Testing S-58 Validation Checks Using Dedicated Test ENC Datasets

Introduction

The S-58 validation checks were originally developed to facilitate testing of the content and integrity of S-57 datasets. The checks were outlined using descriptive text however, no standardized testing software was developed to allow data producers to actually carry out testing of their products. As a result, different data production software manufacturers adopted the checks by interpreting their content and creating their own versions of validation tools.

To reduce ambiguity and improve the precision of the validation software, a group of 26 test datasets have been produced, each containing a variety of negative test case scenarios. As such, each test case scenario was developed incorporating intentional data errors aiming to trigger the corresponding S-58 errors thus allowing software manufacturers to confirm that their validation tools report errors correctly. Using the 26 datasets, 340 tests cases have been established to support systematic software testing.

The references for this initiative are as follows:
1) S58 Recommended ENC Validation Checks, Edition 4.2.0
2) IHO Transfer Standard for Digital Hydrographic Data, Edition 3.1
3) ENC Product Specification, Edition 2.0
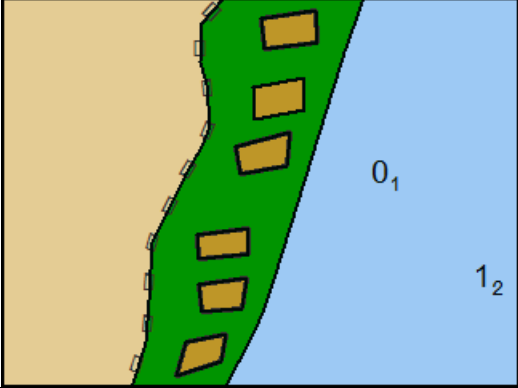4) Use of the Object Catalogue for ENC, Edition 3.0.0

Using S-58 Test Datasets

This document outlines the content of all 26 S-58 test datasets. It is organized into chapters, one for each dataset and its associated tests. A list of the tests is provided on the first page while a description of each test is listed in tabular format on subsequent pages. For each S-58 test a general test description is provided, followed by one or more test scenarios designed to trigger specific errors or warnings. The expected test results along with the expected secondary errors section are also provided. The secondary errors section is intended to list any additional errors which happen to be also triggered by the objects from each test case. The listing of secondary errors aims to facilitate easier cross referencing of errors when reviewing more than one test case scenario at a time or when reviewing cumulative test results for specific test number.

Please note that such secondary errors for the same S-58 check can appear in multiple sections of this document, since many different test case scenarios can trigger instances of the same type of secondary errors. For this reason it is advisable to search the entire document or the corresponding dataset chapter to determine the total count of specific error number when reviewing cumulative test results.

It is envisioned that the actual testing will be conducted in one of two ways: test case scenario centric or S-58 check centric. During the first approach, the test case scenario of interest should be reviewed closely and tested. The errors and/or warnings triggered should match those listed under both he the primary and the secondary test results. When testing using the second approach, the entire dataset section should be searched for any corresponding S-58 checks expected to be triggered by any of the test and the sum of all errors and/or warning should match the test results.

An example of one S58 test case, T0062, is below:

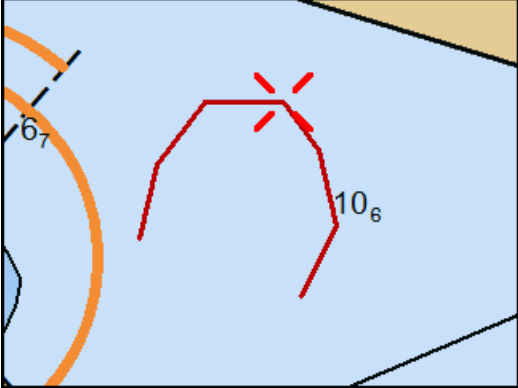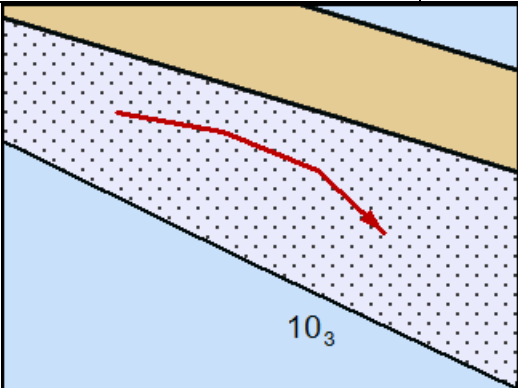| Dataset Name	AA500001		S-58 test No.	T0062		Type	W
S-58 Description	Check for all PONTON, HULKES or FLODOC objects of type Area that no edge of their limits shares the geometry of a line COALNE or SLCONS object, except when this edge also shares the geometry of a LNDARE object of type Area.						
Test Case No. 1	Captured PONTON, HULKES and FLODOC areas bounded by SLCONS and COALNE.						
Location	32°23'34.61"S 60°40'55.99"E		**S57 Encoding**	PONTON (A) HULKES (A) FLODOC (A) COALNE (L) SLCONS (L)	WATLEV = 2		
Screen Capture							
Expected test results	T0062: Three warnings "'coalne' bounds a prohibited object" must be triggered. T0062: Three warnings "'slcons' bounds a prohibited object" must be triggered.						
Secondary Errors	T0057: Three additional warnings "coast line without land area" must be triggered related to the feature objects created.						

For this test, the corresponding test dataset AA500001 contains PONTON, HULKES and FLODOC areas bounded by SLCONS and COALNE as shown. As a result, for this case scenario six T0062 warnings should be reported by the validation software along with the three T0057 secondary errors. When looking for cumulative error totals, while testing AA500001 dataset, twelve T0062 and five T0057 warnings should be reported based on different case scenarios present this particular dataset. Additionally six T0057 warnings should be reported based on different case scenarios present in AA500003.
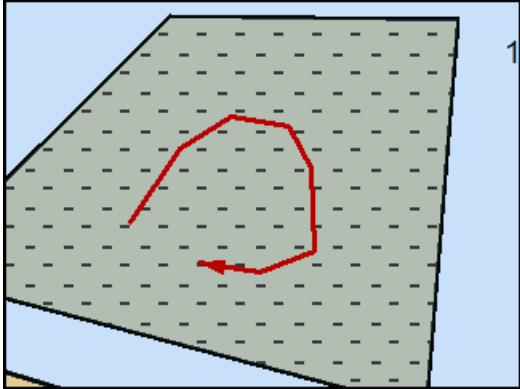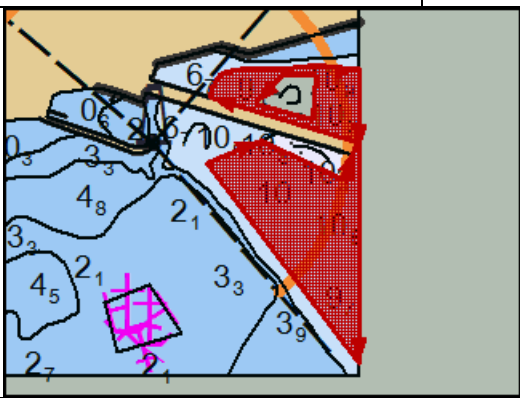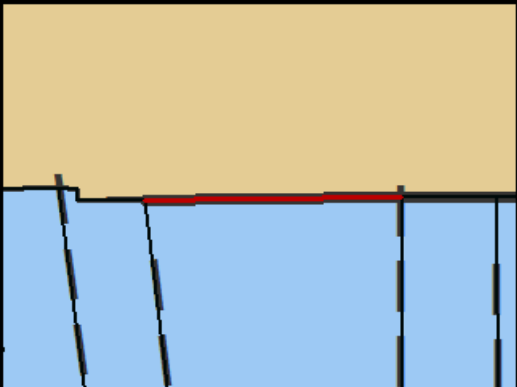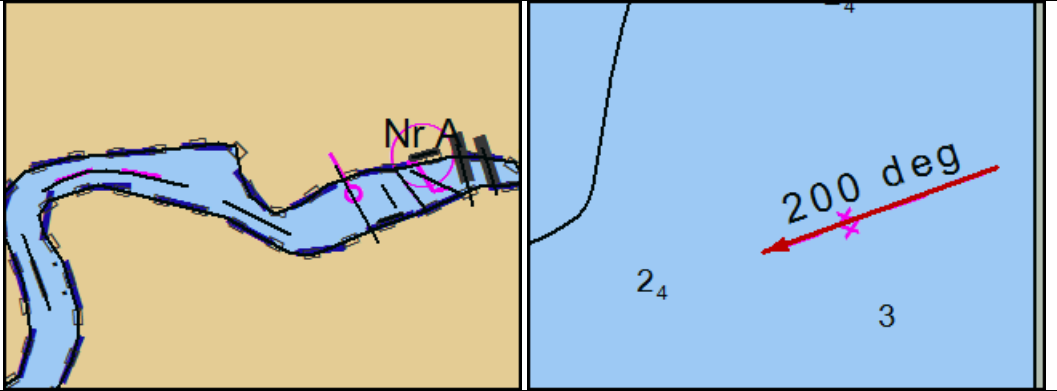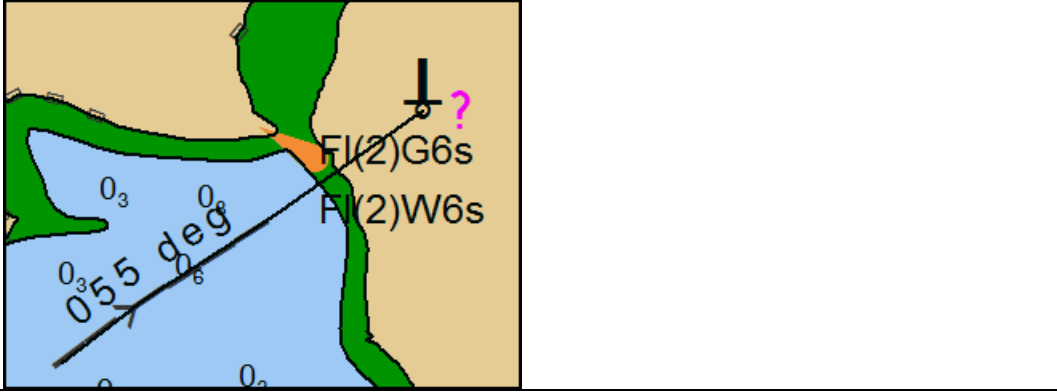
S-58 Test Datasets

Test Dataset: AA500001

List of S58 Recommended ENC Validation Checks covered in this section:

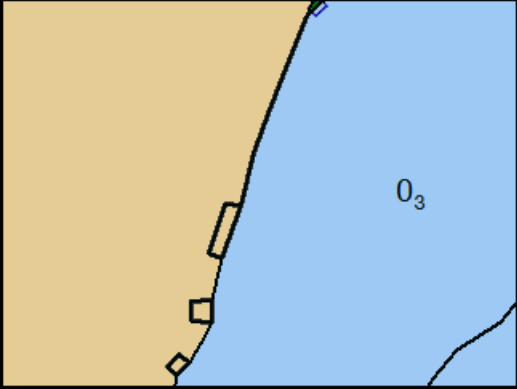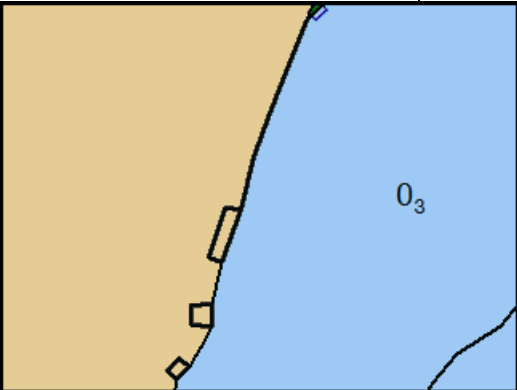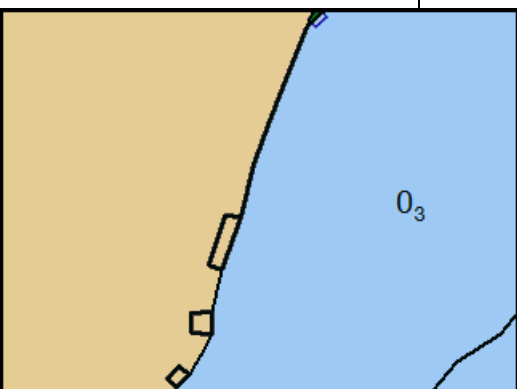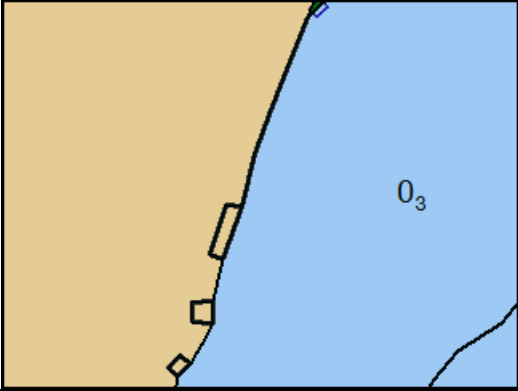| S58 Test	Description
43	Check that all DEPCNT objects coincide with a boundary of two Group 1 objects, except for cases where they appear within an UNSARE or DRGARE.
44	Check that all values (except the shallowest and deepest) DRVAL1 and DRVAL2 of DEPARE of type area are also values of VALDCO.
45	Check 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, DWRTCL, FERYRT, MARCUL, MORFAC, NAVLNE, PIPSOL, RCRTCL, RECTRC.
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.
51	Check that no edge is shared by a COALNE object and a SLCONS object of type line, or by a COALNE object and a SLCONS object of type area covered by a LNDARE, and having WATLEV undefined or encoded with the values (2) [always dry] or (1) [partly submerged at high water].
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, DOCARE, LOKBSN or CANALS object.
56	Check that any BUAARE object is covered by a LNDARE object of type Area, or is coincident with a LNDARE of type point.
57	Check for any COALNE object which does not share spatial geometry with a LNDARE or SLCONS object with CONDTN = 1 [under construction] or 3 [under reclamation] or 5 [planned construction], 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.
60	Check that no CBLSUB object is situated within a LNDARE object of type Area.

61	Check for any object with 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 $\leq$ 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.

62	Check for all PONTON, HULKES or FLODOC objects of type Area that no edge of their limits shares the geometry of a line COALNE or SLCONS object, except when this edge also shares the geometry of a LNDARE object of type Area.
63	Check that no RECTRC object overlaps or intersects a linear or area object LNDARE, PONTON, HULKES, FLODOC or any other object having WATLEV = 1 [partly submerged at high water] or 2 [always dry].
64	Check that no point or area ACHARE object (except with the value CATACH = 8 [small craft mooring area]) is situated within or overlaps another object with attribute RESTRN containing value 1 [anchoring prohibited].
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 containing at least one of values 4 [not in use], 6 [reserved], 11 [extinguished].
67	Check that no object is duplicated (same class, same attribute description and same geometry).
70	Check that all line DEPARE objects coincide with a Group 1 boundary.
72	Check that no loop exists in the graph of hierarchical relationships (e.g. no master object is slave of its own slave).
74	Check for any floating DEPCNT object (i.e. 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.
75	Check for any floating DEPCNT object (i.e. 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.
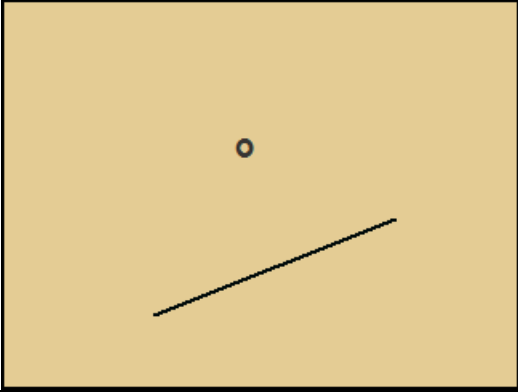
Dataset Name	AA500001		S-58 test No.	T0043		Type	W
S-58 Description	Check that all DEPCNT objects coincide with a boundary of two Group 1 objects, except for cases where they appear within an UNSARE or DRGARE.						
Test Case No. 1	Floating DEPCNT captured.						
Location	32°23'33.77"S 60°43'19.67"E		**S57 Encoding**	DEPCNT		VALDCO=6	
Screen Capture							
Expected test results	T0043: A warning "depth contour without depth area" must be triggered.						
Secondary Errors	None						
Test Case No. 2	Depth contour captured inside dredged area.						
Location	32°23'35.36"S 60°43'27.65"E		**S57 Encoding**	DEPCNT DRGARE		VALDCO=20 DRVAL1=20	
Screen Capture							
Expected test results	T0043: A warning "depth contour without depth area" must not be triggered.						
Secondary Errors	T0075: One additional warning: "depth contour value does not agree with surrounding 'drgare'" must be triggered.						
Test Case No. 3	Depth contour captured inside unsurveyed area.						
Location	32°23'31.56"S 60°43'26.23"E		**S57 Encoding**	DEPCNT UNSARE		VALDCO=1.8	
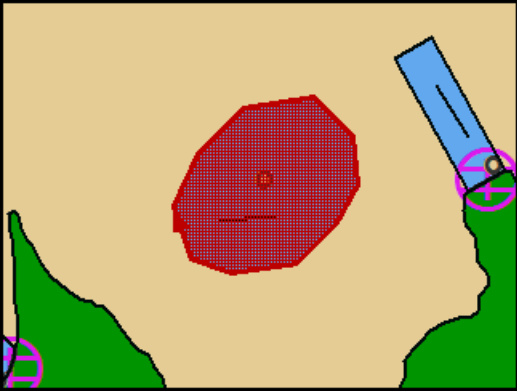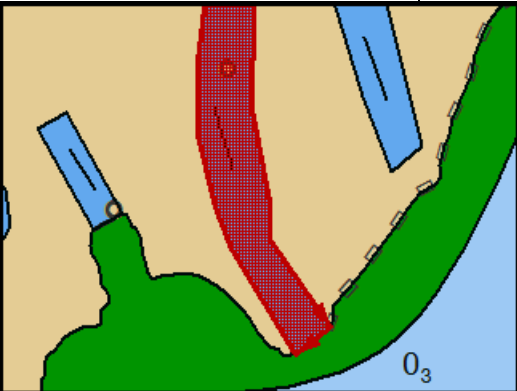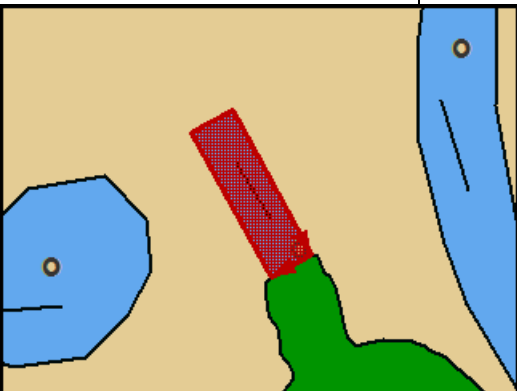
Screen Capture	
Expected test results	T0043: A warning "depth contour without depth area" must not be triggered.
	None

Dataset Name	AA500001	**S-58 test No.**	T0044	**Type**	W
S-58 Description	Check that all values (except the shallowest and deepest) DRVAL1 and DRVAL2 of DEPARE of type area are also values of VALDCO.				
Test Case No. 1	Depth area captured for which there is no depth contour equal to DRVAL2.				
Location	32°23'39.01"S 60°43'26.57"E	**S57 Encoding**	DEPARE	DRVAL1=9.1 DRVAL2=18.2	

Screen Capture	
Expected test results	T0044: A warning "value of 'drval1' not found in 'valdco' sequence" must be triggered. T0044: A warning "value of 'drval2' not found in 'valdco' sequence" must be triggered.
	None

Dataset Name	AA500001	**S-58 test No.**	T0045	**Type**	W
S-58 Description	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, DWRTCL, FERYRT, MARCUL, MORFAC, NAVLNE, PIPSOL, RCRTCL, RECTRC.				
Test Case No. 1	Two SLCONS (L) objects with same edge were captured.				
Location	32°23'36.41"S 60°42'45.01"E	**S57 Encoding**	SLCONS (L) SLCONS (L)	CATSLC=6 WATLEV=2 WATLEV=2	

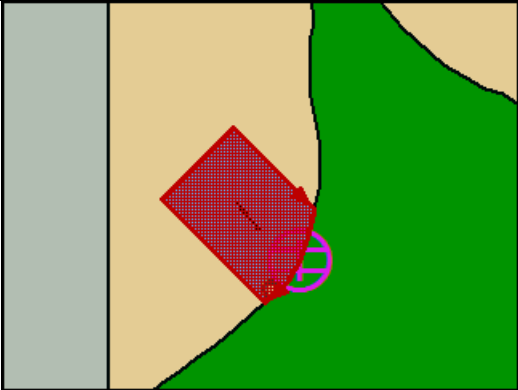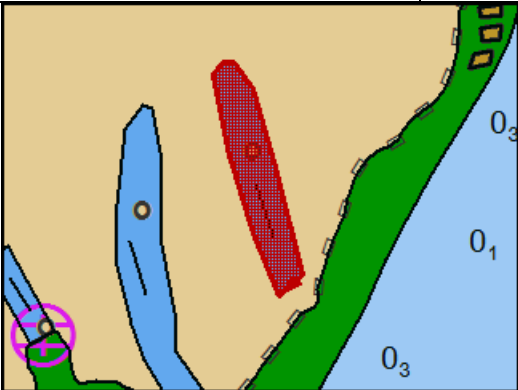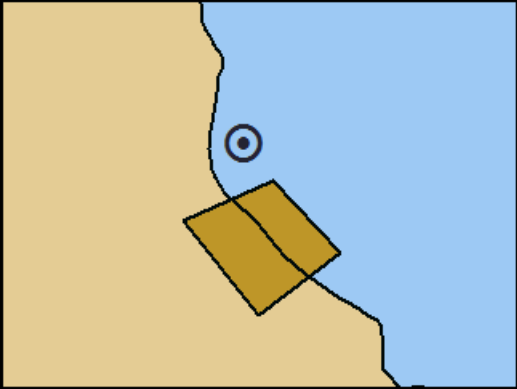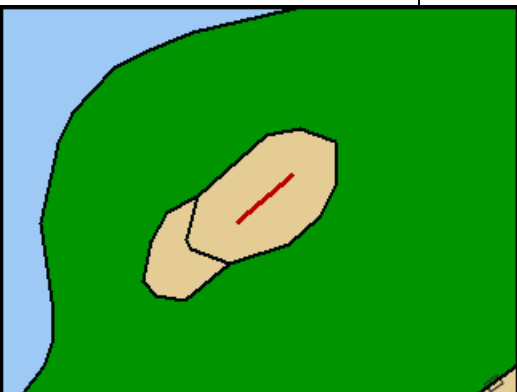|				
Screen Capture				
Expected test results	T0045: A warning "edge is shared by two linear objects of the same class 'slcons' with different attribute values" must be triggered.			
Secondary Errors	None			
Test Case No. 2	BERTHS, CBLOHD, CBLSUB, CONVYR, DWRTCL, FERYRT, MARCUL, MORFAC, NAVLNE, PIPSOL, RCRTCL, RECTRC objects captured with same shared geometry with different attribute values.			
Location	All objects except DWRTCL are at 32°23'03.63"S 60°40'59.84"E. DWRTCL is at 32°22'21.55"S 60°43'26.88"E.	**S57 Encoding**	BERTHS (L) BERTHS (L) CBLOHD (L) CBLOHD (L) CBLSUB (L) CBLSUB (L) CONVYR (L) CONVYR (L) DWRTCL (L) DWRTCL (L) FERYRT (L) FERYRT (L) MARCUL (L) MARCUL (L) MORFAC (L) MORFAC (L) NAVLNE (L) NAVLNE (L) PIPSOL (L) PIPSOL (L) RCRTCL (L) RCRTCL (L) RECTRC (L) RECTRC (L)	OBJNAM=A OBJANM=B VERCLR=12 VERSCA=UNKNOWN VERCLR=10 VERSCA=UNKNOWN CATCBL=empty CATCBL=1 VERCLR=12 VERCLR=10 TRAFIC=3 TRAFIC=4 CATFRY=1 CATFRY=2 CATMFA=1 CATMFA=2 CATMOR=1 CATMOR=2 CATNAV=UNKNOWN CATNAV=1 CATPIP=empty CATPIP=6 OBJNAM=A OBJNAM=B TRAFIC=3 TRAFIC=4

Screen Capture	
Expected test results	T0045: A warning "edge is shared by two linear objects of the same class 'slcons' with different attribute values" must not be triggered.
Secondary Errors	None

Dataset Name	AA500001	**S-58 test No.**	T0050		**Type**	W

S-58 Description	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.					

Test Case No. 1	Navigation line and recommended track not captured as straight line.					

Location	32°23'42.74"S 60°41'30.46"E	**S57 Encoding**	NAVLNE RECTRC	CATNAV=3 ORIENT=55 CATTRK=1 ORIENT=55 TRAFIC=3

Screen Capture	
Expected test results	T0050: A warning "'navlne' does not form a straight line" must be triggered. T0050: A warning "'rectrc' does not form a straight line" must be triggered.
Secondary Errors	None

Dataset Name	AA500001	**S-58 test No.**	T0051		**Type**	W

S-58 Description	Check that no edge is shared by a COALNE object and a SLCONS object of type line, or by a COALNE object and a SLCONS object of type area covered by a LNDARE, and having WATLEV undefined or encoded with the values (2) [always dry] or (1) [partly submerged at high water].					

Test Case No. 1	Coast line and shoreline construction line captured using same edge.					

Location	32°22'24.92"S 60°42'58.86"E	**S57 Encoding**	COALNE (L) SLCONS (L)	WATLEV=2
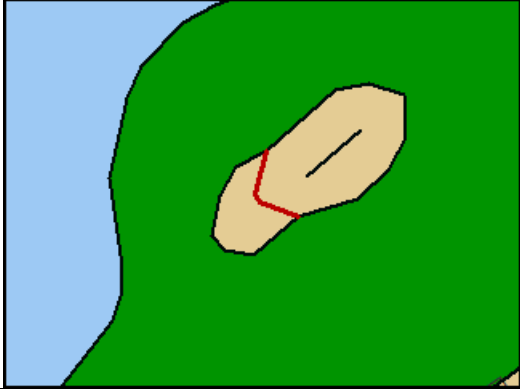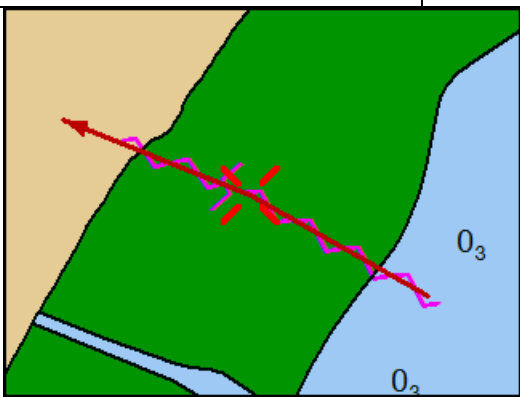
Screen Capture	
Expected test results	T0051: A warning "edge is shared by a COALNE and a line SLCONS" must be triggered.
Secondary Errors	None

Test Case No. 2	Shoreline construction area captured over land area and bounded by a coast line.			
Location	32°22'25.63"S 60°42'58.54"E	**S57 Encoding**	COALNE (L) SLCONS (A)	WATLEV=1

Screen Capture	
Expected test results	T0051: A warning "no edge should be shared by a COALNE and an area SLCONS, which is covered by a LNDARE" must be triggered.
Secondary Errors	None

Test Case No. 3	Shoreline construction area captured over land area and bounded by coast line.			
Location	32°22'26.55"S 60°42'58.21"E	**S57 Encoding**	COALNE (L) SLCONS (A)	WATLEV=2

Screen Capture	
Expected test results	T0051: A warning "edge should be shared by a COALNE and an area SLCONS, which is covered by a LNDARE" must be triggered.
Secondary Errors	None
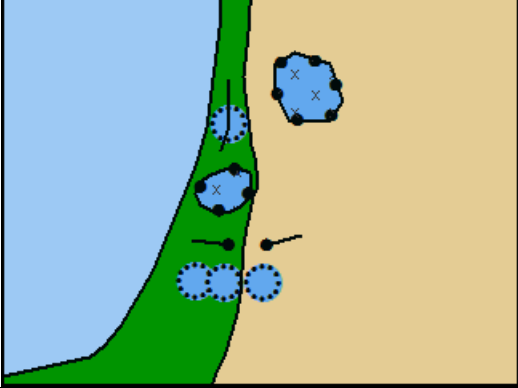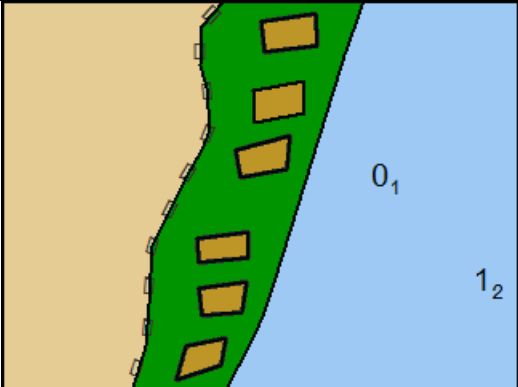
Test Case No. 4	Shoreline construction area captured over land area and bounded by coast line.			
Location	32°22'27.17"S 60°42'57.87"E	**S57 Encoding**	COALNE (L) SLCONS (A)	WATLEV=undefined
Screen Capture				
Expected test results	T0051: A warning "edge should be shared by a COALNE and an area SLCONS, which is covered by a LNDARE" must be triggered.			
Secondary Errors	None			

Dataset Name	AA500001	**S-58 test No.**	T0055	**Type**	W
S-58 Description	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, DOCARE, LOKBSN or CANALS object.				
Test Case No. 1	LNDARE (P) & LNDARE (L) captured on LNDARE (A).				
Location	32°23'36.67"S 60°40'38.65"E	**S57 Encoding**	LNDARE (A) LNDARE (P) LNDARE (L)		
Screen Capture					
Expected test results	T0055: 2 warning "object within prohibited area <Land area>" must be triggered.				
Secondary Errors	None				
Test Case No. 2	LNDARE (L & P) inside a LAKARE area.				
Location	32°23'43.21"S 60°40'38.94"E	**S57 Encoding**	LAKARE (A) LNDARE (L) LNDARE (P)		
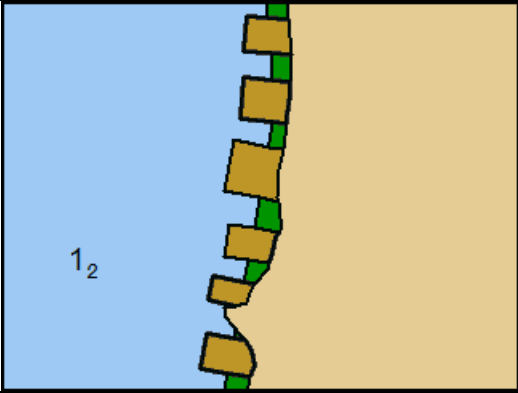
Screen Capture	
Expected test results	T0055: A warning "object within prohibited area" must not be triggered.
Secondary Errors	None

Test Case No. 3	LNDARE (L & P) inside RIVERS area		
Location	32°23'40.30"S 60°40'45.62"E	**S57 Encoding**	RIVERS (A) LNDARE (L) LNDARE (P)
Screen Capture			
Expected test results	T0055: A warning "object within prohibited area" must not be triggered.		
Secondary Errors	None		

Test Case No. 4	LNDARE (L & P) inside DOCARE		
Location	32°23'41.91"S 60°40'42.25"E	**S57 Encoding**	DOCARE (A) LNDARE (L) LNDARE (P)
Screen Capture			
Expected test results	T0055: A warning "object within prohibited area" must not be triggered.		
Secondary Errors	None		
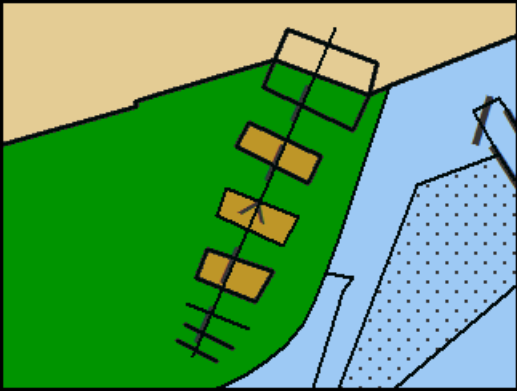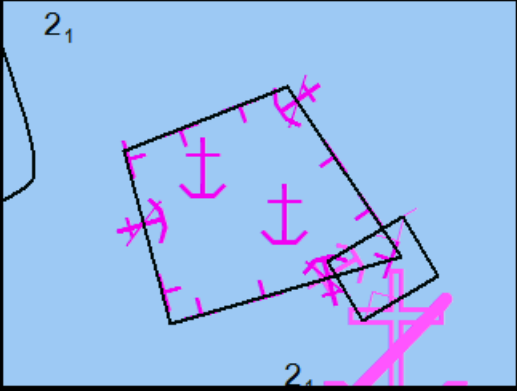
Test Case No. 5	LNDARE (L & P) are captured inside LOKBSN.			
Location	32°23'45.60"S 60°40'33.96"E	**S57 Encoding**	LOKBSN (A) LNDARE (L) LNDARE (P)	
Screen Capture				
Expected test results	T0055: A warning "object within prohibited area" must not be triggered.			
Secondary Errors	None			
Test Case No. 6	LNDARE (L & P) inside CANALS.			
Location	32°23'39.20"S 60°40'49.22"E	**S57 Encoding**	CANALS (A) LNDARE (L) LNDARE (P)	
Screen Capture				
Expected test results	T0055: A warning "object within prohibited area" must not be triggered.			
Secondary Errors	None			
Dataset Name	AA500001	**S-58 test No.**	T0056	**Type**	W
S-58 Description	Check that any BUAARE object is covered by a LNDARE object of type Area, or is coincident with a LNDARE of type point.			
Test Case No. 1	A BUAARE area and point are captured in a depth area.			
Location	32°23'21.91"S 60°40'58.16"E	**S57 Encoding**	BUAARE (A & P)	
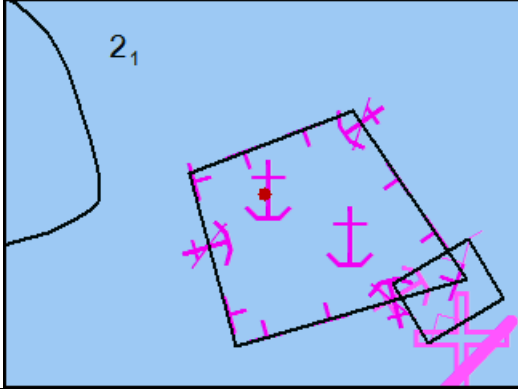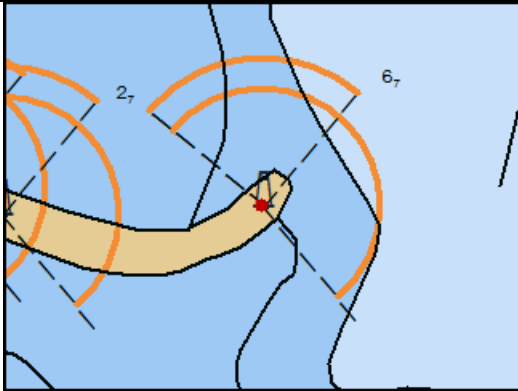
Screen Capture					
Expected test results	T0056: Two warnings "object is not covered by a mandatory 'lndare'" must be triggered.				
Secondary Errors	None				
Dataset Name	AA500001	**S-58 test No.**	T0057	**Type**	W
S-58 Description	Check for any COALNE object which does not share spatial geometry with a LNDARE or SLCONS object with CONDTN = 1 [under construction] or 3 [under reclamation] or 5 [planned construction], 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.				
Test Case No. 1	COALNE captured within a LNDARE area.				
Location	32°23'47.09"S 60°40'58.42"E	**S57 Encoding**	COALNE (L) LNDARE (A)		
Screen Capture					
Expected test results	T0057: A warning "coast line without land area" must be triggered.				
Secondary Errors	None				
Test Case No. 2	COALNE between two LNDARE areas.				
Location	32°23'47.26"S 60°40'58.12"E	**S57 Encoding**	COALNE (L) LNDARE (A)		
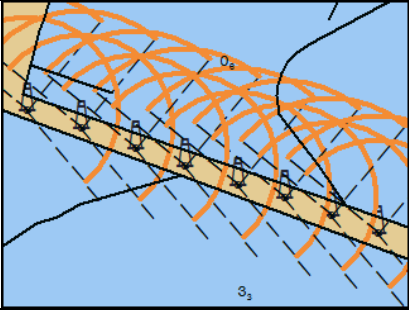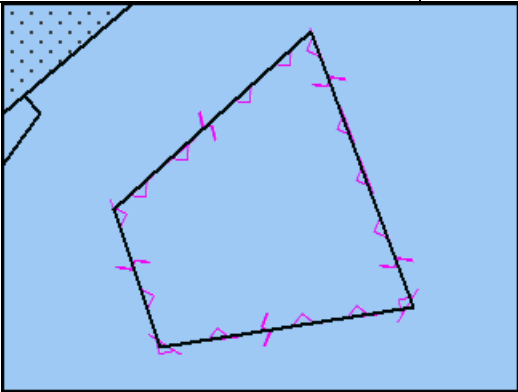
Screen Capture	
Expected test results	T0057: A warning "coast line with two land areas" must be triggered.
Secondary Errors	None

Dataset Name	AA500001	**S-58 test No.**	T0060	**Type**	W
S-58 Description	Check that no CBLSUB object is situated within a LNDARE object of type Area.				
Test Case No. 1	A submarine cable is captured overlapping a LNDARE (A).				
Location	32°22'13.74"S 60°43'09.53"E	**S57 Encoding**	CBLSUB (L) LNDARE (A)		
Screen Capture					
Expected test results	T0060: A warning "object within prohibited area" must be triggered.				
Secondary Errors	None				

Dataset Name	AA500001	**S-58 test No.**	T0061	**Type**	W
S-58 Description	Check for any object with 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.				
Test Case No. 1	OBSTRN (L) captured in intertidal area OBSTRN (L) captured on land area OBSTRN (P) captured in intertidal area				

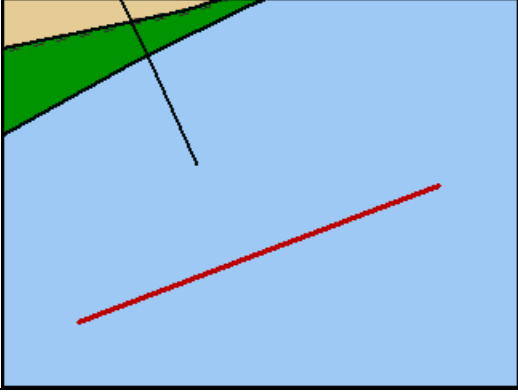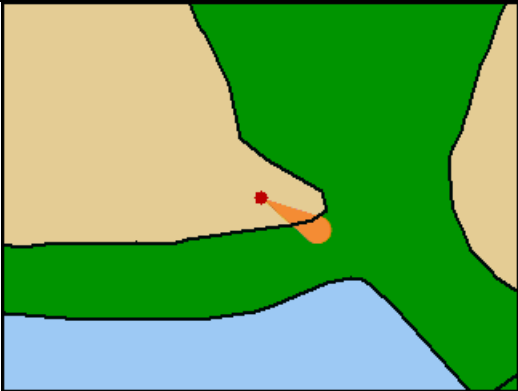|	OBSTRN (P) captured on LNDARE (A) OBSTRN (P) captured on LNDARE (L) OBSTRN (P) captured on LNDARE (P) OBSTRN (A) captured on LNDARE (A) OBSTRN (A) captured over intertidal area			
Location	32°23'45.48"S 60°40'59.79"E	**S57 Encoding**	OBSTRN (L) OBSTRN (A) OBSTRN (P)	WATLEV=3 WATLEV=3 WATLEV=3
Screen Capture				
Expected test results	T0061: Eight warnings that "underwater object in intertidal area or land area" must be triggered.			
Secondary Errors	None			
Dataset Name	AA500001	**S-58 test No.**	T0062	**Type** W
S-58 Description	Check for all PONTON, HULKES or FLODOC objects of type Area that no edge of their limits shares the geometry of a line COALNE or SLCONS object, except when this edge also shares the geometry of a LNDARE object of type Area.			
Test Case No. 1	Captured PONTON, HULKES and FLODOC areas bounded by SLCONS and COALNE.			
Location	32°23'34.61"S 60°40'55.99"E	**S57 Encoding**	PONTON (A) HULKES (A) FLODOC (A) COALNE (L) SLCONS (L)	 WATLEV = 2
Screen Capture				
Expected test results	T0062: Three warnings "'coalne' bounds a prohibited object" must be triggered. T0062: Three warnings "'slcons' bounds a prohibited object" must be triggered.			
Secondary Errors	T0057: Three additional warnings "coast line without land area" must be triggered related to the feature objects created.			
Test Case No. 2	Captured PONTON (A) bounded by COALNE and one edge shared by LNDARE Captured P			
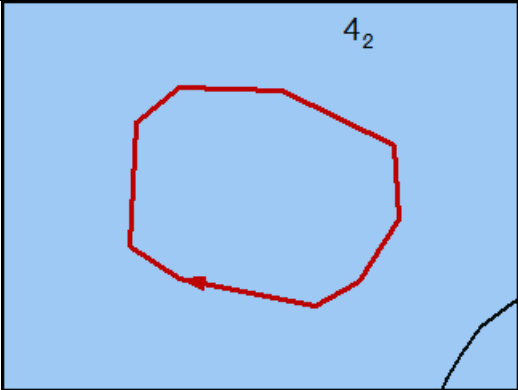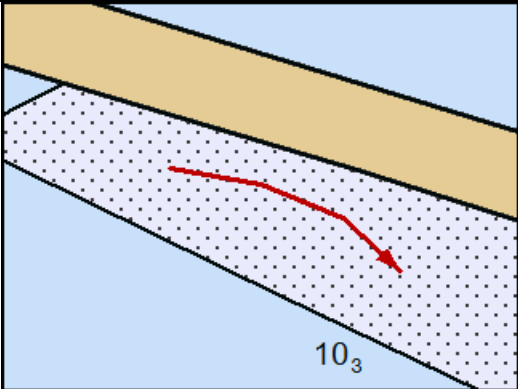
	ONTON (A) bounded by SLCONS and one edge shared by LNDARE Captured HULKES (A) bounded by COALNE and one edge shared by LNDARE Captured HULKES (A) bounded by SLCONS and one edge shared by LNDARE Captured FLODOC (A) bounded by COALNE and one edge shared by LNDARE Captured FLODOC (A) bounded by SLCONS and one edge shared by LNDARE				
Location	32°23'34.50"S 60°41'01.21"E	**S57 Encoding**	PONTON (A) HULKES (A) FLODOC (A) COALNE (L) SLCONS (L) LNDARE	WATLEV = 2	
Screen Capture					
Expected test results	T0062: Three warnings "'coalne' bounds a prohibited object" must not be triggered. T0062: Three warnings "'slcons' bounds a prohibited object" must not be triggered.				
Secondary Errors	None				

Dataset Name	AA500001	**S-58 test No.**	T0063	**Type**	E
S-58 Description	Check that no RECTRC object overlaps or intersects a linear or area object LNDARE, PONTON, HULKES, FLODOC or any other object having WATLEV = 1 [partly submerged at high water] or 2 [always dry].				
Test Case No. 1	Recommended track captured overlapping LNDARE, PONTON, HULKES, FLODOC and SLCONS.				
Location	32°23'40.46"S 60°42'27.51"E	**S57 Encoding**	SLCONS (A) SLCONS (A) RECTRC (L) LNDARE (A) PONTON (A) HULKES (A) FLODOC (A) LNDARE (L) PONTON (L) FLODOC (L)	WATLEV = 1 WATLEV = 2	

Screen Capture	
Expected test results	T0063: Two errors "object overlaps the prohibited 'lndare'" must be triggered. T0063: Two errors "object overlaps the prohibited 'slcons'" must be triggered. T0063: Two errors "object overlaps the prohibited 'ponton'" must be triggered. T0063: Two errors "object overlaps the prohibited 'flodoc'" must be triggered. T0063: An error "object overlaps the prohibited 'hulkes'" must be triggered.
Secondary Errors	None

Dataset Name	AA500001	**S-58 test No.**	T0064	**Type**	W
S-58 Description	Check that no point or area ACHARE object (except with the value CATACH = 8 [small craft mooring area]) is situated within or overlaps another object with attribute RESTRN containing value 1 [anchoring prohibited].				
Test Case No. 1	Anchorage area and point objects captured overlapping with restricted area.				
Location	32°23'45.56"S 60°43'15.85"E	**S57 Encoding**	ACHARE (P) ACHARE (A) RESARE (A)	RESTRN = 1	
Screen Capture					
Expected test results	T0064: Two warnings "object is covered by prohibited 'resare'" must be triggered.				
Secondary Errors	None				
Test Case No. 2	Anchorage point captured inside restricted area.				
Location	32°23'44.74"S 60°43'14.15"E	**S57 Encoding**	RESARE (A) ACHARE (P)	RESTRN = 1 CATACH = 8	

Screen Capture	
Expected test results	T0064: A warning "object is covered by prohibited 'resare'" must not be triggered.
Secondary Errors	None

Dataset Name	AA500001	**S-58 test No.**	T0065	**Type**	W

S-58 Description	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 containing at least one of values 4 [not in use], 6 [reserved], 11 [extinguished].
Test Case No. 1	Two lights captured with same attributes but different sector values.

