIGPER		142	numerical, 2 decimal digits
	FOGSIG	58	*
	LIGHTS	75	*

SIGSEQ		143	format = "l.ll+(e.ee)" (seconds) free text
	FOGSIG	58	*
	LIGHTS	75	*

SORDAT		147	Numerical (CCYYMMDD)
	M_COVR	302	*
	M_NPUB	305	*
	M_QUAL	308	*
	M_SREL	310	*
	ADMARE	1	*

Formatiert: Deutsch (Österreich)

Formatiert: Deutsch (Österreich)

Formatiert: Default, Zeilenabstand: einfach

Formatiert: Default, Zeilenabstand: einfach

	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	DEPARE	42	*
	DEPCNT	43	*
	DMPGRD	48	*
	DRGARE	46	*
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	FLODOC	57	*
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	HULKES	65	*
	LAKARE	69	*
	LIGHTS	75	*
	LNDARE	71	*
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*

	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	RUNWAY	117	*
	SBDARE	121	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UNSARE	154	*
	UWTROC	153	*
	VEGATN	155	*
	WATTUR	156	*
	WRECKS	159	*
	C_AGGR	400	*
	C_ASSO	401	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	c_brga	18003	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	depare	17003	*
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lg_sdm	18001	*
	lg_vsp	18002	*
	lkbspt	17058	*
	lokbsn	17016	*

	m_nsys	17018	*
	m_sdat	17022	*
	m_vdat	17023	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sensor	18004	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	tisdge	17068	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*

SORIND		148	format = "cc,cc,ccccc,c..." 2 character country code, other codes (no restriction on number of characters) ~~free text~~
	M_COVR	302	*
	M_NPUB	305	*
	M_QUAL	308	*
	M_SREL	310	*
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	DEPARE	42	*
	DEPCNT	43	*
	DMPGRD	48	*

	DRGARE	46	*
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	FLODOC	57	*
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	HULKES	65	*
	LAKARE	69	*
	LIGHTS	75	*
	LNDARE	71	*
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*
	PIPARE	92	*
	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	RUNWAY	117	*
	SBDARE	121	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UNSARE	154	*
	UWTROC	153	*
	VEGATN	155	*
	WATTUR	156	*

	WRECKS	159	*
	C_AGGR	400	*
	C_ASSO	401	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	c_brga	18003	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	depare	17003	*
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lg_sdm	18001	*
	lg_vsp	18002	*
	lkbspt	17058	*
	lokbsn	17016	*
	m_nsys	17018	*
	m_sdat	17022	*
	m_vdat	17023	*
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sensor	18004	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	tisdge	17068	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*

	wtwprf	17052	*

SOUACC		144	numerical, 2 decimal digits
	M_QUAL	308	* m
	MARCUL	82	*
	berths	17010	** m

STATUS		149	(2,3,4,8,9,12,14,16,17,18)
	CBLARE	20	18
	CBLSUB	22	(18
	FERYRT	53	2,3,4,8,9,12,14,16,17
	LIGHTS	75	2,3,4,8,9,12,14,16,17
	MARCUL	82	2,4
	PIPARE	92	18
	PIPSOL	94	18
	PRDARE	97	2,12,16,17
	RSCSTA	111	2,4
	SLCONS	122	2,3,4,8,9,12,14,16,17
	TSEZNE	150	3,9
	WRECKS	159	12,16,17,18
	achare	17001	2,3,4,8,9,12,14,16,17
	achbrt	17000	2,3,4,8,9,12,14,16,17
	berths	17010	2,3,4,8,9,12,14,16,17
	comare	17005	2,3,4,8,9,12,14,16,17
	feryrt	17013	2,3,4,8,9,12,14,16,17
	notmrk	17050	2,3,4,8,9,12,14,16,17

SURATH		150	free text
	M_SREL	310	* #

SUREND		151	Numerical (CCYYMMDD)
	M_QUAL	308	*
	M_SREL	310	*CCYYMMDD (full date), CCYYMM (no specific day required) #

