

2.1 Checks relating to S-57 Data Structure

No	Check description	Check message	Check solution	Conformity to:	Cat
1	If For each any parts edge which is of two edges are COINCIDENT with another edge.	Partially duplicated edges.	Remove duplication, add nodes and edit edges as required.	Part 2 (2.2.1.2)	E
2	For each all VE -edges which <u>does</u> not have a beginning or end node	VE edge missing beginning or end node.	Add nodes as required.	Part 2 (2.2.1.2)	C
3	For each record where the record identifier - identifier NAME (<u>concatenation of the RCNM & RCID subfields</u>) is not unique within the file	Record identifier NAME is not unique.	Amend Record identifier NAME to be unique.	Part 3 (2.2)	C
4	For each RCNM Record Name (RCNM) where the value is not in table 2.2 S-57	Invalid value of Record Name (RCNM)	Amend d-value-of Record Name (RCNM value)	Part 3 (2.2.1)	C
5	For each Record Identification Number (RCID) which is <u>Less</u> than 1 and OR <u>greater</u> than $2^{32}-2$ (4294967294).	Record Identification Number (RCID) is out of range.	Amend Record Identification Number (RCID) value.	Part 3 (2.2.2)	C
6	For each file with an invalid CRC Check removed	CRC is invalid	Amend CRC	Part 3 (3..4)	E
7	For each <u>feature</u> object with illegal - invalid AGEN, FIDN or FIDS values.	Invalid <u>legal</u> values of AGEN, FIDN or FIDS.	Amend values-of AGEN, <u>FINDN</u> or FIDS <u>value</u> .	Part 3 (4.3.1) and (4.3.2)	C
8	For each <u>feature</u> object where an attribute code is repeated.	Duplicate attribute code on an object.	Remove or amend duplicate attribute code.	Part 3 (4.4), (4.5) and (5.1.2)	C
9a	For each line - feature object of <u>geometric primitive line</u> where ORNT is <u>Not</u> equal to 1 {(forward)} or OR 2 {(reverse)}	ORNT not set to 'forward' or 'reverse'. Invalid value of ORNT	Set value of ORNT to <u>1</u> {('forward')} or <u>2</u> {('reverse')} .	Part 3 (4.7.2). <u>and Appendix B.1 (3.8)</u>	C
9b	For each line - feature object of <u>geometric primitive line</u> where USAG is <u>Not</u> equal to 255 Null . {null}	Invalid value of USAG. USAG not set to 'null'.	Set value of USAG to <u>255</u> {('null')} .	Part 3 (4.7.2). <u>and Appendix B.1 (3.8)</u>	C
9c	For each line - feature object of <u>geometric primitive line</u> where MASK is <u>not equal</u> Not equal to 1 {(mask)} or OR 2 {(show)} or OR 255 {(masking is not relevant)} .	MASK not set to 'mask', 'show' or 'masking is not relevant'. Invalid value of MASK.	Set MASK to <u>1</u> {('mask')} , <u>2</u> {('show')} or <u>255</u> {('masking is not relevant')} .	Part 3 (4.7.2) and Appendix B.1 (3.8)	C
10a	For each <u>feature</u> object of type <u>geometric primitive</u> point where ORNT <u>does is</u> <u>Not</u> equal to 255 {(direction is not relevant)} .	ORNT not set to 'direction is not relevant'. Invalid value of ORNT.	Set ORNT to <u>255</u> {('direction is not relevant')} .	Part 3 (4.7.1)	E

10b	For each feature <u>geometric primitive</u> object of point where USAG does not equal <u>is Not equal to 255</u> {(null)} .	Invalid value of USAG; not set to 'null'.	Set USAG to <u>255</u> ('null') .	Part 3 (4.7.1)	E
10c	For each feature <u>geometric primitive</u> object of point where MASK does not equal <u>is Not equal to 255</u> {(masking is not relevant)} .	MASK not set to 'masking is not relevant'; Invalid value of MASK.	Set MASK to <u>255</u> ('masking is not relevant') .	Part 3 (4.7.1)	C
11	For each edge reference where USAG = is Equal to 3 <u>{(exterior boundary truncated by the data limit)}</u> not <u>also</u> referenced by <u>an M_COVR meta</u> object.	Edge reference with USAG = 3 {(exterior boundary truncated by the data limit)} does is not referenced <u>an M_COVR object.</u>	Set USAG to 1(<u>exterior</u>) or 2(<u>interior</u>).	Part 3 (4.7.3.3)	E
12	For each feature object which is not a (excluding C_AGGR and C ASSO collection objects) C (collection) object AND which does not reference a spatial record. have an FSPT.	Feature object without geometry. Missing FSPTT [Feature Record to Spatial Record pointer field].	Remove the feature object or reference the feature object to a spatial record of allowable geometric primitive. Add FSPT. [Feature Record to Spatial Record pointer field].	Part 3 (4.7)	C
13a	For each feature object <u>geometric primitive</u> line which references multiple edges where the vector records are not referenced sequentially.	Edges are not referenced sequentially.	Amend records to reference edges sequentially.	Part 3 (4.7.2)	C
13b	For each feature object <u>geometric primitive</u> line which references multiple edges where the end node of a vector record is not identical to the beginning <u>start</u> node of the following vector record.	Sequential edges do not have the same start end and end beginning nodes.	Ensure start end and end beginning nodes of sequential edges match.	Part 3 (4.7.25.1.3.2)	C
13c	For each feature object <u>geometric primitive</u> area where a polygon ring references multiple edges where the vector records are not referenced sequentially.	Edges are not referenced sequentially.	Amend records to reference edges sequentially.	Part 3 (4.7.2) <u>and (4.7.3)</u>	C