Location	32°23'34.89"S 60°43'16.29"E	**S57 Encoding**	LIGHTS	COLOUR=1 LITCHR=2 SECTR1=130 SECTR2=220 SIGGRP=(2) SIGPER=6
			LIGHTS	COLOUR=1 LITCHR=2 SECTR1=130 SECTR2=320 SIGGRP=(2) SIGPER=6

Screen Capture	
Expected test results	T0065: A warning "sector conflict in lights" must be triggered.
Secondary Errors	None
Test Case No. 2	Eight lights (each 2 lights placed at same location with overlapping sectors) with difference in

		attributes: CATLIT, EXCLIT, LITCHR, SIGPER and SIGGRP.			
Location	32°23'34.27"S 60°43'11.63"E	**S57 Encoding**	LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS LIGHTS	CATLIT=12 CATLIT=13 EXCLIT=2 EXCLIT=3 LITCHR=2 LITCHR=3 SIGGRP=(2) SIGGRP=(3) SIGPER=4 SIGPER=6 STATUS=4 STATUS=4 STATUS=6 STATUS=6 STATUS=11 STATUS=11	
Screen Capture					
Expected test results	T0065: 8 warnings "sector conflict in lights" must not be triggered.				
Secondary Errors	None				

Dataset Name	AA500001	**S-58 test No.**		T0067	**Type**	W
S-58 Description	Check that no object is duplicated (same class, same attribute description and same geometry).					
Test Case No. 1	Two cable areas captured with same geometry, same class and same attributes.					
Location	32°23'45.85"S 60°42'33.35"E	**S57 Encoding**	CBLARE (A)	CATCBL=1		
Screen Capture						
Expected test results	T0067: A warning "identical to 'cblare'" must be triggered.					
Secondary Errors	None					
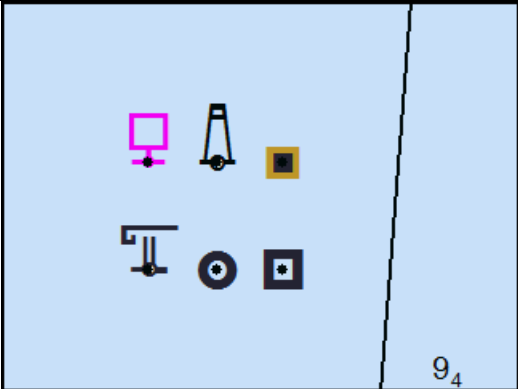
Dataset Name	AA500001		S-58 test No.	T0070		Type	E
S-58 Description	Check that all line DEPARE objects coincide with a Group 1 boundary.						
Test Case No. 1	Linear depth area object captured inside a depth area.						
Location	32°23'45.20"S 60°41'18.43"E		**S57 Encoding**	DEPARE (L)			
Screen Capture							
Expected test results	T0070: An error "linear 'depare' not between TG1 objects" must be triggered.						
Secondary Errors	None						

Dataset Name	AA500001		S-58 test No.	T0072		Type	W
S-58 Description	Check that no loop exists in the graph of hierarchical relationships (e.g. no master object is slave of its own slave).						
Test Case No. 1	Circular master-slave relation created between 3 LIGHTS.						
Location	32°23'39.65"S 60°41'30.07"E		**S57 Encoding**	LIGHTS (3x)			
Screen Capture							
Expected test results	T0072: Three warnings "circular dependency in object hierarchy" must be triggered.						
Secondary Errors	T0517: Three additional errors "there is only one master relationship per collection feature – all others must be slaves" must be triggered related to the feature objects created.						

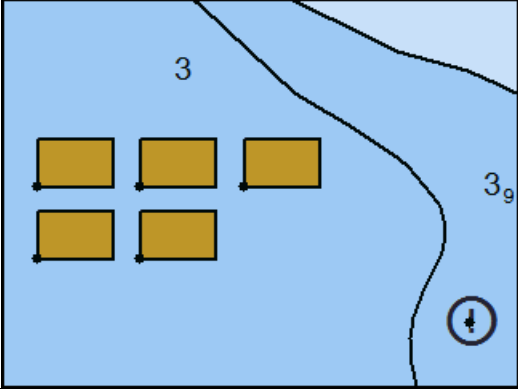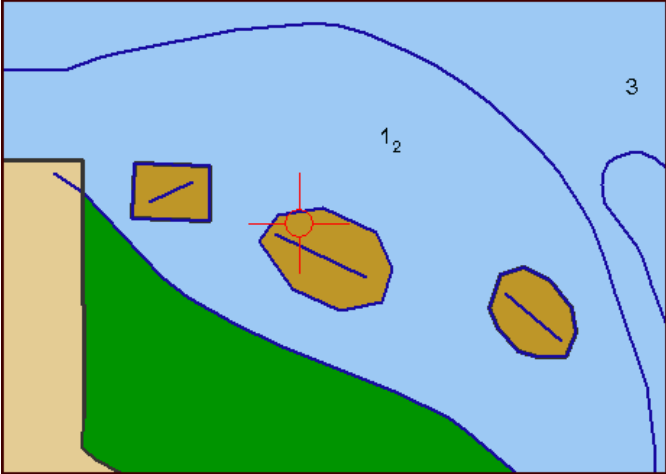| Dataset Name	AA500001		S-58 test No.	T0074		Type	E
S-58 Description	Check for any floating DEPCNT object (i.e. does not share any edge with a Group 1 object) which is within an area DEPARE object, that DRVAL2 >VALDCO >DRVAL1. Remark: This check must only be applied if both DRVAL1 and DRVAL2 for the DEPARE object are encoded with explicit and different attribute values.						

Test Case No. 1	Captured floating depth contour whose values is not within the limits of surrounding depth area.			
Location	32°23'46.28"S 60°42'44.72"E	**S57 Encoding**	DEPCNT DEPARE	VALDCO=1.8 DRVAL1=3.6 DRVAL2=5.4

Screen Capture	
Expected test results	T0074: An error "depth contour value does not agree with surrounding 'depare'" must be triggered.
Secondary Errors	T0043: One additional warning "depth contour without depth area" must be triggered related to the feature objects created.

Dataset Name	AA500001	**S-58 test No.**	T0075		**Type**	W
S-58 Description	Check for any floating DEPCNT object (i.e. 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.					
Test Case No. 1	Captured floating depth contour whose values is not within the limits of surrounding dredged area.					
Location	32°23'35.32"S 60°43'27.49"E	**S57 Encoding**	DEPCNT DRGARE	VALDCO=20 DRVAL1=20		

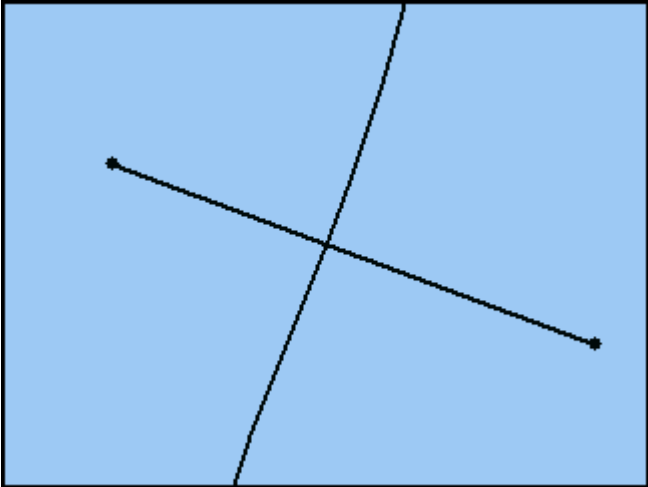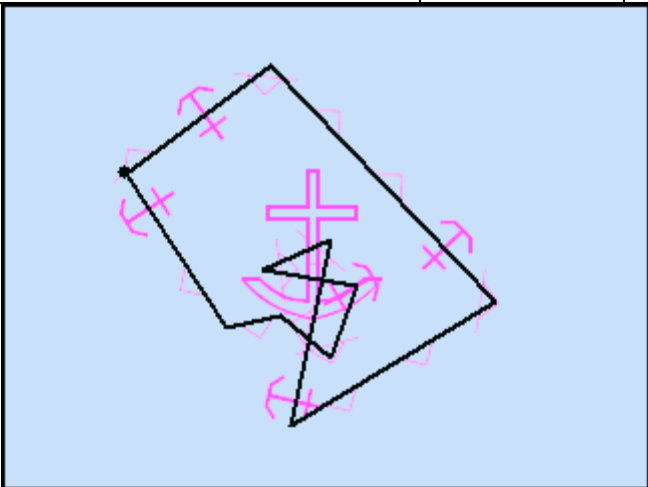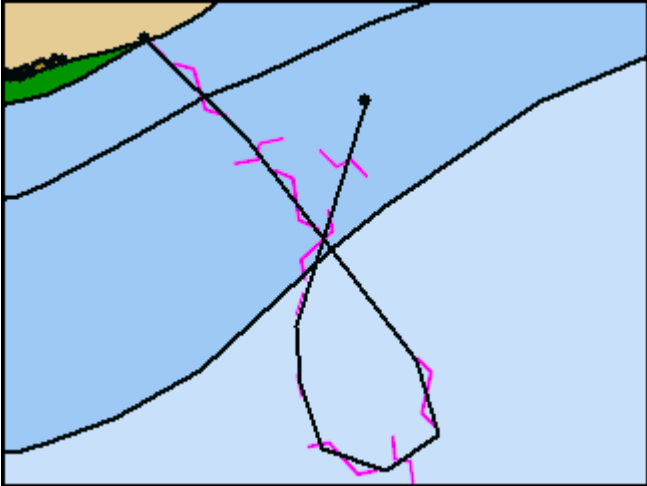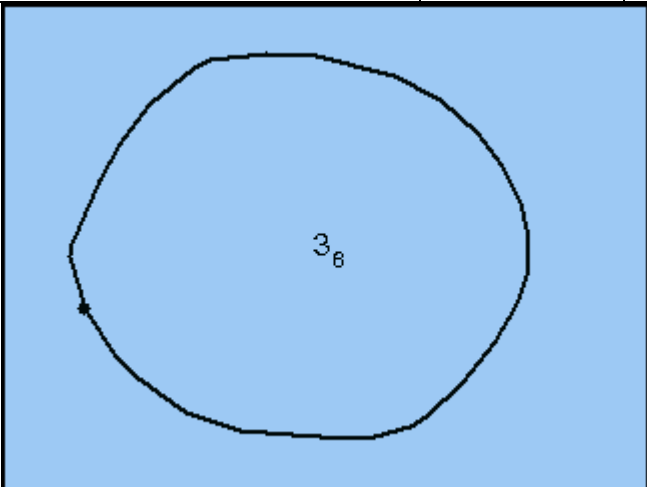|	
Screen Capture	
Expected test results	T0075: A warning "depth contour value does not agree with surrounding 'drgare'" must be triggered.
Secondary Errors	None

Test Dataset:AA500002

List of S58 Recommended ENC Validation Checks covered in this section:

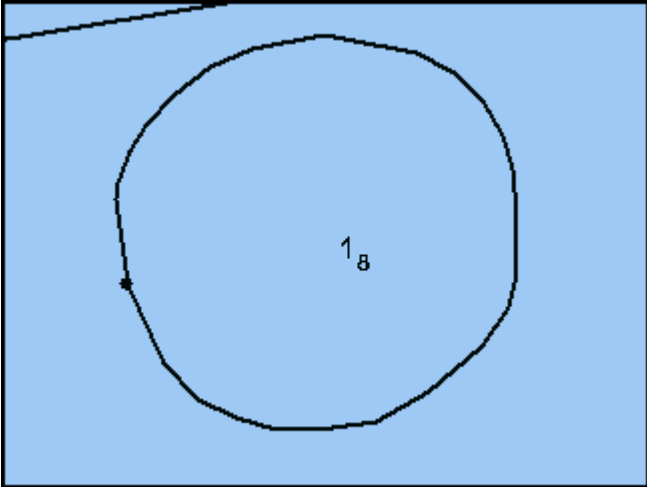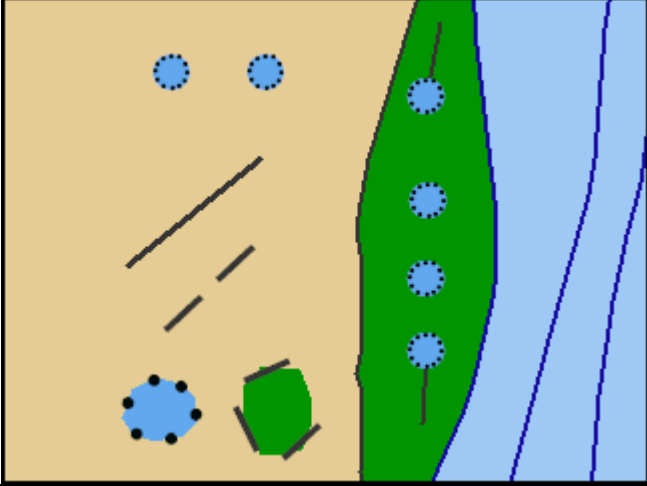| S58 Test	Description

54	Check for any CRANES, BUISGL, FORSTC, LNDMRK or SILTNK object, and for any DAYMAR object which is not a slave in a master/slave relationship:
	• if it is of type Area, that it is covered by a LNDARE, BRIDGE, FLODOC, OFSPLF or PONTON object of type Area,
	• if it is of type Point, that:
	  - it is situated within a LNDARE, BRIDGE, FLODOC, OFSPLF or PONTON object of type Area, or
	  - it is coincident with one LNDARE, PILPNT, PYLONS, OFSPLF, SLCONS or UWTROC object of type Point, or
	  - it is situated on a COALNE, DAMCON, BRIDGE, FLODOC, LNDARE, PONTON or SLCONS object of type Line.

76	Check that no DEPCNT object is within a FLODOC, HULKES, LNDARE or PONTON object of type Area.
77	Check that no DEPCNT object crosses another DEPCNT object.
78	Check for any area object that no boundary crosses itself.
79	Check for any line object that no component edges of a line object cross without a connected node at the crossing point.
81	Check that no spot sounding coincides with another spot sounding (of the same or different depth).

93	Check for any object with WATLEV = 4 [covers and uncovers] or 5 [awash]:
	• 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.

500	Check that all data are within the cell limits.
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: CRANES, FLODOC, FORSTC, FSHFAC, HULKES, PONTON, OBSTRN, PYLONS, SILTNK and WRECKS objects must be considered as possible structure objects, in addition to the list given in Annex A (12.1.1).
519	Check Group 1 coverage and consistency.
544	Check that any area covered by a M_COVR object with CATCOV = 2 [no coverage available] does not contain any other object.
549	Check that all DEPARE and DRGARE objects are covered by M_QUAL objects without gaps or overlaps.
550	Check that any UNSARE object that contains or is partly covered by a DEPCNT, OBSTRN, SOUNDG, UWTROC or WRECKS object is covered by M_QUAL objects without gaps or overlaps.
557	Check that any SIGSEQ attribute value conforms to the correct structure (i.e. string content in accordance with format specification).
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.
559	Check that no STATUS attribute value contains an impossible combination: • 1 [permanent] with at least one of 2 [occasional], 5 [periodic/intermittent], 7 [temporary]; • 3 [recommended] with at least one of 4 [not in use],11 [extinguished]; • 4 [not in use] with at least one of 5 [periodic/intermittent], 9 [mandatory]; • 5 [periodic/intermittent] with 11 [extinguished]; • 9 [mandatory] with 11 [extinguished]; • 16 [watched] with 17 [un-watched]; • 8 [private] with 14 [public].
1524	Check that no M_QUAL object contains the attribute DRVAL1, unless a swept area occupies the entire M_QUAL object.
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, GATCON, DAMCON. • area objects: M_COVR, GATCON, DAMCON, RIVERS, TUNNEL, DRYDOC, CANALS, LAKARE, LOKBSN, DOCARE, LNDARE. • area objects with WATLEV = 1 [partly submerged at high water], 2 [always dry] or 6 [subject to inundation or flooding]: CAUSWY, SLCONS, MORFAC, WRECKS, OBSTRN, PYLONS.
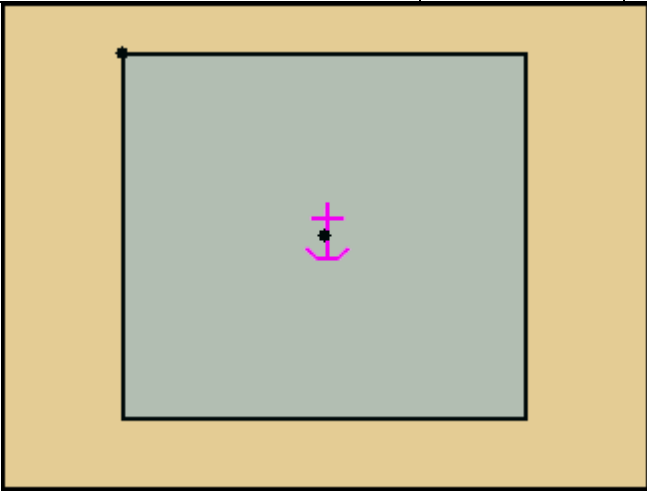
Dataset Name	AA500002		S-58 test No.	T0054	Type	W

S-58 Description	Check for any CRANES, BUISGL, FORSTC, LNDMRK or SILTNK object, and for any DAYMAR object which is not a slave in a master/slave relationship:
	• if it is of type Area, that it is covered by a LNDARE, BRIDGE, FLODOC, OFSPLF or PONTON object of type Area,
	• if it is of type Point, that:
	  - it is situated within a LNDARE, BRIDGE, FLODOC, OFSPLF or PONTON object of type Area, or
	  - it is coincident with one LNDARE, PILPNT, PYLONS, OFSPLF, SLCONS or UWTROC object of type Point, or
	  - it is situated on a COALNE, DAMCON, BRIDGE, FLODOC, LNDARE, PONTON or SLCONS object of type Line.

Test Case No. 1	CRANES, BUISGL, FORSTC, LNDMRK, SILTNK and DAYMAR objects captured over DEPARE.

Location	32°21'59.99"S 60°43'32.77"E	**S-58 test No.**	CRANES (P) BUISGL (P) FORSTC (P) LNDMRK (P) SILTNK (P) DAYMAR (P)

Screen Capture	
Expected test results	T0054: 6 warnings "object is not covered by a mandatory 'object' "must be triggered.
Secondary errors	T1775: One additional warning "Navigational aid structure as master in DAYMAR" must be triggered related to the daymar created.
Test Case No. 2	CRANES, BUISGL, FORSTC, LNDMRK and SILTNK objects captured over DEPARE.

Location	32°22'07.45"S 60°43'33.15"E	**S-58 test No.**	CRANES (A) BUISGL (A) FORSTC (A) LNDMRK (A) SILTNK (A)

Screen Capture	
Expected test results	T0054: Five warnings "object is not covered by a mandatory 'object' "must be triggered.
Secondary errors	None

Dataset Name	AA500002	**S-58 test No.**	T0076	**Type**	E
S-58 Description	Check that no DEPCNT object is within a FLODOC, HULKES, LNDARE or PONTON object of type Area.				
Test Case No. 1	Depth contour captured in Floating dock area Depth contour captured in Hulk area Depth contour captured in Land area Depth contour captured in Pontoon area				
Location	32°22'36.74"S 60°43'46.83"E	**S57 Encoding**	DEPCNT(L) FLODOC (A) HULKES(A) PONTON(A) LNDARE(A)	VALDCO=0	
Screen Capture					
Expected test results	T0076: An error "object is covered by prohibited flodoc" must be triggered. T0076: An error "object is covered by prohibited hulkes" must be triggered. T0076: An error "object is covered by prohibited lndare" must be triggered. T0076: An error "object is covered by prohibited ponton" must be triggered.				
Secondary errors	T0043: Four additional warnings "depth contour without depth area" must be triggered related to the feature objects created.				

Dataset Name	AA500002	**S-58 test No.**	T0077	**Type**	E
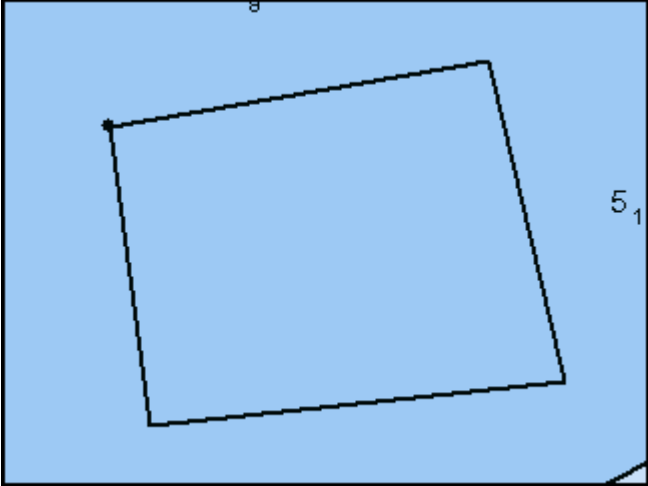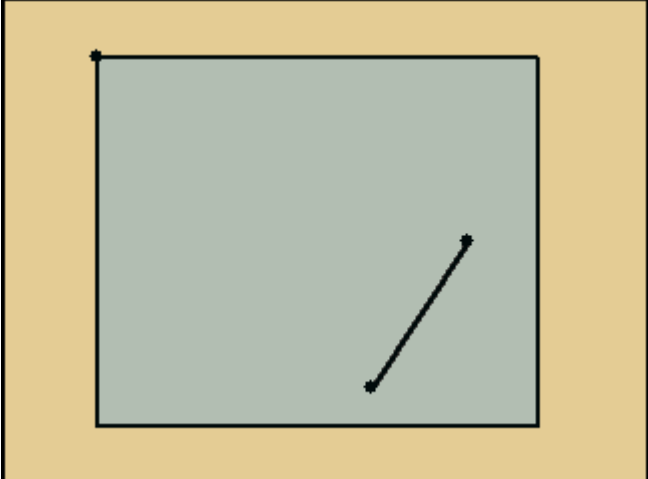
S-58 Description	Check that no DEPCNT object crosses another DEPCNT object.				
Test Case No. 1	Depth contour line captured over another depth contour.				
Location	32°22'24.54"S 60°43'42.38"E	**S57 Encoding**	DEPCNT(L)		
Screen Capture					
Expected test results	T0077: An error "depth contour crosses another depth contour" must be triggered.				
Secondary errors	T0043: One additional warning "depth contour without depth area" must be triggered related to the feature objects created. T0074: Two additional errors "Check for any floating DEPCNT object (i.e. does not share any edge with a Group 1 object) which is within an area DEPARE object, that DRVAL2 >VALDCO >DRVAL1" must be triggered related to the feature objects created.				

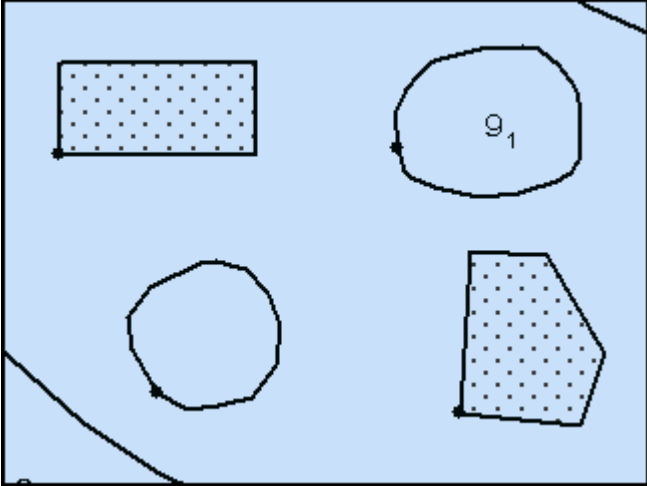|					
Dataset Name	AA500002	**S-58 test No.**	T0078	**Type**	E
S-58 Description	Check for any area object that no boundary crosses itself.				
Test Case No. 1	Anchorage area captured.				
Location	32°23'00.57"S 60°43'55.06"E	**S57 Encoding**	ACHARE (A)		
Screen Capture					
Expected test results	T0078: An error "contour is self-crossed" must be triggered.				
Secondary errors	T0080: One additional error "Check that no area feature has incorrect topology" must be triggered related to the feature objects created.				

Dataset Name	AA500002		S-58 test No.	T0079		Type	W
S-58 Description	Check for any line object that no component edges of a line object Cross without a connected node at the crossing point.						
Test Case No. 1	Cable submarine line captured.						
Location	32°23'28.19"S 60°43'37.52"E		**S57 Encoding**	CBLSUB(L)			
Screen Capture							
Expected test results	T0079: A warning "linear object crosses itself" must be triggered.						
Secondary errors	None						

Dataset Name	AA500002		S-58 test No.	T0081		Type	E
S-58 Description	Check that no spot sounding coincides with another spot sounding (of the same or different depth).						
Test Case No. 1	Two soundings captured with same value on same spatial position.						
Location	32°22'29.75"S 60°43'44.81"E		**S57 Encoding**	SOUNDG	Depth = 3.6		
Screen Capture							
Expected test results	T0081: An error "sounding is identical to 3D Edge sounding" must be triggered.						
Secondary errors	T0067: One additional warning "Check that no object is duplicated (same class, same attribute description and same geometry)" must be triggered related to the feature objects created.						

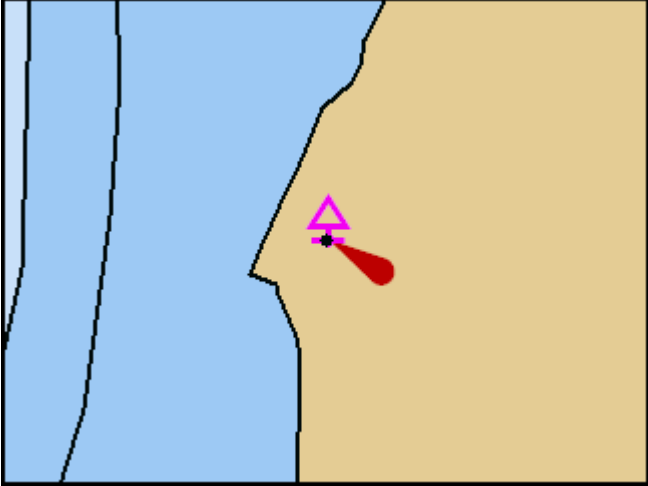| Test Case No. 2	Two soundings captured with different values on same spatial position.			
Location	32°22'32.94"S 60°43'36.70"E	**S57 Encoding**	SOUNDG	Depths are 1.5 and 1.8m

Screen Capture	

Expected test results	T0081: An error "sounding position coincides with 3D Edge sounding" must be triggered.
Secondary errors	None

Dataset Name	AA500002	S-58 test No.	T0093	Type	W

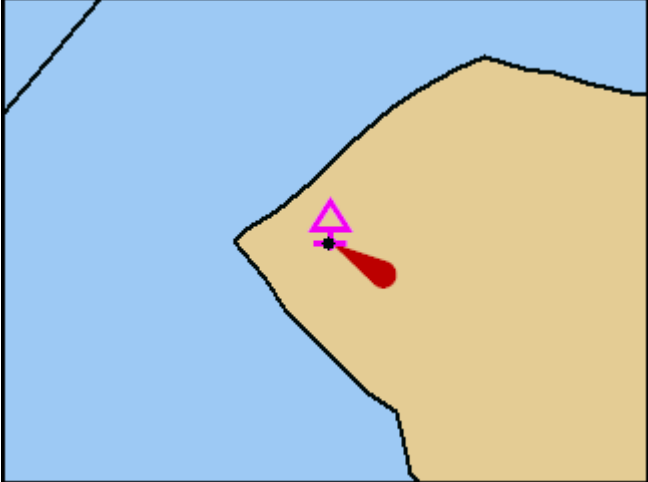| **S-58 Description**	Check for any object with WATLEV = 4 [covers and uncovers] or 5 [awash]: • if it is of type Line or Area, that: - it is not within or overlaps a LNDARE object of type Area, • if it is of type Point, that: - it is not within a LNDARE object of type Area, or - it is not coincident with a LNDARE object of type point, or - it is not situated on a LNDARE object of type line.		
Test Case No. 1	SLCONS (L) `s captured on LNDARE (A) OBSTRN (A)`s captured on LNDARE (A) OBSTRN (P)`s captured on LNDARE (A) OBSTRN (P)`s captured on LNDARE (P) OBSTRN (P)`s captured on LNDARE (L)		
Location	32°22'51.64"S 60°43'42.38"E	**S57 Encoding**	SLCONS (L) WATLEV = 4 SLCONS (L) WATLEV = 5 OBSTRN (A) WATLEV = 4 OBSTRN (A) WATLEV = 5 OBSTRN (P) x 3 WATLEV = 4 OBSTRN (P) x 3 WATLEV = 5 LNDARE (L) LNDARE (P)

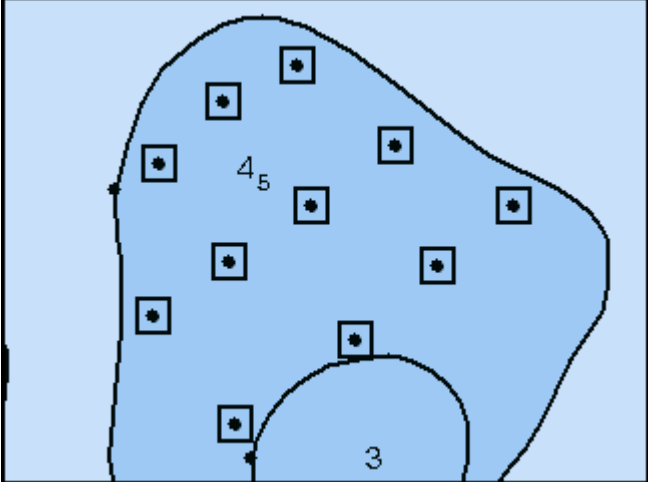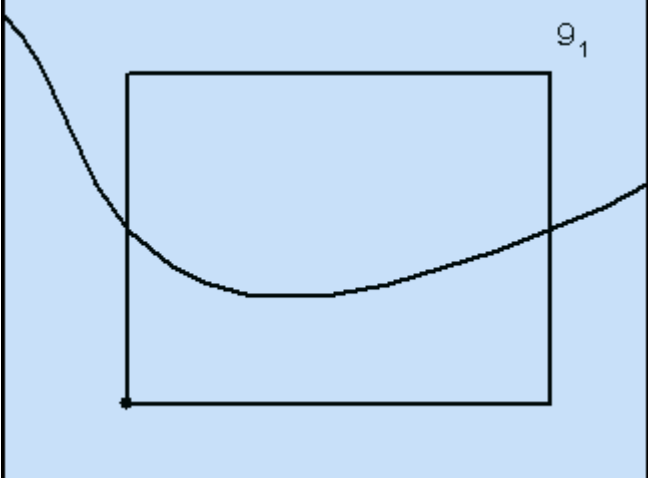| Screen Capture					
Expected test results	T0093: Five warnings "awash object in land area" must be triggered. T0093: Five warnings "'covers and uncovers' object in land area" must be triggered.				
Secondary errors	None				
Dataset Name	AA500002	**S-58 test No.**	T0500	**Type**	E
S-58 Description	Check that all data are within the cell limits.				
Test Case No. 1	Anchorage area point captured inside No coverage area.				
Location	32°22'59.82"S 60°43'36.51"E	**S57 Encoding**	M_COVR (A) ACHARE (P)	CATCOV=2	
Screen Capture					
Expected test results	T0500: An error "object is not within TG1 area" must be triggered.				
Secondary errors	T0544: One additional error "Check that any area covered by a M_COVR object with CATCOV = 2 [no coverage available] does not contain any other object" must be triggered related to the feature objects created. T0019: Five additional warnings "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]" must be triggered related to the feature objects created.				

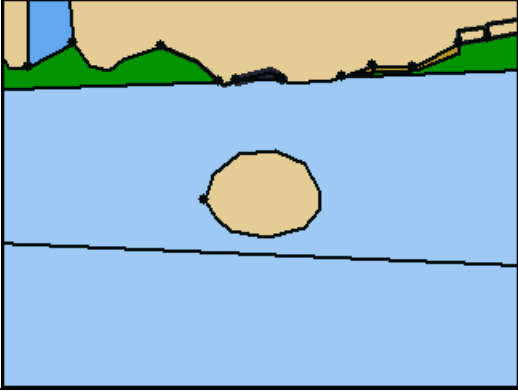| Dataset Name	AA500002		**S-58 test No.**	T0516		**Type**	W
S-58 Description	Check that all master/slave relations are valid. • If the master object is of type point, check that the slave object is sharing the same node as the master object. • If the master object is of type line, check that the slave 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: CRANES, FLODOC, FORSTC, FSHFAC, HULKES, PONTON, OBSTRN, PYLONS, SILTNK and WRECKS objects must be considered as possible structure objects, in addition to the list given in Annex A (12.1.1).						
Test Case No. 1	SILTNK (P) with LIGHTS captured on different spatial positions. SILTNK (A) with LIGHTS captured on different spatial positions. SLCONS (L) with LIGHTS captured on different spatial positions.						
Location	32°23'22.34"S 60°43'42.01"E		**S57 Encoding**	LNDMRK (P) SILTNK (A) SLCONS (L) LIGHTS (P)			
Screen Capture							
Expected test results	T0516: Three warnings "master and its slave do not share geometry" must be triggered.						
Secondary errors	T1723: One additional error "Check that all point objects comprising a navigational aid are pointing to the same point spatial object" must be triggered related to the feature objects created.						
Dataset Name	AA500002		**S-58 test No.**	T0519		**Type**	E
S-58 Description	Check Group 1 coverage and consistency.						
Test Case No. 1	Unsurveyed area captured inside depth area.						
Location	32°22'23.07"S 60°43'51.68"E		**S57 Encoding**	UNSARE (A)			

Screen Capture					
Expected test results	T0519: An error "object is overlapped by next DEPARE (excluded from testing)" must be triggered. T0519: An error "is overlapped by previous UNSARE" must be triggered.				
Secondary errors	T0042: One additional error "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]" must be triggered related to the feature objects created.				
Dataset Name	AA500002	**S-58 test No.**	T0544	**Type**	E
S-58 Description	Check that any area covered by a M_COVR object with CATCOV = 2 [no coverage available] does not contain any other object.				
Test Case No. 1	Shoreline construction line captured inside No coverage area.				
Location	32°22'42.10"S 60°43'39.05"E	**S57 Encoding**	M_COVR(A) SLCONS(L)	CATCOV=2	
Screen Capture					
Expected test results	T0544: An error "object in no data area" must be triggered.				
Secondary errors	T0019: Five additional warnings "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]" must be triggered related to the feature objects created.				
Dataset Name	AA500002	**S-58 test No.**	T0549	**Type**	E

S-58 Description	Check that all DEPARE and DRGARE objects are covered by M_QUAL objects without gaps or overlaps.				
Test Case No. 1	DEPARE, DRGARE and M_QUAL areas captured.				
Location	32°22'06.47"S 60°43'55.38"E	**S57 Encoding**	M_QUAL (A) DRGARE (A) DEPARE (A)		
Screen Capture					
Expected test results	T0549:Four errors "object is not properly covered by M_QUAL" must be triggered.				
Secondary errors	None				
Dataset Name	AA500002	**S-58 test No.**	T0550	**Type**	W
S-58 Description	Check that any UNSARE object that contains or is partly covered by a DEPCNT, OBSTRN, SOUNDG, UWTROC or WRECKS object is covered by M_QUAL objects without gaps or overlaps.				
Test Case No. 1	DEPCNT (L), OBSTRN (P, A & L), SOUNDG, UWTROC, WRECKS (P & A) captured on two UNSARE (A) `s (one is overlapping of M_QUAL and another one is without M_QUAL)".				
Location	32°22'17.09"S 60°43'39.01"E	**S57 Encoding**	UNSARE (A) M_QUAL (A) SOUNDG (P) WRECKS (P,A) UWTROC (P) OBSTRN (P,A,L)		
Screen Capture					
Expected test results	T0550: Two warnings "object is not properly covered by M_QUAL" must be triggered.				

Secondary errors	T0043: One additional warning "depth contour without depth area" must be triggered related to the feature objects created.
	T0074: One additional error "Check for any floating DEPCNT object (i.e. does not share any edge with a Group 1 object) which is within an area DEPARE object, that DRVAL2 >VALDCO >DRVAL1" must be triggered related to the feature objects created.

Dataset Name	AA500002	S-58 test No.	T0557	Type	E
S-58 Description	Check that any SIGSEQ attribute value conforms to the correct structure (i.e. string content in accordance with format specification).				
Test Case No. 1	Light with attribute SIGSEQ captured.				
Location	32°22'28.07"S 60°45'55.16"E	**S57 Encoding**	DAYMAR LIGHTS	SIGSEQ= 0.4+(03.6)	
Screen Capture					
Expected test results	T0557: An error "bad format of 'sigseq'" must be triggered.				
Secondary errors	None				

Dataset Name	AA500002	S-58 test No.	T0558	Type	E
S-58 Description	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.				
Test Case No. 1	Light with attributes SIGSEQ and SIGPER captured.				
Location	32°22'38.69"S 60°45'45.93"E	**S57 Encoding**	DAYMAR LIGHTS	SIGPER= 1 SIGSEQ= 00.4+(03.6)	

Screen Capture	
Expected test results	T0558: An error "sum of 'sigseq' is not equal to 'sigper'" must be triggered.
Secondary errors	None

Dataset Name	AA500002	**S-58 test No.**	T0559	**Type**	W

S-58 Description	Check that no STATUS attribute value contains an impossible combination: • 1 [permanent] with at least one of 2 [occasional], 5 [periodic/intermittent], 7 [temporary]; • 3 [recommended] with at least one of 4 [not in use],11 [extinguished]; • 4 [not in use] with at least one of 5 [periodic/intermittent], 9 [mandatory]; • 5 [periodic/intermittent] with 11 [extinguished]; • 9 [mandatory] with 11 [extinguished]; • 16 [watched] with 17 [un-watched]; • 8 [private] with 14 [public].
Test Case No. 1	Offshore platform points captured with attributes.

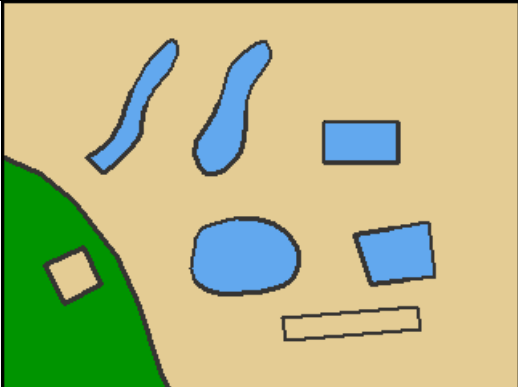|				
Location	32°23'12.30"S 60°43'53.63"E	**S57 Encoding**	OFSPLF(P)	STATUS=1,2 STATUS=1,5 STATUS=1,7 STATUS=3,4 STATUS=3,11 STATUS=4,5 STATUS=4,9 STATUS=5,11 STATUS=9,11 STATUS=16,17 STATUS=8,14

Screen Capture	
Expected test results	T0559: Eleven warnings "values of list attribute 'status' conflicts with other values" must be triggered.
Secondary errors	T2000: Eight additional warnings "meaningless value of 'status' in Offshore platform" must be triggered related to the feature objects created.

Dataset Name	AA500002	**S-58 test No.**	T1524	**Type**	E
S-58 Description	Check that no M_QUAL object contains the attribute DRVAL1, unless a swept area occupies the entire M_QUAL object.				
Test Case No. 1	M_QUAL (A) captured with attribute DRVAL1.				

Location	32°23'32.25"S 60°43'36.20"E	**S57 Encoding**	M_QUAL(A)	DRVAL1=50
Screen Capture				
Expected test results	T1524: An error: "meaningless value of 'drval1' in Quality of data" must be triggered.			
Secondary errors	None			

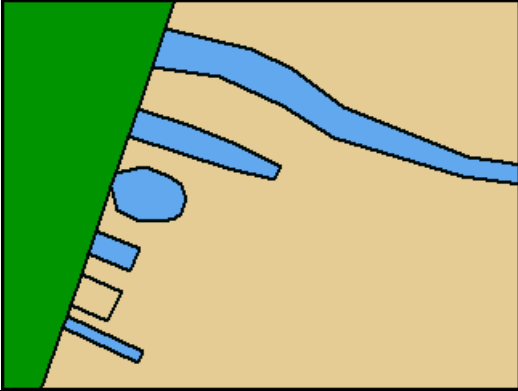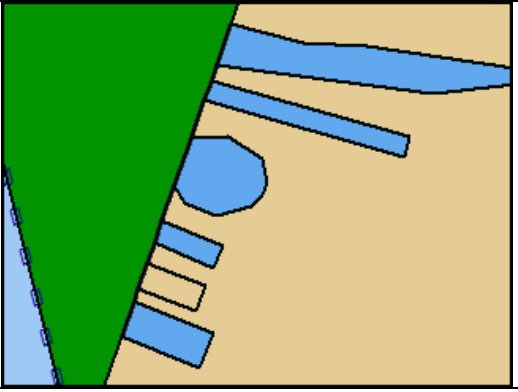| **Dataset Name**	AA500002	**S-58 test No.**	T1565	**Type**	W
S-58 Description	Check for all LNDARE objects of type Area that any edge of the limits shares the geometry of at least one object of the following list: • Linear objects: COALNE, SLCONS, GATCON, DAMCON. • Area objects: M_COVR, GATCON, DAMCON, RIVERS, TUNNEL, DRYDOC, CANALS, LAKARE, LOKBSN, DOCARE, LNDARE.				