Kommentiert [JNE28]: Not available in EG IES 2.4

SURSTA		152	Numerical (CCYYMMDD)
	M_QUAL	308	*
	M_SREL	310	CCYYMMDD (full date), CCYYMM (no specific day required) #

Kommentiert [JNE29]: Not available in EG IES 2.4

SURTYP		153	(2)
	M_SREL	310	*
SYMINS		18029	free text
	NEWOBJ	18005	* #

TECSOU		156	(1 – 14)
	M_QUAL	308	*
	WRECKS	159	*

TOPSHP		171	(1 – 33)
	DAYMAR	39	1,2,7,8,10,12,19,24,25,33 * #
	TOPMAR	144	21,22 * #

Formatiert: Hervorheben

Formatiert: Hervorheben

Formatiert: Hervorheben

	daymar	17035	~~1,2,7,8,10,12,19,24,25,33~~ ~~* #~~

TRAFIC		172	(1,2,3,4)
	RECTRC	109	* #
	TWRTPT	152	* #
	rdocal	17017	* #

TXTDSC		158	free text
	M_NPUB	305	* #
	ADMARE	1	*
	AIRARE	2	*
	BCNISD	6	*
	BCNLAT	7	*
	BOYCAR	14	*
	BOYISD	16	*
	BOYLAT	17	*
	BOYSAW	18	*
	BOYSPP	19	*
	BUAARE	13	*
	BUISGL	12	*
	CANALS	23	*
	CBLARE	20	*
	CBLSUB	22	*
	COALNE	30	*
	CONVYR	34	*
	CRANES	35	*
	CTNARE	27	*
	DAMCON	38	*
	DAYMAR	39	*
	DMPGRD	48	*
	DRGARE	46	*
	DRYDOC	47	*
	DYKCON	49	*
	FAIRWY	51	*
	FERYRT	53	*
	FLODOC	57	*
	FNCLNE	52	*
	FOGSIG	58	*
	FRPARE	60	*
	GATCON	61	*
	HRBFAC	64	*
	HULKES	65	*
	LAKARE	69	*
	LIGHTS	75	*
	LNDARE	71	*
	LNDMRK	74	*
	LNDRGN	73	*
	MARCUL	82	*
	MORFAC	84	*
	NAVLNE	85	*
	NEWOBJ	18005	*
	OBSTRN	86	*
	OILBAR	89	*
	PILPNT	90	*

Formatiert: Hervorheben

Formatiert: Hervorheben

	PIPARE	92	*
	PIPSOL	94	*
	PONTON	95	*
	PRDARE	97	*
	PYLONS	98	*
	RADSTA	102	*
	RAILWY	106	*
	RECTRC	109	*
	RESARE	112	*
	RIVERS	114	*
	ROADWY	116	*
	RSCSTA	111	*
	RTPBCN	103	*
	RUNWAY	117	*
	SBDARE	121	*
	SEAARE	119	*
	SILTNK	125	*
	SLCONS	122	*
	SLOGRD	127	*
	SLOTOP	126	*
	SMCFAC	128	*
	SOUNDG	129	*
	TOPMAR	144	*
	TSEZNE	150	*
	TUNNEL	151	*
	TWRTPT	152	*
	UNSARE	154	*
	UWTROC	153	*
	VEGATN	155	*
	WATTUR	156	*
	WRECKS	159	*
	C_AGGR	400	*
	C_ASSO	401	*
	achare	17001	*
	achbrt	17000	*
	bcnlat	17028	*
	berths	17010	*
	boylat	17029	*
	bridge	17011	*
	bunsta	17054	*
	c_brga	18003	*
	cblohd	17012	*
	chkpnt	17027	*
	comare	17055	*
	convyr	17034	*
	cranes	17030	*
	curent	17019	*
	daymar	17035	*
	dismar	17004	*
	excnst	17070	*
	feryrt	17013	*
	flodoc	17025	*
	gatcon	17031	*
	hrbare	17014	*

	hrbbsn	17056	*
	hrbfac	17015	*
	hulkes	17020	*
	lkbspt	17058	*
	lokbsn	17016	*
	~~**m_vdat**~~	~~17023~~	~~*~~
	notmrk	17050	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	resare	17005	*
	sensor	18004	*
	sistat	17007	*
	sistaw	17008	*
	slcons	17032	*
	termnl	17064	*
	trnbsn	17065	*
	uwtroc	17033	*
	vehtrf	17069	*
	wtware	17066	*
	wtwaxs	17051	*
	wtwgag	17067	*
	wtwprf	17052	*