13d	For each feature <u>object</u> of type <u>geometric primitive</u> area which references multiple edges where the end node of a vector record is not identical to the start <u>beginning</u> node of the following vector record.	Sequential edges do not have the same start-end and end <u>beginning</u> nodes.	Ensure start-end and end <u>beginning</u> nodes of sequential edges match.	Part 3 (4.7.2) <u>and</u> (4.7.3)	C
14	For each area <u>feature</u> object of geometric primitive area where the outer <u>exterior</u> boundary shares or inner boundaries share more than one node with an interior boundary.	Outer <u>Exterior</u> and inner <u>interior</u> boundaries ies share more than one node.	Amend boundary ies <u>so that they</u> share at most one node.	Part 3 (4.7.3)	C
15	For each area outer or inner boundary which is not closed (i.e. the first and last edges bounding the area do not meet at a common For each feature object of geometric primitive area where the exterior boundary or an interior boundary is not closed connected node).	First and last edge of an area boundary, do not meet at a common connected node.	Amend edges bounding the area to meet at a common connected node.	Part 3 (4.7.3.1)	C
16	For each feature object of <u>geometric primitive area</u> where the For each area outer <u>exterior</u> boundary which is not encoded clockwise.	Area outer <u>exterior</u> boundary not encoded clockwise.	Ensure area outer <u>exterior</u> boundary is encoded clockwise.	Part 3 (4.7.3.2)	C
17	For each feature object of <u>geometric primitive area</u> where an For each area inner <u>interior</u> boundary which is not encoded counter-clockwise.	Area inner <u>interior</u> boundary not encoded counter-clockwise.	Ensure area inner <u>interior</u> boundary is encoded counter-clockwise.	Part 3 (4.7.3.2)	C
18a	For each area <u>feature</u> object of geometric primitive area which does not have an outer boundary OR has more than one outer ere the number of exterior boundaries is Not equal to 1. boundary.	Area object without an outer <u>exterior</u> boundary or with several outer <u>exterior</u> boundaries.	Amend geometry so that area object has one outer <u>exterior</u> boundary.	Part 3 (4.7.3.2) and (4.7.3.3)	C
18b	For each area <u>feature</u> object of geometric primitive area which have one outer boundary, that where the exterior boundary is not referenced first.	Area object with one outer <u>exterior</u> boundary which is not referenced first.	Amend geometry so that the outer <u>exterior</u> boundary is referenced first.	Part 3 (4.7.3.2) and (4.7.3.3)	C

18c	For each area feature object of geometric primitive area with one or more innerinterior boundaries where any boundary is not sequential OR includes invalid use of USAG.	InnerInterior boundary is not closed or is not sequential or use of USAG is invalid.	Ensure innerinterior boundary is closed and sequential. Ensure valid use of USAG.	Part 3 (4.7.3.2) and (4.7.3.3)	C
19	For each edge which is COINCIDENT with the data limit borders (i.e. limits of M_COVR with CATCOV =is Equal to 1 {{coverage available}}) where USAG does not equalis Not equal to 3 {{eExterior boundary truncated by the data limit}} .	Edge coincides with the edge-of data limit and USAG does not equal 3 ({{eExterior boundary truncated by the data limit}}).	Amend edge to USAG = 3 {{eExterior boundary truncated by the data limit}} .	Part 3 (4.7.3.3)	EW
20a	For each feature object where a geometric primitive is not one of those permitted.	Geometric primitive of this type is not permitted on-for this object class.	Use alternative geometric primitive or alternative object class as required.	Appendix B.1 (3.3), Part 3 (5.14.2 .1) and Supplement No 32 Ch.4 (3.3.1)	C
20b	For each spatial record which is not referenced by a feature object.	Orphaned geometry.	Remove orphaned geometry.	Logical consistency and Part 2 (1)	C
21	For each vector record pointer (VRPT) fields which are-is not pointed to by an edge vector record.	Vector record pointer field (VRPT) field not referenced by an edge vector record.	Ensure Vector record pointer field (VRPT field) is referenced by an edge vector record or delete.	Appendix B.1 (3.3), Part 3 (5.1.1) and Supplement No2 Ch.4 (3.3.1)	C
22	For each edge where the sequence-of-beginEnd/end node is referenced sbefore the beginning node-is incorrect.	Beginning and /end nodes are not in the correct sequence.	Amend sequence-of edge to reference beginning before /end nodes.	Part 3 (5.1.3.2)	C
23	For each coordinate which is not of type-a SG2D or SG3D field.	Coordinate is not a SG2D or SG3D field.	Amend coordinate to valid typefield.	Part 3 (5.1.4)	C
24	For each SOUNDG feature object which is-does not reference a SG3D field coordinate type SG3D with X, Y and Z values.	SOUNDG is-does not reference aof coordinate type SG3D field with X, Y and Z values.	Amend coordinate type or values for SOUNDG.	Part 3 (5.1.4.1)	C
25a	For each edge where the beginning and end are not encoded as connected nodes.	Beginning or end nodes of an edge are not encoded as connected nodes.	Amend beginning or end nodes to be connected nodes.	Part 3 (5.1.4.4)	C
25b	Check removed For each connected node where the geometry is not part of an edge.	Connected node which is not part of an edge.	Complete edge or make node isolated.	Part 3 (5.1.4.4)	C