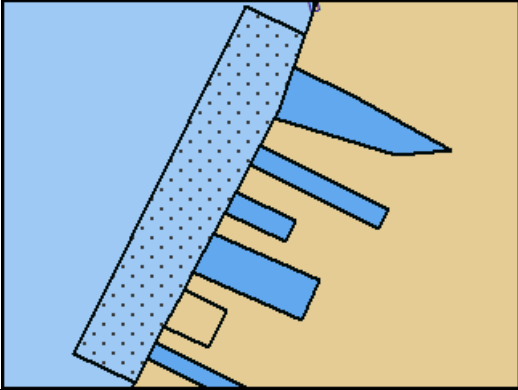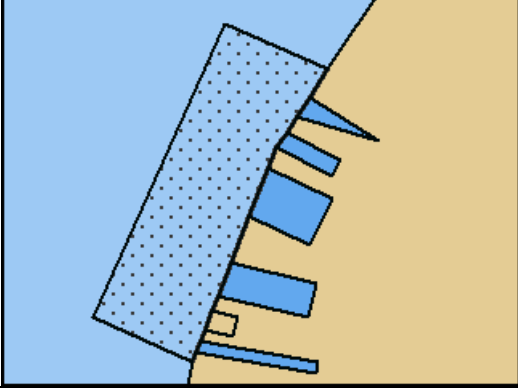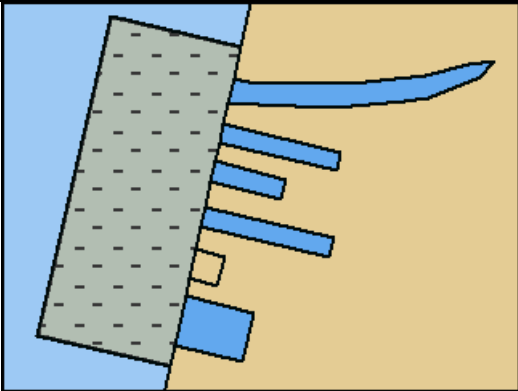|	• Area objects with WATLEV = 1 [partly submerged at high water], 2 [always dry] or 6 [subject to inundation or flooding]: CAUSWY, SLCONS, MORFAC, WRECKS, OBSTRN, PYLONS.		
Test Case No. 1	Captured LNDARE area without being bordered by any of the line objects (COALNE, SLCONS, GATCON, DAMCON) and no area objects (M_COVR, GATCON, DAMCON, RIVERS, TUNNEL, DRYDOC, CANALS, LAKARE, LOKBSN, DOCARE, LNDARE) and also not sharing an edge with area objects whose WATLEV is either 1 or 6.		
Location	32°23'27.59"S 60°43'33.13"E	**S57 Encoding**	LNDARE (A)	
Screen Capture				
Expected test results	T1565: A warning "open border of 'lndare'" must be triggered.		
Secondary errors	None		

Test Dataset:AA500003

List of S58 Recommended ENC Validation Checks covered in this section:

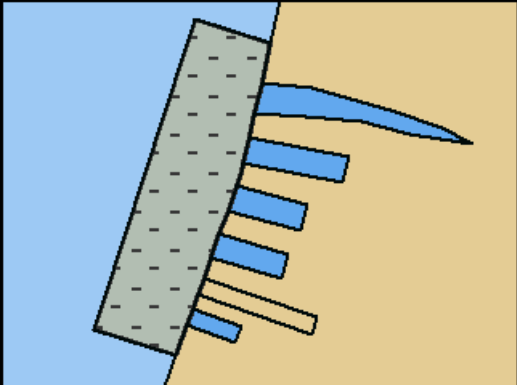| S58 Test	Description
1566	Check that no edge of a COALNE or linear SLCONS object bounds an area RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN object, except when this edge is also shared by a boundary of a DEPARE, DRGARE, UNSARE, PONTON, FLODOC or HULKES object for which the direction of the edge is the opposite of the one encoded for the RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN object (i.e. ...except when this edge separates the area RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN object from an area navigable at compilation scale).
1568	Check that any SLCONS objects of type Area are covered by a LNDARE, DEPARE or UNSARE object of type Area.
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 UNSARE objects of type Area.
1573	Check that any DRYDOC object is covered by a LNDARE object of type Area.
1580	Check that any area GATCON object is covered by a DEPARE or LNDARE object of type Area.
1599	Check that any RAPIDS or WATFAL object is covered by a RIVERS object of type area (or is coincident with a RIVERS object of type line) and a LNDARE or UNSARE object.
1607	Check that any COALNE object adjacent to a VEGATN object with a value of (7) [mangroves] for CATVEG contains a value of (7) [mangrove] for the attribute CATCOA and that the mangrove area's spatial object has a value of (4) [approximate] for the attribute QUAPOS.
1612	Check that any TUNNEL object is covered by LNDARE, DEPARE, UNSARE or DRGARE objects.
1617	Check that any DAMCON object of type Area is covered by a LNDARE object of type Area.
1619	Check that any DYKCON object of type Area is covered by a LNDARE object of type Area.
1648	Check for any DRGARE object, if the attribute QUASOU is encoded, that the value is (10) [maintained depth] or (11) [not regularly maintained].
1649	Check that no DRGARE object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL.
1651	Check that any SWPARE object is covered by DEPARE and/or DRGARE objects of type Area.
1652	Check, for any SWPARE object that shares the same geo-spatial position and geometry as a M_QUAL object, that the values for DRVAL1 on both objects are the same.
1662	Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area.
1670	Check where a WRECKS or OBSTRN area includes other WRECKS or OBSTRN point objects, that the encoded values of the attributes EXPSOU, QUASOU, SOUACC, TECSOU, VALSOU and WATLEV for the area object are identical to the values for the shallowest point object.
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.

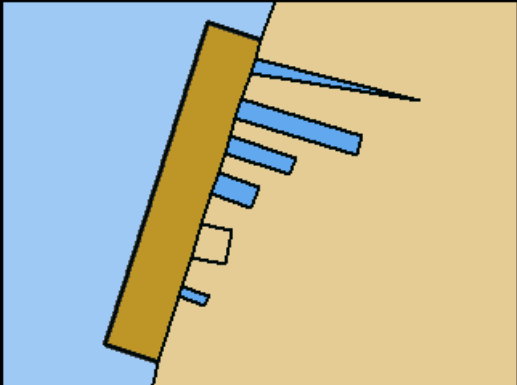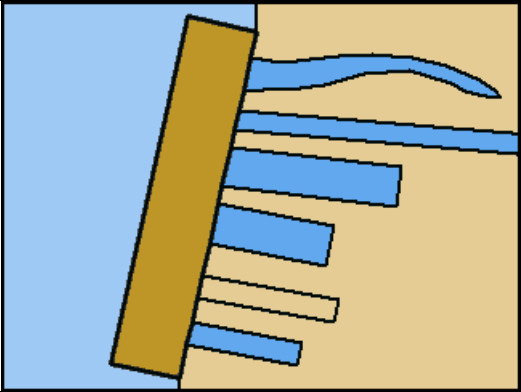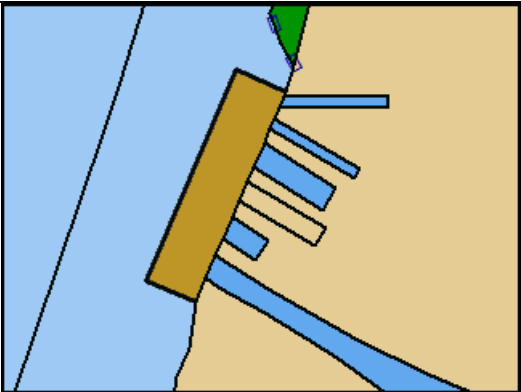| Dataset Name	AA500003			S-58 test No.	T1566	Type	E

S-58 Description	Check that no edge of a COALNE or linear SLCONS object bounds an area RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN object, except when this edge is also shared by a boundary of a DEPARE, DRGARE, UNSARE, PONTON, FLODOC or HULKES object for which the direction of the edge is the opposite of the one encoded for the RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN object (i.e. …except when this edge separates the area RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN object from an area navigable at compilation scale).
Test Case No. 1	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by COALNE\ SLCONS line on LNDARE.

Location	32°22'26.45"S 60°47'57.90"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) SLCONS (L) COALNE (L)	

Screen Capture	

Expected test results	T1566: An error "'canals' is bounded by unexpected object 'slcons'" must be triggered. T1566: An error "'canals' is bounded by unexpected object 'coalne'" must be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'slcons'" must be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must be triggered. T1566: An error "'lakare' is bounded by unexpected object 'slcons'" must be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must be triggered. T1566: An error "'docare' is bounded by unexpected object 'slcons'" must be triggered. T1566: An error "'rivers' is bounded by unexpected object 'slcons'" must be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must be triggered. T1566: An error "'drydock' is bounded by unexpected object 'coalne'" must be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'slcons'" must be triggered.
Secondary errors	T0057: 6 warnings "edge coast line without land area" must be triggered.
Test Case No. 2	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by COALNE with edges shared by DEPARE.

Location	32°22'29.91"S 60°47'55.85"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A)	

		COALNE (L) DEPARE (A)	
Screen Capture			
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.		
Secondary errors	None.		
Test Case No. 3	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by SLCONS line with edges shared by DEPARE.		
Location	32°22'30.78"S 60°47'55.49"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) SLCONS (L) DEPARE (A)
Screen Capture			
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.		
Secondary errors	None.		
Test Case No. 4	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by COALNE with edges shared by DRGARE.		

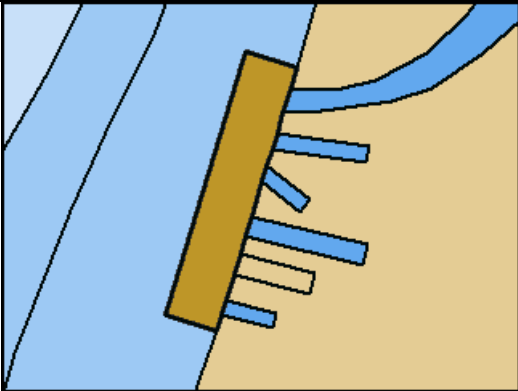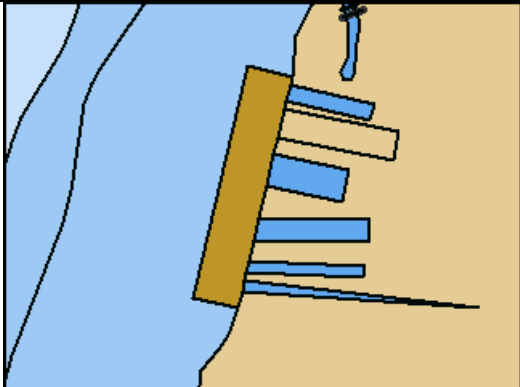| Location	32°22'31.18"S 60°47'55.30"E	S57 Encoding	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) COALNE (L) DRGARE (A)	
Screen Capture				
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.			
Secondary errors	None.			
Test Case No. 5	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by SLCONS line with edges shared by DRGARE.			
Location	32°22'31.87"S 60°47'54.86"E	S57 Encoding	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) SLCONS (L) DRGARE (A)	
Screen Capture				
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'slcons'" must not be triggered.			

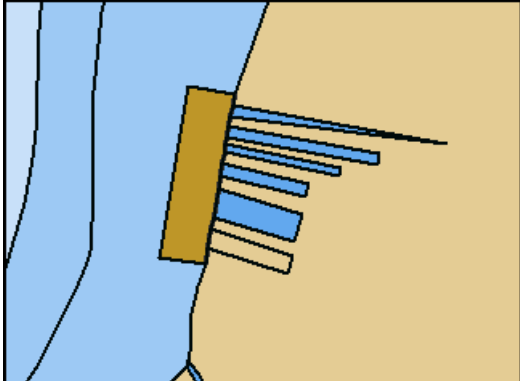|	T1566: An error "'docare' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.
Secondary errors	None.
Test Case No. 6	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by COALNE with edges shared by UNSARE.
Location	32°22'32.45"S 60°47'54.66"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) COALNE (L) UNSARE (A)	
Screen Capture				
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.
Secondary errors	None.
Test Case No. 7	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by SLCONS line with edges shared by UNSARE.
Location	32°22'33.05"S 60°47'54.50"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) SLCONS (L) UNSARE (A)	

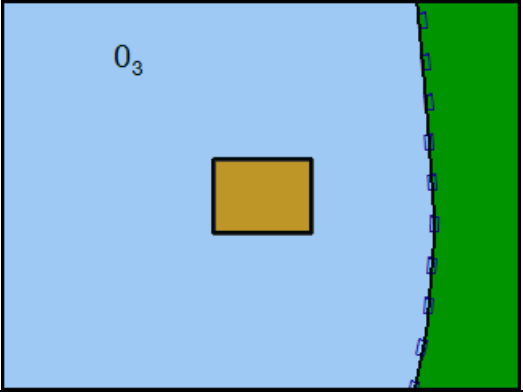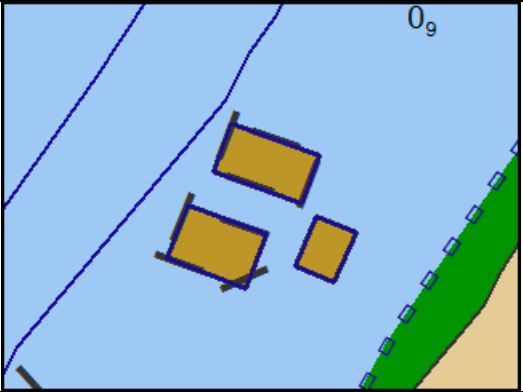|	
Screen Capture	
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'slcons'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object' coalne'" must not be triggered.
Secondary errors	None.
Test Case No. 8	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by COALNE with edges shared by PONTON.

| **Location** | 32°22'33.80"S 60°47'54.20"E | **S57 Encoding** | RIVERS (A)
LAKARE (A)
CANALS (A)
DOCARE (A)
DRYDOC (A)
LOKBSN (A)
COALNE (L)
PONTON (A) | |

Screen Capture	
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.
Secondary errors	None.
Test Case No. 9	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by SLCONS line with edges shared by PONTON.

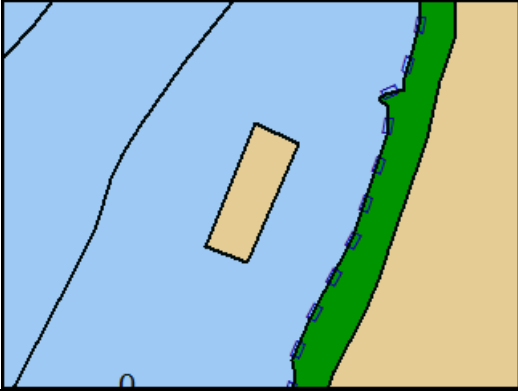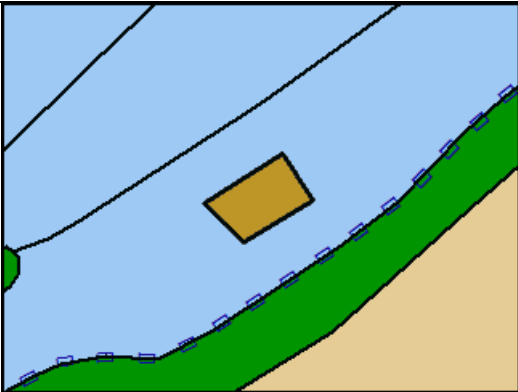|			
Location	32°22'41.38"S 60°47'53.82"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) SLCONS (L) PONTON (A)
Screen Capture			
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.		
Secondary errors	None.		
Test Case No. 10	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by COALNE with edges shared by FLODOC.		
Location	32°22'46.70"S 60°47'51.54"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) COALNE (L) FLODOC (A)
Screen Capture			
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered.		

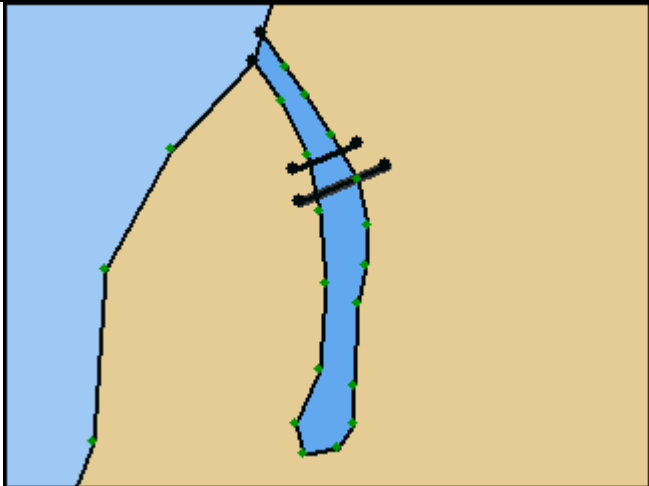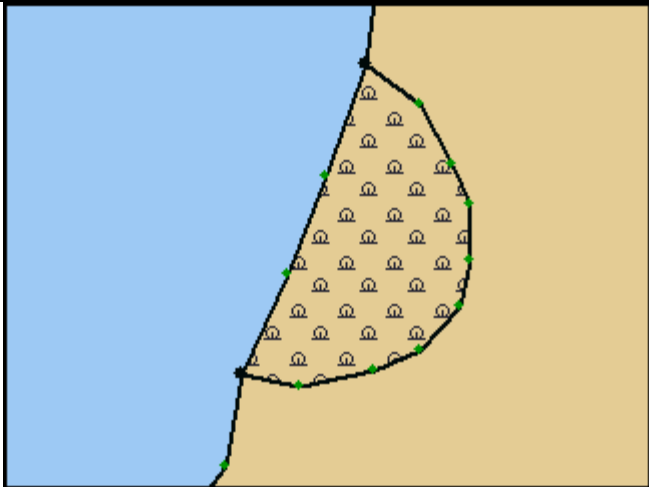|	T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered.
	T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered.
	T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.
Secondary errors	None.
Test Case No. 11	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by SLCONS line with edges shared by FLODOC.

Location	32°22'51.44"S 60°47'49.71"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) SLCONS (L) FLODOC (A)	
Screen Capture				
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.			
Secondary errors	None.			
Test Case No. 12	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by COALNE with edges shared by HULKES.			
Location	32°22'59.12"S 60°47'47.21"E	**S57 Encoding**	RIVERS (A) LAKARE (A) CANALS (A) DOCARE (A) DRYDOC (A) LOKBSN (A) COALNE (L) HULKES (A)	

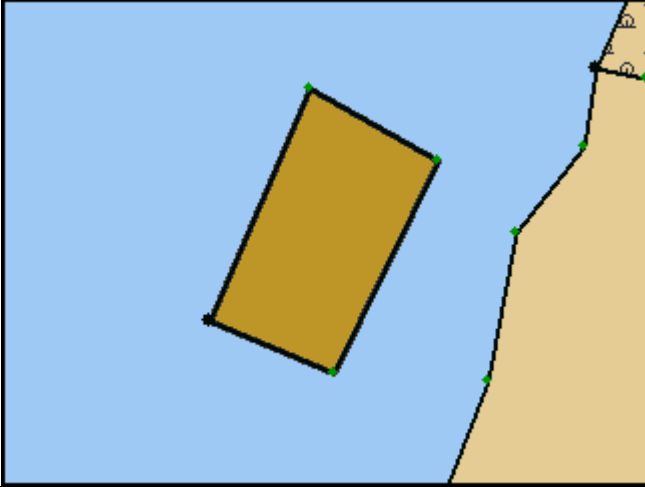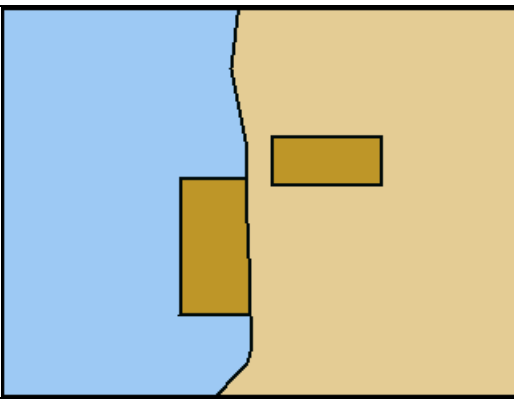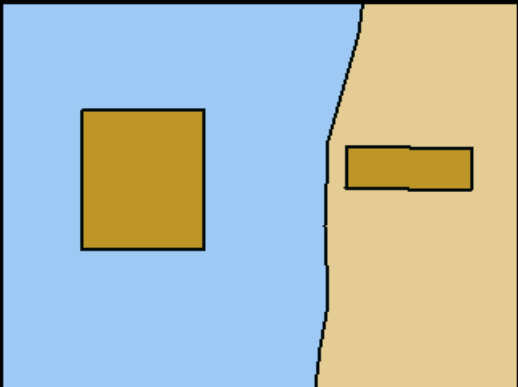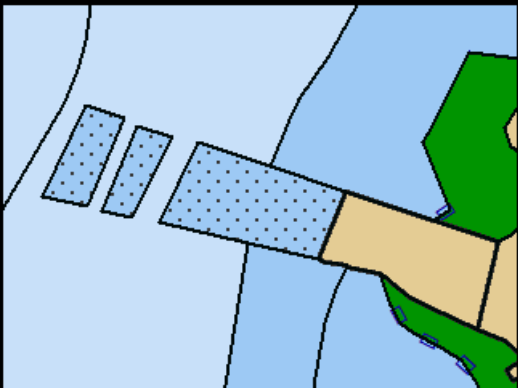|	
Screen Capture	
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.
Secondary errors	None.
Test Case No. 13	Captured RIVERS, CANALS, LAKARE, DOCARE, DRYDOC or LOKBSN areas bounded by SLCONS line with edges shared by HULKES.

| **Location** | 32°22'55.15"S 60°47'48.36"E | **S57 Encoding** | RIVERS (A)
LAKARE (A)
CANALS (A)
DOCARE (A)
DRYDOC (A)
LOKBSN (A)
SLCONS (L)
HULKES (A) | |

Screen Capture	
Expected test results	T1566: An error "'canals' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lokbsn' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'lakare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'docare' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'rivers' is bounded by unexpected object 'coalne'" must not be triggered. T1566: An error "'drydoc' is bounded by unexpected object 'coalne'" must not be triggered.
Secondary errors	None.

| **Dataset Name** | AA500003 | **S-58 test No.** | T1568 | **Type** | E |
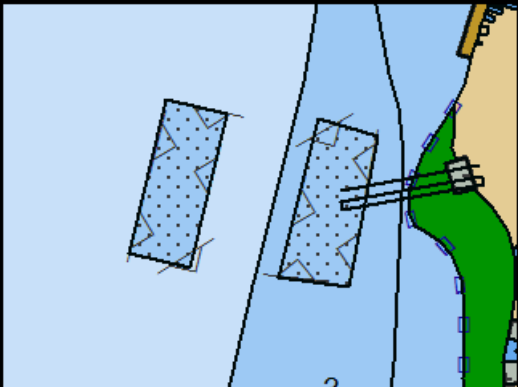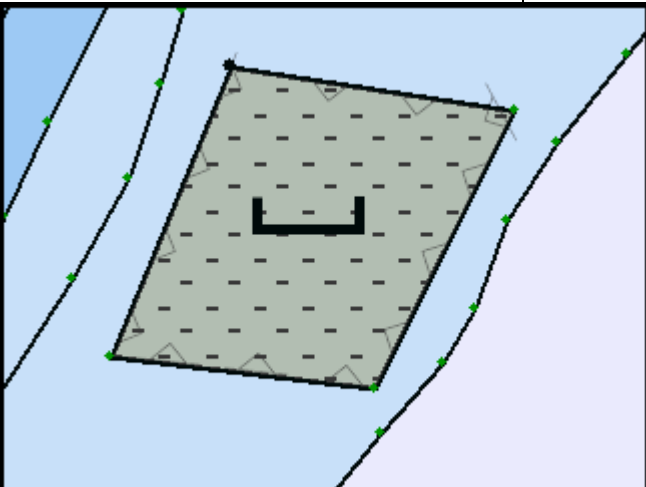
S-58 Description	Check that any SLCONS objects of type Area are covered by a LNDARE, DEPARE or UNSARE object of type Area.			
Test Case No. 1	SLCONS area captured over PONTON area.			
Location	32°22'27.65"S 60°47'56.43"E	**S57 Encoding**	SLCONS(A) PONTON (A)	WATLEV=2
Screen Capture				
Expected test results	T1568: An error "object is covered by prohibited 'ponton'" must be triggered.			
Secondary errors	T1786: A warning "SLCONS Object of type Area with WATLEV=2[always dry] aren't covered by LNDARE" must be triggered.			
Dataset Name	AA500003	**S-58 test No.**	T1569	**Type**	E
S-58 Description	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 UNSARE objects of type Area.			
Test Case No. 1	SLCONS areas captured over PONTON areas.			
Location	32°22'16.70"S 60°48'07.72"E	**S57 Encoding**	PONTON (A) SLCONS (A) SLCONS (A) SLCONS (A)	WATLEV=3 WATLEV=4 WATLEV=5
Screen Capture				
Expected test results	T1569: Three errors "'slcons' is not covered by DEPARE or UNSARE objects" must be triggered.			
Secondary errors	T1568: Three errors "Check that any SLCONS objects of type Area are covered by a LNDARE, DEPARE or UNSARE object of type Area." must be triggered.			
Dataset Name	AA500003	**S-58 test No.**	T1573	**Type**	E
S-58 Description	Check that any DRYDOC object is covered by a LNDARE object of type Area.			
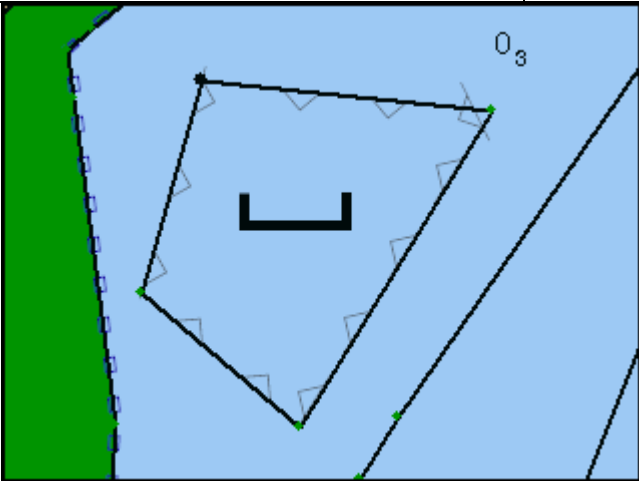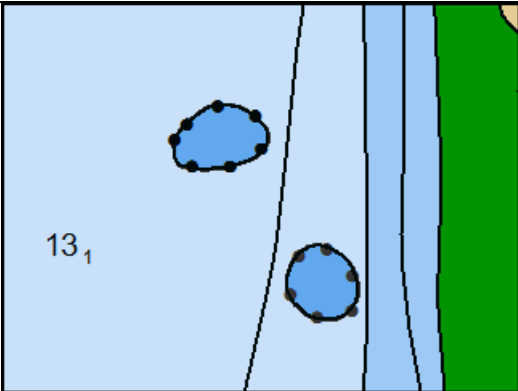
Test Case No. 1	Dry dock object has been captured inside depth area.			
Location	32°22'12.96"S 60°48'09.90"E	**S57 Encoding**	DRYDOC (A)	
Screen Capture				
Expected test results	T1573: An error "object is not covered by a mandatory 'lndare'" must be triggered.			
Secondary errors	None.			

Dataset Name	AA500003	**S-58 test No.**	T1580	**Type**	W
S-58 Description	Check that any area GATCON object is covered by a DEPARE or LNDARE object of type Area.				
Test Case No. 1	GATCON object has been captured inside depth area underneath PONTON area.				
Location	32°22'22.73"S 60°48'00.27"E	**S57 Encoding**	GATCON (A) PONTON (A)		
Screen Capture					
Expected test results	T1580: An error "Check that any area GATCON object is covered by a DEPARE or a LNDARE object of type Area" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500003	**S-58 test No.**	T1599	**Type**	W
S-58 Description	Check that any RAPIDS or WATFAL object is covered by a RIVERS object of type area (or is coincident with a RIVERS object of type line) and a LNDARE or UNSARE object.				
Test Case No. 1	RAPIDS and WATFAL features are captured without completely surrounded by RIVERS.				
Location	32°22'57.60"S 60°47'48.15"E	**S57 Encoding**	RAPIDS (L) WATFAL (L) RIVERS (A)		
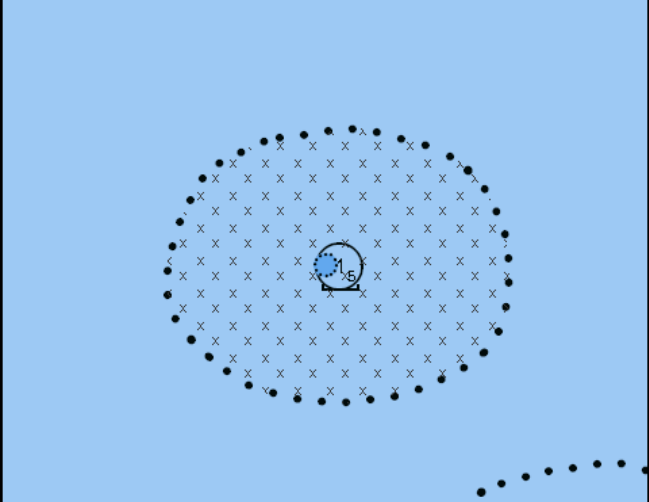
Screen Capture					
Expected test results	T1599: An error "object is not covered by a mandatory 'rivers'" must be triggered. T1599: An error "object is not covered by a mandatory 'lndare'" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500003	**S-58 test No.**	T1607	**Type**	W
S-58 Description	Check that any COALNE object adjacent to a VEGATN object with a value of (7) [mangroves] for CATVEG contains a value of (7) [mangrove] for the attribute CATCOA and that the mangrove area's spatial object has a value of (4) [approximate] for the attribute QUAPOS.				
Test Case No. 1	VEGATN area captured adjacent to COALNE without CATCOA=7				
Location	32°23'02.21"S 60°47'46.23"E	**S57 Encoding**	VEGATN (A) COALNE (L)	CATVEG=7	
Screen Capture					
Expected test results	T1607: A warning "mangroves without 'catcoa:7' or 'quapos:4'" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500003	**S-58 test No.**	T1612	**Type**	W
S-58 Description	Check that any TUNNEL object is covered by LNDARE, DEPARE, UNSARE or DRGARE objects.				
Test Case No. 1	TUNNEL area captured over PONTON area				
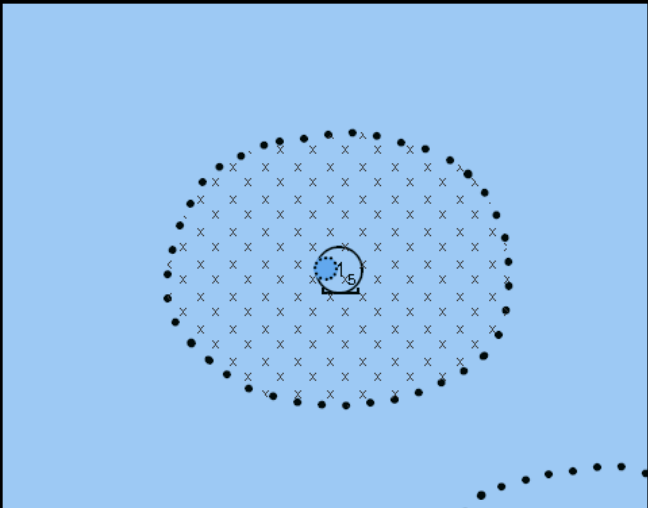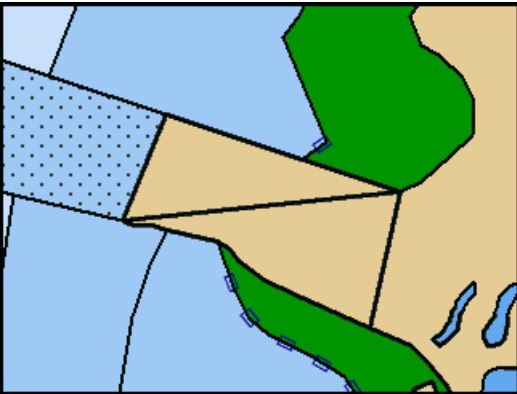
Location	32°23'02.97"S 60°47'45.10"E	**S57 Encoding**	TUNNEL (A) PONTON (A)	

Screen Capture	

Expected test results	T1612: An error "object is not covered by a mandatory 'object'" must be triggered.
Secondary errors	None.

Dataset Name	AA500003	**S-58 test No.**	T1617	**Type**	E
S-58 Description	Check that any DAMCON object of type Area is covered by a LNDARE object of type Area.				
Test Case No. 1	DAMCON area captured on depth area.				
Location	32°23'07.25"S 60°47'45.03"E	**S57 Encoding**	DAMCON (A) DEPARE (A)		

Screen Capture	

Expected test results	T1617: An error "object is not covered by a mandatory 'lndare'" must be triggered.
Secondary errors	None.

Dataset Name	AA500003	**S-58 test No.**	T1619	**Type**	E
S-58 Description	Check that any DYKCON object of type Area is covered by a LNDARE object of type Area.				
Test Case No. 1	DYKCON area captured in DEPARE.				
Location	32°23'05.28"S 60°47'44.15"E	**S57 Encoding**	DYKCON (A) DEPARE (A)		
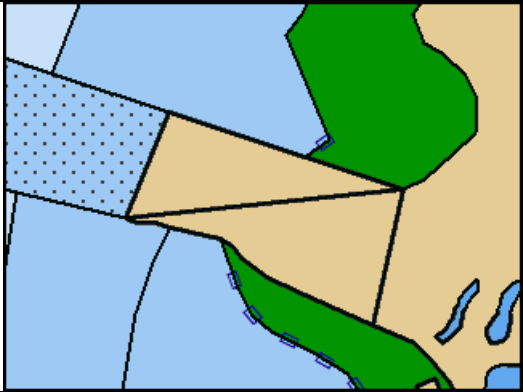
Screen Capture					
Expected test results	T1619: An error "object is not covered by a mandatory 'lndare'" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500003	**S-58 test No.**	T1648	**Type**	E
S-58 Description	Check for any DRGARE object, if the attribute QUASOU is encoded, that the value is (10) [maintained depth] or (11) [not regularly maintained].				
Test Case No. 1	Dredged area with QUASOU captured.				
Location	32°22'25.17"S 60°47'54.40"E	**S57 Encoding**	DRGARE (A)	QUASOU=6	
Screen Capture					
Expected test results	T1648: An error "meaningless value of 'quasou' in Dredged area" must be triggered.				
Secondary errors	T2000: A warning "DRGARE should not have value 6 [least depth known] for QUASOU" must be triggered.				
Dataset Name	AA500003	**S-58 test No.**	T1649	**Type**	E
S-58 Description	Check that no DRGARE object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL.				
Test Case No. 1	A DRGARE and M_QUAL with same SOUACC are captured.				
Location	32°22'35.50"S 60°47'52.58"E	**S57 Encoding**	DRGARE (A) M_QUAL(A) M_QUAL(A)	SOUACC=2 SOUACC=2 SOUACC=1	

Screen Capture					
Expected test results	T1649: Two errors "redundant 'souacc' is defined by 'm_qual'" must be triggered.				
Secondary errors	T1530: An error "The value of SOUACC must not be equal to that of the covering M_QUAL" must be triggered. T1655: "Check that no SWPARE object sharing the same geo-spatial position and geometry as a M_QUAL object contains the attribute POSACC if the SOUACC is encoded." must be triggered.				
Dataset Name	AA500003	**S-58 test No.**	T1651	**Type**	E
S-58 Description	Check that any SWPARE object is covered by DEPARE and/or DRGARE objects of type Area.				
Test Case No. 1	SWAPARE captured over UNSARE.				
Location	32°23'24.99"S 60°49'16.81"E	**S57 Encoding**	SWPARE (A) UNSARE (A)	DRVAL1=1	
Screen Capture					
Expected test results	T1651: An error "'swpare' is not in water" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500003	**S-58 test No.**	T1652	**Type**	E
S-58 Description	Check, for any SWPARE object that shares the same geo-spatial position and geometry as a M_QUAL object, that the values for DRVAL1 on both objects are the same.				
Test Case No. 1	SWPARE and M_QUAL objects with same geometry are captured.				

Location	32°23'31.64"S 60°49'07.44"E	**S57 Encoding**	SWPARE (A)	DRVAL1=2
			M_QUAL (A)	DRVAL1=1

Screen Capture

Expected test results	T1652: An error "spatial conflict between 'drval1' and meta object 'm_qual'" must be triggered.
Secondary errors	None.

Dataset Name	AA500003	**S-58 test No.**	T1662	**Type**	E

S-58 Description	Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area.

Test Case No. 1	WRECKS (A) and OBSTRN (A) captured on PONTON (A).

Location	32°23'15.60"S 60°47'39.19"E	**S57 Encoding**	OBSTRN (A)
			WRECKS (A)
			PONTON (A)

Screen Capture

Expected test results	T1662: Two errors "object is not covered by a mandatory object" must be triggered.
Secondary errors	None.

Dataset Name	AA500003	**S-58 test No.**	T1670	**Type**	W

S-58 Description	Check where a WRECKS or OBSTRN area includes other WRECKS or OBSTRN point objects, that the encoded values of the attributes EXPSOU, QUASOU, SOUACC, TECSOU, VALSOU and WATLEV for the area object are identical to the values for the shallowest point object.

Test Case No. 1	OBSTRN area and point captured with different attributes.

Location	32°23'38.52"S 60°47'49.39"E	**S57 Encoding**	OBSTRN(A)	VALSOU=1.5 WATLEV=3 EXPSOU=1 QUASOU=7 SOUACC=0.1 TECSOU=6
			OBSTRN(P)	VALSOU=-2.0 WATLEV=4 EXPSOU=2 QUASOU=6 SOUACC=0.0 TECSOU=5

Screen Capture	

Expected test results	T1670: A warning "'valsou' attribute conflicts with that in 'obstrn'" must be triggered. T1670: A warning "'watlev' attribute conflicts with that in 'obstrn'" must be triggered. T1670: A warning "'tecsou' attribute conflicts with that in 'obstrn'" must be triggered. T1670: A warning "'souacc' attribute conflicts with that in 'obstrn'" must be triggered. T1670: A warning "'quasou' attribute conflicts with that in 'obstrn'" must be triggered. T1670: A warning "'expsou' attribute conflicts with that in 'obstrn'" must be triggered.
Secondary errors	None.
Test Case No. 2	WRECKS area and point captured with different attributes.

Location	32°23'38.91"S 60°47'49.71"E	**S57 Encoding**	WRECKS(A)	WATLEV=3 EXPSOU=1 QUASOU=7 SOUACC=0 TECSOU=5 VALSOU=1
			WRECKS(P)	WATLEV=4 EXPSOU=2 QUASOU=6 SOUACC=1 TECSOU=6 VALSOU=-1.5

Screen Capture	
Expected test results	T1670: A warning "'valsou' attribute conflicts with that in 'wrecks'" must be triggered. T1670: A warning "'watlev' attribute conflicts with that in 'wrecks'" must be triggered. T1670: A warning "'tecsou' attribute conflicts with that in 'wrecks'" must be triggered. T1670: A warning "'souacc' attribute conflicts with that in 'wrecks'" must be triggered. T1670: A warning "'quasou' attribute conflicts with that in 'wrecks'" must be triggered. T1670: A warning "'expsou' attribute conflicts with that in 'wrecks'" must be triggered.
Secondary errors	None.

Dataset Name	AA500003	**S-58 test No.**	T1671	**Type**	E

S-58 Description	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.				

Test Case No. 1	SLCONS line and area objects with same attributes created.				

Location	32°22'25.20"S 60°47'55.86"E	**S57 Encoding**	SLCONS (A) SLCONS (L)	CATSLC=10 WATLEV=2

Screen Capture	
Expected test results	T1671: An error "line 'slcons' shares geometry with identical area 'slcons'" must be triggered.
Secon dary errors	None.
Test Case No. 2	SLCONS line and area objects captured with same attributes expect for one object, for which attributes SORIND, SORDAT and SCAMIN assigned.

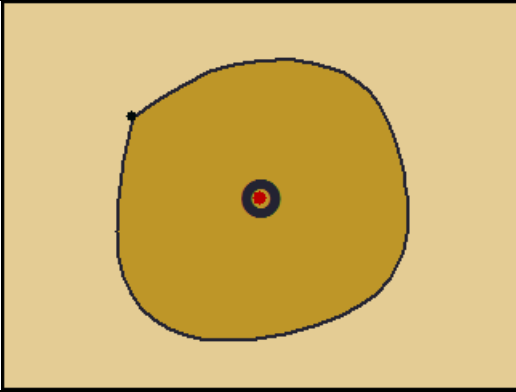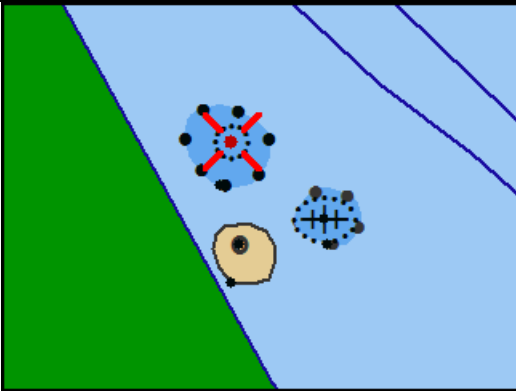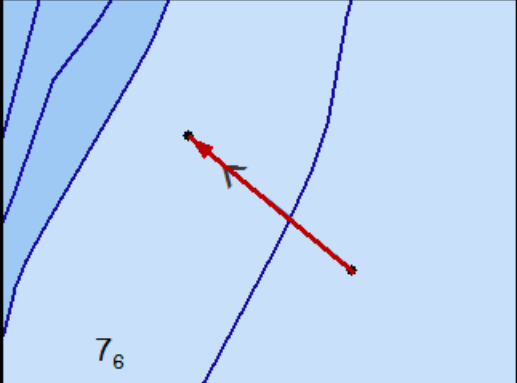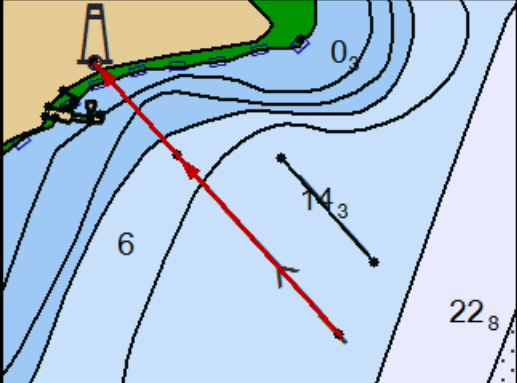| Location	32°22'26.10"S 60°47'56.28"E	S57 Encoding	SLCONS (L) SLCONS (A)	CATSLC=10 WATLEV=2 CATSLC=10 WATLEV=2 SCAMIN=4999 99 SORDAT=2012 0628 SORIND=US,U S,reprt,S58
Screen Capture				
Expected test results	T1671: An error "line 'slcons' shares geometry with identical area 'slcons'" must not be triggered.			
Secondary errors	None.			