VALDCO		174	numerical, 1 decimal digit
	DEPCNT	43	* # m

VALMXR		177	numerical, 1 decimal digit
	FOGSIG	58	* ~~nm~~
VALNMR		178	numerical, 1 decimal digit
	LIGHTS	75	*

VALSOU		179	numerical, 2 decimal digits
	MARCUL	82	format = *[sxxxxx.xx] (s: sign, negative values only)
	OBSTRN	86	* m
	UWTROC	153	* # m
	WRECKS	159	* m
	uwtroc	17033	* # m

VERCCL		182	numerical, 2 decimal digits
	bridge	17011	* m

VERCLR		181	numerical, 2 decimal digits
	CONVYR	34	** m
	CRANES	35	** m
	GATCON	61	** m
	TUNNEL	151	* m
	bridge	17011	* m
	cblohd	17012	* # m
	convyr	17034	* m
	cranes	17030	* m

	gatcon	17031	* m
	pipohd	17024	* # m

VERCOP		183	numerical, 2 decimal digits
	bridge	17011	* m

VERDAT		185	(4)
	GATCON	61	*

WATLEV		187	(1,2,3,4,5,7)
	MARCUL	82	*
	MORFAC	84	1,2,3,4,5
	OBSTRN	86	1,2,3,4,5
	PYLONS	98	1,2,3,4,5 #
	SLCONS	122	1,2,3,4,5
	UWTROC	153	1,2,3,4,5 #
	WRECKS	159	1,2,3,4,5

addmrk		17050	(1,2,3,4,5)
	notmrk	17050	*
allcon		18024	integer
	bunsta	17054	*
amoamp		18023	integer
	bunsta	17054	*

aptref		17099	free text
	tisdge	17068	*

bnkwtw		17105	(1,2)
	notmrk	17050	*

bunves		17065	(1,2)
	bunsta	17054	* #

catach		17000	(1,2,3,4,5,6,7,9,10,11,12,13)
	achare	17001	*
	achbrt	17000	*

catbrt		17066	(1,2,3,4,5,6,7,8,9)
	berths	17010	*

catbun		17067	(1,2,3,4)
	bunsta	17054	*

catcbl		17101	(1,3,4,5,6,7)
	cblohd	17012	* #

catccl		17068	(1,2,3,4,5,6,7,8,9,10,11,12)
	wtware	17066	* #
	wtwaxs	17051	*

catchp		17010	(1,2)
	chkpnt	17027	* #

catcom		17069	(1,2,3,4,5,6,7,8,9)
	comare	17055	*
	rdocal	17017	1,2,3,4,5,6,7,8,* #

catexs		17100	(1,2,3,4,5)
	excnst	17070	* #
catfrq		18021	(1,2)
	bunsta	17054	*

catfry		17007	(4)
	feryrt	17013	* #

catgag		17078	(1,2,3,4,5)
	wtwgag	17067	*

cathaf		17008	(1,3,4,6,7,8,9,10,11,12,13,16,17)
	hrbfac	17015	4,6,9,12,13,16,17 #
	termnl	17064	1,3,7,8,10,11 #

cathbr		17070	(1,2,3,4,5)
	hrbare	17014	*

cathlk		17102	(1,2,3,4,5,6)
	hulkes	17020	*

catlam		17011	(1 – 273)
	bcnlat	17028	* #
	boylat	17029	* #

catnmk		17052	(1 – 116122)
	notmrk	17050	* #
catplg		18034	free text
	bunsta	17054	*