25c	For each edge where the beginning and-or end nodes are-is not referenced using the vector record pointer.	Beginning or end nodes not referenced by the vector record pointer.	Amend edge to ensure beginning and-and end nodes are referenced.	Part 3 (5.1.4.4)	C
26a	For each subfield where the value is not within the range defined in the S-57 format description.	Subfield value does not conform to S-57 format specification.	Correct Amend subfield value.	Part 3 (7.2.2.1), (7.3) and Appendix A, Chapter 2.	C
26b	For each subfield value which is not within the legal range 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).	Subfield value outside of the permitted range for an attribute value.	Amend subfield value to permitted attribute value.	Part 3 (7.2.2.1), (7.3) and Appendix A, Chapter 2.	C
27	For each subfield which is not formatted in accordance with S-57.	Subfield not formatted in accordance with S-57.	Amend formatting of subfield value.	Part 3 (7.2.2.2)	C
28	If the count of records in the DSSI field does-not equal-is Not equal to the total number of records.	DSSI field record count incorrect.	Correct Amend the DSSI field record count.	Part 3 (7.3.1.2)	E
29	For each of the following: FFPC-NFPT, FSPC-NSPT, SGCC-CCNC, and VRPC-NVPT subfields where the index position for updating is invalid value is Not equal to the number of records/pointers.	Invalid index position for updating number of records/pointers in the following FFPC-NFPT, FSPC-NSPT, SGCC-CCNC or VRPC-NVPT.	Amend to valid index position for updating subfield to equal the number of records/pointers to be amended.	Part 3 (7.6.5) (7.6.7), (7.7.1.5) and (7.7.1.3)	C
30	For each of the following: FFPC-FFIX, FSPC-FSIX, SGCC-CCIX, and VRPC-VPIX subfields where the index position for updating is invalid.	Invalid index position for updating in the following subfields FFPC-FFIX, FSPC-FSIX, SGCC-CCIX or VRPC-VPIX.	Amend to valid index position for updating.	Part 3 (7.7.1.5), (7.6.5), (7.6.7) and (7.7.1.3)	C
31	For each edge where SG2D coordinates are identical to the start beginning and-or end node coordinates.	Edge where start beginning and-or end node coordinates are the same as the SG2D coordinates.	Amend SG2D coordinates to differ from start beginning and end node coordinates.	Part 3 (7.7.1.6)	C
32	For each record update which does not refer to a valid record NAME.	Record update does not refer to a valid record NAME.	Amend record update to refer to a valid record NAME.	Part 3 (8.3.2)	C
33	For each attribute update which does not refer to a valid record NAME and attribute label/code.	Attribute update does not refer to valid record NAME and attribute label/code.	Amend attribute update to refer to valid values.	Part 3 (8.3.3)	C

34	For each of the following fields FFPT, FSPT and or VRPT where the update pointer index does not refer to a valid record NAME and index.	Update pointer index does not refer to a valid record NAME and index for FFPT, FSPT or VRPT.	Ensure update pointer index refers to a valid record NAME and index.	Part 3 (8.3.4)	C
35	For each <u>feature</u> object where RVER is out of sequence.	RVER is out of sequence.	Ensure RVER is sequential.	Part 3 (8.4.2.1) and (8.4.3.1)	C
36a	For each <u>feature or vector</u> update record of type feature or vector which is DELETE and AND contains further fields.	DELETE update contains additional fields.	Remove additional fields from update record.	Part 3 (8.4.2.2) and (8.4.3.1)	C
36b	For each <u>feature or vector</u> update record of type feature or vector which is MODIFY OR INSERT and contains no further fields.	MODIFY or INSERT update does not contain additional fields.	Add additional fields to update record.	Part 3 (8.4.2.2) and (8.4.3.1)	C
37	If an update and its base cell do not have the same	Update and base cell do not have the	Correct the lexical level of the update.	Part 3 (8.4.2.2a)	C
38	For each update record which contains more than one of the following fields: <u>FFPC</u> , <u>VRPC</u> , <u>FSPC</u> or <u>SGCC</u> . <u>FFPC</u> field [8.4.2.3] <u>VRPC</u> field [8.4.3.2b] <u>FSPC</u> field [8.4.2.4] <u>SGCC</u> field [8.4.3.3]	Update record contains more than one of the following fields: <u>FFPC</u> , <u>VRPC</u> , <u>FSPC</u> or <u>SGCC</u> .	Remove additional fields from update record.	See references in the column to the left. Part 3 (8.4.2.3), (8.4.3.2b), (8.4.2.4) and (8.4.3.3)	C
39	For all edges where line segments are not complete. Check removed.	Line segments are not complete within edge.	Complete line segments.	Part 3 (8.4.3.3)	C
40	For any pair of <u>feature objects</u> of <u>geometric primitive</u> line objects where class and attribute values are identical AND all referenced edges have the same spatial attribute values AND which have one or two common connected nodes which is (are) a beginning node or an end node of each linear feature AND each common connected node is not shared by more than two objects which are not chained together.	Linear objects with the same class, attribute values and spatial attribute values which are connected <u>and</u> are not chained together.	Chain linear objects together.	Logical consistency	W
41	Check removed. For all geometric objects where type is area AND are not complete.	Area is not closed.	Complete geometry to close area.	Logical consistency	C

42	For each VE edges which is are referenced by Group 1 objects and AND are is not linked-referenced by to objects a M_COVR meta object with CATCOV = is <u>Equal to 1</u> {(coverage available)} which does not appear twice with different ORNT (forward and reverse) values.	GROUP Group 1 coverage is not correct, a hole or an overlap exists.	Correct Amend Group GROUP 1 coverage , to remove hole or overlap.	<u>Appendix B.1 (3.10.1)</u> , Logical consistency	C
43	For each DEPCNT <u>feature</u> object which is not COINCIDENT with two <u>G</u> group 1 <u>feature</u> objects AND is not WITHIN an UNSARE or DRGARE.	DEPCNT does not coincide with two <u>G</u> group 1 objects.	Amend DEPCNT or <u>G</u> Group 1 objects as required.	<u>Appendix B.1 (3.10.1)</u> , Logical consistency	W
44	For each values of DRVAL1 or DRVAL2 <u>value</u> (except the shallowest and the deepest found in the ENC) for a of DEPRE <u>feature object of type</u> geometric primitive area which are is not <u>E</u> equal to <u>a</u> values of VALDCO on DEPCNT <u>feature</u> objects found in the ENC.	The value of DRVAL1 {or DRVAL2} is different of from one of the values of VALDCO found in the ENC.	Amend value of DRVAL1 {or DRVAL2} so that it equals a value of VALDCO.	Logical consistency	W
45a	For each <u>feature</u> object (excluding BERTHS, CBLOHD, CBLSUB, CONVYR, DWRTCL, FERYRT, MARCUL, MORFAC, NAVLNE, PIPSOL, RCRTCL and RECTRC) of type geometric primitive line which shares an edge with another <u>feature</u> object of the same class and of type geometric primitive. line where the object is not one of the following BERTHS, CBLOHD, CBLSUB, CONVYR, DWRTCL, FERYRT, MARCUL, MORFAC, NAVLNE, PIPSOL, RCRTCL, RECTRC.	Coincident line <u>ar</u> objects of the same class.	Delete Remove coincident object.	Logical consistency	W