Test Dataset:AA500004

List of S58 Recommended ENC Validation Checks covered in this section:

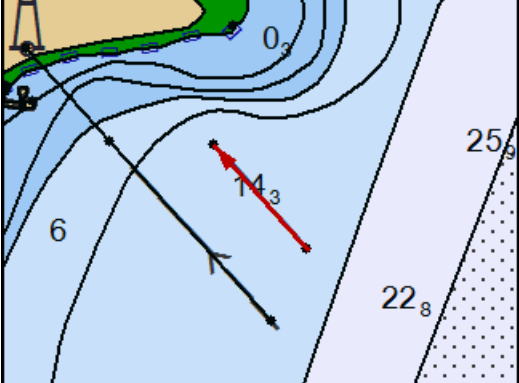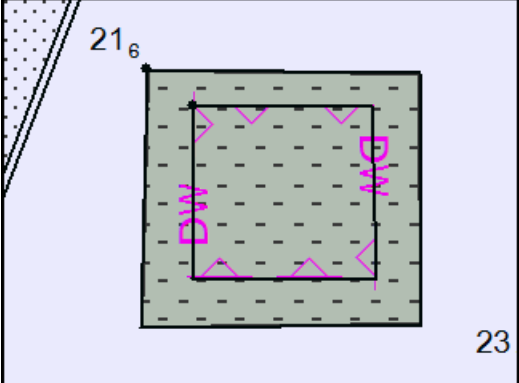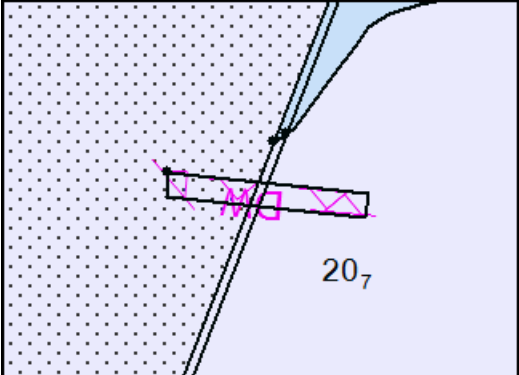| S58 Test	Description
1672	Check for the occurrence of any point object lying inside an area object of the same class and attribute values, except for LNDARE, WRECKS and OBSTRN objects.
1674	Check for any SBDARE object of type Area, located in an intertidal area, that WATLEV has a value of (4) [covers and uncovers].
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).
1682	Check that any RECTRC or NAVLNE object belongs to a C_AGGR collection object, except for RECTRC objects with a value of (2) [not based on a system of fixed marks] for CATTRK, which may exist as isolated objects.
1692	Check that any DWRTPT object is covered by DEPARE and/or DRGARE objects.
1693	Check for any DWRTPT and DWRTCL object, that if the attribute OBJNAM is encoded, the DWRTPT or DWRTCL object is not aggregated in a collection object.
1694	Check for any one way DWRTCL object with a value for ORIENT encoded, the direction of digitizing is consistent (i.e. deviation less than 5 degrees) with the direction of the traffic flow (as encoded in ORIENT).
1696	Check for any one way RCRTCL object with a value for ORIENT encoded, the direction of digitizing is consistent (i.e. deviation less than 5 degrees) with the direction of the traffic flow (as encoded in ORIENT).
1698	Check that no TWRTPT object contains the attributes VERDAT and DRVAL2.
1719	Check for any MARCUL 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. For each specific case, when QUASOU (attribute of type List) is encoded, it should contain one or more values selected from the list of allowed values given in the table. In addition, other attributes which do not appear in the table may be encoded. See sub-table below.
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) contained in the list of structure objects are part of the navigational aid, then the DAYMAR object must be considered as an equipment object. NOTE: CRANES, FLODOC, FORSTC, FSHFAC, HULKES, PONTON, OBSTRN, PYLONS, SILTNK and WRECKS objects must be considered as possible structure objects, in addition to the list given in Annex A (12.1.1).
1724	Check that no navigational aid equipment object contains a value for OBJNAM equivalent to the OBJNAM value of the master object.
1725	Check, for a navigational aid containing only equipment objects that point to the same point spatial object, that a DAYMAR object (if one exists) is encoded as the master object else a LIGHTS object (if one exists) is encoded as the master object.
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.
1732	Check that no BCNLAT object contains the attributes VERDAT and VERACC.
1765	Check when both M_QUAL and M_ACCY objects are used in a cell, that these meta objects provide exhaustive, non-overlapping coverage of those areas covered by M_COVR objects with CATCOV = 1 [coverage available].
1766	Check for any attribute PICREP, TXTDSC and NTXTDS that the attribute value only contains one file name.
1767	Check for any edge which fulfils the following conditions: it is shared by an area SBDARE object with WATLEV = 4 [covers and uncovers], and it is shared by an area DEPARE or DRGARE object, with DRVAL2 $\leq$ 0, and it is shared by an area DEPARE or DRGARE object, with DRVAL1 $\geq$ 0, or by an area UNSARE object, and

Table for test 1719:

WATLEV	VALSOU	QUASOU
1, 2, 5 or 7	Undefined	Undefined
4	VALSOU < 0	1, 3, 4, 6, 7, 8, 9 or undefined
4	Undefined or unknown	2 or undefined
5	VALSOU = 0	1, 3, 4, 6, 8, 9 or undefined
5	Undefined or unknown	2 or undefined
3	VALSOU > 0	1, 3, 4, 6, 7, 8, 9 or undefined
3	Unknown	2 or undefined
Unknown	Unknown	2 or undefined

it is not shared by a line DAMCON, GATCON, SLCONS or LNDARE	
that it is also shared by a DEPCNT object with VALDCO = 0.	
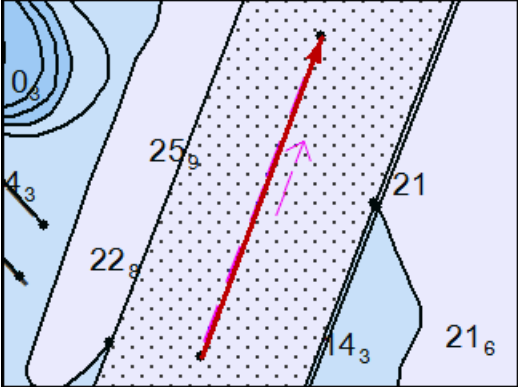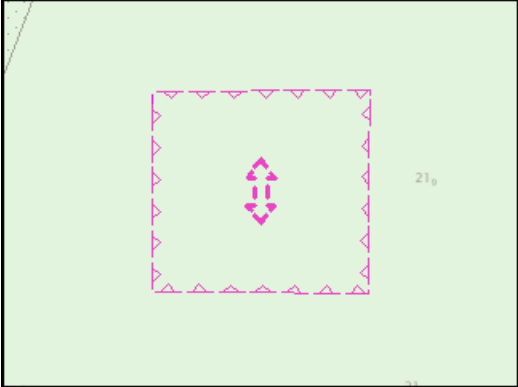
Dataset Name	AA500004		S-58 test No.	T1672	Type	E
S-58 Description	Check for the occurrence of any point object lying inside an area object of the same class and attribute values, except for LNDARE, WRECKS and OBSTRN objects.					
Test Case No. 1	Captured SILTNK area inside SILTNK point.					
Location	32°22'21.13"S 60°49'38.17"E		**S57 Encoding**	SILTNK (A & P)		
Screen Capture						
Expected test results	T1672: An error "point 'siltnk' is inside identical area 'siltnk' "must be triggered.					
Secondary Errors	None.					
Test Case No. 2	Captured LNDARE, WRECKS and OBSTRN areas inside LNDARE, WRECKS and OBSTRN points.					
Location	32°22'22.00"S 60°49'48.22"E		**S57 Encoding**	LNDARE (A &P) WRECKS (A &P) OBSTRN (A &P)		
Screen Capture						
Expected test results	T1672: An error "point 'lndare' is inside identical area 'lndare' "must not be triggered. T1672: An error "point 'obstrn' is inside identical area 'obstrn' "must not be triggered. T1672: An error "point 'wrecks' is inside identical area 'wrecks' "must not be triggered.					
Secondary Errors	T0055: A warning "LNDARE object within prohibited area" must be triggered for the objects created.					
Dataset Name	AA500004		S-58 test No.	T1674	Type	W
S-58 Description	Check for any SBDARE object of type Area, located in an intertidal area, that WATLEV has a value of (4) [covers and uncovers].					
Test Case No. 1	Captured SBDARE (A) with WATLEV=3 in intertidal area.					
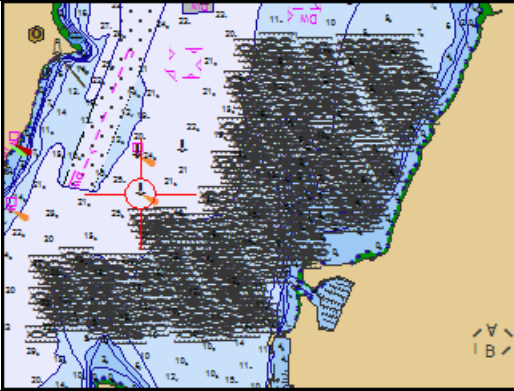
Location	32°22'13.70"S 60°51'34.47"E	**S57 Encoding**	SBDARE (A) DEPARE (A)	NATSUR=9 WATLEV=1,2,3,5,6,7 DRVAL1=-1 DRVAL2=0
Screen Capture				
Expected test results	T1674: 6 warnings "meaningless value of 'watlev' in <Seabed area>" must be triggered.			
Secondary Errors	T0061: A warning "Check that no object with WATLEV = 3 is within or overlaps an intertidal area (DEPARE with DRVAL2 <= 0) or a LNDARE." must be triggered for the objects created. T1786: A warning "Check that any objects of type Area with WATLEV = 2 [always dry] are covered by a LNDARE object of type Area." must be triggered for the objects created. T2000: Four warnings "SBDARE meaningless value of 'watlev'" must be reported for the objects created must be triggered for the objects created.			

Dataset Name	AA500004	**S-58 test No.**	T1681	**Type**	E
S-58 Description	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).				
Test Case No. 1	Captured RECTRC (L) with direction of digitization of 130.				
Location	32°22'34.54"S 60°49'43.63"E	**S57 Encoding**	RECTRC (L)	ORIENT=100	
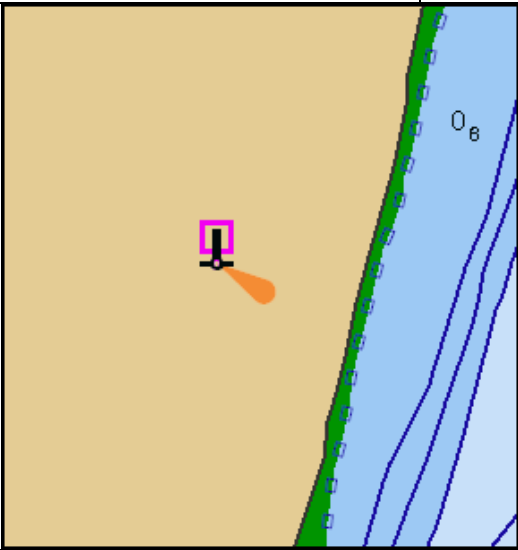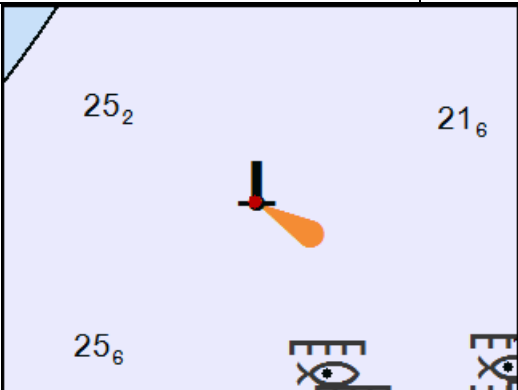
Screen Capture	
Expected test results	T1681: An error "'orient' and direction of digitizing do not match" must be triggered.
Secondary Errors	T1789: A warning "Check for any object DWRTCL, NAVLNE, RECTRC and RCRTCL of type Line with a value for ORIENT encoded, that the orientation of the spatial geometry is consistent (i.e. deviation less than 5 degrees) with the attribute value (or the reciprocal value) encoded in ORIENT." must be triggered for the objects created.

Dataset Name	AA500004	S-58 test No.	T1682	Type	W
S-58 Description	Check that any RECTRC or NAVLNE object belongs to a C_AGGR collection object, except for RECTRC objects with a value of (2) [not based on a system of fixed marks] for CATTRK, which may exist as isolated objects.				
Test Case No. 1	Captured RECTRC and NAVLNE line.				
Location	32°22'27.81"S 60°49'46.15"E	**S57 Encoding**	NAVLNE (L) RECTRC (L)		
Screen Capture					
Expected test results	T1682: Two warnings "object must be associated with an object C_AGGR" must be triggered.				
Secondary Errors	T1788 Warning "NAVLNE object and coincided RECTRC have connection to different C_AGGR objects."				
Test Case No. 2	Captured RECTRC.				
Location	32°22'29.16"S 60°49'50.21"E	**S57 Encoding**	RECTRC (L)	CATTRK = 2	
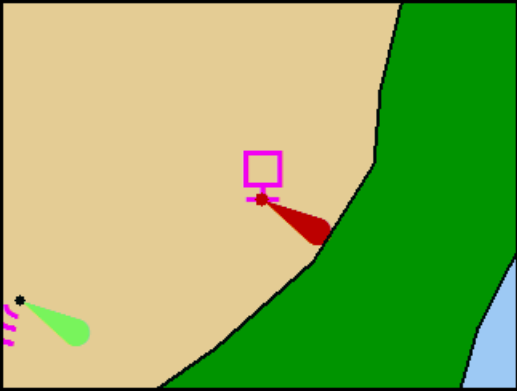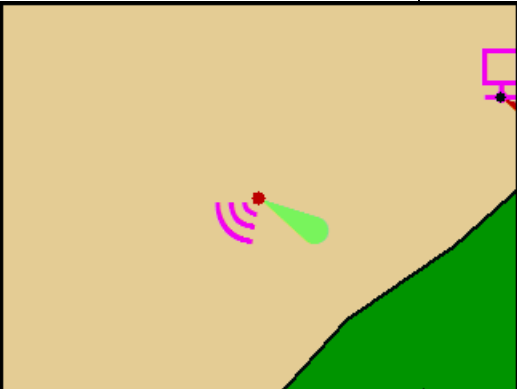
Screen Capture					
Expected test results	T1682: A warning "object must be associated with an object C_AGGR" must not be triggered.				
Secondary Errors	None.				
Dataset Name	AA500004	**S-58 test No.**	T1692	**Type**	E
S-58 Description	Check that any DWRTPT object is covered by DEPARE and/or DRGARE objects.				
Test Case No. 1	DWRTPT captured inside UNSARE.				
Location	32°22'13.41"S 60°50'19.66"E	**S57 Encoding**	UNSARE (A) DWRTPT (A)		
Screen Capture					
Expected test results	T1692: An error "object is covered by prohibited 'unsare'" must be triggered.				
Secondary Errors	None.				
Test Case No. 2	DWRTPT captured inside DRGARE and DEPARE.				
Location	32°22'02.75"S 60°50'16.85"E	**S57 Encoding**	DWRTPT (A)		
Screen Capture					

Expected test results	T1692: Two errors "object is covered by prohibited 'unsare'" must not be triggered.				
Secondary Errors	None.				
Dataset Name	AA500004	**S-58 test No.**	1693	**Type**	W
S-58 Description	Check for any DWRTPT and DWRTCL object, that if the attribute OBJNAM is encoded, the DWRTPT or DWRTCL object is not aggregated in a collection object.				
Test Case No. 1	Captured DWRTPT (A) and DWRTCL (L) with OBJNAM`s aggregated in a collection object.				
Location	32°22'15.64"S 60°50'47.48"E	**S57 Encoding**	DWRTCL (L) DWRTPT (A)	OBJNAM = Deep Water	
Screen Capture					
Expected test results	T1693: Two warnings "unexpected reference to collection objects" must be triggered.				
Secondary Errors	None.				
Dataset Name	AA500004	**S-58 test No.**	T1694	**Type**	E
S-58 Description	Check for any one way DWRTCL object with a value for ORIENT encoded, the direction of digitizing is consistent (i.e. deviation less than 5 degrees) with the direction of the traffic flow (as encoded in ORIENT).				
Test Case No. 1	Captured DWRTCL line.				
Location	32°22'47.20"S 60°49'52.09"E	**S57 Encoding**	DWRTCL (L)	CATTRK=2 ORIENT=320 TRAFIC=3	
Screen Capture					
Expected test results	T1694: An error "'orient' and direction of digitizing do not match" must be triggered.				
Secondary Errors	T1789: A warning "Check for any object DWRTCL, NAVLNE, RECTRC and RCRTCL 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." must be triggered for the objects created.				

Dataset Name	AA500004	S-58 test No.	T1696	Type	E

S-58 Description	Check for any one way RCRTCL object with a value for ORIENT encoded, the direction of digitizing is consistent (i.e. deviation less than 5 degrees) with the direction of the traffic flow (as encoded in ORIENT).
Test Case No. 1	Captured RCRTCL line.

Location	32°22'28.79"S 60°50'00.33"E	**S57 Encoding**	RCRTCL (L)	CATTRK=2 ORIENT=5 TRAFIC=3

Screen Capture	

Expected test results	T1696: An error "'orient' and direction of digitizing do not match" must be triggered.
Secondary Errors	T1789: A warning "Check for any object DWRTCL, NAVLNE, RECTRC and RCRTCL 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." must be reported for the objects created.

Dataset Name	AA500004	S-58 test No.	T1698	Type	E

S-58 Description	Check that no TWRTPT object contains the attributes VERDAT and DRVAL2.
Test Case No. 1	TWRTPT captured with attributes VERDAT and DRVAL2.

Location	32°22'27.63"S 60°50'16.87"E	**S57 Encoding**	TWRTPT (A)	VERDAT=1 DRVAL2=25

Screen Capture	

Expected test results	T1698: An error "Attributes Vertical datum (VERDAT) and Depth range value 2 (DRVAL2) are prohibited for Two-way route part (TWRTPT) objects" must be triggered.
Secondary Errors	T1503: A warning "any object with attribute VERDAT should have at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA" must be triggered for the objects created.
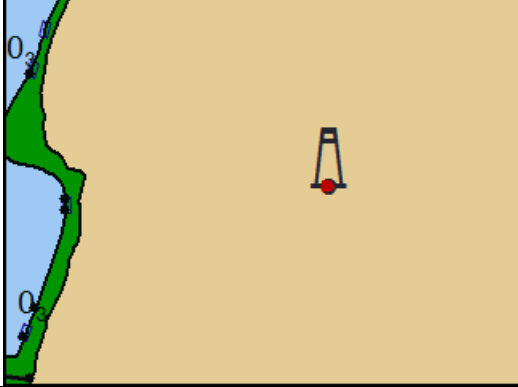
Dataset Name	AA500004		S-58 test No.	T1719	Type	W

S-58 Description	Check for any MARCUL 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. For each specific case, when QUASOU (attribute of type List) is encoded, it should contain one or more values selected from the list of allowed values given in the table. In addition, other attributes which do not appear in the table may be encoded.

WATLEV	VALSOU	QUASOU	
1, 2, 5 or 7	Undefined	Undefined	
4	VALSOU < 0	1, 3, 4, 6, 7, 8, 9 or undefined	
	Undefined or unknown	2 or undefined	
5	VALSOU = 0	1, 3, 4, 6, 8, 9 or undefined	
	Undefined or unknown	2 or undefined	
3	VALSOU > 0	1, 3, 4, 6, 7, 8, 9 or undefined	
	Unknown	2 or undefined	
Unknown	Unknown	2 or undefined	

Test Case No. 1	Captured MARCUL points objects with attributes.

Location	32°23'00.20"S 60°50'41.15"E	S57 Encoding	MARCUL (P)	VALSOU=-1/1/2/3/4/6 QUASOU=UNKNOWN, 1,2,3,4,5,6,7,8,9,10,11 WATLEV=1,2,3,4,5,6,7

Screen Capture	

Expected test results	T1719: 546 warnings "Check for any MARCUL object that the combination of attribute values corresponds to the table as per S58" must be triggered.

Secondary Errors	T2000: 245 warnings "meaningless value of 'quasou and watlev' in Marine farm/culture" must be triggered for the objects created. T0507: 26 warnings "mandatory 'valsou and watlev' not found in <Marine farm/culture>" must be triggered for the objects created.

Dataset Name	AA500004		S-58 test No.	T1722	Type	W
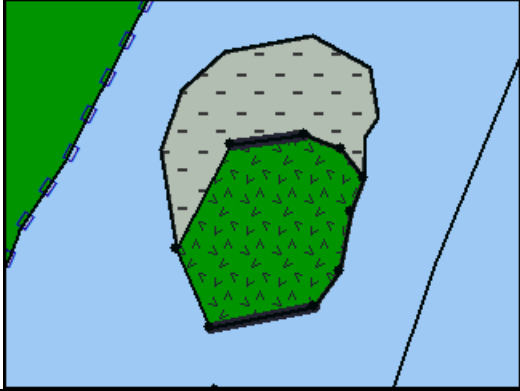
S-58 Description	Check that any navigational aid equipment object is a slave to a navigational aid structure object or another navigational aid equipment object. When two objects (including one DAYMAR) contained in the list of structure objects are part of the navigational aid, then the DAYMAR object must be considered as an equipment object. NOTE: CRANES, FLODOC, FORSTC, FSHFAC, HULKES, PONTON, OBSTRN, PYLONS, SILTNK and WRECKS objects must be considered as possible structure objects, in addition to the list given in Annex A (12.1.1).				
Test Case No. 1	Captured DAYMAR and BCNSPP (master) with LIGHTS (slave).				
Location	32°22'35.42"S 60°49'35.29"E	S57 Encoding	DAYMAR (P) BCNSPP (P) LIGHTS (P)	
Screen Capture					
Expected test results	T1722: A warning "objects hierarchy can be made out of structure and "equipment" must be triggered.				
Secondary Errors	None				

Dataset Name	AA500004	S-58 test No.		T1724	Type	W
S-58 Description	Check that no navigational aid equipment object contains a value for OBJNAM equivalent to the OBJNAM value of the master object.					
Test Case No. 1	Same OBJNAM has been encoded for both master and slave objects.					
Location	32°22'56.03"S 60°50'05.27"E	S57 Encoding	BCNSPP LIGHTS	OBJNAM=abc		
Screen Capture						

Expected test results	T1724: A warning ”redundant 'objnam' in slave” must be triggered.				
Secondary Errors	None.				
Dataset Name	AA500004	**S-58 test No.**	T1725	**Type**	W
S-58 Description	Check, for a navigational aid containing only equipment objects that point to the same point spatial object, that a DAYMAR object (if one exists) is encoded as the master object else a LIGHTS object (if one exists) is encoded as the master object.				
Test Case No. 1	Captured LIGHTS as master and DAYMAR as slave.				
Location	32°22'45.32"S 60°49'32.74"E	**S57 Encoding**	DAYMAR (P) LIGHTS (P)	SIGPER=4 SIGGRP=(1)	
Screen Capture					
Expected test results	T1725: A warning "master is not 'daymar' in equipment group'" must be triggered.				
Secondary Errors	T0516: A warning "LIGHTS object has a structure 'daymar' as a slave <Light> " must be triggered for the objects created.				
Test Case No. 2	Captured FOGSIG as master and LIGHTS as slave.				
Location	32°22'45.79"S 60°49'31.42"E	**S57 Encoding**	FOGSIG (P) LIGHTS (P)		
Screen Capture					
Expected test results	T1725: A warning "master is not 'lights' in equipment group'" must be triggered.				
Secondary Errors	T1722: A warning "LIGHTS has equipment without a structure" must be triggered for the objects created. T0516: A warning "FOGSIG this object cannot have slaves " must be triggered for the objects created				
Dataset Name	AA500004	**S-58 test No.**	T1726	**Type**	E
S-58 Description	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.				

Test Case No. 1	M_NSYS not captured over small portion of DEPARE.			
Location	32°23'34.00"S 60°50'22.13"E	**S57 Encoding**	M_NSYS (A)	
Screen Capture				
Expected test results	T1726: An error "edge is open border of 'm_nsys' coverage" must be triggered.			
Secondary Errors	None.			

Dataset Name	AA500004	**S-58 test No.**	T1732	**Type**	E
S-58 Description	Check that no BCNLAT object contains the attributes VERDAT and VERACC.				
Test Case No. 1	Captured BCNLAT with VERDAT and VERACC.				
Location	32°22'46.78"S 60°50'16.25"E	**S57 Encoding**	BCNLAT (P)	VERACC=10 VERDAT=3	
Screen Capture					
Expected test results	T1732: An error "Attributes Vertical datum (VERDAT) and Vertical accuracy (VERACC) are prohibited for Beacon, lateral (BCNLAT) objects" must be triggered.				
Secondary Errors	T1503: A warning "any object with VERDAT should have an attribute of type ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA" must be triggered for the objects created. T1546: An error "no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered for the object created.				

Dataset Name	AA500004	**S-58 test No.**	T1765	**Type**	W
S-58 Description	Check when both M_QUAL and M_ACCY objects are used in a cell, that these meta objects provide exhaustive, non-overlapping coverage of those areas covered by M_COVR objects with CATCOV = 1 [coverage available].				
Test Case No. 1	M_ACCY captured over M_QUAL.				

Location	32°23'42.66"S 60°49'35.51"E	S57 Encoding	M_ACCY (A) M_QUAL (A)	
Screen Capture				
Expected test results	T1765: A warning "If the feature is a M_QUAL, then it should not overlap a M_ACCY of area geometry" must be triggered for the objects created.			
Secondary Errors	None.			
Test Case No. 2	Created a hole in M_QUAL.			
Location	32°23'42.48"S 60°49'48.28"E	S57 Encoding	M_QUAL (A)	
Screen Capture				
Expected test results	T1765: A warning "If the feature is a M_QUAL, then it should provide exhaustive coverage of the cell" must be triggered for the objects created.			
Secondary Errors	T0549: 3 errors "object is not properly covered by M_QUAL"			

Dataset Name	AA500004	S-58 test No.	T1766	Type	E
S-58 Description	Check for any attribute PICREP, TXTDSC and NTXTDS that the attribute value only contains one file name.				
Test Case No. 1	LNDMRK assigned with multiple text files in PICREP, TXTDSC and NTXTDS.				
Location	32°22'05.11"S 60°51'48.50"E	S57 Encoding	LNDMRK (P)	PICREP=US003151.TIF ;US003150.TIF TXTDSC=US003151.TXT;US003152.TXT NTXTDS=US003151.TXT;US003152.TXT	

Screen Capture	

Expected test results	T1766: Three errors "illegal file name" must be triggered.
Secondary Errors	T0073: Three errors must be triggered for the objects created "Check that Pictorial Representation (PICREP) does not contain a leading or a trailing space. Check that the format of the attribute is valid. Check that Textual Description in National Language (NTXTDS) does not contain a leading or a trailing space. Check that the format of the attribute is valid. Check that Textual Description (TXTDSC) does not contain a leading or a trailing space. Check that the format of the attribute is valid." T0527: Three errors must be triggered for the objects created "Check that all files reference by PICREP attributes exist and that the file names are in accordance with the ENC Product Specification. Check that all files reference by NTXTDS attributes exist and that the file names are in accordance with the ENC Product Specification. Check that all files reference by TXTDSC attributes exist and that the file names are in accordance with the ENC Product Specification.

Dataset Name	AA500004	**S-58 test No.**	T1767	**Type**	W
S-58 Description	Check for any edge which fulfils the following conditions: • it is shared by an area SBDARE object with WATLEV = 4 [covers and uncovers], and • it is shared by an area DEPARE or DRGARE object, with DRVAL2 ≤ 0, and • it is shared by an area DEPARE or DRGARE object, with DRVAL1 ≥ 0, or by an area UNSARE object, and • it is not shared by a line DAMCON, GATCON, SLCONS or LNDARE that it is also shared by a DEPCNT object with VALDCO = 0.				
Test Case No. 1	Seabed area captured without depth contour around it.				

Location	32°22'30.47"S 60°49'40.53"E	**S57 Encoding**	UNSARE (A) SBDARE (A) DEPARE (A) DEPARE (A) DRGARE (A)	NATSUR=9 WATLEV=4 DRVAL2=0 DRVAL1=0 DRVAL1=1
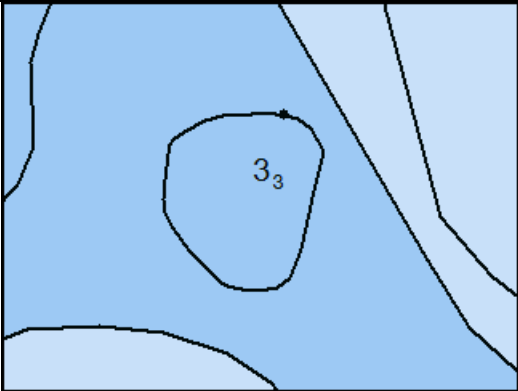
Screen Capture	
Expected test results	T1767: Four warnings "Zero-metre contour missing" must be triggered.
Secondary Errors	None.
Test Case No. 2	SBDARE captured surrounded by LNDARE, DAMCON, GATCON and SLCONS.

Location	32°22'28.81"S 60°49'41.20"E	**S57 Encoding**	UNSARE (A) SBDARE (A)	NATSUR=9 WATLEV=4
			DEPARE (A) DEPARE (A) DRGARE (A) LNDARE (L) DAMCON (L) GATCON (L) SLCONS (L)	DRVAL2=0 DRVAL1=0 DRVAL1=1

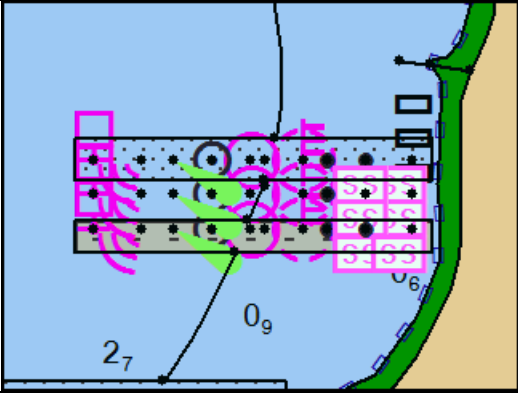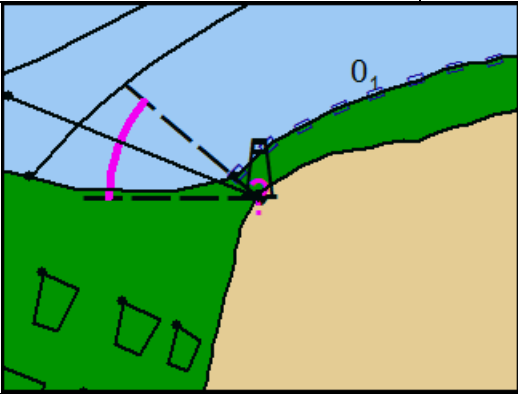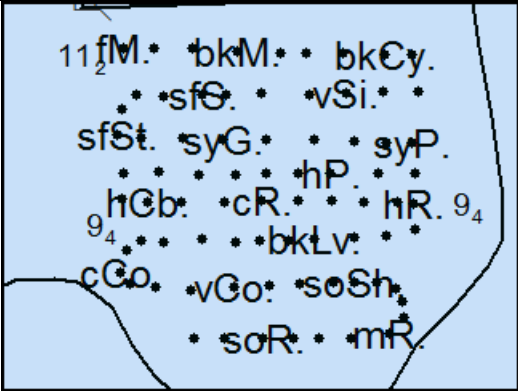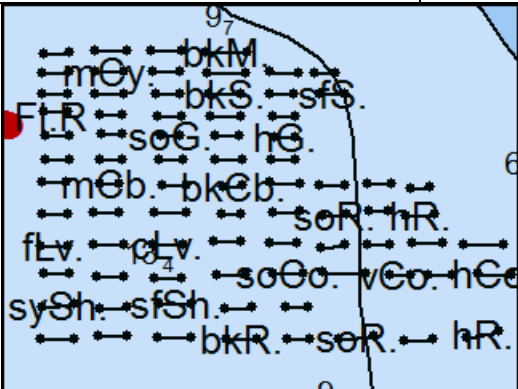|	
Screen Capture	
Expected test results	T1767: Four warnings "Zero-metre contour missing" must not be triggered.
Secondary Errors	None.

Test Dataset:AA500005

List of S58 Recommended ENC Validation Checks covered in this section:

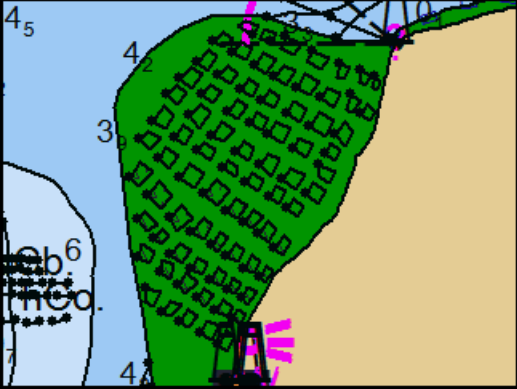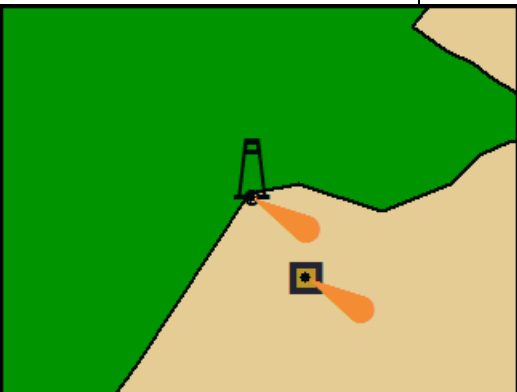| S58 Test	Description
1771	Check for any edge which is shared by a DEPCNT (VALDCO) and two area DEPARE (DRVAL1, DRVAL2), but by no line DEPARE, that: (Maximum value of DRVAL2) > VALDCO > (Minimum value of DRVAL1), and (Minimum value of DRVAL2) = VALDCO
1775	Check for any equipment object (see UOC 12.1.1) which is situated within a DEPARE, DRGARE or UNSARE, 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, CONVYR, COALNE, DAMCON (with CATDAM = 3 [flood barrage]), BRIDGE, FLODOC, LNDARE, MORFAC, PIPOHD, PONTON or SLCONS object, or it is situated within an area CONVYR or BRIDGE object.
1778	Check that no LIGHTS object has CATLIT = 1 [directional function] with the angle defined by SECTR1 and SECTR2 being greater than 10 degrees.
1780	Check that for a SBDARE object, if NATSUR is encoded, the associated attribute value for NATQUA (if encoded) is correct (the symbol "**x**" indicates the possible attribute combinations):

NATQUA NATSUR	1	2	3	4	5	6	7	8	9	10
1					x	x	x	x	x	x
2					x	x	x			x
3	x	x	x		x	x	x			x
4	x	x	x			x		x	x	x
5	x	x	x					x	x	
6	x	x	x					x	x	
7	x	x	x					x	x	
8								x	x	
9								x	x	
11								x		
14				x						
17	x	x	x	x					x	
18								x	x	x

S58 Test	Description
1781	Check that any BUISGL or LNDMRK object which is part of a master/slave relationship and references a LIGHTS object (except with the value of (6) [air obstruction light], (8) [flood light] or (9) [strip light] for CATLIT) as slave, has a value of (33) [light support] for the attribute FUNCTN.
1782	Check that SWPARE objects do not overlap.
1783	Check that no object of type Area with: WATLEV = 4 [covers and uncovers] overlaps a DEPARE object with DRVAL1 >= 0. WATLEV = 5 [awash] overlaps a DEPARE object with DRVAL1 > 0.
1784	Check for any spatial object that no attribute HORDAT, POSACC, or QUAPOS is populated with a missing value (unknown).
1785	Check that only LNDMRK objects having CATLMK = 18 [windmill] or 19 [windmotor], have been encoded with CONDTN = 4 [wingless].
1786	Check that any objects of type Area with WATLEV = 2 [always dry] are covered by LNDARE objects of type Area.
1787	Check for any objects NAVLNE and RECTRC sharing an edge that they have the same or reciprocal attribute value for ORIENT.
1788	Check that when one object NAVLNE and one object RECTRC share an edge, they belong to the same C_AGGR object.
1789	Check for any object DWRTCL, NAVLNE, RECTRC and RCRTCL 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.
1790	Check for any LIGHTS having ORIENT encoded with an explicit value, that: 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 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.
1793	Check for any master/slave relationship which references one or more LIGHTS, that there is at least one LIGHTS which is not encoded with LITVIS = 6 [visibility deliberately restricted] or LITVIS = 7 [obscured].
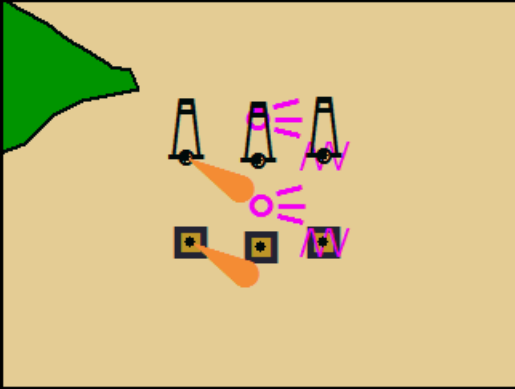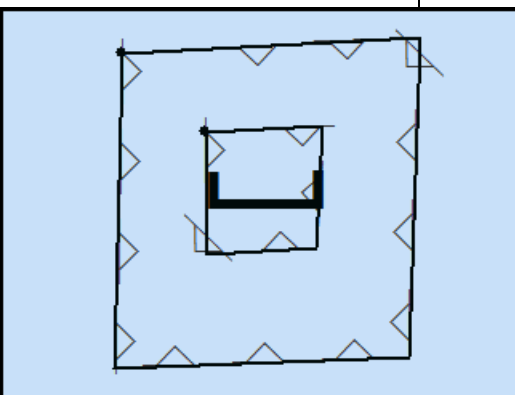
1794	Check for any LIGHTS object having CATLIT = 1 [directional function] and which is a slave in a master/slave relationship, that the master object is not a BOYCAR, BOYINB, BOYISD, BOYLAT, BOYSAW, BOYSPP, LITFLT or LITVES.
1795	Check for any master object in a master/slave relationship containing temporal attribution (DATEND, DATSTA, PEREND, PERSTA) that its slave objects also contain the same temporal attributes.
1797	Check that none of the following feature object and geometric primitive combinations, which do not display in ECDIS, are present in the dataset: BRIDGE of type point; DAMCON of type point, with attribute CATDAM ≠ 3; GRIDRN of type point; PIPSOL of type point; PRDARE of type point, with attribute CATPRA = [Empty (null) value]; RAPIDS of type point; ROADWY of type point; RUNWAY of type point; SLOGRD of type area, with attributes CATSLO = 1, 2, 3, 4, 5, 7 and CONRAD ≠ 1, or CATSLO = [Empty (null) value]; TUNNEL of type point; VEGATN of type point or area, with attribute CATVEG = 1, 10, 11, 12, [Empty (null) value]; and WATFAL of type point.
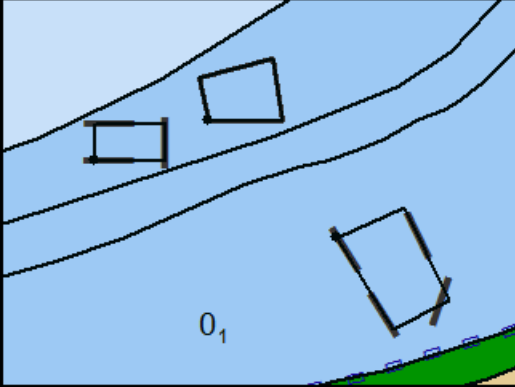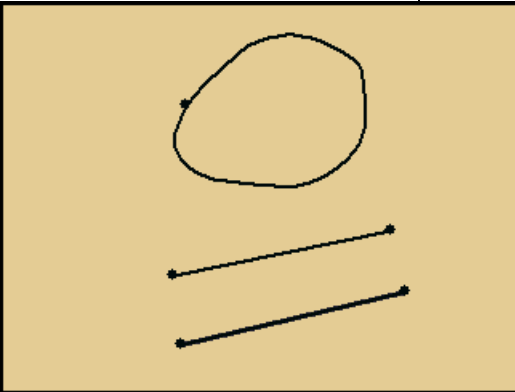
Dataset Name	AA500005		S-58 test No.	T1771		Type	W

S-58 Description	Check for any edge which is shared by a DEPCNT (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 DRVAL1) = VALDCO

Test Case No. 1	Depth contour with wrong VALDCO assigned.

Location	32°24'06.59"S 60°50'09.00"E	**S57 Encoding**	DEPARE (A) DEPCNT (L) DEPARE (A)	DRVAL1=1.8 DRVAL2=3.6 VALDCO=5.4 DRVAL1=3.6 DRVAL2=5.4

Screen Capture	

Expected test results	T1771: A warning "depth contour does not correspond to depth area limit" must be triggered.

Secondary Errors	None

Dataset Name	AA500005		S-58 test No.	T1775		Type	W

S-58 Description	Check for any equipment object (see UOC 12.1.1) which is situated within a DEPARE, DRGARE or UNSARE, 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, CONVYR, COALNE, DAMCON (with CATDAM = 3 [flood barrage]), BRIDGE, FLODOC, LNDARE, MORFAC, PIPOHD, PONTON or SLCONS object, or • It is situated within an area CONVYR or BRIDGE object.

Test Case No. 1	10 objects (as per UOC 12.1.1) are captured in DEPARE, DRGARE and UNSARE without any supporting structure.