catrfd		17071	(1,2,3,4)
	refdmp	17062	*

catrsc		17106	(1,2,3,4,5,6,7,8,910)
	RSCSTA	111	1,2,4,5,6,7,8,9 10 #

~~lg_fnc~~		~~**18009**~~	attribute class deleted

~~lc_sp1~~		~~**18024**~~	attribute class deleted

~~lc_sp2~~		~~**18025**~~	attribute class deleted

catsen		18019	(1,2)
	sensor	18004	* #

catsit		17002	(2,6,8,10)
	sistat	17007	* #

catsiw		17003	(15,16,18)
	sistaw	17008	* #

catslc		17012	(2,7,8,9,18,19,20)
	slcons	17032	* #

cattab		17092	(1,2)
	tisdge	17068	* #
catvol		18031	(1,2)
	bunsta	17054	*

catvtr		17091	(1,2,3,4,5,6)
	vehtrf	17069	* #

clsdng		17055	(1,2,3,4,5)
	achare	17001	*
	achbrt	17000	*
	berths	17010	*

curvhw		17095	numerical, 1 decimal digit
	curent	17019	*

curvlw		17096	numerical, 1 decimal digit
	curent	17019	*

curvmw		17097	numerical, 1 decimal digit
	curent	17019	*

curvow		17098	numerical, 1 decimal digit
	curent	17019	*

dirimp		17056	(1,2,3,4,5)
	bcnlat	17028	1,2,3,4
	curent	17019	1,2,3,4
	daymar	17035	1,2,3,4
	notmrk	17050	*
	sistat	17007	1,2,3,4
	tisdge	17068	1,2,3,4
	wtware	17066	1,2,3,4 #

disbk1		17057	numerical, 1 decimal digit
	notmrk	17050	* m

disbk2		17058	numerical, 1 decimal digit
	notmrk	17050	* m

disipd		17060	numerical, 1 decimal digit
	notmrk	17050	* m

	wtwgag	17067	* m

disipu		17059	numerical, 1 decimal digit
	notmrk	17050	* m
	wtwgag	17067	* m

eleva1		17061	numerical, 2 decimal digits
	depare	17003	* m

eleva2		17062	numerical, 2 decimal digits
	depare	17003	* m

fnctnm		17063	(1,2,3,4,5)
	notmrk	17050	* #

fnctsn		18020	(1)
	sensor	18004	* #

hignam		17081	free text
	curent	17019	*
	wtwgag	17067	*

higwat		17080	numerical, 2 decimal digits
	wtwgag	17067	* m

horcll		17074	numerical, 2 decimal digits
	flodoc	17025	* m
	lkbspt	17058	* # m
	lokbsn	17016	* # m

horclw		17075	numerical, 2 decimal digits
	flodoc	17025	* m
	lkbspt	17058	* # m
	lokbsn	17016	* # m

hunits		17103	(1,2,3,4,5,6)
	bridge	17011	*
	cblohd	17012	*
	depare	17003	* #
	dismar	17004	* #
	excnst	17070	* #
	gatcon	17031	*
	pipohd	17024	*
	wtwgag	17067	*
	wtwprf	17052	1,2,3,5,6 #