45b	For each <u>BERTHS</u> , <u>CBLOHD</u> , <u>CBLSUB</u> , <u>CONVYR</u> , <u>DWRTCL</u> , <u>FERYRT</u> , <u>MARCUL</u> , <u>MORFAC</u> , <u>NAVLNE</u> , <u>PIPSOL</u> , <u>RCRTCL</u> , or <u>RECTRC</u> feature object of type <u>geometric primitive</u> line which shares an edge with another <u>feature</u> object of the same class and <u>AND</u> <u>geometric primitive</u> <u>AND</u> <u>the same</u> attribute values, of type line where the object is one of the following <u>BERTHS</u> , <u>CBLOHD</u> , <u>CBLSUB</u> , <u>CONVYR</u> , <u>DWRTCL</u> , <u>FERYRT</u> , <u>MARCUL</u> , <u>MORFAC</u> , <u>NAVLNE</u> , <u>PIPSOL</u> , <u>RCRTCL</u> , <u>RECTRC</u> .	Coincident line objects of the same class and attribute values.	Delete <u>Remove</u> coincident object.	Logical consistency	W
46	For each <u>feature</u> object where DATEND and DATSTA are notNull <u>AND</u> DATEND is less <u>Less</u> than or equal to DATSTA.	DATEND less than DATSTA.	Amend values of DATEND or DATSTA accordingly.	Logical consistency	E
47a	For each LIGHTS or RTPBCN <u>feature</u> object where SECTR1 is notNull and <u>AND</u> SECTR2 is <u>Null</u> or <u>OR</u> is <u>E</u> equal to SECTR1. (0 and 360 must be treated as the same value.)	SECTR2 not populated with a valid value, must not be the same as SECTR1.	Populate SECTR2 with a valid value.	Logical consistency	E
47b	For each LIGHTS or or RTPBCN <u>feature</u> object where SECTR2 is notNull and <u>AND</u> SECTR1 is <u>Null</u> or <u>OR</u> is <u>E</u> equal to SECTR2. (0 and 360 must be treated as the same value.)	SECTR1 not populated with a valid value, must not be the same as SECTR2.	Populate SECTR1 with a valid value.	Logical consistency	E
48	For each M_SREL <u>meta</u> object where SCVAL1 and <u>AND</u> SCVAL2 are notNull <u>AND</u> SCVAL2 is <u>L</u> ess than SCVAL1.	SCVAL2 is less than SCVAL1.	Amend values of SCVAL1 <u>or</u> <u>SCVAL2</u> <u>accordingly</u> . The/2 value of SCVAL2 must be greater than SCVAL1.	Logical consistency	E
49	For each <u>feature</u> object where DRVAL1 AND DRVAL2 are notNull <u>AND</u> DRVAL2 is <u>L</u> ess than DRVAL1.	DRVAL2 is less than DRVAL-1, DRVAL-2 must be greater than or equal to DRVAL1.	Amend the values of DRVAL1 or DRVAL2 as required.	Logical consistency	E

50	For each RECTRC <u>feature object of geometric primitive line</u> where CATTRK <u>is Equal to</u> 1 <u>(based on a system of fixed marks)</u> OR NAVLNE <u>feature object</u> where its nodes/vertices do not lie on a straight line.	RECTRC where CATTRK <u>=</u> 1 <u>(based on a system of fixed marks)</u> or NAVLNE is not a straight line.	Amend geometry to a straight line.	Logical consistency	E
51a	For each COALNE <u>feature object</u> which is COINCIDENT with a SLCONS <u>feature object of typegeometric primitive line</u> .	COALNE and SLCONS objects share an edge.	Amend objects so that they do not share an edge.	Logical consistency	W
51b	For each COALNE <u>feature object</u> which is COINCIDENT with a SLCONS <u>feature object of typegeometric primitive area</u> where WATLEV <u>is Equal to 1 (partly submerged at high water)</u> is OR 2 not populated or encoded with the values (2) {(always dry)} or (1) {partly submerged at high water} that is WITHIN an area LNDARE <u>feature object of geometric primitive area</u> .	COALNE and SLCONS with illogical values of WATLEV overlap.	Amend objects so that they do not overlap or amend WATLEV values.	Logical consistency	W
52a	For each LNDELV <u>feature object of typegeometric primitive line</u> which which is not WITHIN a LNDARE <u>feature object of typegeometric primitive area</u>	Linear LNDELV object not situated on <u>covered by</u> area LNDARE	Ensure linear LNDELV object is situated on <u>covered by</u> a LNDARE.	Appendix B1, Annex A (4.7.2, 4.7.4, 6.1.1 and 6.2.1).	E
52b	For each LNDELV <u>feature object of typegeometric primitive point</u> which is not WITHIN <u>DISJOINT from</u> a LNDARE <u>feature object of any typegeometric primitive area</u> AND does not touch a LNDARE of type line or point <u>AND is not WITHIN</u> <u>DISJOINT from</u> a WRECKS <u>feature object of typegeometric primitive area</u> which where is always dry <u>WATLEV is Equal to 1</u> <u>(partly submerged at high water)</u> OR or partially submerged <u>WATLEV=2 (always dry)</u> <u>4</u> .	LNDELV object not situated on <u>covered by</u> a LNDARE or <u>by</u> on a drying or partially submerged WRECKS object.	Ensure LNDELV object is situated covered on <u>by</u> a LNDARE or <u>by</u> on a drying <u>or</u> partially submerged WRECKS object.	Appendix B1, Annex A (4.7.2, 4.7.4, 6.1.1 and 6.2.1).	E