Location	32°24'06.25"S 60°50'48.42"E	**S57 Encoding**	DAYMAR(P) FOGSIG(P) LIGHTS(P) RADSTA(P) RDOSTA(P) RETRFL(P) RTPBCN(P) SISTAT(P) SISTAW(P) TOPMAR(P) DEPARE (A) DRGARE (A)	3x 3x 3x 3x 3x 3x 3x 3x 3x 3x
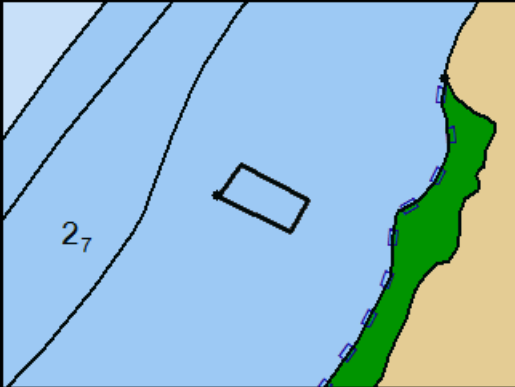
	UNSARE (A)

Screen Capture	
Expected test results	T1755: 30 warnings "equipment without a structure in the water" must be triggered.
Secondary Errors	T1722: 27 additional warnings "equipment without a structure" must be triggered related to the feature objects created. T0054: 3 additional warnings "object is not covered by a mandatory 'object' <Daymark>" must be triggered related to the feature objects created.

Dataset Name	AA500005	S-58 test No.	T1778	Type	W
S-58 Description	Check that no LIGHTS object has CATLIT = 1 [directional function] with the angle defined by SECTR1 and SECTR2 being greater than 10 degrees.				
Test Case No. 1	Light captured with difference between SECTR1 and SECTR2 being greater than 10 degrees.				

Location	32°24'29.00"S 60°50'18.20"E	**S57 Encoding**	LIGHTS (P) LNDMRK(P)	CATLIT=1 SECTR1=90 SECTR2=130

Screen Capture	
Expected test results	T1778: A warning "sector is too wide for a directional light" must be triggered.
Secondary Errors	None

Dataset Name	AA500005	S-58 test No.	T1780	Type	W
S-58 Description	Check that for a SBDARE object, if NATSUR is encoded, the associated attribute value for NATQUA (if encoded) is correct (the symbol "**x**" indicates the possible attribute combinations):				

NATQUA	1	2	3	4	5	6	7	8	9	10
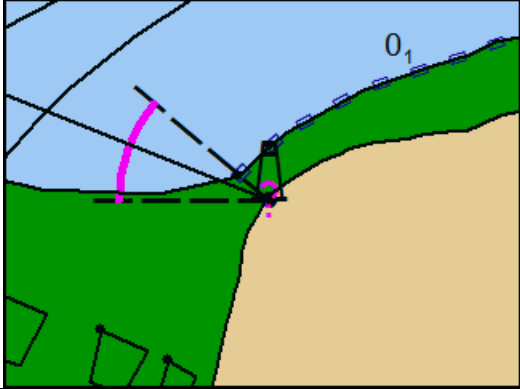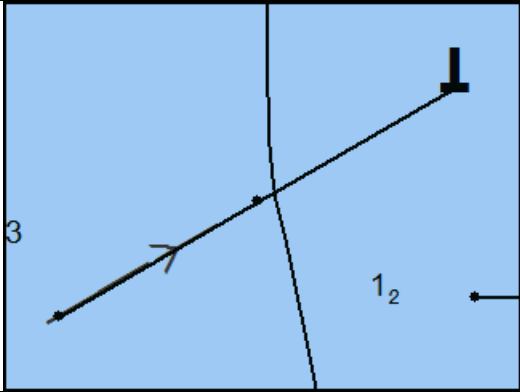
NATSUR										
1					x	x	x	x	x	x
2					x	x	x			x
3	x	x	x		x	x	x			x
4	x	x	x			x		x	x	x
5	x	x	x					x	x	
6	x	x	x					x	x	
7	x	x	x					x	x	
8								x	x	
9								x	x	
11								x		
14				x						
17	x	x	x	x					x	
18								x	x	x

Test Case No. 1	78 objects (other than combinations shown in table) are captured as SBDARE points.			
Location	32°24'03.77"S 60°50'31.26"E	**S57 Encoding**	SBDARE (P)	78x

Screen Capture

Expected test results	T1780: 78warnings "inconsistent qualifiers: 'natsur' and 'natqua'" must be triggered.
Secondary Errors	None

Test Case No. 2	78 objects (other than combinations shown in table) captured as SBDARE lines.			
Location	32°24'42.86"S 60°49'44.05"E	**S57 Encoding**	SBDARE (L)	78x

Screen Capture

Expected test results	T1780:78 warnings "inconsistent qualifiers: 'natsur' and 'natqua'" must be triggered.
Secondary Errors	None

Test Case No. 3	78 objects (other than combinations shown in table) captured SBDARE areas with attributes assigned.			
Location	32°24'35.19"S 60°50'06.54"E	**S57 Encoding**	SBDARE (A)	78x
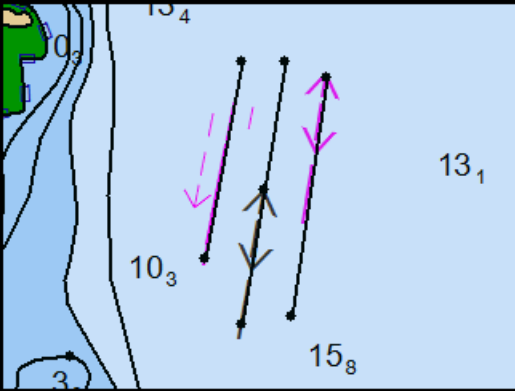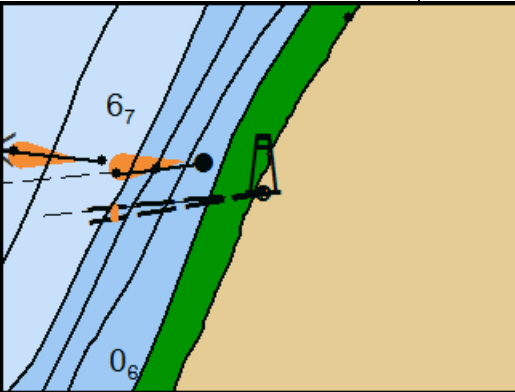
Screen Capture	
Expected test results	T1780: 78warnings"inconsistent qualifiers: 'natsur' and 'natqua'" must be triggered.
Secondary Errors	None

Dataset Name	AA500005	**S-58 test No.**	T1781	**Type**	W
S-58 Description	Check that any BUISGL or LNDMRK object which is part of a master/slave relationship and references a LIGHTS object (except with the value of (6) [air obstruction light], (8) [flood light] or (9) [strip light] for CATLIT) as slave, has a value of (33) [light support] for the attribute FUNCTN.				
Test Case No. 1	LNDMRK and BUISGL captured attribute FUNCTN not assigned.				
Location	32°24'50.71"S 60°50'05.51"E	**S57 Encoding**	BUISGL (P) LNDMRK (P) LIGHTS (P)	FUNCTN=UNDEFINED FUNCTN=UNDEFINED	
Screen Capture					
Expected test results	T1781: A warning "light support function is not specified Landmark" must be triggered. T1781: A warning "light support function is not specified Building, single "must be triggered.				
Secondary Errors	None				
Test Case No. 2	We have captured LIGHTS with attributes CATLIT=6, 8 and 9.				
Location	32°24'50.67"S 60°50'07.19"E	**S57 Encoding**	LIGHTS (P)

BUISGL (P) LNDMRK (P) | CATLIT=6 CATLIT=8 CATLIT=9 | |

Screen Capture	
Expected test results	T1781: Three warnings "light support function is not specified Landmark" must not be triggered. T1781: Three warnings "light support function is not specified Building, single "must not be triggered.
Secondary Errors	None

Dataset Name	AA500005	**S-58 test No.**	T1782	**Type**	W
S-58 Description	Check that SWPARE objects do not overlap.				
Test Case No. 1	Swept area captured overlapping with another swept area.				
Location	32°23'57.78"S 60°50'29.16"E	**S57 Encoding**	SWPARE (A)		

Screen Capture	
Expected test results	T1782: A warning "object overlaps with Swept area" must be triggered.
Secondary Errors	T1655: One additional error "no SWPARE object sharing the same geo-spatial position and geometry as a M_QUAL object contains the attribute POSACC if the SOUACC is encoded" must be triggered related to the feature objects created

Dataset Name	AA500005	**S-58 test No.**	T1783	**Type**	W
S-58 Description	Check that no object of type Area with: WATLEV = 4 [covers and uncovers] overlaps a DEPARE object with DRVAL1 >= 0. WATLEV = 5 [awash] overlaps a DEPARE object with DRVAL1 > 0.				
Test Case No. 1	Shoreline Construction areas captured with WATLEV=4 and 5.				
Location	32°24'22.52"S 60°50'29.07"E	**S57 Encoding**	SLCONS(A)	WATLEV=4 WATLEV=5	
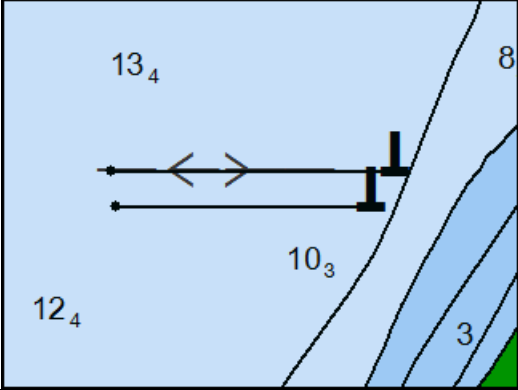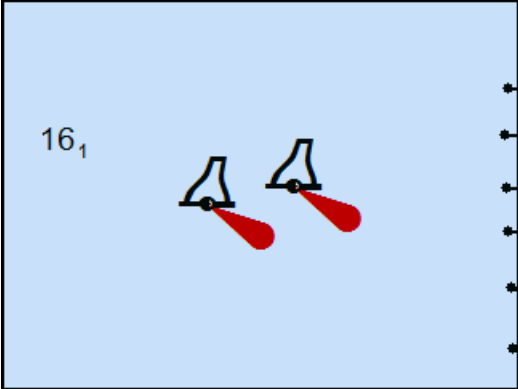
Screen Capture	

Expected test results	T1783: Three warnings "awash object under water" must be triggered.
Secondary Errors	None

Dataset Name	AA500005	S-58 test No.	T1784	Type	W

S-58 Description	Check for any spatial object that no attribute HORDAT, POSACC, or QUAPOS is populated with a missing value (unknown).				
Test Case No. 1	Land elevation, Road and Railway lines captured with attributes.				

Location	32°25'14.62"S 60°49'58.03"E	S57 Encoding	LNDELV (L) ROADWY(L) RAILWY(L)	HORDAT=UNKNOWN POSACC =UNKNOWN QUAPOS= UNKNOWN

Screen Capture	

Expected test results	T1784: Three warnings "Check for any spatial object that no attribute HORDAT, POSACC, or QUAPOS is populated with a missing value (unknown)." must be triggered.
Secondary Errors	T1502: One error "prohibited attribute 'hordat'" must be triggered related to the feature objects created.

Dataset Name	AA500005	S-58 test No.	T1785	Type	W

S-58 Description	Check that only LNDMRK objects having CATLMK = 18 [windmill] or 19 [wind motor], have been encoded with CONDTN = 4 [wingless].				
Test Case No. 1	Land Mark captured with CONDTN=4 and CATLMK=3.				

Location	32°25'32.12"S 60°49'50.68"E	S57 Encoding	LNDMRK (P,L&A)	CATLMK=3 CONDTN=4 CONVIS=1
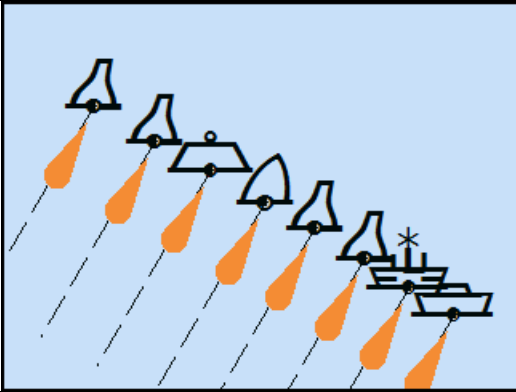
Screen Capture	
Expected test results	T1785: Three warnings "LNDMRK with CONDTN=4[wingless] doesn't have CATLMK= 18[windmill] or 19[wind motor] "must be triggered.
Secondary Errors	None

Dataset Name	AA500005	**S-58 test No.**	T1786	**Type**	W

S-58 Description	Check that any objects of type Area with WATLEV = 2 [always dry] are covered by LNDARE objects of type Area.				
Test Case No. 1	Shoreline Construction areas captured with WATLEV=2.				
Location	32°25'32.22"S 60°49'33.25"E	**S57 Encoding**	SLCONS (A)	WATLEV=2	

Screen Capture	
Expected test results	T1786: A warning "Object of type Area with WATLEV=2[always dry] aren't covered by LNDARE. must be triggered.
Secondary Errors	None

Dataset Name	AA500005	**S-58 test No.**	T1787	**Type**	W

S-58 Description	Check for any objects NAVLNE and RECTRC sharing an edge that they have the same or reciprocal attribute value for ORIENT.			
Test Case No. 1	Recommended track and Navigation line captured with different ORIENT values.			
Location	32°24'27.50"S 60°50'13.86"E	**S57 Encoding**	RECTRC (L) NAVLNE (L)	ORIENT=116° ORIENT=115°

Screen Capture	
Expected test results	T1787: A warning "NAVLNE object and coinciding RECTRC have different ORIENT attribute values." must be triggered.
Secondary Errors	T1683: 1 additional warning "orient' attribute conflicts with that in 'navlne'[FE-000180] <Recommended track>" must be triggered related to the feature objects created.

Dataset Name	AA500005	**S-58 test No.**	T1788	**Type**	W
S-58 Description	Check that when one object NAVLNE and one object RECTRC share an edge, they belong to the same C_AGGR object				
Test Case No. 1	Recommended track and Navigation line are captured with different C_AGGR.				
Location	32°24'00.17"S 60°50'48.44"E	**S57 Encoding**	RECTRC (L) NAVLNE (L) C_AGGR		

Screen Capture	
Expected test results	T1788: A warning "NAVLNE object and coinciding RECTRC have connection to different C_AGGR objects." must be triggered.
Secondary Errors	None

Dataset Name	AA500005	**S-58 test No.**	T1789	**Type**	W
S-58 Description	Check for any object DWRTCL, NAVLNE, RECTRC and RCRTCL 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.				
Test Case No. 1	DWRTCL, NAVLNE, RECTRC and RCRTCL Lines captured with attributes.				
Location	32°24'00.90"S 60°50'15.78"E	**S57 Encoding**	NAVLNE (L) DWRTCL (L) RECTRC (L) RCRTCL (L)		
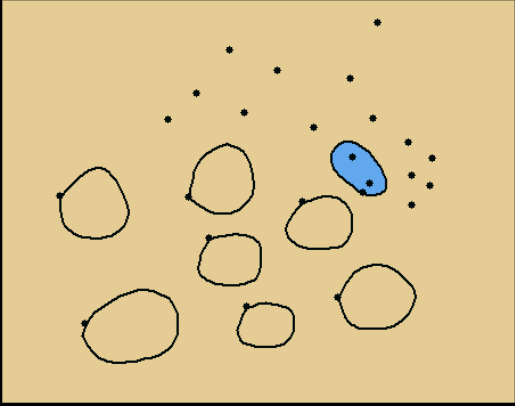
Screen Capture	
Expected test results	T1789: Four warnings "'ORIENT' and orientation of the spatial geometry do not match" must be triggered.
Secondary Errors	None

Dataset Name	AA500005	S-58 test No.	T1790	Type	W
S-58 Description	Check for any LIGHTS having ORIENT encoded with an explicit value, that: • 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 LIGHT in a master/slave relationship is not aggregated to a RECTRC or a NAVLNE in a collection object C_AGGR.				

Test Case No. 1	Light captured with SECTR1 and SECTR2 are not populated.		
Location	32°25'15.75"S 60°49'43.94"E	**S57 Encoding**	LIGHTS (P) — SECTR1=80, SECTR2=85, ORIENT=85

Screen Capture	
Expected test results	T1790: A warning "Oriented LIGHTS can't have SECTR1/SECTR2 values." must be triggered.
Secondary Errors	None

Test Case No. 2	Recommended track, Navigation line and LIGHTS with attribute ORIENT captured.		
Location	32°25'14.84"S 60°49'38.89"E	**S57 Encoding**	LIGHTS (P), NAVLNE (L), RECTRC (L), C_AGGR — ORIENT=85

Screen Capture	
Expected test results	T1790: A warning "Oriented LIGHTS can't be a part of aggregation" must be triggered.
Secondary Errors	T1791: A warning "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, or vice versa" must be triggered related to the feature objects created. T1722: A warning "equipment without a structure <Light>" must be triggered related to the feature objects created. T1775: A warning "equipment without a structure <Light>" must be triggered related to the feature objects created.

Test Case No. 3	Recommended track, Navigation line, PILPNT and LIGHTS with attribute ORIENT captured.			
Location	32°25'14.85"S 60°49'42.00"E	**S57 Encoding**	LIGHTS (P) NAVLNE (L) RECTRC (L) PILPNT (P) C_AGGR	ORIENT=85

Screen Capture	
Expected test results	T1790: A warning "Oriented LIGHTS can't be a part of aggregation" must be triggered.
Secondary Errors	T1791: A warning "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, or vice versa" must be triggered related to the feature objects created. T1722: A warning "objects hierarchy can be made out of "structure"<Pile> and "equipment" <Light>" must be triggered related to the feature objects created T516: A warning "If the master object is of type point, check that the slave object is sharing the same node as the master object." should be reported for the objects created.

	T1775: A warning "equipment without a structure in the water <Light>" must be triggered related to the feature objects created.

Dataset Name	AA500005	S-58 test No.	T1791	Type	W
S-58 Description	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.				
Test Case No. 1	Recommended track line captured with attribute CATTRK=1. Navigation lines captured with attribute CATNAV =3				
Location	32°25'03.94"S 60°49'41.42"E	S57 Encoding	RECTRC (L) NAVLNE (L)	CATTRK=1 CATNAV =3	
Screen Capture					
Expected test results	T1791: A warning "RECTRC with CATTRK=1 have no shared edges of NAVLNE with CATNAV=3" must be triggered. T1791: A warning "NAVLNE with CATNAV=3 have no shared edges of NAVLNE with CATTRK=1" must be triggered.				
Secondary Errors	None				

Dataset Name	AA500005	S-58 test No.	T1793	Type	W
S-58 Description	Check for any master/slave relationship which references one or more LIGHTS, that there is at least one LIGHTS which is not encoded with LITVIS = 6 [visibility deliberately restricted] or LITVIS = 7 [obscured].				
Test Case No. 1	BOYLAT, LIGHTS captured with attributes LITVIS= 6 and 7.				
Location	32°24'40.47"S 60°49'36.08"E	S57 Encoding	LIGHTS (P) BOYLAT (P)	LITVIS = 6 and 7	
Screen Capture					
Expected test results	T1793: Two warnings "LIGHTS object no visible lights in master/slave hierarchy" must be triggered.				

Secondary Errors	None				

Dataset Name	AA500005	S-58 test No.	T1794	Type	W

S-58 Description	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, BOYINB, BOYISD, BOYLAT, BOYSAW, BOYSPP, LITFLT or LITVES.				
Test Case No. 1	BOYCAR, BOYINB, BOYISD, BOYLAT, BOYSAW, BOYSPP, LITFLT and LITVES are captured as master to LIGHTS with attribute CATLIT=1.				

Location	32°24'50.78"S 60°49'29.80"E	**S57 Encoding**	BOYCAR (P) BOYINB (P) BOYISD (P) BOYLAT (P) BOYSAW (P) BOYSPP(P) LITFLT (P) LITVES (P) LIGHTS (P)	CATLIT=1

Screen Capture	
Expected test results	T1794: 8 warnings "LIGHTS object has directional light and is set on a floating structure." must be triggered.
Secondary Errors	None

Dataset Name	AA500005	S-58 test No.	T1795	Type	W

S-58 Description	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.			
Test Case No. 1	BCNSPP captured with attributes DATEND, DATSTA, PEREND, and PERSTA and LIGHTS without temporal attributes.			

Location	32°23'56.84"S 60°49'34.39"E	**S57 Encoding**	LIGHTS (P) BCNSPP (P)	DATEND= 20130612 DATSTA= 20110611 PEREND= 20090411 PERSTA= 20110203 STATUS=5 DATEND=20120613 DATSTA=20120613 PEREND=20120410 PERSTA=20120204
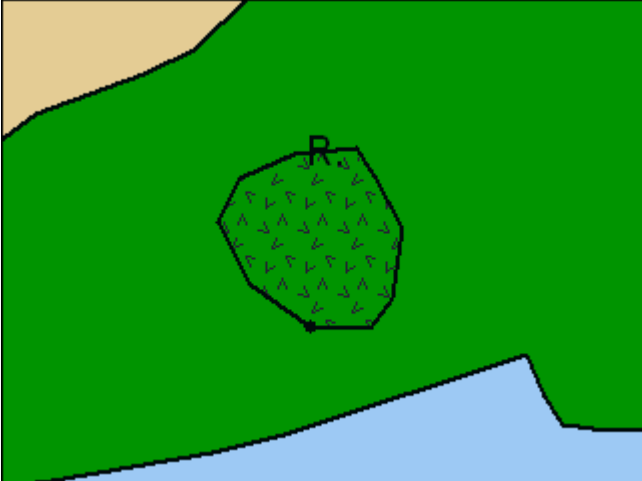
Screen Capture					
Expected test results	T1795: Four warnings "temporal attribution of master object bcnspp and slave object lights is different." must be triggered for the objects created.				
Secondary Errors	None				
Dataset Name	AA500005	**S-58 test No.**	T1797	**Type**	W

S-58 Description	Check that none of the following feature object and geometric primitive combinations, which do not display in ECDIS, are present in the dataset: • BRIDGE of type point; • DAMCON of type point, with attribute CATDAM ≠ 3; • GRIDRN of type point; • PIPSOL of type point; • PRDARE of type point, with attribute CATPRA = [Empty (null) value]; • RAPIDS of type point; • ROADWY of type point; • RUNWAY of type point; • SLOGRD of type area, with attributes CATSLO = 1, 2, 3, 4, 5, 7 and CONRAD ≠ 1, or CATSLO = [Empty (null) value]; • TUNNEL of type point; • VEGATN of type point or area, with attribute CATVEG = 1, 10, 11, 12, [Empty (null) value]; and WATFAL of type point.
Test Case No. 1	Above listed objects with attributes captured.

Location	32°24'37.84"S 60°51'11.46"E	**S57 Encoding**	WATFAL (P)	
			TUNNEL (P)	
			RUNWAY (P)	
			ROADWY (P)	
			RAPIDS (P)	
			PIPSOL (P)	
			GRIDRN (P)	
			BRIDGE (P)	
			DAMCON (P)	CATDAM=1
			DAMCON (P)	CATDAM=2
			VEGATN (P)	CATVEG=<Empty>
			VEGATN (P)	CATVEG=1
			VEGATN (P)	CATVEG=10
			VEGATN (P)	CATVEG=11
			VEGATN (P)	CATVEG=12
			PRDARE(P)	CATPRA=<Empty>
			SLOGRD (A)	CATSLO=<Empty>
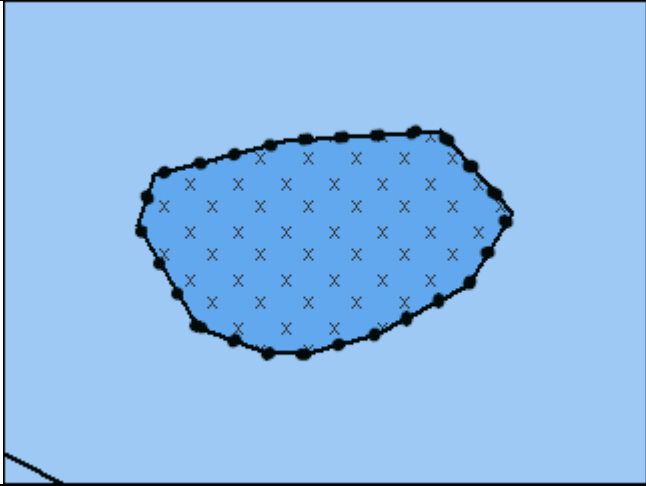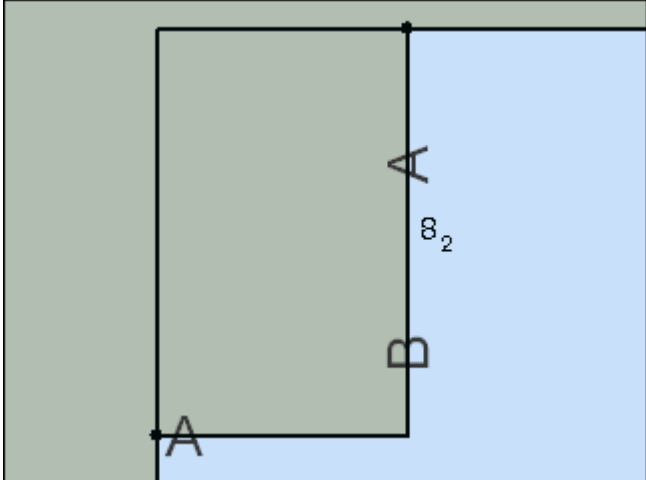
				SLOGRD (A)	CATSLO=1
				SLOGRD (A)	CATSLO=2
				SLOGRD (A)	CATSLO=3
				SLOGRD (A)	CATSLO=4
				SLOGRD (A)	CATSLO=5
				SLOGRD (A)	CATSLO=7

Screen Capture	
Expected test results	T1797: 25 warnings "the object cannot be displayed in ECDIS." must be triggered.
Secondary Errors	None
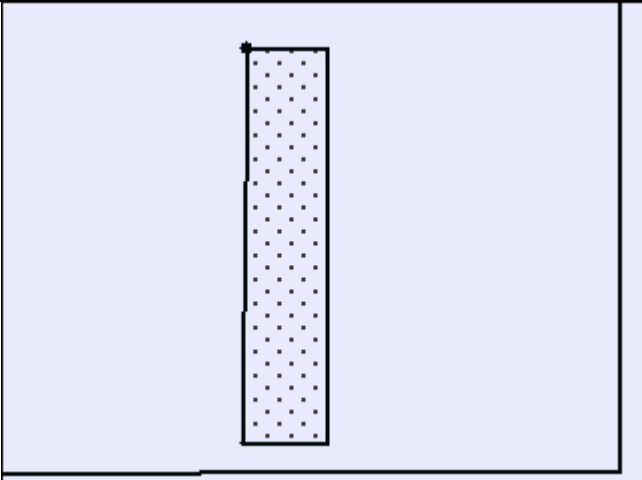
Test Dataset:AA500006
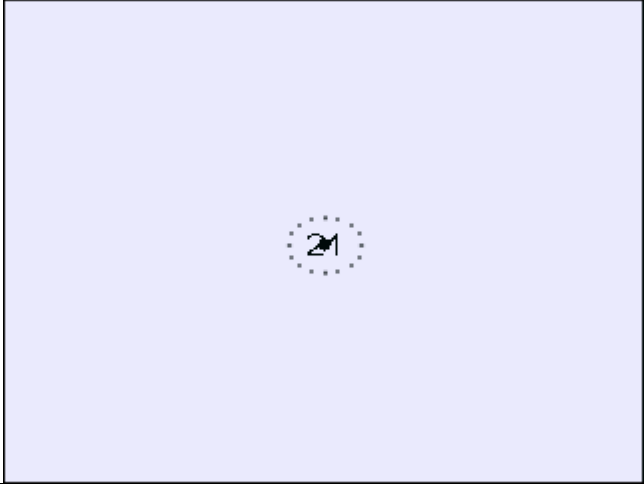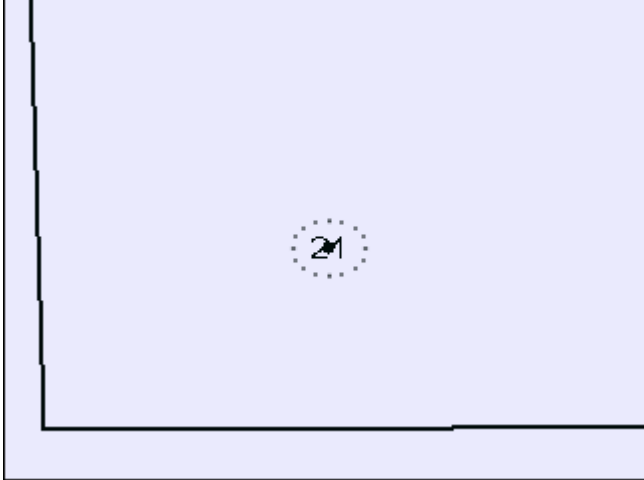
List of S58 Recommended ENC Validation Checks covered in this section:
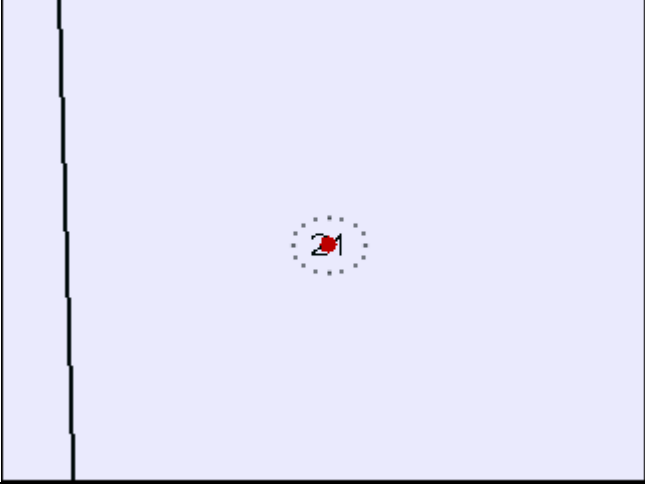
S58 Test	Description
58	Check that no SBDARE object of type Line bounds a SBDARE object of type Area.
59	Check that no OBSTRN object of type Line bounds an OBSTRN object of type Area.
548	Check that M_COVR meta objects provide exhaustive non-overlapping coverage of the whole cell.
1533	Check that no DRGARE object has a value for SOUACC that is equivalent to or degrades the accuracy indicated by the attribute value of CATZOC on the meta object M_QUAL.
1534	Check that no UWTROC object has a value for SOUACC that is equivalent to or degrades the accuracy indicated by the attribute value of CATZOC on the meta object M_QUAL.
1536	Check that no WRECKS object has a value for SOUACC that is equivalent to or degrades the accuracy indicated by the attribute value of CATZOC on the meta object M_QUAL.
1538	Check that no OBSTRN object has a value for SOUACC that is equivalent to or degrades the accuracy indicated by the attribute value of CATZOC on the meta object M_QUAL.
1637	Check that any PYLONS object of type Area with a WATLEV attribute value of 1 [partly submerged at high water], 2 [always dry] or 6 [subject to inundation or flooding] is covered by a LNDARE object of type Area.
1683	If only one RECTRC and only one NAVLNE belong to the same C_AGGR collection object, check that the RECTRC and NAVLNE objects have the same or reciprocal attribute value for ORIENT.
1684	Check for any measured distance that each transit line and its beacons are aggregated into collection objects C_AGGR, and that these collection objects, along with the track to be followed, are aggregated into another C_AGGR object.
1685	Check that any object encoded as TSSBND is the outer limit of a traffic lane/separation scheme roundabout.
1686	Check that any object encoded as TSELNE separates either of the following: 1) Two traffic lanes, 2) Traffic lane and Inshore traffic zone.
1687	Check that any object encoded as TSEZNE separates either of the following: 1) Two traffic lanes, 2) Traffic lane and Inshore traffic zone, 3) Centre of roundabout.
1688	Check that any object encoded as TSSCRS encodes a crossing between at least four traffic lanes.
543	Check that any TS_TSP attribute value conforms to the correct structure, (i.e. values separated by commas).
1559	Check that any T_NHMN object is associated (using the collection object C_ASSO with a T_TIMS or T_HMON object).
1562	Check that any TS_PNH object is associated (using the collection object C_ASSO) with a TS_TIS or TS_PRH object.
1605	Check that any ICEARE object is covered by a LNDARE or an UNSARE or a DEPARE object.
1625	Check that, if one of the component objects (AIRARE or RUNWAY) of an airfield is encoded using a collection object, that only C_ASSO is used.
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 the IALA system being used (given in 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").
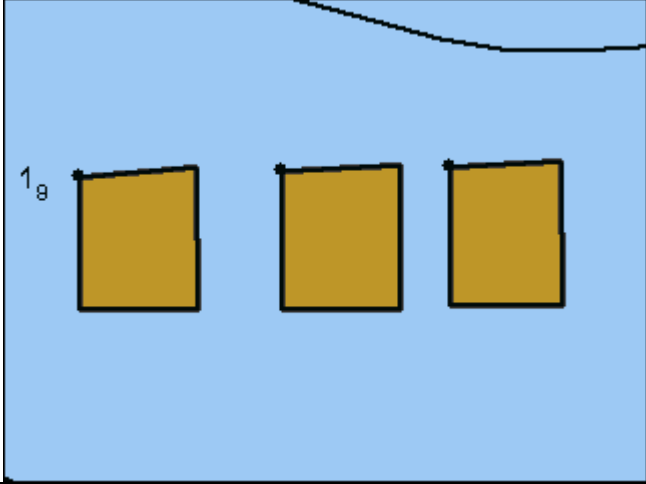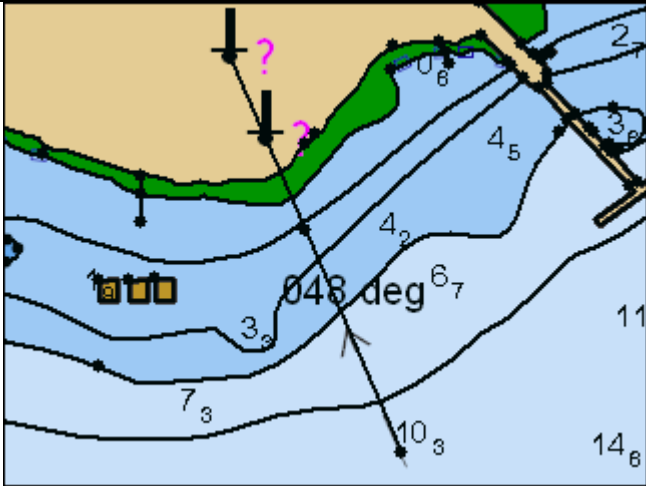
Dataset Name	AA500006			**S-58 test No.**	T0058	**Type**	W
S-58 Description	Check that no SBDARE object of type Line bounds a SBDARE object of type Area.						
Test Case No. 1	Linear SBDARE object created bounding SBDARE area object.						
Location	32°23'52.16"S 60°48'46.25"E			**S57 Encoding**	SBDARE (A&L)	NATSUR=9 WATLEV=4	
Screen Capture							
Expected test results	T0058: A warning "edge is shared between linear and area 'sbdare'" must be triggered.						
Secondary errors	T1671: One additional error "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" must be triggered related to the feature objects created.						
Dataset Name	AA500006			**S-58 test No.**	T0059	**Type**	W
S-58 Description	Check that no OBSTRN object of type Line bounds an OBSTRN object of type Area.						
Test Case No. 1	Linear OBSTRN object created bounding OBSTRN area object.						
Location	32°24'04.48"S 60°48'14.20"E			**S57 Encoding**	OBSTRN (A&L)	CATOBS=6 WATLEV=3 QUASOU=2 VALSOU=UNKNOWN	

Screen Capture	
Expected test results	T0059: A warning "edge is shared between linear and area 'obstrn'" must be triggered.
Secondary errors	T1671: One additional error "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" must be triggered related to the feature objects created.

Dataset Name	AA500006	**S-58 test No.**	T0548	**Type**	E

S-58 Description	Check that M_COVR meta objects provide exhaustive non-overlapping coverage of the whole cell.
Test Case No. 1	M_COVR objects with CATCOV=1 and CATCOV=2 captured overlapping each other.

Location	32°23'55.33"S 60°46'33.24"E	**S57 Encoding**	M_COVR(A)	CATCOV=1
			M_COVR(A)	CATCOV=2

Screen Capture	
Expected test results	T0548: An error "object is overlapped by next M_COVR" must be triggered. T0548: An error "is overlapped by previous M_COVR" must be triggered.
Secondary errors	T0019: Three additional warnings "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]" must be triggered related to the feature objects created. T0519: One additional error "Check Group 1 coverage and consistency" must be triggered related to the feature objects created. T1726: One additional error "Check that the entire area of the data set is covered by one or more
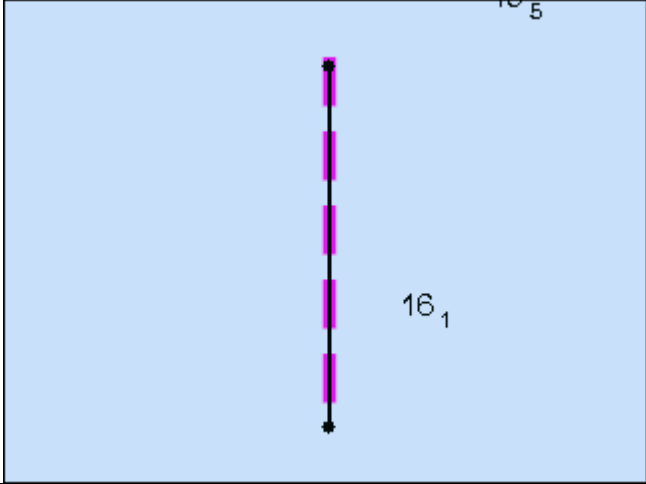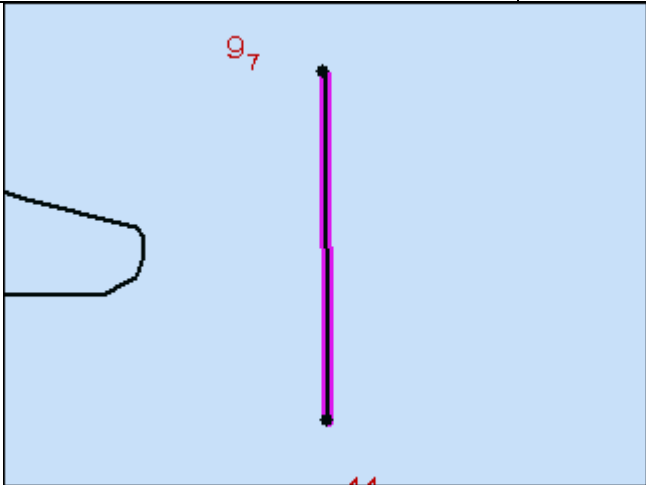
M_NSYS objects, with a value for the attribute MARSYS indicating the buoyage system in operation" must be triggered related to the feature objects created.

T0042: One additional error "inconsistency of 'm_covr' or TG1 coverage" must be triggered related to the feature objects created.

T0554: One additional error "Check Group 1 coverage and consistency" must be triggered related to the feature objects created.

T0501: One additional error "Check that cells are rectangular" must be triggered related to the feature objects created.

Dataset Name	AA500006		**S-58 test No.**	T1533	**Type**	E
S-58 Description	Check that no DRGARE object has a value for SOUACC that is equivalent to or degrades the accuracy indicated by the attribute value of CATZOC on the meta object M_QUAL.					
Test Case No. 1	Captured DRGARE object with attribute SOUACC that degrades the accuracy indicated attribute value of CATZOC on the meta object M_QUAL.					
Location	32°25'14.65"S 60°48'40.00"E		**S57 Encoding**	M_QUAL(A) DRGARE(A)	CATZOC=1 DRVAL1=20 SOUACC=5	
Screen Capture						
Expected test results	T1533: An error "redundant 'souacc' is defined by 'm_qual' in Dredged area" must be triggered.					
Secondary errors	None.					

Dataset Name	AA500006		**S-58 test No.**	T1534	**Type**	E
S-58 Description	Check that no UWTROC object has a value for SOUACC that is equivalent to or degrades the accuracy indicated by the attribute value of CATZOC on the meta object M_QUAL.					
Test Case No. 1	Captured UWTROC object with attribute SOUACC that degrades the accuracy indicated attribute value of CATZOC on the meta object M_QUAL.					
Location	32°25'11.24"S 60°48'42.90"E		**S57 Encoding**	M_QUAL(A) UWTROC(P)	CATZOC=1 QUASOU=1 SOUACC=5 VALSOU=21 WATLEV=3	
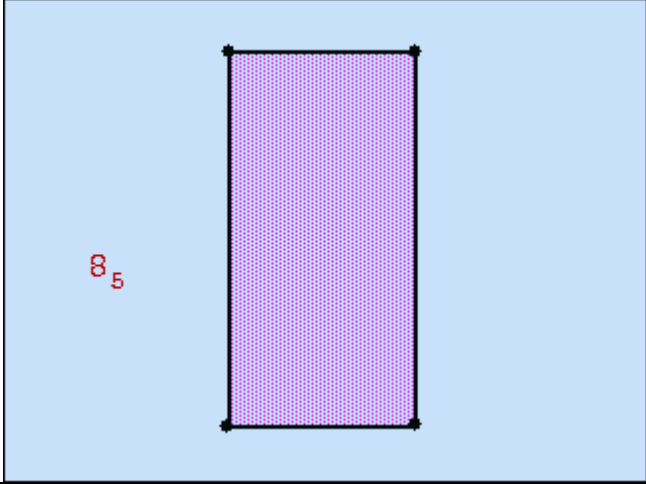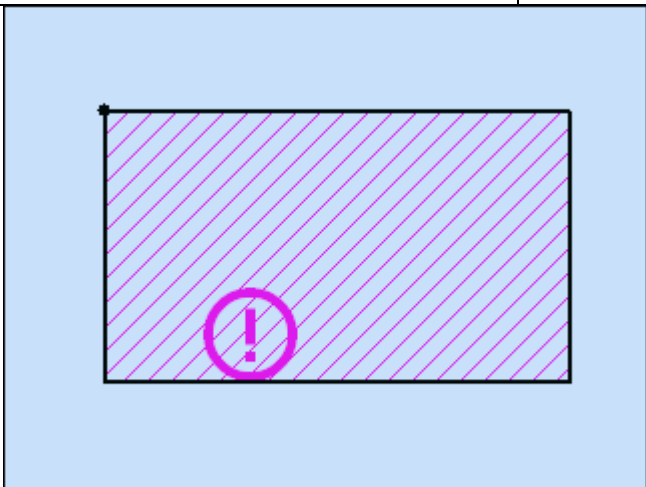
Screen Capture				
Expected test results	T1534: An error "redundant 'souacc' is defined by 'm_qual' in Underwater/awash rock" must be triggered.			
Secondary errors	None.			
Dataset Name	AA500006	**S-58 test No.**	T1536	**Type**	E

S-58 Description	Check that no WRECKS object has a value for SOUACC that is equivalent to or degrades the accuracy indicated by the attribute value of CATZOC on the meta object M_QUAL.
Test Case No. 1	Captured WRECKS object with attribute SOUACC that degrades the accuracy indicated attribute value of CATZOC on the meta object M_QUAL.

Location	32°25'16.55"S 60°48'34.71"E	**S57 Encoding**	M_QUAL(A) WRECKS (P)	CATZOC=1 CATWRK=2 SOUACC=5 VALSOU=21 WATLEV=3 QUASOU=6

Screen Capture	
Expected test results	T1536: An error "redundant 'souacc' is defined by 'm_qual' in Wreck" must be triggered.
Secondary errors	None.