lc_ase		18015	(1,2,3,5,6,7,8,9,10)
	lg_sdm	18001	* #
	lg_vsp	18002	* #

lc_asi		18014	(1,2,3,5,6,7,8,9,10)
	lg_sdm	18001	* #
	lg_vsp	18002	* #

lc_cce		18017	(1,2,4,5,6,7,8,9)
	lg_sdm	18001	* #
	lg_vsp	18002	* #

lc_cci		18016	(1,2,4,5,6,7,8,9)
	lg_sdm	18001	* #
	lg_vsp	18002	* #

lc_cse		18013	(1,2,3,5 – 32)
	lg_sdm	18001	* #
	lg_vsp	18002	* #

lc_csi		18012	(1,2,3,5 – 32)
	lg_sdm	18001	* #
	lg_vsp	18002	* #

lg_bme		18003	numerical, 2 decimal digits
	lg_sdm	18001	* # m

lg_des		18010	free text
	lg_sdm	18001	*
	lg_vsp	18002	*

lg_drt		18005	numerical, 2 decimal digits
	lg_sdm	18001	* # m

lg_lgs		18004	numerical, 2 decimal digits
	lg_sdm	18001	* # m

lg_pbr		18011	free text
	lg_sdm	18001	*
	lg_vsp	18002	*

lg_rel		18008	(1,2,3,4)
	lg_sdm	18001	* #
	lg_vsp	18002	* #

lg_spd		18001	numerical, 2 decimal digits
	lg_vsp	18002	* # km/h

lg_spr		18002	(1,2,3)
	lg_vsp	18002	* #

lg_wdp		18006	numerical, 1 decimal digit
	lg_sdm	18001	* #

lg_wdu		18007	(1,2,3)
	lg_sdm	18001	* #

lownam		17083	free text
	curent	17019	*
	wtwgag	17067	*

lowwat		17082	numerical, 2 decimal digits

	wtwgag	17067	* m

marsys		17009	(1,2,9,10,11,12,13,14,15)
	boylat	17029	*
	m_nsys	17018	* #
	notmrki	17050	*

meanam		17085	free text
	curent	17019	*
	wtwgag	17067	*

meawat		17084	numerical, 2 decimal digits
	wtwgag	17067	* m

othnam		17087	free text
	curent	17019	*
	wtwgag	17067	*

othwat		17086	numerical, 2 decimal digits
	wtwgag	17067	* m

refgag		18018	free text
	bridge	17011	*
	cblohd	17012	*
	pipohd	17024	*

reflev		17088	(1,2,3,4,5,6,7,8,9,10)
	wtwgag	17067	*
	wtwprf	17052	*

restrn		17004	(1,2,7,8,13,14,27,28,29,30,31,32,33,34,35,36,37,38)
	achare	17001	1,2,7,8,13,14,27,28,29,30,31,32,33,34,35,36,38
	achbrt	17000	1,2,7,8,13,14,27,28,29,30,31,32,33,34,35,36,38
	resare	17005	* #

schref		17093	free text
	tisdge	17068	* #

sdrlev		17089	free text
	wtwgag	17067	*

shptyp		33066	(1 – 15)
	tisdge	17068	* #
shrnum		18026	integer
	bunsta	17054	*

trshgd		17076	(1,2,3,4,5,6,7,8,9,10)
	berths	17010	*
	termnl	17064	*

unlocd		17077	free text
	GATCON	61	*
	C_AGGR	400	*

	TUNNEL	151	*
	achare	17001	*
	achbrt	17000	*
	berths	17010	*
	bridge	17011	*
	bunsta	17054	*
	cblohd	17012	*
	chkpnt	17027	*
	dismar	17004	*
	excnst	17070	*
	gatcon	17031	*
	hrbare	17014	*
	hrbbsn	17056	*
	hulkes	17020	*
	lkbspt	17058	*
	lokbsn	17016	*
	pipohd	17024	*
	ponton	17021	*
	prtare	17059	*
	rdocal	17017	*
	refdmp	17062	*
	sistat	17007	*
	termnl	17064	*
	trnbsn	17065	*
	vehtrf	17069	*
	wtware	17066	*
	wtwgag	17067	*

useshp		17094	(1,2,3)
	tisdge	17068	* #

vcrlev		17090	free text
	wtwgag	17067	*

verdat		17005	(12,31,32,33,34,35,36,37,38,39,40,41,42,43,44)
	berths	17010	*
	bridge	17011	*
	cblohd	17012	*
	convyr	17034	*
	cranes	17030	*
	excnst	17070	*
	flodoc	17025	*
	gatcon	17031	*
	m_sdat	17022	* #
	m_vdat	17023	* #
	pipohd	17024	*
	vehtrf	17069	*
	wtwgag	17067	*
	wtwprf	17052	*

watlev		17104	(1,2,3,4,8,9)
	slcons	17032	*
	uwtroc	17033	* #

Formatiert: Schriftart: 10 Pt.

wtwdis		17064	numerical, 3 decimal digits
	bridge	17011	*
	cblohd	17012	*
	depare	17003	* #
	dismar	17004	numerical, 1 decimal digit* #
	excnst	17070	* #
	gatcon	17031	*
	pipohd	17024	*
	wtwgag	17067	*
	wtwprf	17052	* #