53a	For each SLOGRD <u>feature</u> object which is not within <u>WITHIN</u> a LNDARE <u>feature</u> object of type <u>geometric primitive</u> area.	SLOGRD not covered by LNDARE.	Amend LNDARE or SLOGRD accordingly.	Appendix B1, Annex A (4.7.4, 4.7.5, 4.8.4)	E
53b	For each SLOTOP <u>feature</u> object which is not within <u>WITHIN</u> a LNDARE <u>feature</u> object of type <u>geometric primitive</u> area.	SLOTOP not covered by LNDARE.	Amend LNDARE or SLOTOP accordingly.	Appendix B1, Annex A (4.7.4, 4.7.5, 4.8.4)	E
54a	For each CRANES , FORSTC, LNDMRK or SILTNK <u>feature</u> object of type <u>geometric primitive</u> area that which is not WITHIN a LNDARE, BRIDGE, FLODOC, OFSPLF or PONTON <u>feature</u> object of type <u>geometric primitive</u> area.	CRANES , FORSTC, LNDMRK or SILTNK not within covered <u>by</u> a LNDARE, BRIDGE, FLODOC, OFSPLF or PONTON.	Amend object to ensure it is situated on a suitable object.	Logical consistency	C
54b	For each CRANES , FORSTC, LNDMRK, DAYMAR or SILTNK <u>feature</u> object of type <u>geometric primitive</u> point that which is not WITHIN a LNDARE, BRIDGE, FLODOC, OFSPLF or PONTON <u>feature</u> object of type <u>geometric primitive</u> area OR it does not EQUAL a LNDARE, PILPNT, PYLONS, OFSPLF, SLCONS or UWTROC <u>feature object</u> of type <u>geometric primitive</u> point OR it is not COINCIDENT with a COALNE, DAMCON, BRIDGE, FLODOC, LNDARE, PONTON or SLCONS <u>feature object</u> of type <u>geometric primitive</u> line.	CRANES , FORSTC, LNDMRK, DAYMAR or SILTNK not situated covered by <u>a</u> suitable supporting object.	Amend object to ensure it is situated on a suitable object.	Logical consistency	C

54c	For each BUISGL <u>or CRANES feature</u> object of typegeometric primitive area that-which is not within-WITHIN a LNDARE, BRIDGE, FLODOC, HRBFAC, OFSPLF, or PONTON <u>feature</u> object of typegeometric primitive area OR for each BUISGL <u>or CRANES feature object</u> of typegeometric primitive point that-which is not WITHIN a LNDARE, BRIDGE, FLODOC, OFSPLF or PONTON <u>feature object</u> of typegeometric primitive area OR-AND it does not EQUAL a LNDARE, PILPNT, PYLONS, OFSPLF, SLCONS or UWTROC <u>feature object</u> of typegeometric primitive point OR-AND it is not COINCIDENT with a COALNE, DAMCON, BRIDGE, FLODOC, LNDARE, PONTON or SLCONS <u>feature object</u> of typegeometric primitive line.	BUISGL <u>or CRANES</u> not situated-covered <u>by</u> a suitable supporting object	Amend object to ensure it is situated on a suitable object.	Logical consistency	W
55	For each LNDARE <u>feature</u> object of typegeometric primitive point or line which is WITHIN a LNDARE <u>feature</u> object of typegeometric primitive area AND <u>is</u> not WITHIN an object LAKARE_ or RIVERS_ or DOCARE_ or LOKBSN or CANALS <u>feature object</u> of typegeometric primitive area.	Point LNDARE lies on <u>LNDARE</u> land.	Amend point LNDARE or area LNDARE accordingly.	Logical consistency	W
56	For each BUAARE <u>feature</u> object not WITHIN a LNDARE <u>feature</u> object of typegeometric primitive area or- ORAND which is <u>Not</u> COINCIDENT with a LNDARE <u>feature</u> object of typegeometric primitive point or line.	BUAARE not located on LNDARE.	Amend BUAARE so that it sits-on <u>is covered by a</u> -LNDARE.	Logical consistency	E

57a	For each COALNE <u>feature</u> object which is not COINCIDENT with a LNDARE <u>feature object</u> AND is not WITHIN a LNDARE <u>feature</u> object of type <u>geometric primitive</u> area.	COALNE object not bounding LNDARE	Ensure that COALNE coincides <u>with</u> LNDARE boundary.	Logical consistency UOC.4.5	E
57b	For each COALNE <u>feature</u> object which is WITHIN a LNDARE <u>feature</u> object of type <u>geometric primitive</u> area or OR is COINCIDENT with LNDARE <u>feature</u> objects on both sides AND is COINCIDENT with a SLCONS or DRYDOC <u>feature</u> object where CONDTN does not equal <u>is Not equal to 1</u> (<u>under construction</u>) or OR <u>3</u> (<u>under reclamation</u>) or OR <u>5</u> (<u>planned construction</u>)	COALNE is inside <u>within a</u> LNDARE <u>or is</u> coincident with <u>a</u> permanent SLCONS or DRYDOC object.	Remove COALNE or amend CONDTN values.	Logical consistency. UOC.4.6.10	E
57c	For each COALNE <u>feature</u> object which is COINCIDENT with LNDARE <u>feature</u> objects on both sides <u>where NOT not</u> one of them has CONDTN equal is <u>Equal to 1</u> (<u>under construction</u>) or OR <u>3</u> (<u>under reclamation</u>) OR <u>5</u> (<u>planned construction</u>)	COALNE is COINCIDENT <u>coincident</u> with LNDARE objects on both sides	Remove COALNE or amend CONDTN values.	Logical consistency. UOC.4.6.10	E
58	For each SBDARE <u>feature</u> object of type <u>geometric primitive</u> line which is COINCIDENT with an SBDARE <u>feature</u> object of type <u>geometric primitive</u> area.	Line SBDARE bounds an area SBDARE.	Delete <u>Remove</u> <u>linear</u> SBDARE.	Logical consistency	W
59	For each OBSTRN <u>feature</u> object of type <u>geometric primitive</u> line which is COINCIDENT with an OBSTRN <u>feature</u> object of type <u>geometric primitive</u> area.	Line OBSTRN bounds an area OBSTRN.	Amend or delete <u>linear</u> OBSTRN <u>of type line</u> .	Logical consistency	W
60	For each CBLSUB <u>feature</u> object <u>which</u> INTERSECTS <u>OR is WITHIN</u> a LNDARE <u>feature</u> object of type <u>geometric primitive</u> <u>a</u> Area.	CBLSUB lies <u>is covered by</u> <u>LNDARE land</u> .	Amend CBLSUB object accordingly.	Logical consistency	W