Dataset Name	AA500006	**S-58 test No.**	T1538	**Type**	E
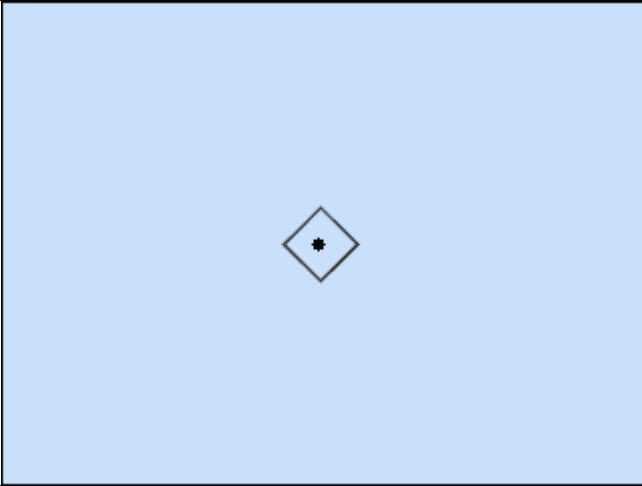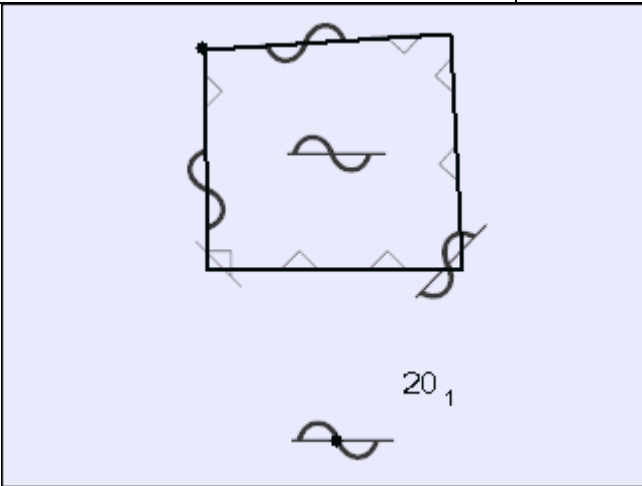
S-58 Description	Check that no OBSTRN object has a value for SOUACC that is equivalent to or degrades the accuracy indicated by the attribute value of CATZOC on the meta object M_QUAL.			
Test Case No. 1	Captured OBSTRN object with attribute SOUACC that degrades the accuracy indicated attribute value of CATZOC on the meta object M_QUAL.			
Location	32°25'11.20"S 60°48'34.36"E	**S57 Encoding**	M_QUAL(A) OBSTRN(P)	CATZOC=1 SOUACC=5 VALSOU=21 WATLEV=3 QUASOU=6
Screen Capture				
Expected test results	T1538: An error "redundant 'souacc' is defined by 'm_qual' in Obstruction" must be triggered.			
Secondary errors	None.			
Dataset Name	AA500006	**S-58 test No.**	T1637	**Type**	E
S-58 Description	Check that any PYLONS object of type Area with a WATLEV attribute value of 1 [partly submerged at high water], 2 [always dry] or 6 [subject to inundation or flooding] is covered by a LNDARE object of type Area.			
Test Case No. 1	Captured PYLONS (A) objects with attribute WATLEV=1, 2 or 6 without covered by a LNDARE.			
Location	32°24'06.10"S 60°48'20.59"E	**S57 Encoding**	PYLONS(A)	CATPYL=unknown WATLEV=1,2 or 6
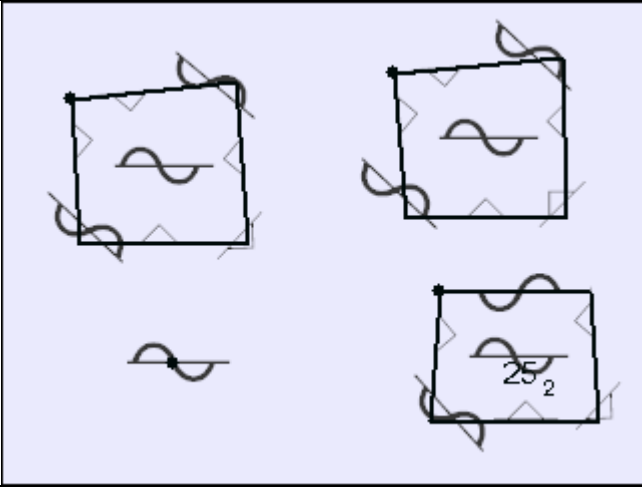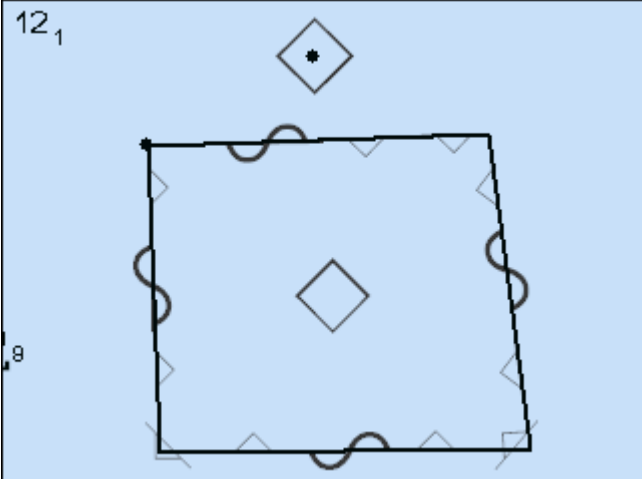
Screen Capture	
Expected test results	T1637: Three errors "pylons object is covered by prohibited 'depare'" must be triggered.
Secondary errors	T1786: One additional warning "Check that any objects of type Area with WATLEV = 2 [always dry] are covered by LNDARE objects of type Area" must be triggered related to the feature objects created.

Dataset Name	AA500006		**S-58 test No.**	T1683	**Type**	W
S-58 Description	If only one RECTRC and only one NAVLNE belong to the same C_AGGR collection object, check that the RECTRC and NAVLNE objects have the same or reciprocal attribute value for ORIENT.					
Test Case No. 1	Captured NAVLNE and RECTRC objects having the different value of ORIENT.					
Location	32°24'02.60"S 60°48'27.83"E		**S57 Encoding**	NAVLNE(L)	CATNAV=3 ORIENT=335	
				RECTRC(L)	CATTRK=1 ORIENT=336 TRAFIC=3	
Screen Capture						
Expected test results	T1683: A warning "'orient' attribute conflicts with that in 'navlne'" must be triggered.					
Secondary errors	T0050: One additional warning "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" must be triggered related to the feature objects created.

T1787: Two additional warnings "Check for any objects NAVLNE and RECTRC sharing an edge that | | | | | |

	they have the same or reciprocal attribute value for ORIENT" must be triggered related to the feature objects created.			

Dataset Name	AA500006	**S-58 test No.**	T1684	**Type**	E
S-58 Description	Check for any measured distance that each transit line and its beacons are aggregated into collection objects C_AGGR, and that these collection objects, along with the track to be followed, are aggregated into another C_AGGR object.				
Test Case No. 1	Captured NAVLNE and BCNSPP objects with attributes CATNAV and CATSPM.				

Location	32°23'55.15"S 60°48'03.02"E	**S57 Encoding**	NAVLNE(L)	CATNAV=2 ORIENT=unknown INFORM= Measured distance=145 metres
			BCNSPP(P)	CATSPM=17

Screen Capture	
Expected test results	T1684: Three warnings "Check that any NAVLNE object with CATNAV=2 belongs to a C_AGGR collection object" must be triggered.
Secondary errors	None.

Dataset Name	AA500006	**S-58 test No.**	T1685	**Type**	E
S-58 Description	Check that any object encoded as TSSBND is the outer limit of a traffic lane/separation scheme roundabout.				
Test Case No. 1	Captured TSSBND object without any outer limit of a traffic lane/separation scheme roundabout.				
Location	32°24'22.56"S 60°48'39.33"E	**S57 Encoding**	TSSBND (L)		
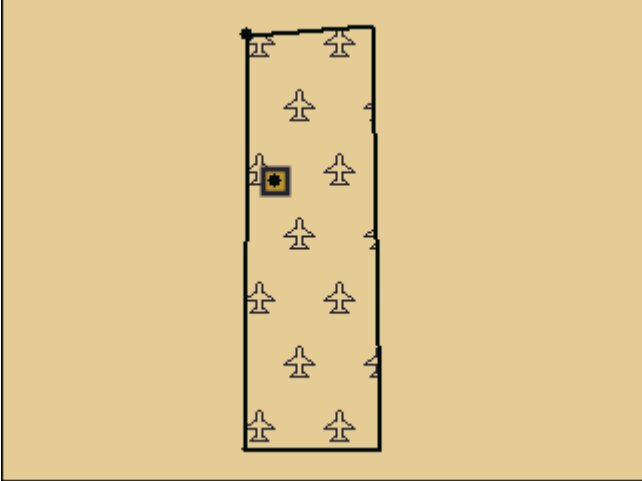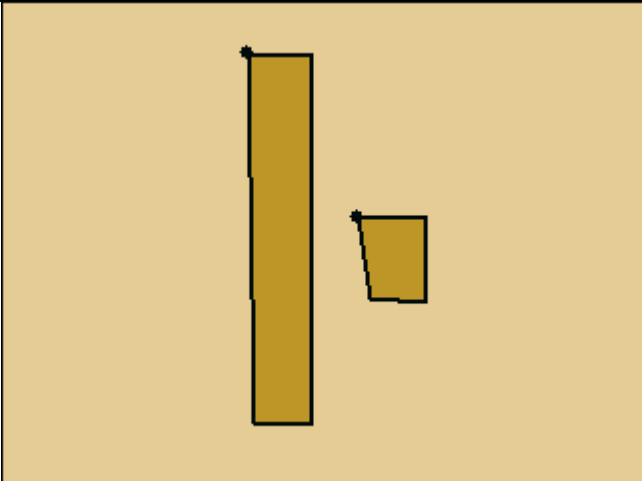
Screen Capture	
Expected test results	T1685: An error" traffic separation scheme boundary without the scheme" must be triggered.
Secondary errors	None.

Dataset Name	AA500006	**S-58 test No.**	T1686	**Type**	E
S-58 Description	Check that any object encoded as TSELNE separates either of the following: 1) Two traffic lanes, 2) Traffic lane and Inshore traffic zone.				
Test Case No. 1	Captured TSELNE object without any traffic lanes and inshore traffic zone.				
Location	32°24'22.36"S 60°48'29.28"E	**S57 Encoding**	TSELNE (L)		
Screen Capture					
Expected test results	T1686: An error "traffic separation line does not separate anything" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500006	**S-58 test No.**	T1687	**Type**	W
S-58 Description	Check that any object encoded as TSEZNE separates either of the following: 1) Two traffic lanes, 2) Traffic lane and Inshore traffic zone, 3) Centre of roundabout.				
Test Case No. 1	Captured TSEZNE object which does not separate two traffic lanes, traffic lane and inshore traffic zone and centre of roundabout.				
Location	32°24'15.46"S 60°47'45.97"E	**S57 Encoding**	TSEZNE (A)		
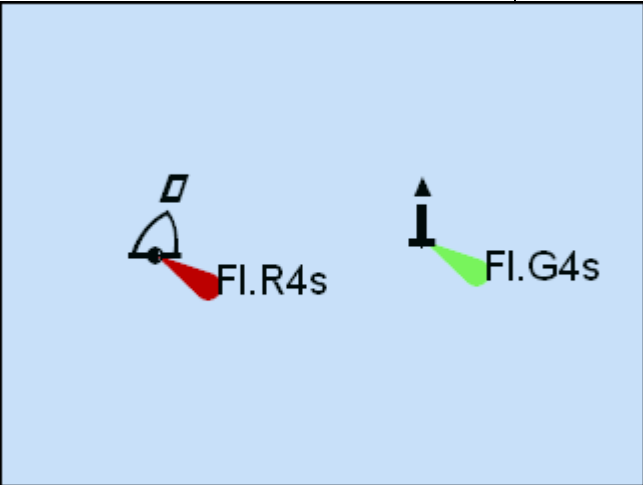
Screen Capture					
Expected test results	T1687: A warning "Check that any object encoded as TSEZNE separates either of the following: 1) Two traffic lanes, 2) Traffic lane and Inshore traffic zone, 3) Centre of roundabout" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500006	**S-58 test No.**	T1688	**Type**	E
S-58 Description	Check that any object encoded as TSSCRS encodes a crossing between at least four traffic lanes.				
Test Case No. 1	Captured TSSCRS object without any traffic lanes.				
Location	32°24'10.26"S 60°47'15.08"E	**S57 Encoding**	TSSCRS (A)		
Screen Capture					
Expected test results	T1688: An error "incomplete traffic separation scheme crossing" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500006	**S-58 test No.**	T0543	**Type**	E
S-58 Description	Check that any TS_TSP attribute value conforms to the correct structure, (i.e. values separated by commas).				
Test Case No. 1	Captured TS_PAD object with attribute TS_TSP values improperly.				
Location	32°24'57.45"S 60°47'05.16"E	**S57 Encoding**	TS_PAD(P)	TS_TSP=	
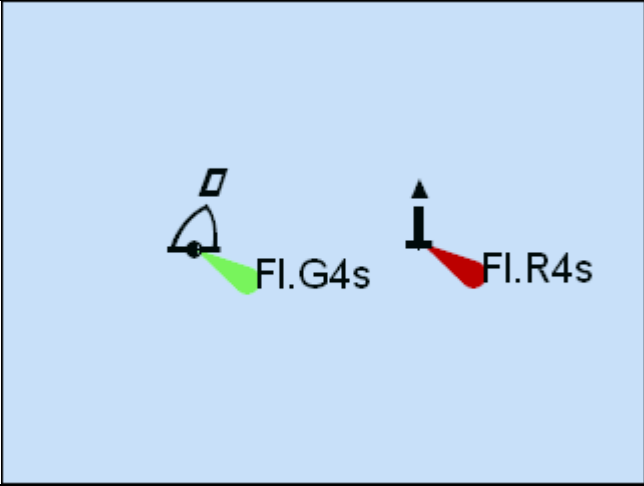
					63230,Darwin,HW,124,2.2,128,2.1,125,2.9,116,2.8,110,2.0,095,0.6,020,0.2,320,1.9,315,2.1,300,2.8,268,2.6,200,2.4,1652.5

Screen Capture	
Expected test results	T0543: An error "bad format of 'ts_tsp' in tidal stream panel data" must be triggered.
Secondary errors	T0073: One additional warning "Check that no attribute value contains a leading or a trailing space, and that no attribute of type List contains any space" must be triggered related to the feature objects created.

Dataset Name	AA500006	**S-58 test No.**	T1559	**Type**	E
S-58 Description	Check that any T_NHMN object is associated (using the collection object C_ASSO with a T_TIMS or T_HMON object).				
Test Case No. 1	Captured T_NHMN (P, A) object, without associated a collection object with a T_TIMS or T_HMON objects.				
Location	32°25'29.81"S 60°48'19.92"E	**S57 Encoding**	T_NHMN(P&A)		
Screen Capture					
Expected test results	T1559: Two errors" object must be associated using 'c_asso'" must be triggered.				

Secondary errors	None.				
Test Case No. 2	Captured T_NHMN (P, A) object associated a collection object. • T_NHMN (A) associated a collection object with a T_TIMSS (A) object. • T_NHMN (P) associated a collection object with a T_HMON (A) object.				
Location	32°25'30.28"S 60°48'32.33"E	**S57 Encoding**	T_NHMN(P, A) T_TIMS(P) T_HMON(A)		
Screen Capture					
Expected test results	T1559: 2errors "object must be associated using 'c_asso'" must not be triggered.				
Secondary errors	None.				
Dataset Name	AA500006	**S-58 test No.**	T1562	**Type**	E
S-58 Description	Check that any TS_PNH object is associated (using the collection object C_ASSO) with a TS_TIS or TS_PRH object.				
Test Case No. 1	Captured TS_PNH (P, A) object, without associated a collection object with a TS_TIS or TS_PRH objects.				
Location	32°25'27.91"S 60°47'53.54"E	**S57 Encoding**	TS_PNH (P ,A)	T_MTOD=unkn own T_THDF=1	
Screen Capture					
Expected test results	T1562: Two errors" object must be associated using 'c_asso' "must be triggered.				

Secondary errors	None.				
Test Case No. 2	Captured TS_PNH (P, A) object associated a collection object. • TS_PNH (A) associated a collection object with a TS_TIS (A) object. • TS_PNH (P) associated a collection object with a TS_PRH (A) object.				
Location	32°25'32.43"S 60°47'35.81"E	**S57 Encoding**	TS_PNH(P) TS_TIS(P) TS_PRH(P)		
Screen Capture					
Expected test results	T1562:2errors" object must be associated using 'c_asso' "must not be triggered.				
Secondary errors	None.				

Dataset Name	AA500006	**S-58 test No.**	T1605	**Type**	E
S-58 Description	Check that any ICEARE object is covered by a LNDARE or an UNSARE or a DEPARE object.				
Test Case No. 1	Captured ICEARE object overlapping PONTON or HULCKS or FLODOC.				
Location	32°23'54.97"S 60°46'58.06"E	**S57 Encoding**	ICEARE (A) PONTON (A) HULCKS (A) FLODOC (A)	CATICE=5	
Screen Capture					
Expected test results	T1605: An error" Ice area object is covered by prohibited 'ponton'" must be triggered. T1605: An error" Ice area object is covered by prohibited 'hulkes'" must be triggered.				

T1605: An error" Ice area object is covered by prohibited 'flodoc'" must be triggered.					
Secondary errors	None.				
Dataset Name	AA500006	**S-58 test No.**	T1625	**Type**	W
S-58 Description	Check that, if one of the component objects (AIRARE or RUNWAY) of an airfield is encoded using a collection object, that only C_ASSO is used.				
Test Case No. 1	Captured AIRARE and BUISGL objects, these objects are encoded as collection object (C_AGGR).				
Location	32°23'51.08"S 60°48'22.79"E	**S57 Encoding**	AIRARE(A) BUISGL(P)		
Screen Capture					
Expected test results	T1625: A warning "'c_asso' must be used in this case" must be triggered.				
Secondary errors	None.				
Test Case No. 2	Captured RUNWAY and BUISGL objects, these objects are encoded as collection object (C_AGGR).				
Location	32°23'51.55"S 60°48'27.99"E	**S57 Encoding**	RUNWAY(A) BUISGL(A)		
Screen Capture					
Expected test results	T1625: A warning "'c_asso' must be used in this case" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500006	**S-58 test No.**	T1729	**Type**	W

S-58 Description	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 the IALA system being used (given in 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").			
Test Case No. 1	Captured BOYLAT BCNLAT and LIGHTS objects opposite to IALA system.			
Location	32°25'28.02"S 60°46'39.96"E	**S57 Encoding**	BCNLAT(P) TOPMAR(P) LIGHTS(P) BOYLAT(P) TOPMAR(P) LIGHTS(P)	BCNSHP=1 CATLAM=2 COLOUR=4 TOPSHP=1 COLOUR=4 LITCHR=2 COLOUR=4 SIGGRP=(1) SIGPER=4 BOYSHP=1 CATLAM=1 COLOUR=3 TOPSHP=5 COLOUR=3 LITCHR=2 COLOUR=3 SIGGRP=(1) SIGPER=4
Screen Capture				
Expected test results	T1729: 6 warnings "wrong 'colour' of navigational mark in BCNLAT, BOYLAT and LIGHTS" must be triggered.			
Secondary errors	None.			
Test Case No. 2	Captured BOYLAT BCNLAT and LIGHTS objects opposite to IALA system with attribute MARSYS.			
Location	32°25'32.17"S 60°46'57.56"E	**S57 Encoding**	BCNLAT(P) TOPMAR(P)	BCNSHP=1 CATLAM=2 COLOUR=3 MARSYS=9 TOPSHP=1 COLOUR=3

			LIGHTS(P)	LITCHR=2
				COLOUR=3
				SIGGRP=(1)
				SIGPER=4
			BOYLAT(P)	BOYSHP=1
				CATLAM=1
				COLOUR=4
				MARSYS=9
			TOPMAR(P)	TOPSHP=5
				COLOUR=4
			LIGHTS(P)	LITCHR=2
				COLOUR=4
				SIGGRP=(1)
				SIGPER=4

Screen Capture	

Expected test results	T1729: 6warnings "wrong 'colour' of navigational mark in BCNLAT, BOYLAT and LIGHTS" must not be triggered.
Secondary errors	None.
Test Case No. 3	Captured BOYLAT BCNLAT and LIGHTS objects opposite to IALA system with attribute MARSYS.

Location	32°25'23.65"S 60°46'57.61"E	**S57 Encoding**	BCNLAT(P)	BCNSHP=1
				CATLAM=2
				COLOUR=3
				MARSYS=10
			TOPMAR(P)	TOPSHP=1
				COLOUR=3
			LIGHTS(P)	LITCHR=2
				COLOUR=3
				SIGGRP=(1)
				SIGPER=4
			BOYLAT(P)	BOYSHP=1
				CATLAM=1
				COLOUR=4
				MARSYS=10
			TOPMAR(P)	TOPSHP=5
				COLOUR=4
			LIGHTS(P)	LITCHR=2
				COLOUR=4
				SIGGRP=(1)

			SIGPER=4
Screen Capture	FI.G4s FI.R4s 13 4		
Expected test results	T1729: 6warnings "wrong 'colour' of navigational mark in BCNLAT, BOYLAT and LIGHTS" must not be triggered.		
Secondary errors	None		

Test Dataset:AA500007
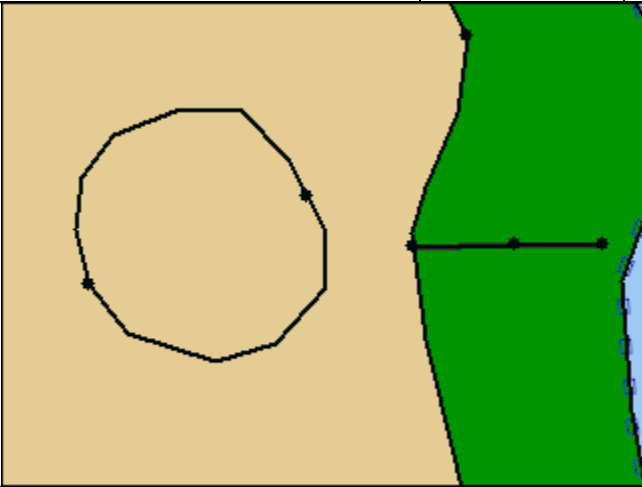
List of S58 Recommended ENC Validation Checks covered in this section:
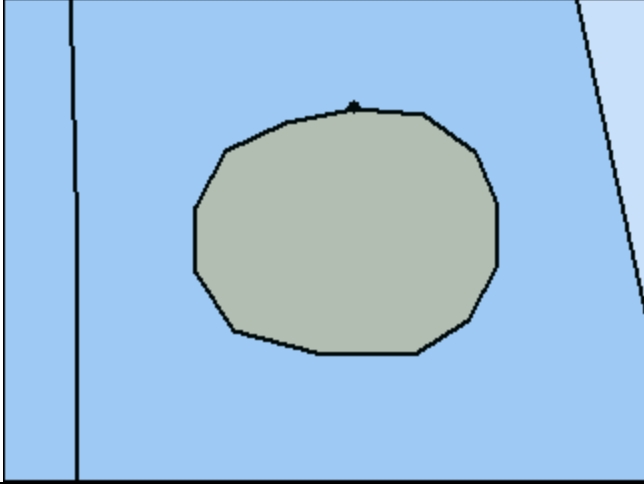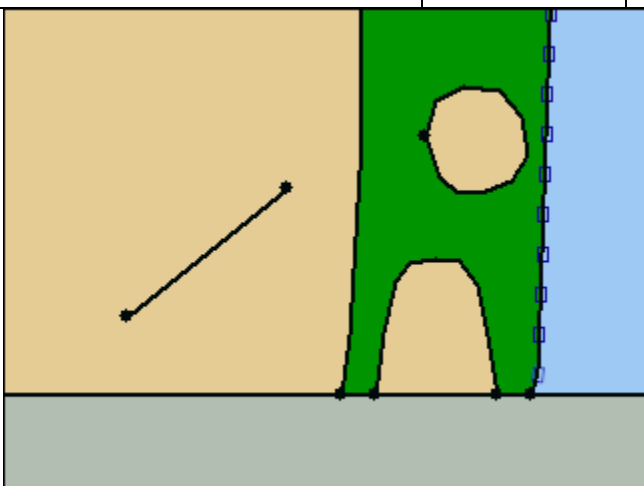
S58 Test	Description
2	Check that all VE edges have a beginning node and an end node.
11	Check that all segments with USAG = 3 [exterior boundary truncated By the data limit] are linked to an object M_COVR.
13	Check that for linear features comprising multiple edges, the vector records making up the 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.
15	Check that the first and last edges bounding an area meet at a common connected node.
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].
21	Check that all vector record pointer (VRPT) fields are pointed to by an edge vector record.
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.
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].
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 its edges masked (i.e. MASK = 1 [mask]).
527	Check that all files referenced by TXTDSC, NTXTDS and PICREP attributes exist and that the file names are in accordance with the ENC Product Specification.
528	Check for existence of a catalogue file.
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.
566	Check that there is no NEWOBJ object in the data that has not been approved by an IHO ENC Encoding Bulletin.
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.
28	Check that the count of records in DSSI is correct.
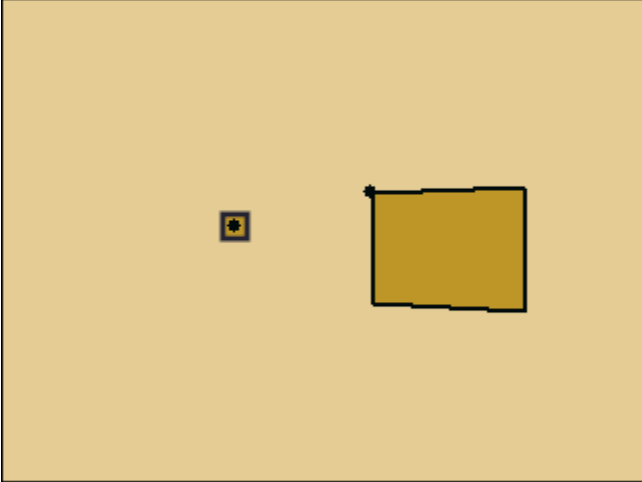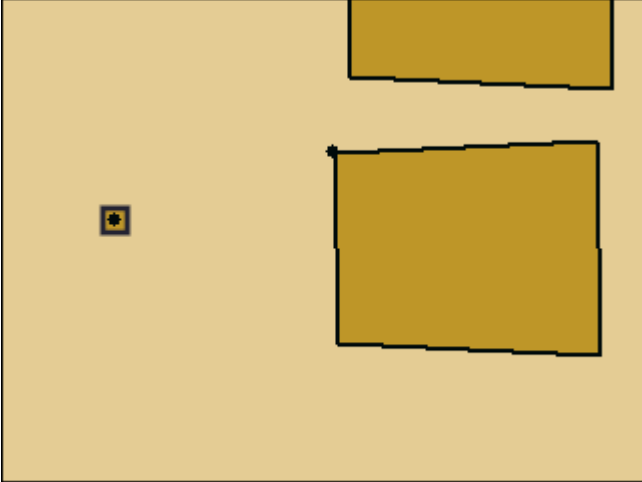
Dataset Name	AA500007		S-58 test No.	T0002		Type	E

S-58 Description	Check that all VE edges have a beginning node and an end node.

Test Case No. 1	Cable submarine line captured without connected nodes.

Location	32°24'54.03"S 60°44'54.20"E	S57 Encoding	CBLSUB(L)	

Screen Capture	

Expected test results	T0002: An error "Edge does not point to two nodes" must be triggered.
Secondary Errors	T0084: An error "isolated node marked as connected" must be triggered. T0012: An error "CBLSUB object has no geometry". T0021: An error "orphan" must be triggered.

Dataset Name	AA500007		S-58 test No	T0011		Type	E

S-58 Description	Check that all segments with USAG = 3 [exterior boundary truncated By the data limit] are linked to an object M_COVR.

Test Case No. 1	Anchorage area with truncated edges captured.

Location	32°23'51.34"S 60°43'36.08"E	S57 Encoding	ACHARE (A)	

Screen Capture	

Expected test results	T0011: An error "edge is not shared by 'm_covr' with 'coverage available', but has USAG=C in
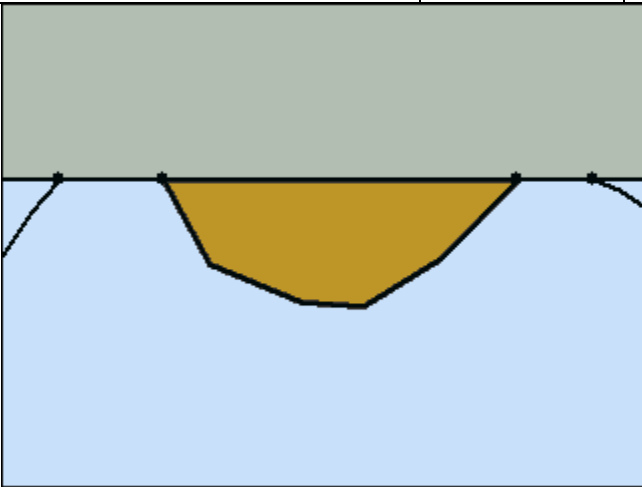
	object ACHARE" must be triggered.				
Secondary Errors	None.				
Dataset Name	AA500007	**S-58 test No.**	T0013	**Type**	W
S-58 Description	Check that for linear features comprising multiple edges, the vector records making up the linear feature are referenced sequentially and that the end node of a vector record is the same as the start node of The following vector record.				
Test Case No. 1	Cable submarine line captured single object and two edges.				
Location	32°24'39.15"S 60°45'00.11"E	**S57 Encoding**	CBLSUB(L)		
Screen Capture					
Expected test results	T0013: A warning "line primitive contains gap" must be triggered.				
Secondary Errors	None.				
Dataset Name	AA500007	**S-58 test No.**	T0015	**Type**	E
S-58 Description	Check that the first and last edges bounding an area meet at a common connected node.				
Test Case No. 1	Cable submarine area captured bounding an area without meet at a common connected node.				
Location	32°24'50.17"S 60°44'20.17"E	**S57 Encoding**	CBLARE(A)		
Screen Capture					
Expected test results	T0015: An error "contour is not closed" must be triggered.				

Secondary Errors	T0041: An error "Check that all areas are closed" must be triggered for the objects created.

Dataset Name	AA500007	S-58 test No.	T0019	Type	W
S-58 Description	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].				
Test Case No. 1	M_COVR Exterior boundary truncated captured.				
Location	32°25'40.43"S 60°44'02.86"E	S57 Encoding	M_COVR (A)		
Screen Capture					
Expected test results	T0019: A warning "edge coincides with data limit border, but has no USAG=C in object M_COVR" must be triggered.				
Secondary Errors	None.				

Dataset Name	AA500007	S-58 test No.	T0021	Type	E
S-58 Description	Check that all vector record pointer (VRPT) fields are pointed to by an edge vector record.				
Test Case No. 1	Captured Spatial node with null class.				
Location	32°24'54.47"S 60°43'47.10"E	S57 Encoding	VE		
Screen Capture					
Expected test results	T0021: An error "orphan" must be triggered.				
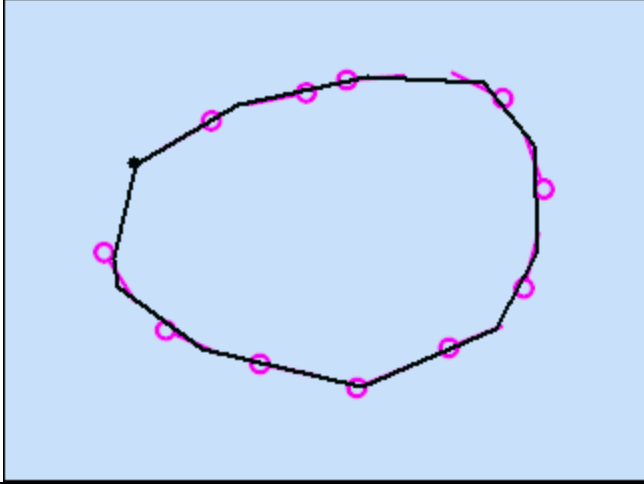
Secondary Errors	None.				
Dataset Name	AA500007	S-58 test No.	T0040	Type	W
S-58 Description	Check that any two feature objects of type Line satisfying all of the following conditions are chained together: • both objects are encoded with the same class and attribute values, • both objects refer to linear 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.				
Test Case No. 1	Shoreline construction lines are encoded with different object class and attributes.				
Location	32°25'38.79"S 60°46'22.09"E	S57 Encoding	SLCONS (L) LNDELV (L)	CATSLC=4 WATLEV=2 QUAPOS=2 and 4	
Screen Capture					
Expected test results	T0040: Two warnings "this object and 'slcons' can be merged into one object Shoreline construction" must be triggered.				
Secondary Errors	None.				
Dataset Name	AA500007	S-58 test No.	T0042	Type	E
S-58 Description	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].				
Test Case No. 1	Edge referenced by only one Group 1 feature.				
Location	32°25'39.24"S 60°46'25.66"E	S57 Encoding			

Screen Capture	
Expected test results	T0042: An error "edge is open border of TG1 coverage" must be triggered.
Secondary Errors	None.

Dataset Name	AA500007	**S-58 test No.**	T0071	**Type**	W
S-58 Description	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 its edges masked (i.e. MASK = 1 [mask]).				
Test Case No. 1	Land area edges masked Land elevation line edge masked Coastline line edge masked				
Location	32°25'40.30"S 60°46'22.34"E	**S57 Encoding**	LNDARE(A) LNDELV(L) COALNE(L)		
Screen Capture					
Expected test results	T0071: Three warnings "all edges masked" must be triggered.				
Secondary Errors	None.				

Dataset Name	AA500007	**S-58 test No.**	T0527	**Type**	E
S-58 Description	Check that all files referenced by TXTDSC, NTXTDS and PICREP attributes exist and that the file names are in accordance with the ENC Product Specification.				

Test Case No. 1	Building, single (A&P) captured.			
Location	32°25'34.41"S 60°44'55.10"E	**S57 Encoding**	BUISGL (P&A)	TXTDSC=US500527.TXT NTXTDS= US500527.TXT PICREP = US500527.TIF
Screen Capture				
Expected test results	T0527: Two errors "external file for 'ntxtds' not found" must be triggered. T0527: Two errors "external file for 'txtdsc' not found" must be triggered. T0527: Two errors "external file for 'picrep' not found" must be triggered.			
Secondary Errors	None.			
Test Case No. 2	Building, single (A&P) captured.			
Location	32°25'35.57"S 60°44'55.21"E	**S57 Encoding**	BUISGL (P&A)	TXTDSC=GB50527.TXT NTXTDS= GB50527.TXT PICREP = GB50527.TIF
Screen Capture				
Expected test results	T0527: Two errors "illegal file name in 'picrep'" must be triggered. T0527: Two errors "illegal file name in 'txtdsc'" must be triggered. T0527: Two errors "illegal file name in 'ntxtds'" must be triggered.			
Secondary Errors	T0073: A warning "Check that Textual Description (TXTDSC) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered for the objects created.			

T0073: A warning "Check that Textual Description in National Language (NTXTDS) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered for the objects created.

T0073: A warning "Check that Pictorial Representation (PICREP) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered for the objects created.

Dataset Name	AA500007	S-58 test No.	T0528	Type	E
S-58 Description	Check for existence of a catalogue file.				
Test Case No. 1	Catalogue file deleted after creating ENCROOT.				
Location	N/R	**S-58 test No.**	N/R		
Screen Capture					
Expected test results	T0528: An error "No catalog file detected, cannot check CRC" must be triggered.				
Secondary Errors	None.				

Dataset Name	AA500007	S-58 test No.	T0554	Type	E
S-58 Description	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.				
Test Case No. 1	Floating dock area captured on DEPARE.				
Location	32°23'48.90"S 60°44'04.92"E	**S57 Encoding**	FLODOC (A) DEPARE (A)		
Screen Capture					
Expected test results	T0554: An error "edge is shared by M_COVR with CATCOV=1 and more than one TG1 objects" must be triggered.				
Secondary Errors	T0519: Two errors "Check Group 1 coverage and consistency: Group 1 features cannot overlap" must be triggered for the objects created. T0548: An error "edge is open border of 'm_covr', but not on the chart borders" must be triggered for the objects created. T0042: An error "edge is open border of TG1 coverage" must be triggered for the objects created				
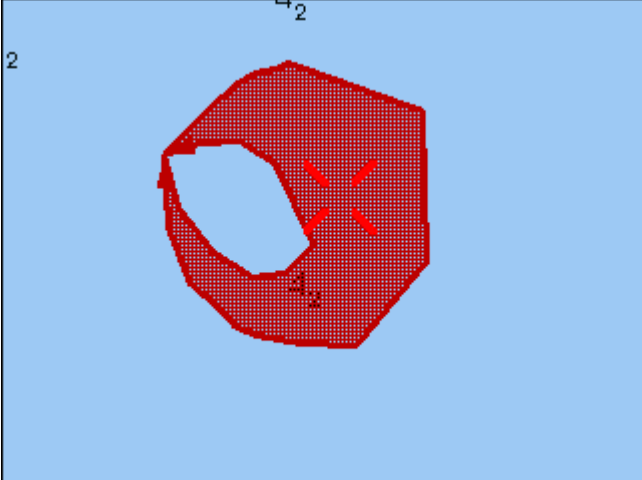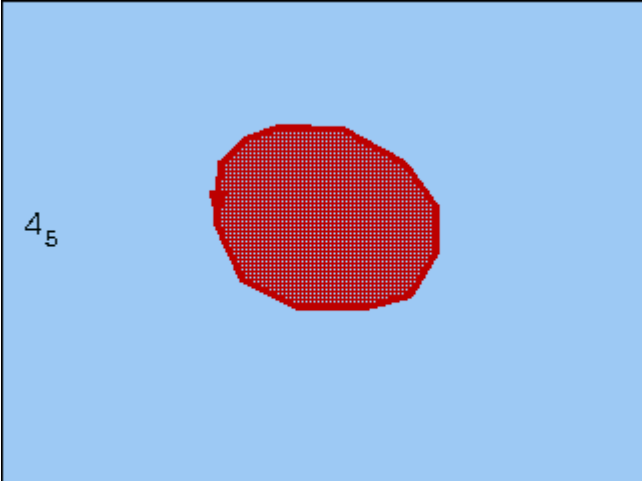
	must be triggered for the objects created.
	T0019: A warning "edge coincides with data limit border, but has no USAG=C in object FLODOC" must be triggered for the objects created.

Dataset Name	AA500007	S-58 test No.	T0566	Type	E
S-58 Description	Check that there is no NEWOBJ object in the data that has not been approved by an IHO ENC Encoding Bulletin.				
Test Case No. 1	New Object (A, P and L) captured.				
Location	32°24'26.12"S 60°44'44.35"E	**S57 Encoding**	NEWOBJ (A,P&L))		
Screen Capture					
Expected test results	T0566: Three errors "This use of NEWOBJ is forbidden unless it has been approved by an IHO ENC Encoding Bulletin" must be triggered.				
Secondary Errors	T0562: Three errors "INFORM must commence with the value "New object" must be triggered.				

Dataset Name	AA500007	S-58 test No.	T0025	Type	E
S-58 Description	• 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.				
Test Case No. 1	Pipeline captured.				
Location	32°23'53.31"S 60°46'20.89"E	**S57 Encoding**	PIPSOL (L)		
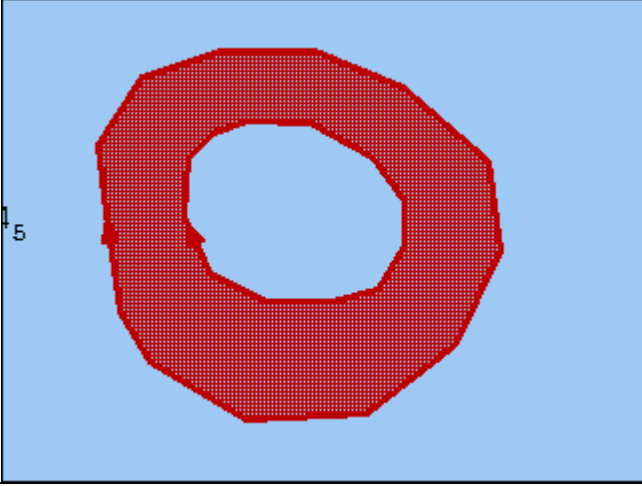
Screen Capture	
Expected test results	T0025: An error "Edge record does not contain SOPT subfield" must be triggered.
Secondary Errors	T0012: One error "PIPSOL object has no geometry" must be triggered for the objects created.

Dataset Name	AA500007	**S-58 test No.**	T0028	**Type**	E
S-58 Description	Check that the count of records in DSSI is correct.				
Test Case No. 1	Created a scenario that count of records is not equal to number of physical records in the cell.				
Location	N/A	**S57 Encoding**	N/A	N/R	
Screen Capture					
Expected test results	T0028: An error "Wrong number of records in DSSI" must be triggered.				
Secondary Errors	None.				
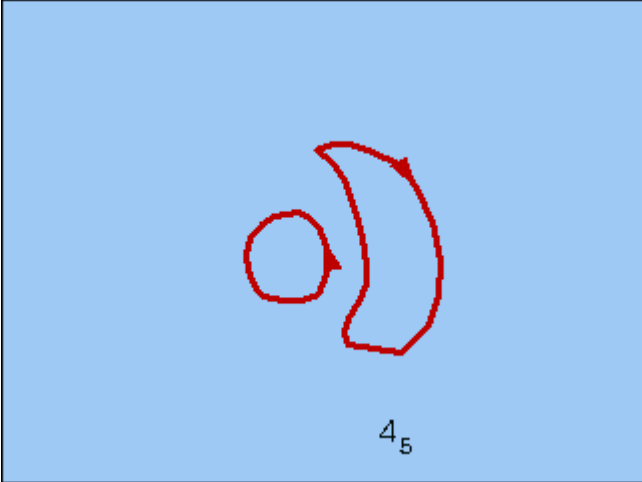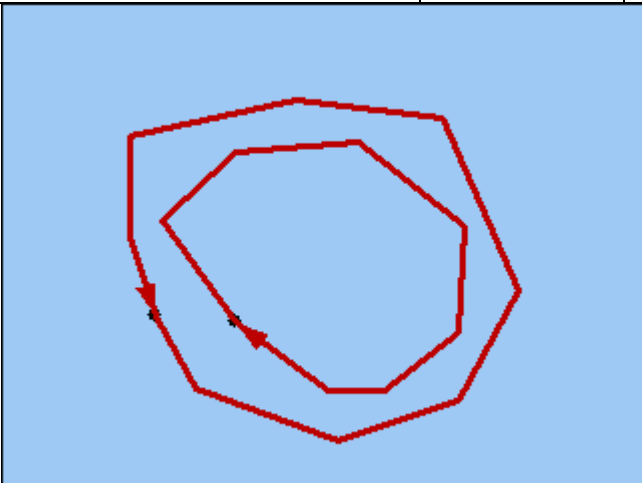
Test Dataset:AA500008
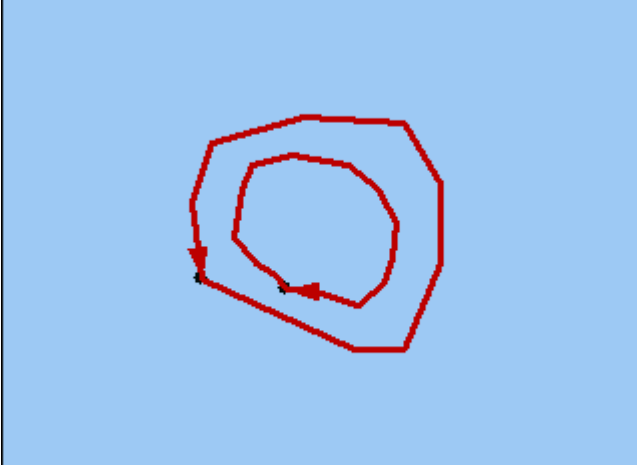
List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
14	Check for any area object having outer and inner boundaries that two of these boundaries do not share more than one node.
16	Check that area outer boundaries are encoded clockwise.
17	Check that area inner boundaries are encoded counter clockwise.
20	Check that geometry primitive is compatible with object class.
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.