61a	For each <u>feature</u> object of typegeometric primitive line or area where WATLEV = <u>is Equal to 3</u> {(always underwater/submerged)} which OVERLAPS or OR is WITHIN an inter-tidal area (DEPARE <u>feature object with where</u> DRVAL2 <u>is Less than or equal to</u> ≤ 0) OR- WITHIN a LNDARE <u>feature object of typegeometric primitive</u> area.	Line or area object which is where WATLEV = 3 {(always underwater/submerged)} lies is within or overlap ping an inter-tidal area (DEPARE with DRVAL2 ≤ 0) or land area <u>LNDARE</u> .	Amend value of WATLEV.	Logical consistency	E
61b	For each <u>feature</u> object of typegeometric primitive point where WATLEV <u>is Equal to</u> $= 3$ {(always underwater/submerged)} which is WITHIN an inter-tidal (DEPARE <u>feature object where</u> DRVAL2 <u>is Less than or equal to</u> ≤ 0) area OR is WITHIN a LNDARE <u>feature object of typegeometric primitive</u> area OR EQUALS a LNDARE <u>feature object of typegeometric primitive</u> point or OR is situated on <u>TOUCHES</u> a LNDARE <u>feature object of typegeometric primitive</u> line.	Point object which is ere WATLEV = 3 {(always underwater/submerged)} lies within an inter-tidal area (DEPARE with DRVAL2 ≤ 0) or is within or coincident with a land area <u>LNDARE</u> object.	Amend value of WATLEV.	Logical consistency	E
62	For each PONTON, HULKES or FLODOC <u>feature</u> object of typegeometric primitive area where any edge shares the geometry of a line COALNE or SLCONS <u>feature object of geometric primitive line</u> AND the edge does not also share the geometry of is not COINCIDENT with a LNDARE <u>feature object of typegeometric primitive</u> area.	PONTON, HULKES or FLODOC which uses shares an edge with an SLCONS or COALNE edge which is not on the edge of <u>a</u> LNDARE.	Ensure all SLCONS or COALNE objects are backed by LNDARE objects.	Logical consistency	W

63	For each RECTRC feature object which INTERSECTS line or area objects of the following types LNDARE, PONTON, HULKES or , FLODOC feature objects of geometric primitive line or area OR any feature object where WATLEV =is Equal to 1 {{(partly submerged at high water)}} or OR 2 {{(always dry)}}.	RECTRC intersects prohibited objects.	Amend RECTRC or other objects to ensure RECTRC is within navigable objects.	Logical consistency	E
64	For each ACHARE feature object of type geometric primitive point or area where CATACH does not equalis Not equal to 8 {{(small craft mooring area)}} which-AND OVERLAPS another feature object where RESTRN includes the value 1 {{(anchoring prohibited)}}.	ACHARE object within an area with RESTRN = 1 {{(anchoring prohibited)}}.	Amend ACHARE object or object carrying RESTRN = = 1 (anchoring prohibited).	Logical consistency	W
65	For each LIGHTS feature object which EQUALS another LIGHTS feature object AND STATUS does not equalis Not equal to does Not contain the value 4 {{(not in use)}} ORAND does not contain the value , 6 {{(reserved)}} or ORAND does not contain the value 11 {{(extinguished)}} where sectors overlap AND none of the values of the following attributes are different CATLIT, EXCLIT, LITCHR, SIGPER or SIGGRP.	Coincident lights with overlapping sectors and the same characteristics.	Modify-Amend light sectors so that they do not overlap, or delete remove duplicated sectors.	Logical consistency	W
66	Check removed. For each SOUNDG where EXPSON = (1) or is not populated AND the depth value is less than DRVAL1 of the underlying DEPARE or DRGARE OR the depth value is greater than or equal to the DRVAL2 of underlying DEPARE or DRGARE.	Sounding outside of the range of the corresponding DEPARE, DRGARE.	Amend depth value or populate EXPSON accordingly.	Logical consistency	W

67a	For each <u>feature</u> object where its <u>the</u> object class, attribution and geometry is identical to another <u>feature</u> object.	Duplicate object exists.	Delete-Remove duplicate object.	Data structure	E
67b	For each <u>collection object</u> which references identical <u>feature</u> objects to another <u>collection object</u> .	<u>Duplicate collection object</u> exists.	<u>Remove duplicate collection object.</u>	<u>Data structure</u>	<u>E</u>
68	For each object which references a text/graphic file and the text/graphic file is not present in the exchange set. Moved to section 2.3 as Check renumbered 10074	Text or graphic file referenced by update is not present.	Add text or graphic files to exchnage set.	-	C
69	Check removed. For each object where the Agency Code is invalid.	Invalid agency code.	Amend Agency code to valid value.	Appendix A, Annex A	W
70a	For each DEPARE <u>feature</u> object of type <u>geometric primitive</u> line which does not EQUAL a Group 1 boundary.	'Hanging' linear depth area of type line.	Delete-Remove 'hanging' linear DEPARE.	Logical consistency	E
70b	For each DEPARE <u>feature</u> objects of type <u>geometric primitive</u> line.	<u>Linear DEPARE of type line exit present</u> in the ENC	Delete-Remove linear DEPARE as no longer required in ENC.	Logical consistency	W
71a	For each feature object of geometric primitive area that is not COINCIDENT with the M_COVR boundary where all edges are masked (i.e. USAG is Equal to 3 (exterior boundary truncated by the data limit) OR MASK is Equal to 1 (mask)). For each object of type area where all edges have not USAG = 3 [exterior boundary truncated by the data limit] AND all edges are masked (i.e. USAG = 3 or MASK = 1 [mask]).	Area object has all of its edges masked and is not the edge of the data coverage.	Remove masking.	Logical consistency	W
71b	For each <u>feature</u> object of type <u>geometric primitive</u> line which has any edges masked (i.e. MASK = is <u>Equal to 1 [(mask)]</u>).	Line object with masked edges.	Remove masking from line object,	Logical consistency	E
72	For each set of hierarchical relationships which form a loop (e.g. no master object is slave of its own slave).	Relationships form a loop.	Amend relationships to remove loop.	Logical consistency	E

73a	For each attribute value which contains a leading or trailing space.	Attribute value contains leading or trailing spaces.	Remove leading or trailing spaces.	Logical consistency	W
73b	For each attribute value of type list which contains spaces.	List attribute value contains spaces.	Remove spaces.	Logical consistency	W
74	For each DEPCNT feature object which does not share an edge with a Group 1 feature object AND is WITHIN an area DEPCNT feature object of geometric primitive area with where DRVAL1 AND DRVAL2 are equal to notNull AND DRVAL2 <= VALDCO <= DRVAL1-VALDCO is Less than DRVAL1 OR Greater than DRVAL2	Floating DEPCNT within a DEPCNT with VALDCO less than DRVAL1 or greater than DRVAL2.	Amend floating contour VALDCO between DRVAL1 and DRVAL2 of the underlying DEPCNT.	Logical consistency	C
75	For each DEPCNT feature object which does not share an edge with a Group 1 feature object AND is WITHIN an area DRGARE feature object of geometric primitive area with where DRVAL1 equal to is notNull AND VALDCO <= is Less than DRVAL1.	Floating DEPCNT within a DRGARE with VALDCO less than DRVAL1 of the DRGARE.	Amend floating contour VALDCO to be greater than the DRVAL1 of the underlying DRGARE. or amend DRVAL1 of the DRGARE.	Logical consistency	C
76	For each DEPCNT feature object that INTERSECTS OR is WITHIN a FLODOC, HULKES, LNDARE or PONTON feature object of type geometric primitive area .	DEPCNT intersects prohibited objects.	Amend DEPCNT to be WITHIN within appropriate objects.	Logical consistency.	E
77	For each DEPCNT feature object of type DEPCNT which crosses CROSSES another DEPCNT feature object. of type DEPCNT	DEPCNT objects cross.	Amend DEPCNT objects so they do not cross.	Logical consistency	C
78	For each area feature object of geometric primitive area where its boundary CROSSES itself.	Boundary of an area object crosses itself.	Amend boundary to remove part which crosses itself.	Logical consistency	C

79	For each feature object of geometric primitive line where a component edge CROSSES another component edge without a connected node at the crossing point. For each line object where component edges CROSSES without a connected node at the crossing point	Component edges of a line object cross without a connected node at the crossing point.	Insert connected node at crossing point.	Topology	E
80a	For each feature area object of geometric primitive area where an internalinterior boundary is WITHIN an internalinterior boundary.	InternalInternal boundary within an internalinterior boundary.	Amend boundaries so that internalinterior boundary is not within another internalinterior boundary.	Topology	C
80b	For each feature area object of geometric primitive area where an internalinterior boundary is not WITHIN an externalexterior boundary.	InternalInternal boundary outside of an externalexterior boundary.	Amend boundaries so that internalinterior boundary is within externalexterior boundary.	Topology	C
80c	For each area-feature object of geometric primitive area where an externalexterior boundary is WITHIN an internalinterior boundary.	ExternalExterior boundary within an internalinterior boundary.	Amend boundaries so that internalinterior boundary is <u>not</u> within the externalinterior boundary.	Topology	C
81	For each Spot Sounding (point of sounding array) which position EQUALS to another spot soundingSOUNDG feature object which is COINCIDENT with another SOUNDG feature object. (COINCIDENT-EQUALS applies to the horizontal component only).	Spot Soundings SOUNDG-objects are coincidentposition is equal.	Delete-Remove coincident SOUNDG sounding.objects	Topology	E
82	For each feature object of typegeometric primitive line or area which references the same edge more than once.	Object references the same edge more than once.	Remove duplicate reference to the edge.	Topology	C
83	For each node which is COINCIDENT with another node (connected or isolated).	Nodes are coincident.	Delete-Remove or amend coincident nodes.	Topology	W
84a	For each node which is physically isolated and <u>AND</u> is marked as connected.	Isolated node marked as connected.	Amend to isolated.	Part 3 (2.2.45.1.1)	C