Dataset Name	AA500008		S-58 test No.	T0014		Type	E
S-58 Description	Check for any area object having outer and inner boundaries that two of these boundaries do not share more than one node.						
Test Case No. 1	Captured two SEAARE sharing with a single node.						
Location	32°24'43.18"S 60°42'06.52"E		**S57 Encoding**	SEAARE(A)			
Screen Capture							
Expected test results	T0014: An error "SEAARE - Sea area / named water area Polygon rings touch at more than one node" must be triggered.						
Secondary Errors	None.						

Dataset Name	AA500008		S-58 test No.	T0016		Type	E
S-58 Description	Check that area outer boundaries are encoded clockwise.						
Test Case No. 1	Captured SEAARE object outer boundaries are encoded as clockwise.						
Location	32°25'00.42"S 60°42'18.18"E		**S57 Encoding**	SEAARE(A)			
Screen Capture							
Expected test results	T0016: An error "Area external contour has wrong direction" must be triggered.						
Secondary Errors	None.						

Dataset Name	AA500008		S-58 test No.	T0017		Type	E
S-58 Description	Check that area inner boundaries are encoded counter clockwise.						
Test Case No. 1	Captured SEAARE object inner boundaries are encoded as counter clockwise.						
Location	32°25'00.42"S 60°42'18.18"E		**S57 Encoding**	SEAARE(A)			
Screen Capture							
Expected test results	T0017: An error "Area internal contour has wrong direction" must be triggered.						
Secondary Errors	None.						

Dataset Name	AA500008		S-58 test No.	T0020		Type	E
S-58 Description	Check that geometry primitive is compatible with object class.						
Test Case No. 1	Captured SOUNG object to isolated node.						
Location	32°24'51.77"S 60°42'34.31"E		**S57 Encoding**	SOUNDG(P)			
Screen Capture							
Expected test results	T0020: An error "illegal geometry type of Sounding" must be triggered.						
Secondary Errors	T0547: An error "Object contains attributes outside of the list of permissible attributes for the object class (as defined in the Object Catalogue) for the specified object". must be triggered related to the objects created.						

Dataset Name	AA500008		**S-58 test No.**	T0080		**Type**	E

S-58 Description	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.						

Test Case No. 1	Captured SEAARE objects.						
Location	32°24'51.50"S 60°42'09.21"E		**S57 Encoding**	SEAARE(A)			
Screen Capture							
Expected test results	T0080: An error "Area internal contour has wrong nesting" must be triggered.						
Secondary Errors	None.						
Test Case No. 2	Captured SEAARE objects.						
Location	32°24'52.72"S 60°42'13.90"E		**S57 Encoding**	SEAARE(A)			
Screen Capture							
Expected test results	T0080: An error "Area internal contour has wrong nesting" must be triggered.						
Secondary Errors	None.						
Test Case No. 3	Captured SEAARE objects.						
Location	32°24'52.92"S 60°42'17.29"E		**S57 Encoding**	SEAARE(A)			
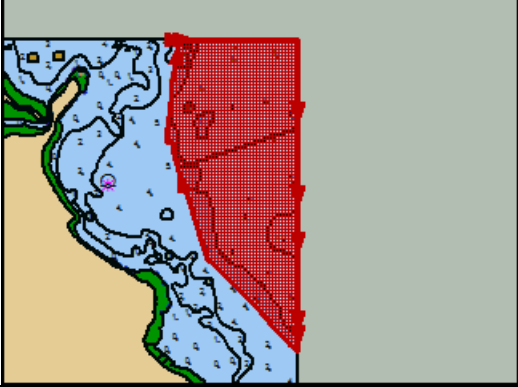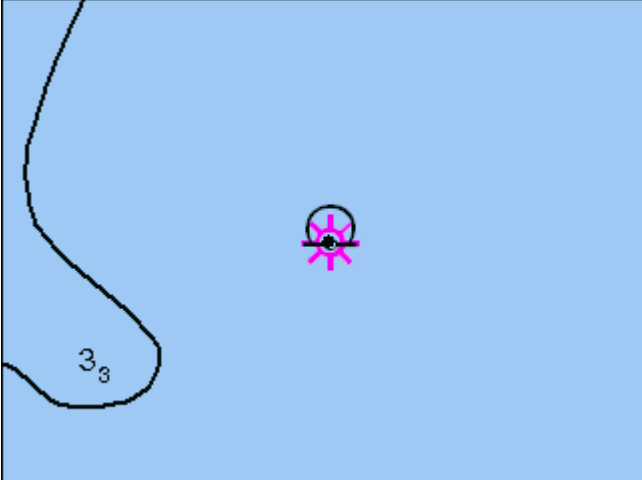
Screen Capture	
Expected test results	T0080: An error "Area internal contour has wrong nesting" must be triggered.
Secondary Errors	None.
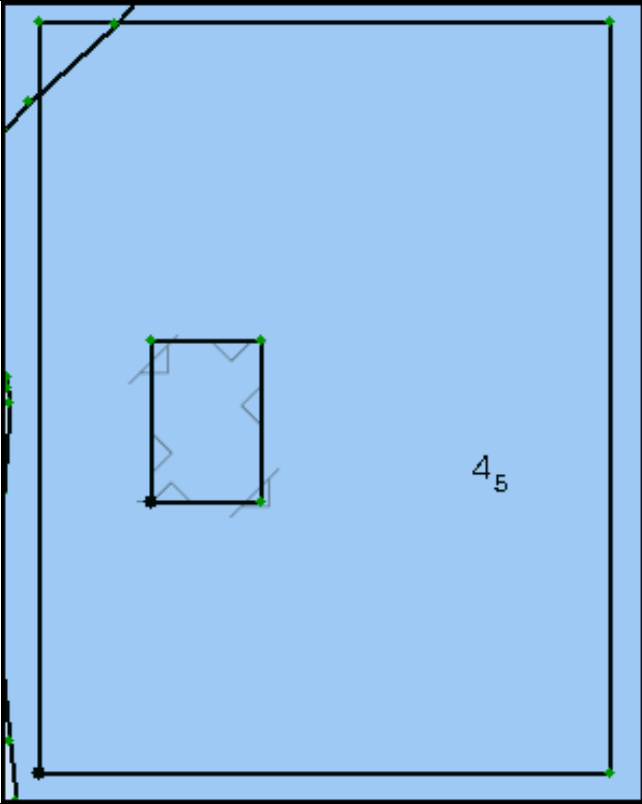
Test Dataset:AA500009
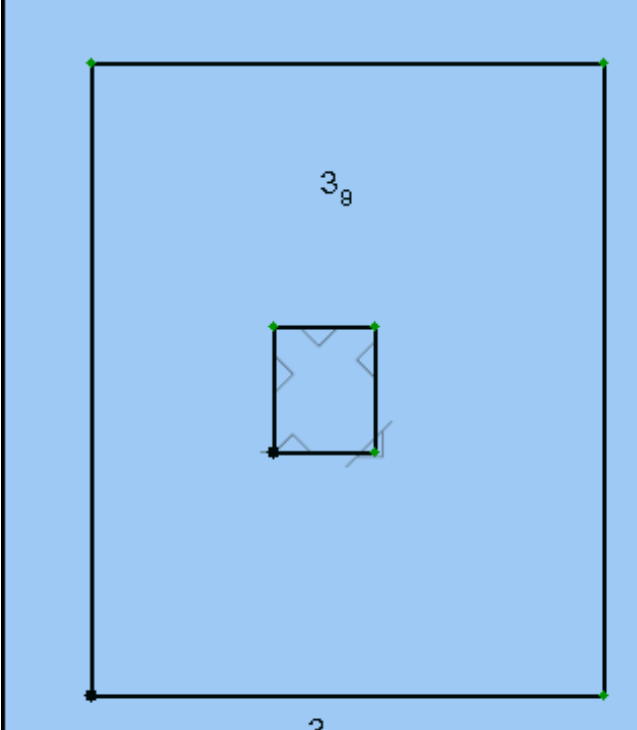
List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
553	Check that no Group 1 object contains the attributes DATSTA, DATEND, PERSTA or PEREND.
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 coverage.
1721	Check that no RADRFL object is attached to a navigational aid having CONRAD as a relevant attribute (the navigational aid must use CONRAD = (3) [radar conspicuous (has reflector radar)]).
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.

Dataset Name	AA500009		S-58 test No.	T0553	Type	E
S-58 Description	Check that no Group 1 object contains the attributes DATSTA, DATEND, PERSTA or PEREND.					
Test Case No. 1	Captured PONTON object.					
Location	32°25'44.36"S 60°42'28.53"E		**S57 Encoding**	PONTON	PERSTA= 02.01.2010 PEREND= 12.01.2011 STATUS=5	
Screen Capture						
Expected test results	T0553: An error "prohibited attribute 'perend' in Pontoon" must be triggered. T0553: An error " prohibited attribute 'persta' in Pontoon" must be triggered.					
Secondary Errors	None.					
Test Case No. 2	Captured FLODOC object.					
Location	32°25'44.81"S 60°42'21.44"E		**S57 Encoding**	FLODOC	DATSTA= 19.07.2010 DATEND= 19.07.2011	
Screen Capture						
Expected test results	T0553: An error " prohibited attribute 'datsta' in Floating dock" must be triggered. T0553: An error "prohibited attribute 'datend' in Floating dock" must be triggered.					
Secondary Errors	None.					
Dataset Name	AA500009		**S-58 test No.**	T1532	**Type**	E

S-58 Description	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 coverage.				
Test Case No. 1	Captured one M_QUAL and two M_SREL				
Location	32°26'04.12"S 60°43'14.77"E	S57 Encoding	M_QUAL	CATZOC=2 SURSTA=20120623 SUREND=20120723	
			M_SREL	SURSTA=20100723 SUREND=20120723	
			M_SREL	SURSTA=20110623 SUREND=20120723	
Screen Capture					
Expected test results	T1532: An error "If there is more than one M_SREL feature inside a M_QUAL feature, check that the value of the M_QUAL feature's SURSTA attribute, if defined, is equal to the value of the oldest SURSTA attribute used by the contained M_SREL features" must be triggered.				
Secondary Errors	None.				

Dataset Name	AA500009	S-58 test No.	T1721	Type	E
S-58 Description	Check that no RADRFL object is attached to a navigational aid having CONRAD as a relevant attribute (the navigational aid must use CONRAD = (3) [radar conspicuous (has reflector radar)]).				
Test Case No. 1	RADRFL captured on BOYSPP.				
Location	32°26'12.90"S : 60°42'41.49"E	S57 Encoding	BOYSPP RADRFL	CONRAD=3	
Screen Capture					
Expected test results	T1721: An error" T1721: An error "prohibited object Radar reflector"" must be triggered.				
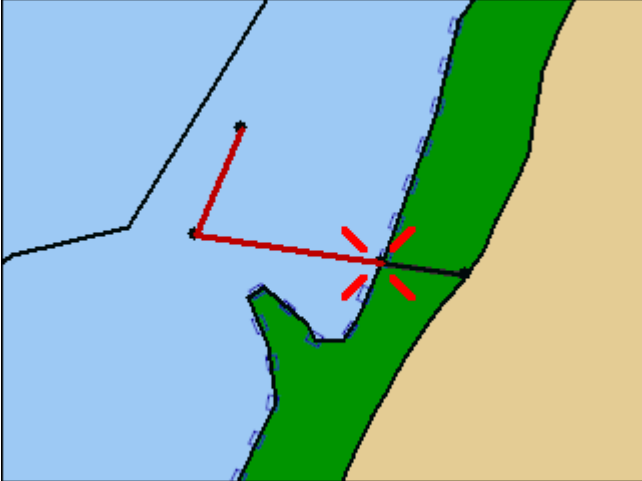
Secondary Errors	T1762: An error "RADRFL object is encoded on an Area or Point type object" must be triggered for the objects created. T0516: A warning "BOYSPP object has a wrong 'radrfl' as a slave" must be triggered for the objects created.

Dataset Name	AA500009	**S-58 test No.**	T1530	**Type**	E
S-58 Description	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.				
Test Case No. 1	Captured FAIRWY object with attribute value of SOUACC that is equivalent to the SOUACC of the overlying M_QUAL.				

Location	32°26'59.17"S 60°43'20.25"E	**S57 Encoding**	M_QUAL (A)	CATZOC=6 SOUACC=5 DRVAL1=5
			FAIRWY (A)	SOUACC=5

Screen Capture	

Expected test results	T1530: An error "The value of SOUACC must not be equal to that of the covering M_QUAL" must be triggered.
Secondary Errors	None.
Test Case No. 2	Captured FAIRWY object with attribute value of SOUACC that is equivalent to the CATZOC of the overlying M_QUAL.

Location	32°26'50.20"S 60°43'23.07"E	**S57 Encoding**	M_QUAL (A)	CATZOC=1
			FAIRWY (A)	SOUACC=0.6 DRVAL1=5

Screen Capture	
Expected test results	T1530: An error "The value of SOUACC must not be equal to that of the covering M_QUAL" must be triggered.
Secondary Errors	T0513: An error "The value of SOUACC must not be equal to that of the covering M_QUAL" must be triggered for the objects created.

Test Dataset:AA500010
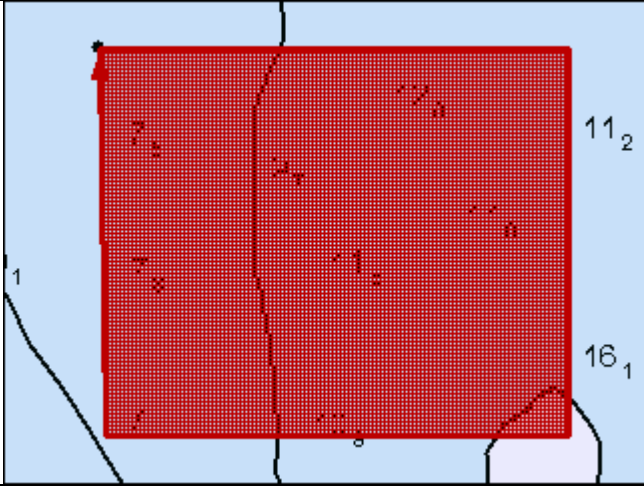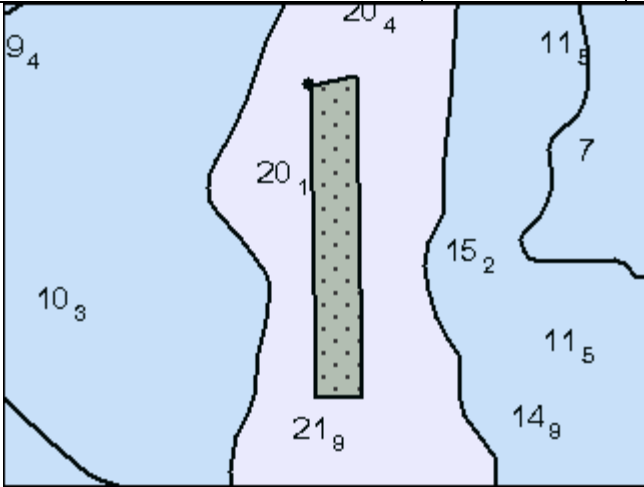
List of S58 Recommended ENC Validation Checks covered in this section:
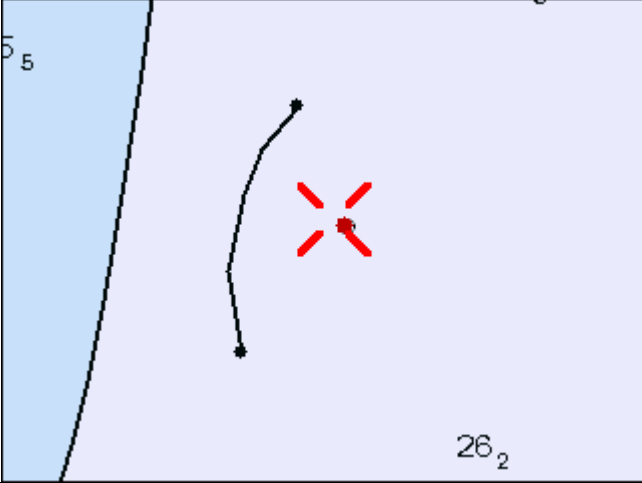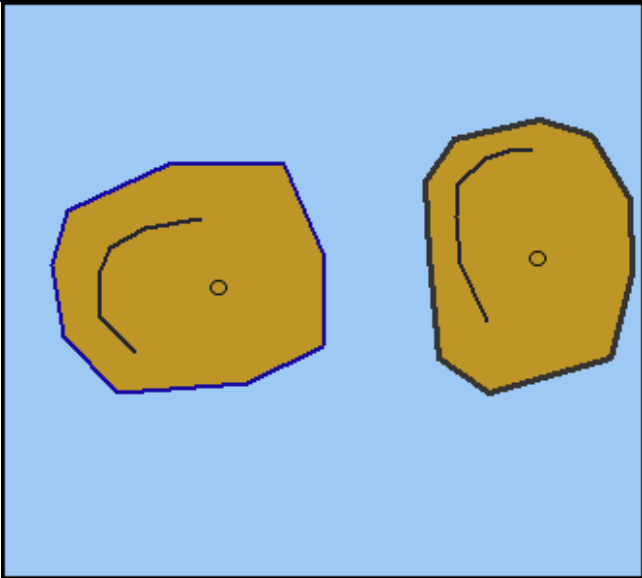
S58 Test	Description
1	Check that no part of an edge is duplicated (i.e. a pair of coordinates identical for two edges).
12	Check that all feature objects except C_(collection) have a FSPT.
46	Check for any object having both attributes DATEND and DATSTA encoded with explicit values that DATEND is the same or later than DATSTA.
47	Check for any LIGHTS and RTPBCN object having SECTR1 encoded that SECTR2 is also encoded (with a different value) and vice versa.
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).
49	Check for any object having DRVAL1 and DRVAL2 encoded that DRVAL1 is smaller than or equal to DRVAL2.
52	Check that any LNDELV object of type Point or Line is situated within a LNDARE object of type Area, or on a LNDARE object of type Line, or shares the geometry of a LNDARE object of type Point, except where the LNDELV object is encoded on an area WRECKS object which is always dry (WATLEV = 2 [always dry]) or is partially submerged at high water (WATLEV = 1 [partly submerged at high water]).
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.
83	Check that no node coincides with another node (connected or isolated).
87	Check for edges with degenerated geometry (when consecutive vertices coincide).
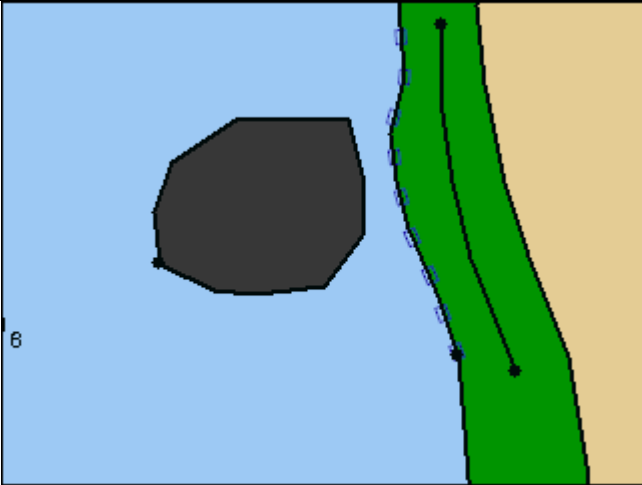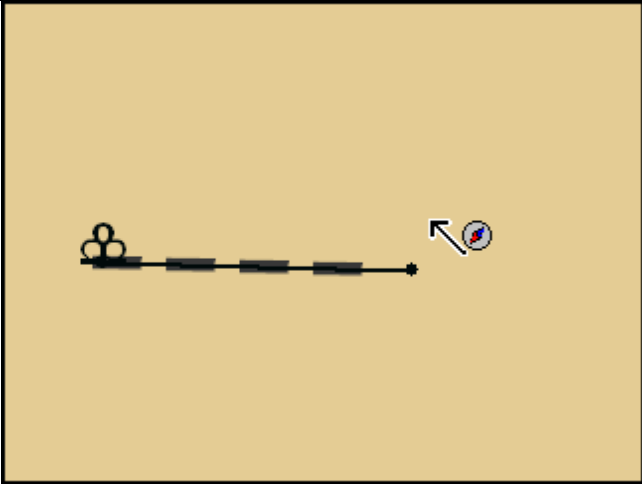
Dataset Name	AA500010		S-58 test No.	T0001		Type	W
S-58 Description	Check that no part of an edge is duplicated (i.e. a pair of coordinates identical for two edges).						
Test Case No. 1	Two SLCONS lines captured.						
Location	32°26'38.69"S 60°44'38.69"E		S57 Encoding	SLCONS (L)			
Screen Capture							
Expected test results	T0001: 4 warning "pairs of vertexes are identical" must be triggered.						
Secondary errors	None.						

Dataset Name	AA500010		S-58 test No.	T0012		Type	E
S-58 Description	Check that all feature objects except C_(collection) have a FSPT.						
Test Case No. 1	SLCONS point captured.						
Location	Nil		S57 Encoding	SLCONS(P)			
Screen Capture	No preview is available for this case.						
Expected test results	T0012: An error "object has no geometry" must be triggered.						
Secondary errors	T0020: An error "Geometric primitive, N, is invalid for object class, SLCONS" must be triggered for the objects created. T0544&T0548: An error "A geographic feature must be covered by an M_COVR with CATCOV = 1 [coverage]" must be triggered for the objects created.						

Dataset Name	AA500010		S-58 test No.	T0046		Type	E
S-58 Description	Check for any object having both attributes DATEND and DATSTA encoded with explicit values that DATEND is the same or later than DATSTA.						
Test Case No. 1	ACHARE (P) object captured with different dates for DATSTA and DATEND.						
Location	32°26'26.99"S 60°44'35.22"E		S57 Encoding	ACHARE (P)	DATSTA=25.06.2011 DATEND=25.06.2010		
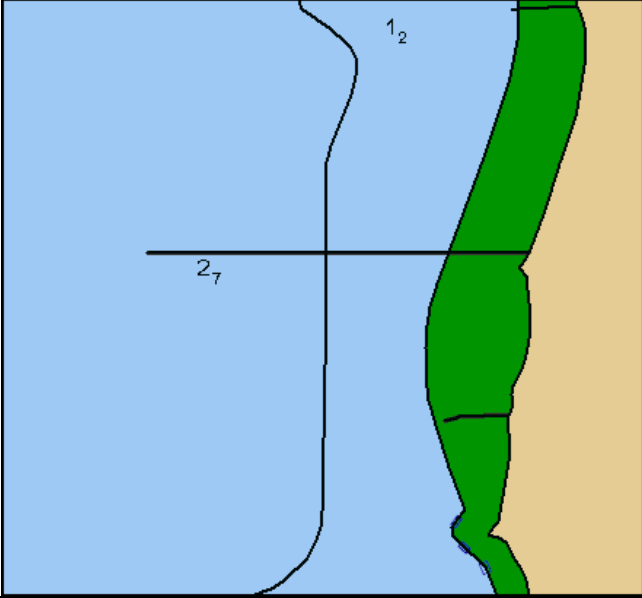
Screen Capture	
Expected test results	T0046: ERROR "attribute conflict between 'datsta' and 'datend'" must be triggered.
Secondary errors	None.

Dataset Name	AA500010	**S-58 test No.**	T0047	**Type**	E
S-58 Description	Check for any LIGHTS and RTPBCN object having SECTR1 encoded that SECTR2 is also encoded (with a different value) and vice versa.				
Test Case No. 1	LIGHTS and RTPBCN objects are captured with only SECTR1.				
Location	32°26'25.01"S 60°44'30.47"E	**S57 Encoding**	LIGHTS (P) RTPBCN (P)	SECTR1=30 SECTR1=30	
Screen Capture					
Expected test results	T0047: Two errors "attribute conflict between 'sectr1' and 'sectr2'" must be triggered.				
Secondary errors	None.				
Test Case No. 2	LIGHTS and RTPBCN objects are captured with only SECTR2.				
Location	32°26'24.51"S 60°44'37.56"E	**S57 Encoding**	LIGHTS (P) RTPBCN (P)	SECTR2=30 SECTR2=30	

Screen Capture				
Expected test results	T0047: Two errors "attribute conflict between 'sectr1' and 'sectr2'" must be triggered.			
Secondary errors	None.			
Test Case No. 3	LIGHTS and RTPBCN objects are captured with SECTR1 and SECTR2.			
Location	32°26'24.29"S 60°44'34.29"E	**S57 Encoding**	LIGHTS (P) RTPBCN (P)	SECTR1=30 SECTR2=30 SECTR1=30 SECTR2=30

Screen Capture	
Expected test results	T0047: Two errors "attribute conflict between 'sectr1' and 'sectr2'" must be triggered.
Secondary errors	None.

Dataset Name	AA500010	**S-58 test No.**	T0048	**Type**	E
S-58 Description	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).				
Test Case No. 1	M_SREL object captured with attributes SCVAL1 and SCVAL2.				
Location	32°26'21.86"S 60°43'57.40"E	**S57 Encoding**	M_SREL	SCVAL1=15000 SCVAL2=10000	

Screen Capture					
Expected test results	T0048: ERROR "attribute conflict between 'scval1' and 'scval2' <Survey reliability>" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500010	**S-58 test No.**	T0049	**Type**	E
S-58 Description	Check for any object having DRVAL1 and DRVAL2 encoded that DRVAL1 is smaller than or equal to DRVAL2.				
Test Case No. 1	DRGARE object captured with attributes DRVAL1 and DRVAL2, depth value is encoded for DRVAL1 greater than DRVAL2				
Location	32°26'43.17"S 60°44'10.73"E	**S57 Encoding**	DRGARE	DRVAL1=4 DRVAL2=3	
Screen Capture					
Expected test results	T0049: An error "'drval1' deeper than 'drval2'" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500010	**S-58 test No.**	T0052	**Type**	E
S-58 Description	Check that any LNDELV object of type Point or Line is situated within a LNDARE object of type Area, or on a LNDARE object of type Line, or shares the geometry of a LNDARE object of type Point, except where the LNDELV object is encoded on an area WRECKS object which is always dry (WATLEV = 2 [always dry]) or is partially submerged at high water (WATLEV = 1 [partly submerged at high water]).				

Test Case No. 1	LNDELV (P, L) objects captured on depth area.			
Location	32°27'25.82"S 60°43'58.53"E	S57 Encoding	LNDELV (P,L)	
Screen Capture				
Expected test results	T0052: Two errors "object within prohibited area" must be triggered.			
Secondary errors	None.			
Test Case No. 2	LNDELV (P, L) objects captured on wrecks area and point objects.			
Location	32°27'31.44"S 60°44'24.19"E	S57 Encoding	LNDELV (L) 2x LNDELV (P) 2x WRECKS (A) WRECKS (A)	ELEVAT=10 ELEVAT=10 WATLEV=2 WATLEV=1
Screen Capture				
Expected test results	T0052: Four errors "object within prohibited area" must not be triggered.			
Secondary errors	None.			
Dataset Name	AA500010	S-58 test No.	T0053	Type	E
S-58 Description	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.			
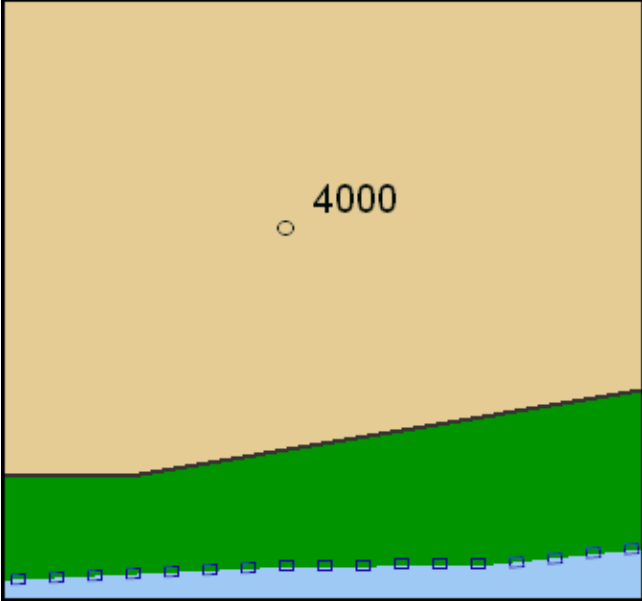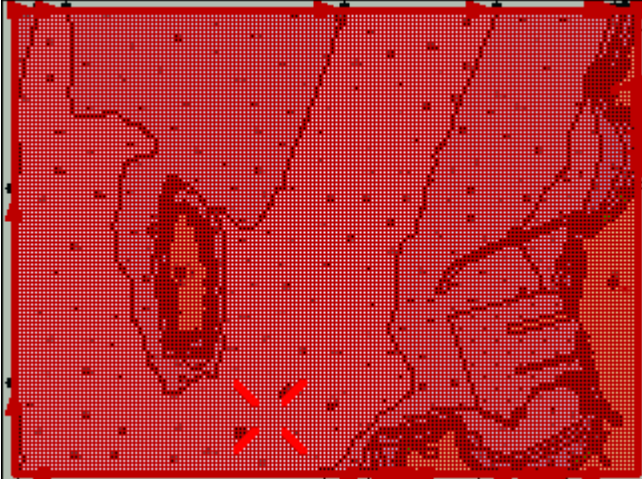
Test Case No. 1	SLOGRD and SLOTOP objects captured on depth area.			
Location	32°25'41.92"S 60°44'49.31"E	**S57 Encoding**	SLOGRD (A) SLOTOP (L)	
Screen Capture				
Expected test results	T0053: Two errors "object is not covered by a mandatory 'lndare'" must be triggered.			
Secondary errors	None.			

Dataset Name	AA500010	**S-58 test No.**	T0083	**Type**	W
S-58 Description	Check that no node coincides with another node (connected or isolated).				
Test Case No. 1	Two S57 objects captured as connected node coincides with another isolated node.				
Location	32°27'25.74"S 60°44'33.23"E	**S57 Encoding**	LNDMRK (P) CBLOHD (L)		
Screen Capture					
Expected test results	T0083: A warning "isolated node is identical to connected Node" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500010	**S-58 test No.**	T0087	**Type**	W
S-58 Description	Check for edges with degenerated geometry (when consecutive vertices coincide).				
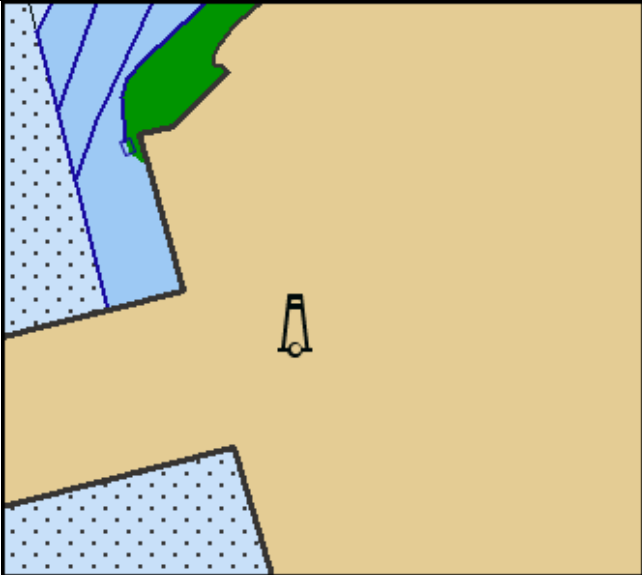
Test Case No. 1	SLCONS line captured as straight with a vertex.			
Location	32°26'08.31"S 60°44'44.61"E	**S57 Encoding**	SLCONS (L)	
Screen Capture				
Expected test results	T0087: Warning "vertex lies on straight line" must be triggered.			
Secondary errors	None.			
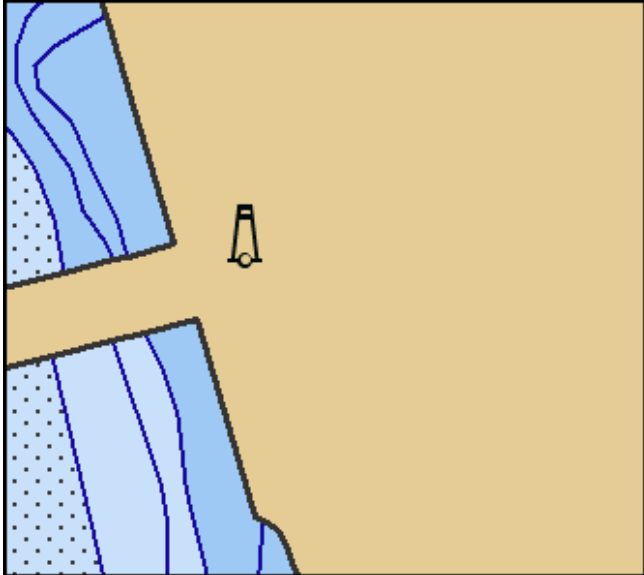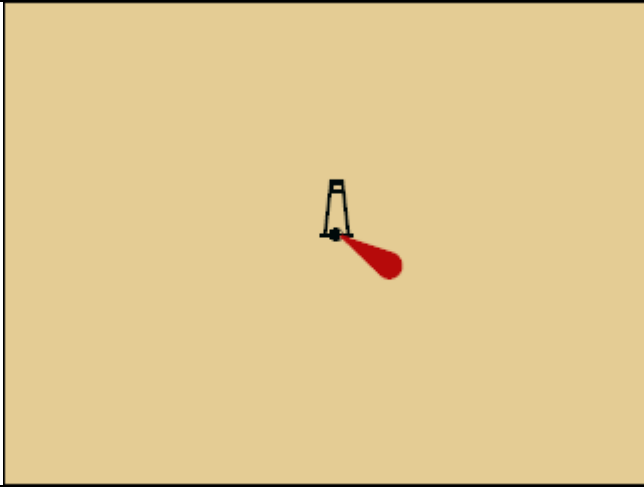
Test Dataset:AA500011
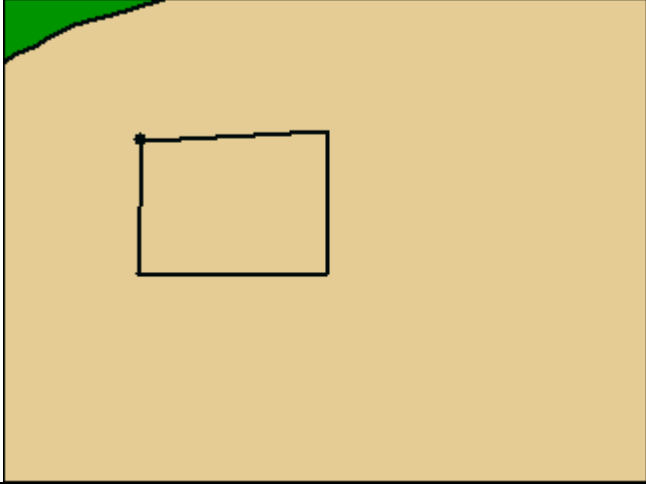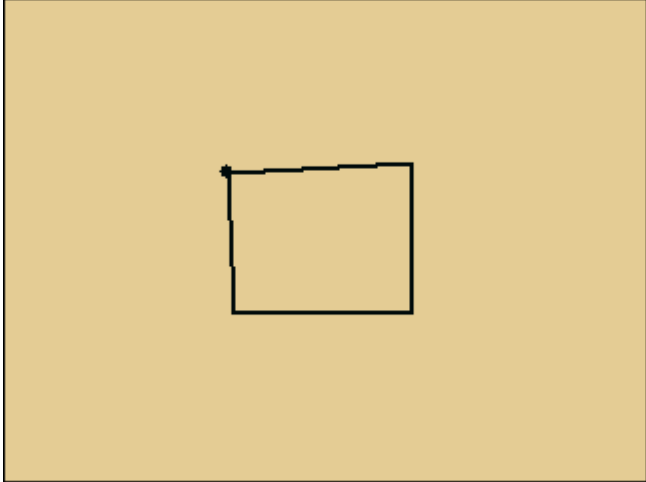
List of S58 Recommended ENC Validation Checks covered in this section:
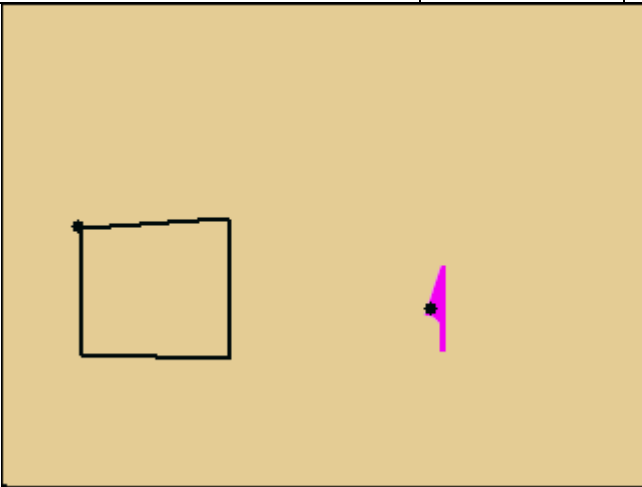
S58 Test	Description
91	Check for all attribute values of type "float", that the number of digits in the integer part is smaller than or equal to the number of digits given in the format statement (e.g. XX.X).
501	Check that cells are rectangular.
508	Check that COLPAT is encoded for every object (except LIGHTS) with more than one COLOUR. Check that no object with a value for COLPAT has only one COLOUR.
510	Check that HORDAT only appears in M_HOPA.
511	Check that the prohibited attributes DUNITS, HUNITS, RECDAT, RECIND, SCAMAX, PUNITS, CATQUA are not used.
521	Check that OBJNAM and NOBJNM values, or INFORM and NINFOM values, or PILDST and NPLDST values, are different for any particular object.
522	Check that if NOBJNM is encoded, then OBJNAM has also been encoded.
524	Check that DUNI = 1 [metres].
1510	Check that the value in the Sounding Datum subfield (SDAT) of the Data Set Parameter field (DSPM) is not null.
1542	Check that no object falling within a given M_ACCY object coverage has an attribute value for POSACC that is equivalent to the POSACC attribute for the M_ACCY object.
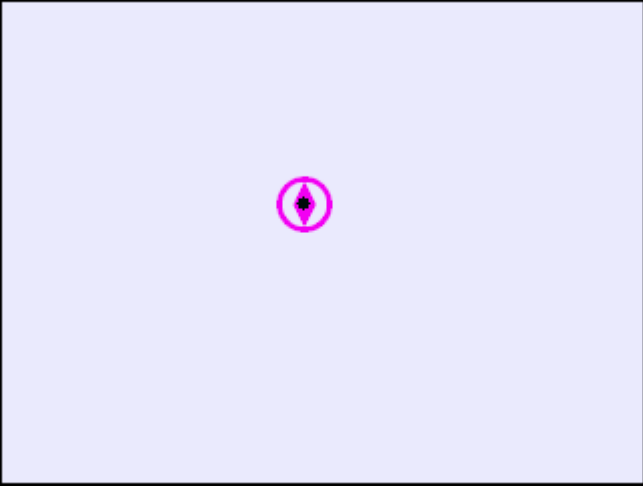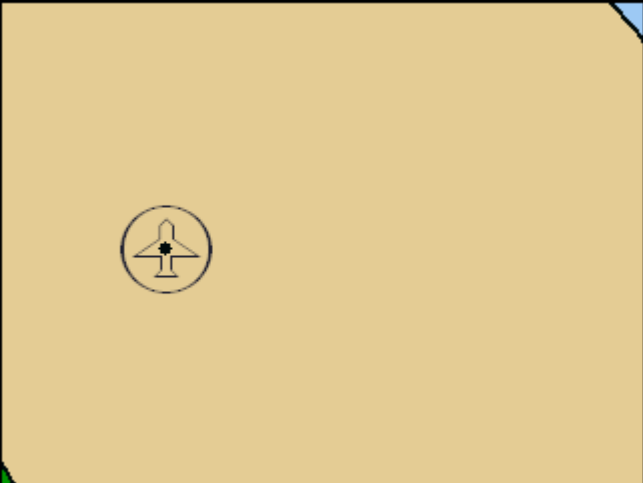
Dataset Name	AA500011	S-58 test No.	T0091	Type	W
S-58 Description	Check for all attribute values of type "float" that the number of digits in the integer part is smaller than or equal to the number of digits given in the format statement (e.g. XX.X).				
Test Case No. 1	Created LNDELV (P) with attribute value ELEVAT.				
Location	32°26'59.15"S 60°47'20.75"E	**S57 Encoding**	LNDELV (P)	ELEVAT=4000	
Screen Capture					
Expected test results	T0091: A warning "Assigned float value is invalid for this object/attribute" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500011	S-58 test No.	T0501	Type	E
S-58 Description	Check that cells are rectangular.				
Test Case No. 1	Modified south east corner co-ordinate values.				
Location	32°27'32.61"S 60°49'26.23"E	**S57 Encoding**	M_COVR (A)		
Screen Capture					
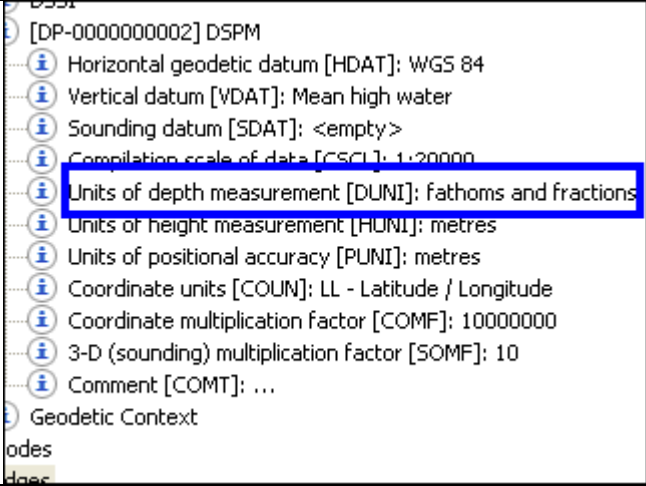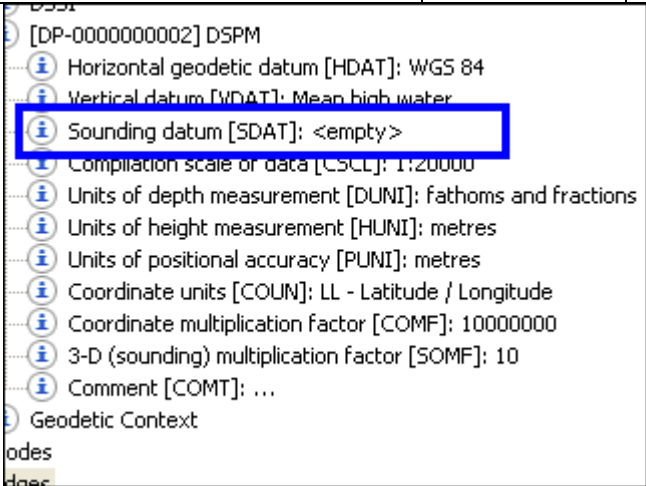
Expected test results	T0501: An error "dataset is not rectangular: no vertexes in the south-west, south-east corner(s)" must be triggered.				
Secondary errors	T0548: 15 errors "edge is open border of 'm_covr', but not on the chart borders" must be triggered for the objects created.				
Dataset Name	AA500011	**S-58 test No.**	T0508	**Type**	E
S-58 Description	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.				
Test Case No. 1	Created LNDMRK with attribute COLOUR and COLPAT unassigned.				
Location	32°26'53.54"S 60°49'09.77"E	**S57 Encoding**	LNDMRK(P)	CATLMK=17 COLOUR=1,3 COLPAT=UNDEFINED	
Screen Capture					
Expected test results	T0508: An error "mandatory 'colpat' not found " must be triggered.				
Secondary errors	None.				
Test Case No. 2	Created LNDMRK with attribute value COLOUR and COLPAT.				
Location	32°27'03.07"S 60°49'12.81"E	**S57 Encoding**	LNDMRK(P)	CATLMK=17 COLOUR=1 COLPAT=5	
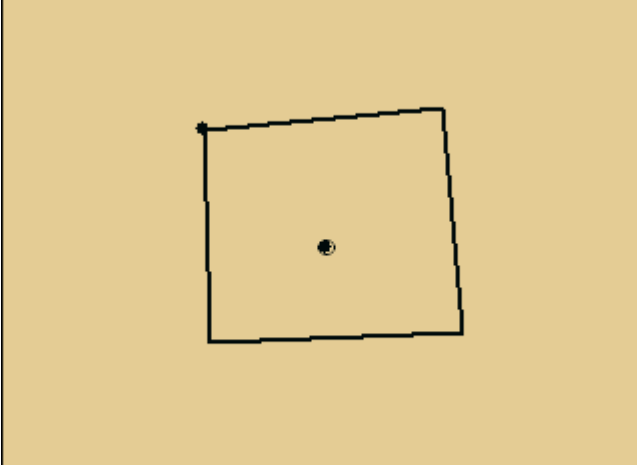
Screen Capture					
Expected test results	T0508: An error "attribute conflict between 'colpat' and 'colour'" must be triggered.				
Secondary errors	None.				
Test Case No. 3	Created LIGHTS with attribute value COLOUR without COLPAT.				
Location	32°26'46.92"S 60°49'19.58"E	**S57 Encoding**	LIGHTS	COLOUR=1,3 LITCHR=1 COLPAT=UNDEFINED	
Screen Capture					
Expected test results	T0508: An error "mandatory 'colpat' not found" must not be triggered.				
Secondary errors	None.				
Dataset Name	AA500011	**S-58 test No.**	T0510	**Type**	E
S-58 Description	Check that HORDAT only appears in M_HOPA.				
Test Case No. 1	Created M_HDAT object with attributes HORDAT.				
Location	32°27'27.78"S 60°48'26.95"E	**S57 Encoding**	M_HDAT(A)	HORDAT=UNKNOWN	

Screen Capture	
Expected test results	T0510: An error "prohibited attribute 'hordat'" must be triggered.
Secondary errors	T0504: An error "prohibited object Horizontal datum of data" must be triggered for the objects created. T0545: An error "Object code, Unknown class, is invalid" must be triggered for the objects created.