84b	For each node which is not physically isolated and AND is marked as isolated.	Connected node marked as isolated.	Amend to connected.	Part 3 (5.1.12.2.1)	C
85	For each update (ER) file where an AGEN subfield value (In DSID and FOID fields) is not identical to the AGEN subfield values in the base (EN) file. Moved to section 2.3 as Cecheck renumbered 10082	AGEN subfield values do not agree between update (ER) and base (EN) files.	Amend AGEN subfield values to agree.	Part 3 (4.3.1) and (7.3.1.1)	C
86	For each feature record object of type geometric primitive point which references more than one vector record.	Point feature references more than one vector record.	Delete-Remove references to additional vector records.	Part 3 (4.7.1)	C
87	For each edge with coincident COINCIDENT consecutive vertices.	Consecutive vertices are coincident.	Remove coincident vertices vertexess from edge.	Part 3 (4.7.2)	E
88a	For each area feature object of geometric primitive area where ORNT is N not equal to 1 {{(forward)}} or ORAND is Not equal to 1 {{(forward)}} or ORAND is Not equal to 2 {{(reverse)}}.	Invalid value of ORNT_ is not set to forward or reverse.	Set value of ORNT to 1 (forward) or 2 (reverse). Amend ORNT to a valid value.	Part 3 (4.7.3)	C
88b	For each area feature object of geometric primitive area where USAG is N not equal to 1 {{(exterior)}} ORAND is Not equal to; 2 {{(interior)}} or ORAND is Not equal to 3 {{(exterior boundary truncated by the data limit)}}.	Invalid value of USAG_ is not set to exterior, interior or exterior boundary truncated by the data limit.	Set USAG to 1 (exterior), 2 (interior) or 3 (exterior boundary, truncated by the data limit). Amend USAG to a valid value.	Part 3 (4.7.3)	C
88c	For each area feature object of geometric primitive area where MASK is N not equal to 1 {{(mask)}} ORAND is Not equal to; 2 {{(show)}} AND is Not equal to or OR 255 {{(masking is not relevant)}}.	Invalid value of MASK_ is not set to mask, show or masking is not relevant.	Set MASK to 1 (mask), 2 (show) or 255 (masking is not relevant). Amend MASK to a valid value.	Part 3 (4.7.3)	C
89a	For each master object which references the same slave more than once.	Master object references the same slave more than once.	Remove duplicate reference to slave object.	Part 3 (6.3); Appendix B.1 (3.9) & Appendix B.1 Annex A 12.1.2	C
89b	For each slave object which is referenced by more than one master object.	Slave object has more than one master.	Remove a incorrect master from slave object.	Part 3 (6.3); Appendix B.1 (3.9) & Appendix B.1 Annex A 12.1.2	C

90a	For a catalogue file where the DDR (Data Descriptive Record) does not contain only the description of the catalogue file structure. Moved to section 2.3 as Ccheck renumbered 10093	Invalid DDR (Data Descriptive Record) in catalogue file.	Correct DDR (Data Descriptive Record).	Part 3 (7-) and Part 3 (A.2)	W
90b	For an EN file where the DDR (Data Descriptive Record) does not contain only the description of the base cell file structure.	Invalid DDR (Data Descriptive Record) in EN file.	Correct Amend DDR (Data Descriptive Record).	Part 3 (-7-) and Part 3 (A.2)	W
90c	For an ER file where the DDR (Data Descriptive Record) does not contain only the description of the update cell file structure.	Invalid DDR (Data Descriptive Record) in ER file.	Correct Amend DDR (Data Descriptive Record).	Part 3 (-77-) and Part 3 (A.2)	W
91	Check removed. For each attribute value of type 'float' where the number of digits in the integer part is greater than the number of digits given in the format statement (e.g. XX.X).	Incorrect number of digits for value of float attribute.	Amend the value to conform to the format statement.	Part 3 (7.2.2.1), (7.3) and Appendix A, Chapter 2.	C, E, W
92	For each FRID field in an update (ER) file where RUIN = 3 [modify] and the FOID for the modified object is not identical in the base (EN) and update (ER) files. Moved to section 2.3 as Ccheck renumbered 101004	FOIDS do not match for a modify update between update ER and base EN files.	Correct FOIDS to be identical or make separate insert and delete updates.	Part 3 (8.4.2)	C
93a	For each <u>feature</u> object of <u>geometric primitive line or area</u> where WATLEV = <u>is Equal to 4</u> {(covers and uncovers)} <u>or OR 5</u> {(awash)} of type <u>line or area</u> which is <u>WITHIN or AND OVERLAPS</u> a LNDARE <u>feature</u> object of type <u>geometric primitive area</u> .	Object with WATLEV = 4 or 5 <u>is on within</u> a LNDARE object.	Amend LNDARE object to ensure object is within <u>an</u> inter-tidal <u>zonearea</u> .	Logical consistency	E

93b	For each <u>feature</u> object <u>of geometric primitive point</u> where WATLEV <u>is Equal to</u> <u>= 4</u> {(covers and uncovers)} <u>or-OR</u> <u>5</u> {(awash)} <u>of type point</u> which OVERLAPS a LNDARE <u>feature</u> object of type <u>geometric primitive</u> area or-OR EQUALS a LNDARE <u>feature</u> object of type <u>geometric primitive</u> point or-OR is COINCIDENT with a LNDARE <u>feature</u> object of type <u>geometric primitive</u> line.	Object with WATLEV = 4 or 5 on a LNDARE object.	Amend LNDARE object to ensure object is within inter-tidal zone <u>area</u> .	Logical consistency	E
94	For each ER file which contains instructions for the FSPC field to modify an FSPT field of a feature object to a value it already contains.	Update {ER} file contains instructions to modify an FSPT field to a value it already contains.	Remove pointless <u>irrelevant</u> FSPC field from update {ER} file.	Logical consistency	E
95	If the COMT subfield of the DISID and DSPM fields contains text which is not lexical level (0).	COMT subfield contains text which is not lexical level (0).	Amend text to conform to lexical level (0).	Part 3 (2.4)	E
96	For each relationship which does not reference an object of type C ASSO or-OR C AGGR collection object and-AND the RIND Relationship Indicator {RIND} subfield of the FFPT Feature Record to Feature object Pointer {FFPT} field set to {3} {(peer)} .	Relationship indicator has an incorrect value for a master slave relationship <u>Invalid value of RIND.</u>	Amend the relationship indicator to {31} {(masterpeer)} or <u>2</u> (slave) <u>as appropriate.</u>	<u>Part 3 (6.2) and Appendix B.1 (3.9)</u>	E
97	For each <u>feature</u> object where SUREND and SURSTA are notNull <u>AND</u> SUREND is <u>less</u> than SURSTA.	SUREND less than SURSTA.	Amend values of SUREND or SURSTA accordingly.	Logical consistency	E
98	For each <u>feature</u> object which has a relationship AND references an object which does not exist.	Object references an object that does not exist	Remove reference to non-existent object	Logical consistency.	E