Dataset Name	AA500011	**S-58 test No.**	T0511	**Type**	E
S-58 Description	Check that the prohibited attributes DUNITS, HUNITS, RECDAT, RECIND, SCAMAX, PUNITS, CATQUA are not used.				
Test Case No. 1	Created M_UNIT with attribute values PUNITS, DUNITS, HUNITS, RECDAT and RECIND.				
Location	32°27'29.76"S 60°49'17.69"E	**S57 Encoding**	M_UNIT (A)	PUNITS=1 DUNITS=1 HUNITS=1 RECDAT=15.02.2010 RECIND=US,US,digi	
Screen Capture					
Expected test results	T0511: An error "prohibited attribute 'punits' in Units of measurement of data" must be triggered. T0511: An error "prohibited attribute 'dunits' in Units of measurement of data" must be triggered. T0511: An error "prohibited attribute 'hunits' in Units of measurement of data" must be triggered.				

	T0511: An error "prohibited attribute 'recdat' in Units of measurement of data" must be triggered. T0511: An error "prohibited attribute 'recind' in Units of measurement of data" must be triggered.
Secondary errors	T0504: An error "prohibited object Units of measurement of data" must be triggered for the objects created. T0545: An error "Object code, Unknown class, is invalid" must be triggered for the objects created.
Test Case No. 2	Created M_QUAL object with attribute values CATZOC and CATQUA, and MAGVAR object created with attribute value SCAMAX.

Location	32°26'05.44"S 60°49'23.46"E	**S57 Encoding**	MAGVAR(P) M_QUAL(A)	SCAMAX=15000 CATQUA=1

Screen Capture	
Expected test results	T0511: An error "prohibited attribute 'catqua' in Quality of data" must be triggered. T0511: An error "prohibited attribute 'scamax' in Magnetic variation" must be triggered.
Secondary errors	None.

Dataset Name	AA500011	**S-58 test No.**	T0521	**Type**	W
S-58 Description	Check that OBJNAM and NOBJNM values, or INFORM and NINFOM values, or PILDST and NPLDST values, are different for any particular object.				
Test Case No. 1	Created PILBOP(P)				

Location	32°27'22.95"S : 60°47'33.18"E	**S57 Encoding**	PILBOP(P)	OBJNAM= Judith Harbor NOBJNM= Judith Harbor INFORM= Judith Harbor NINFOM= Judith Harbor PILDST= Judith Harbor NPLDST= Judith Harbor

Screen Capture					
Expected test results	T0521: A warning "national attribute 'nobjnm' is identical to 'objnam'" must be triggered. T0521: A warning "national attribute 'npldst' is identical to 'pildst'" must be triggered. T0521: A warning "national attribute 'ninfom' is identical to 'inform'" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500011	**S-58 test No.**	T0522	**Type**	W
S-58 Description	Check that if NOBJNM is encoded, then OBJNAM has also been encoded.				
Test Case No. 1	Created AIRARE with NOBJNM and no OBJNAM.				
Location	32°26'44.54"S : 60°47'16.32"E	**S57 Encoding**	AIRARE(P)	NOBJNM=Judith	
Screen Capture					
Expected test results	T0522: A warning "national attribute 'nobjnm' encoded without 'objnam'" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500011	**S-58 test No.**	T0524	**Type**	E
S-58 Description	Check that DUNI = 1 [metres].				
Test Case No. 1	Modified depth units in DSPM parameters.				
Location	DSPM Parameters	**S57 Encoding**		DUNI=4	
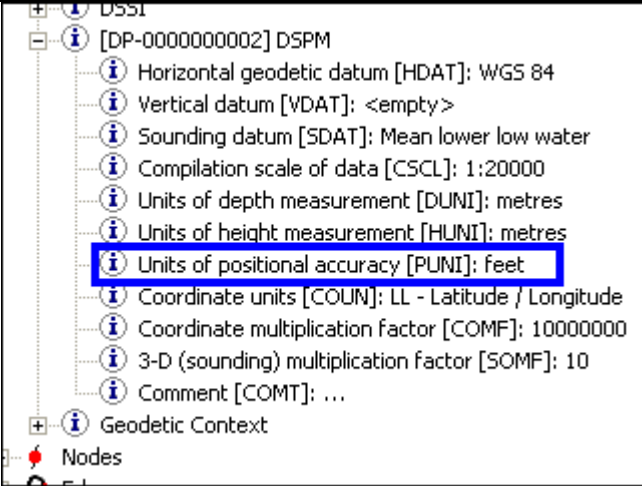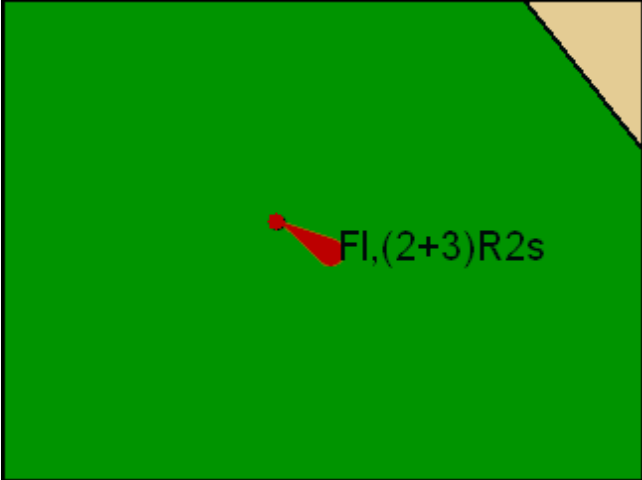
Screen Capture	
Expected test results	T0524: An error "illegal value of DSPM.DUNI" must be triggered.
Secondary errors	None.

Dataset Name	AA500011	**S-58 test No.**	T1510	**Type**	E
S-58 Description	Check that the value in the Sounding Datum subfield (SDAT) of the Data Set Parameter field (DSPM) is not null.				
Test Case No. 1	Modified SDAT in DSPM parameters.				
Location	DSPM Parameters	**S57 Encoding**		SDAT= EMPTY	
Screen Capture					
Expected test results	T1510: An error "illegal value of DSPM.SDAT" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500011	**S-58 test No.**	T1542	**Type**	E
S-58 Description	Check that no object falling within a given M_ACCY object coverage has an attribute value for POSACC that is equivalent to the POSACC attribute for the M_ACCY object.				
Test Case No. 1	Created LNDELV (P) object with spatial attribute value POSACC, that is equivalent to the POSACC attribute for the M_ACCY object				
Location	32°27'20.07"S 60°49'20.97"E	**S57 Encoding**	M_ACCY(A) LNDELV(P)	POSACC=5 POSACC=5	
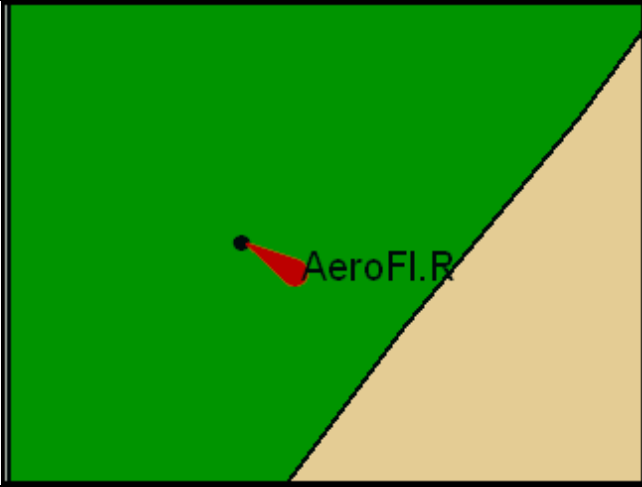
Screen Capture	
Expected test results	T1542: An error "redundant 'posacc' is defined by 'm_accy'" must be triggered.
Secondary errors	None.
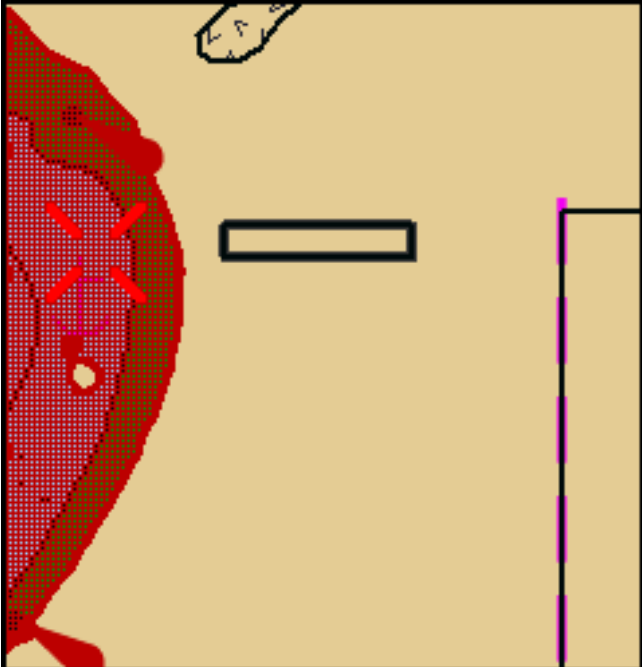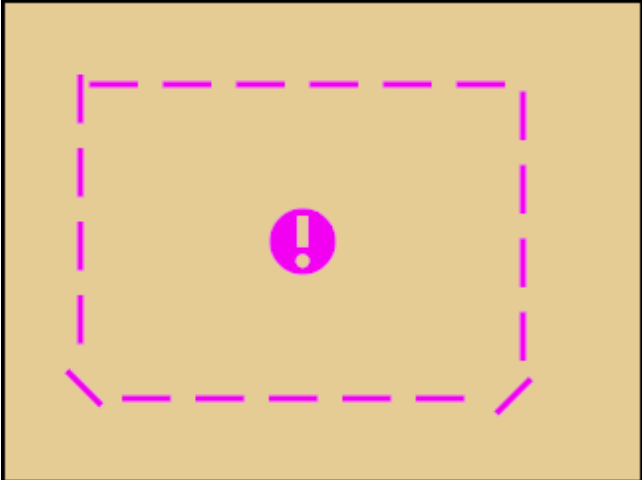
Test Dataset:AA500012
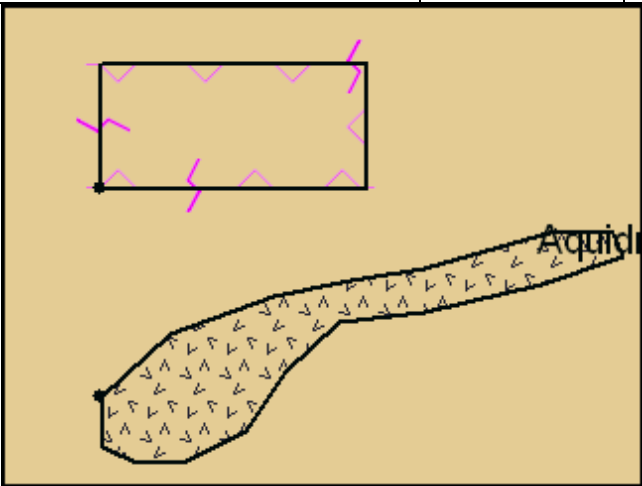
List of S58 Recommended ENC Validation Checks covered in this section:
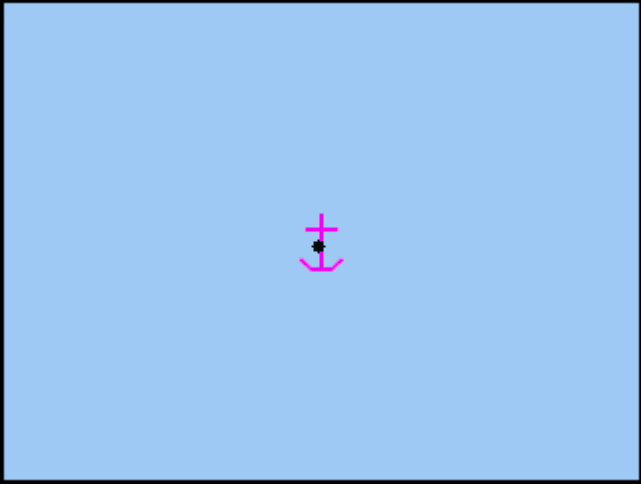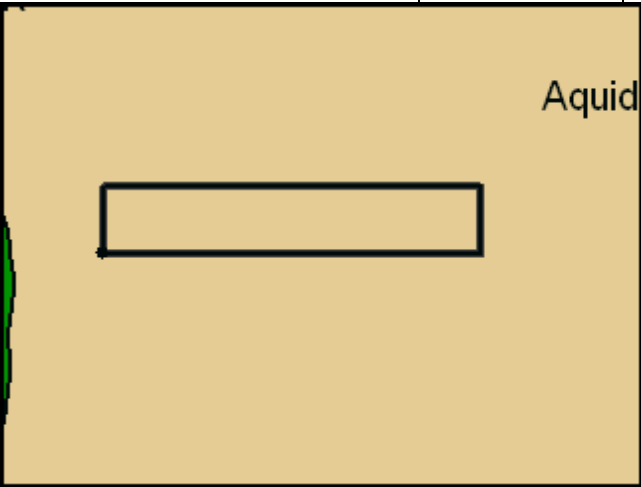
S58 Test	Description
525	Check that PUNI = 1 [metres].
541	Check that the SIGGRP format is correct for all LIGHTS, except for fixed LIGHTS, which must not have a value for SIGGRP.
542	Check that any attribute value SIGGRP starts and finishes with a bracket.
547	Check that no object contains attributes outside the list of permissible attributes for the object's class (as defined in the Object Catalogue and S-57 Supplement No 2 for the specified object.
562	Check for any NEWOBJ object, that at least one of the attributes INFORM or TXTDSC contains the name of the feature object. The text must commence with the approved object class name (CLSNAM) of the feature (i.e. New Object).
1500	Check that certain area objects do not overlap for logical reasons: • LNDARE and SBDARE. • LNDARE and CBLARE.
1502	Check that no spatial object contains the attribute HORDAT.
1503	Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests).
1504	Check that the value in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM) is not null.

Dataset Name	AA500012		S-58 test No.	T0525		Type	E
S-58 Description	Check that PUNI = 1 [metres].						
Test Case No. 1	PUNI=4(Feet) has been assigned						
Location	DSPM Parameters						
Screen Capture							
Expected test results	T0525: An error" illegal value of DSPM.PUNI" must be triggered.						
Secondary errors	None.						
Dataset Name	AA500012		**S-58 test No.**	T0541		**Type**	E
S-58 Description	Check that the SIGGRP format is correct for all LIGHTS, except for fixed LIGHTS, which must not have a value for SIGGRP.						
Test Case No. 1	Light captured with attribute SIGGRP.						
Location	32°26'10.42"S 60°49'28.40"E		**S57 Encoding**	LIGHTS(P)	SIGGRP=(1),(2+3)		
Screen Capture							
Expected test results	T0541: An error "bad format of 'siggrp' <Light> "must be triggered.						

Secondary errors	T0073: A warning "Check that Signal Group (SIGGRP) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered for the objects created.

Dataset Name	AA500012	**S-58 test No.**	T0542	**Type**	E
S-58 Description	Check that any attribute value SIGGRP starts and finishes with a bracket.				
Test Case No. 1	Light captured with attribute SIGGRP.				
Location	32°26'23.10"S 60°49'26.61"E	**S57 Encoding**	LIGHTS(P)	SIGGRP=1	
Screen Capture					
Expected test results	T0542: An error" bad format of 'siggrp' <Light> ""must be triggered.				
Secondary errors	T0073: A warning "Check that Signal Group (SIGGRP) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered for the objects created.				

Dataset Name	AA500012	**S-58 test No.**	T0547	**Type**	E
S-58 Description	Check that no object contains attributes outside the list of permissible attributes for the object's class (as defined in the Object Catalogue and S-57 Supplement No 2 for the specified object.				
Test Case No. 1	Harbour area captured with attribute.				
Location	32°26'16.87"S 60°49'28.68"E	**S57 Encoding**	HRBARE (A)	DATSTA= 20120701 DATEND= 20120709	

Screen Capture	

Expected test results	T0547: An error "attribute 'datend' not allowed in Harbour area (administrative)" must be triggered for the object created. T0547: An error "attribute 'datsta' not allowed in Harbour area (administrative)" must be triggered for the object created.
Secondary errors	None.

Dataset Name	AA500012	S-58 test No.	T0562	Type	E
S-58 Description	Check for any NEWOBJ object, that at least one of the attributes INFORM or TXTDSC contains the name of the feature object. The text must commence with the approved object class name (CLSNAM) of the feature (i.e. New Object).				
Test Case No. 1	NEWOBJ captured with attribute.				
Location	32°26'18.63"S 60°49'53.72"E	**S57 Encoding**	NEWOBJ (A)	CLSDEF=CLSDEF CLSNAM= New Object INFORM= Newobject	
Screen Capture					
Expected test results	T0562: An error" Wrong description <New Object>" must be triggered.				

Secondary errors	T0566: A warning "Check that there is no NEWOBJ object in the data that has not been approved by an IHO ENC Encoding Bulletin" must be triggered for the object created.				

Dataset Name	AA500012	S-58 test No.	T1500	Type	W
S-58 Description	Check that certain area objects do not overlap for logical reasons: • LNDARE and SBDARE. • LNDARE and CBLARE.				
Test Case No. 1	SBDARE (A) captured on land area CBLARE (A) captured on land area				
Location	32°26'06.70"S 60°49'34.42"E	S57 Encoding	SBDARE (A) CBLARE (A)		
Screen Capture					
Expected test results	T1500: A warning" object overlaps the prohibited 'cblare' <Land area>" must be triggered. T1500: A warning" object overlaps the prohibited 'sbdare' <Land area>" must be triggered.				
Secondary errors	T0093: A warning "SBDARE 'covers and uncovers' object in land area" must be triggered for the objects created.				

Dataset Name	AA500012	S-58 test No.	T1502	Type	E
S-58 Description	Check that no spatial object contains the attribute HORDAT.				
Test Case No. 1	Anchorage area point captured.				
Location	32°26'15.08"S 60°49'28.50"E	S57 Encoding	ACHARE (P)	HORDAT=2	

Screen Capture	
Expected test results	T1502:Error " prohibited attribute 'hordat'" must be triggered.
Secondary errors	None.

Dataset Name	AA500012	**S-58 test No.**	T1503		**Type**	W
S-58 Description	Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests).					
Test Case No. 1	Bridge area captured					
Location	32°26'13.47"S 60°49'35.55"E	**S57 Encoding**	BRIDGE (A)	VERDAT=3		
Screen Capture						
Expected test results	T1503: A warning" prohibited attribute 'verdat' in <Bridge>" must be triggered.					
Secondary errors	None.					

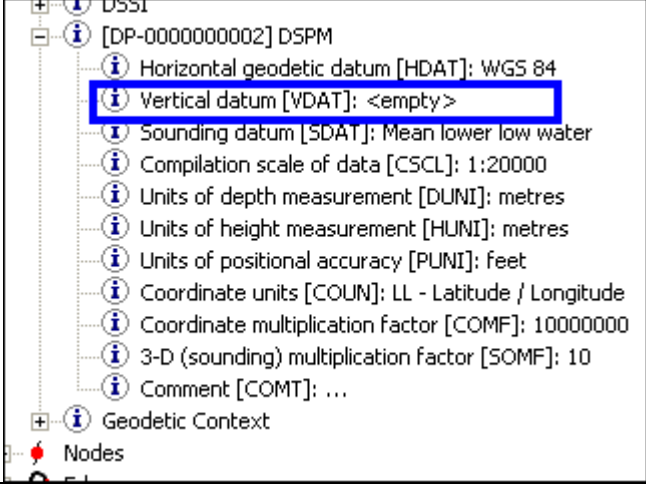| **Dataset Name**	AA500012	**S-58 test No.**	T1504		**Type**	E
S-58 Description	Check that the value in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM) is not null.					
Test Case No. 1	"VDAT" has been assigned "0" null value.					
Location	DSPM Parameters					
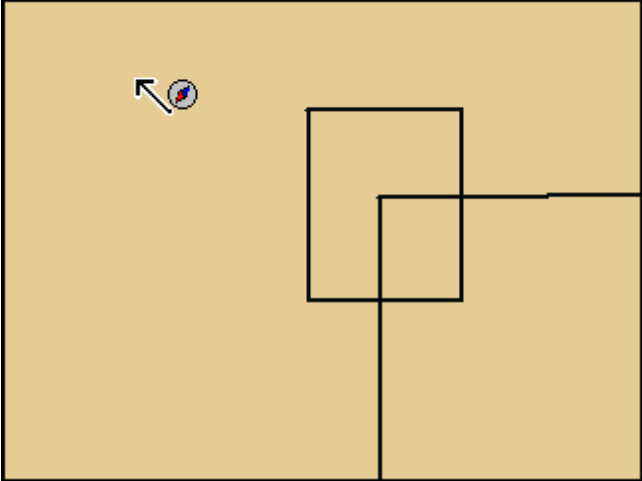
Screen Capture	
Expected test results	T1504: An error "illegal value of DSPM.VDAT" must be triggered.
Secondary errors	None.
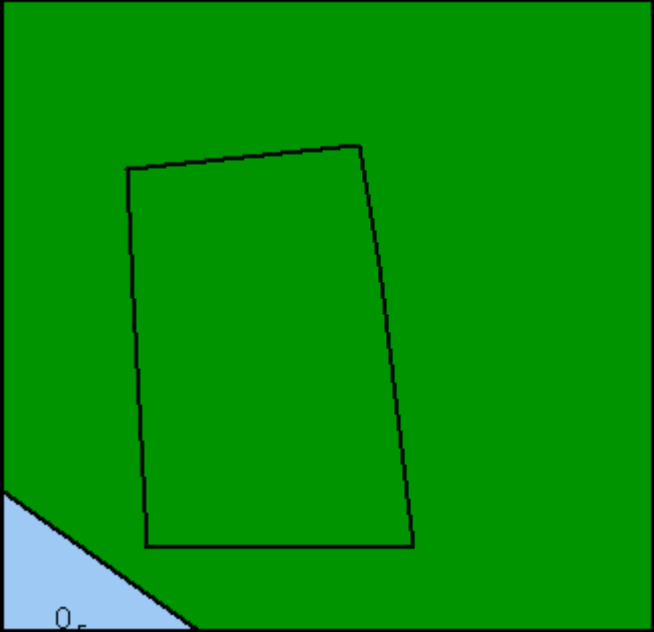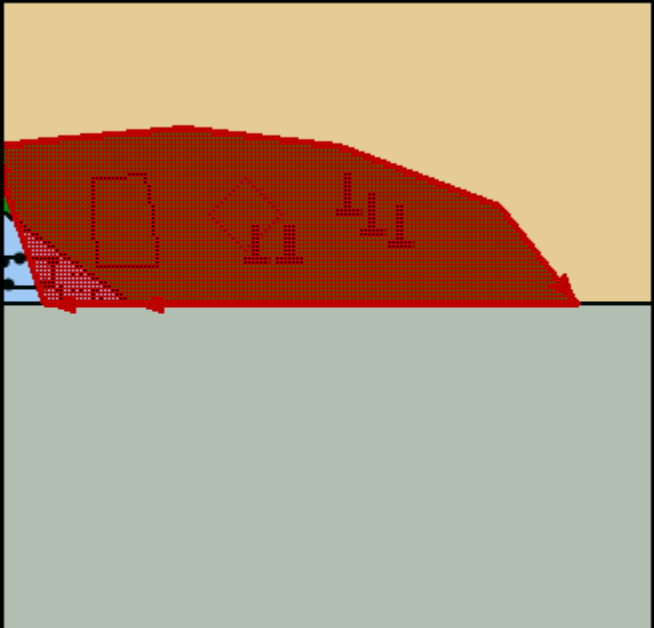
Test Dataset:AA500013

List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
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).
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.
1507	Check that no M_VDAT objects overlap one another.
1508	Check that no M_SDAT objects overlap one another.
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).
1512	Check that all SOUNDG objects and all those objects that have at least one of VALSOU, VALDCO, WATLEV, EXPSOU, DRVAL1 or DRVAL2 encoded with an explicit value and which cross a M_SDAT object boundary are split at that boundary.
1513	Check that the value for the Units of Height measurement subfield (HUNI) of the Data Set Parameter field (DSPM) is (1) [metre].
1515	Check that if an object contains a value for the attributes DATEND, DATSTA, PEREND, PERSTA, SORDAT, CPDATE, SUREND or SURSTA, that this value conforms to ISO 8601:1988.
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.
1517	Check that if an object contains values for the attributes TIMSTA and TIMEND, that these values conform to the format defined in Chapter 2 of S-57 Appendix A.
1520	Check that the value of the Edition Number (EDTN) subfield of the Data Set Identification field (DSID) is correct.
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.
1525	Check that no M_QUAL object that has an attribute value for DRVAL1 contains a value for POSACC.
1526	Check that any M_QUAL object, which has an attribute value for SOUACC, also has an attribute value for DRVAL1.
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.
1535	Check that no UWTROC object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL.
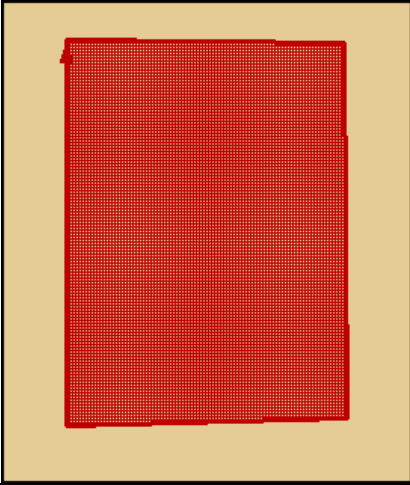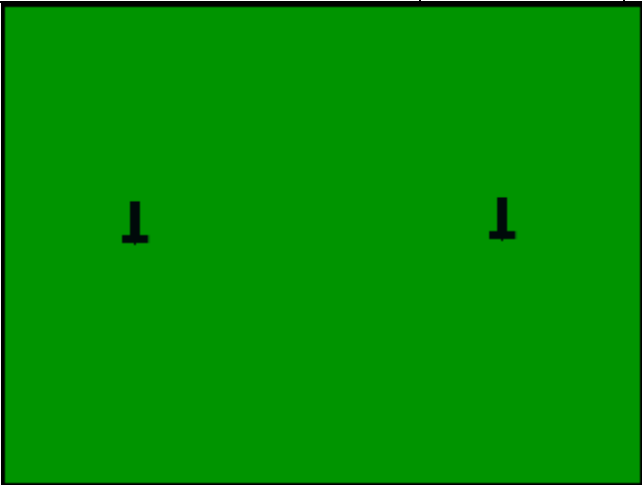
Dataset Name	AA500013		S-58 test No.	T1505		Type	E
S-58 Description	Check that there are no M_VDAT objects which have an attribute value for VERDAT equal to that given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM).						
Test Case No. 1	Captured M_VDAT object with attribute VERDAT equal to that given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM)						
Location	32°29'06.92"S 60°51'26.34"E		**S57 Encoding**	M_VDAT(A)	VERDAT=16		
Screen Capture							
Expected test results	T1505: An error "unnecessary META object Vertical datum of data" must be triggered.						
Secondary errors	None.						

Dataset Name	AA500013		S-58 test No.	T1506		Type	E
S-58 Description	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.						
Test Case No. 1	Captured a BRIDGE cross a M_VDAT object boundary.						
Location	32°29'07.50"S 60°51'36.99"E		**S57 Encoding**	BRIDGE (A) M_VDAT (A)	VERDAT=17 VERDAT=16		
Screen Capture							
Expected test results	T1506: An error "spatial conflict between 'verclr' and meta object 'm_vdat'" must be triggered.						
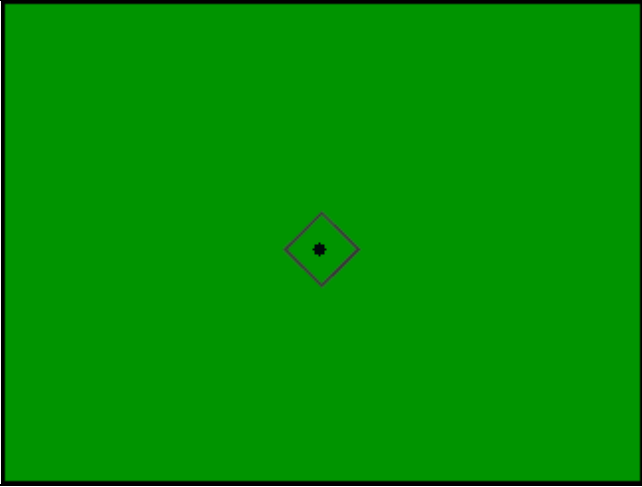
Secondary errors	T0513: An error "Check that an attribute on an individual object does not have the same value as the general value defined by the meta object. Attribute VERDAT equals the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM)" must be triggered for the objects created.				
Dataset Name	AA500013	**S-58 test No.**	T1507	**Type**	E
S-58 Description	Check that no M_VDAT objects overlap one another.				
Test Case No. 1	Vertical datum of data area captured overlapping with another Vertical datum of data area.				
Location	32°29'02.21"S 60°51'18.76"E	**S57 Encoding**	M_VDAT (A)	VERDAT=12	
			M_VDAT (A)	VERDAT=16	
Screen Capture					
Expected test results	T1507:Two errors "M_VDAT object is overlapped by next M_VDAT" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500013	**S-58 test No.**	T1508	**Type**	E
S-58 Description	Check that no M_SDAT objects overlap one another.				
Test Case No. 1	Sounding datum area captured overlapping with another sounding datum area.				
Location	32°29'23.65"S 60°52'01.12"E	**S57 Encoding**	M_SDAT (A)	VERDAT=27	
			M_SDAT (A)	VERDAT=12	
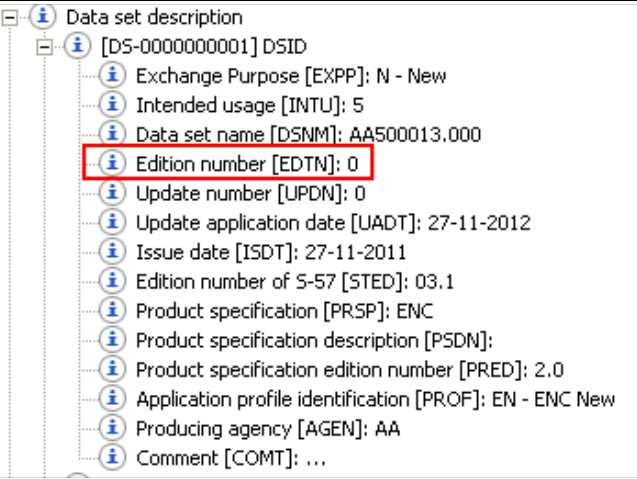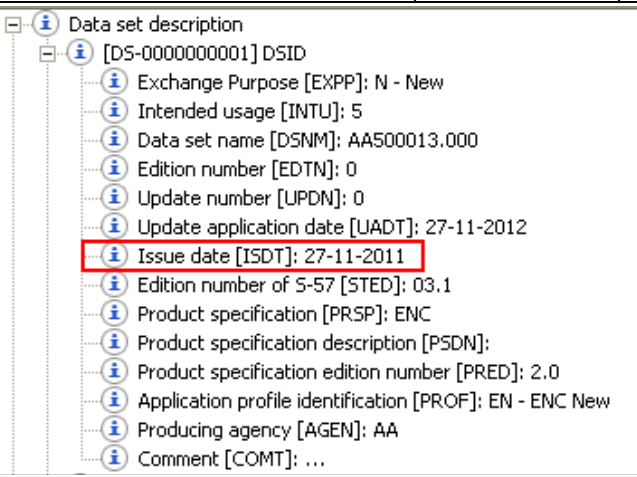
Screen Capture	
Expected test results	T1508: Two errors "object is overlapped by next M_SDAT" must be triggered.
Secondary errors	None.

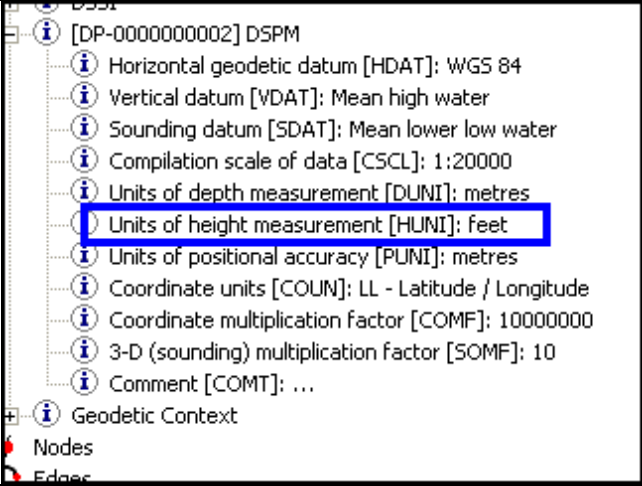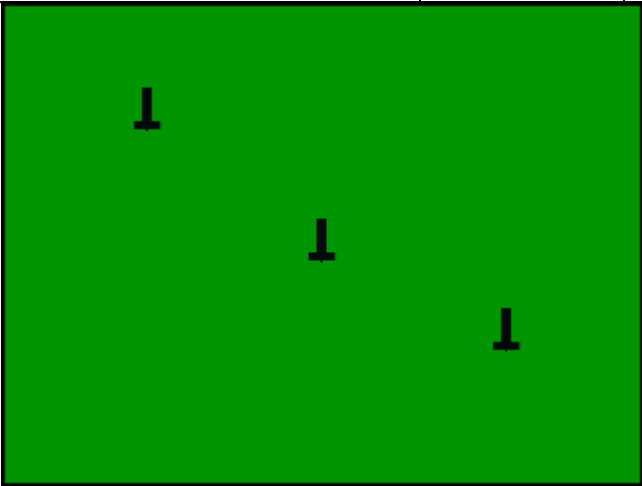|					
Dataset Name	AA500013	**S-58 test No.**	T1511	**Type**	E
S-58 Description	Check that there are no M_SDAT objects that have an attribute value for VERDAT equal to that given in the Sounding Datum subfield (SDAT) of the Data Set Parameter field (DSPM).				
Test Case No. 1	Sounding datum area captured with attribute VERDAT.				
Location	32°29'24.08"S 60°52'04.65"E	**S57 Encoding**	M_SDAT (A)	VERDAT=12	
Screen Capture					
Expected test results	T1511: An error "unnecessary META object Sounding datum" must be triggered.				
Secondary errors	None.				
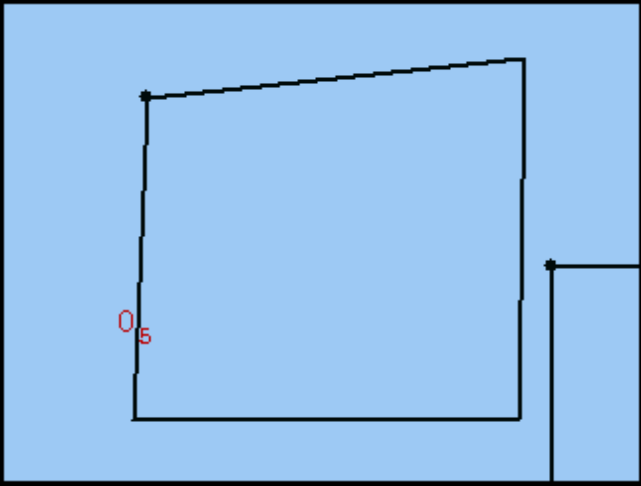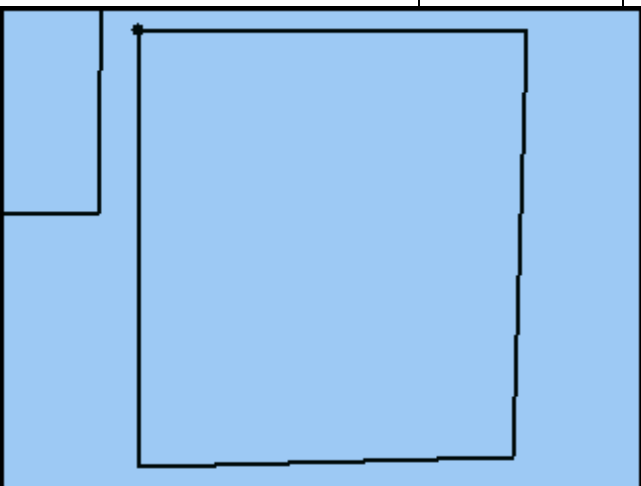
Dataset Name	AA500013		S-58 test No.	T1512		Type	E
S-58 Description	Check that all SOUNDG objects and all those objects that have at least one of VALSOU, VALDCO, WATLEV, EXPSOU, DRVAL1 or DRVAL2 encoded with an explicit value and which cross a M_SDAT object boundary are split at that boundary.						
Test Case No. 1	SOUNDG, DEPARE (A), DEPCNT (L) and OBSTRN (A) objects which cross a M_SDAT (A) object boundary captured.						
Location	32°29'24.21"S 60°52'00.02"E		**S57 Encoding**	DEPARE (A) DEPCNT (L) OBSTRN (A) SOUNDG (P)	DRVAL1=0 DRVAL2=1.8 VALDCO=0 VALSOU=2 EXPSOU=3 WATLEV=3		
Screen Capture							
Expected test results	T1512: An error " spatial conflict between 'soundg' and meta object 'm_sdat' "must be triggered. T1512: An error "spatial conflict between 'depcnt' and meta object 'm_sdat' "must be triggered. T1512: Two errors "spatial conflict between 'depare' and meta object 'm_sdat' "must be triggered. T1512: An error "spatial conflict between 'obstrn' and meta object 'm_sdat' "must be triggered.						
Secondary errors	None.						

Dataset Name	AA500013		S-58 test No.	T1513		Type	E
S-58 Description	Check that the value for the Units of Height measurement subfield (HUNI) of the Data Set Parameter field (DSPM) is (1) [metre].						
Test Case No. 1	Assigned HUNI = feet(2) of the Data Set Parameter field (DSPM)						
Location	DSPM Parameters						
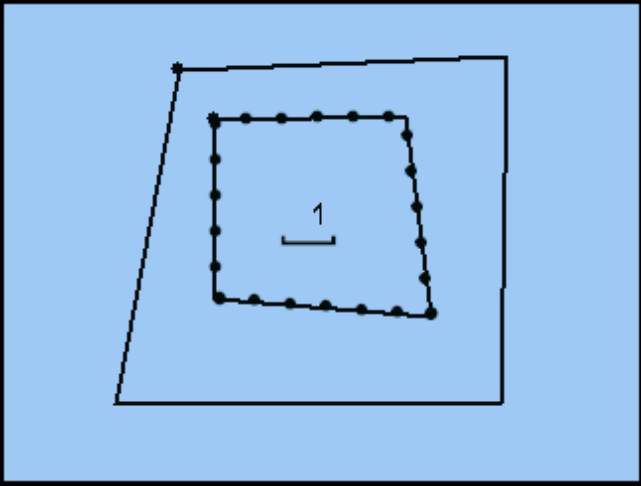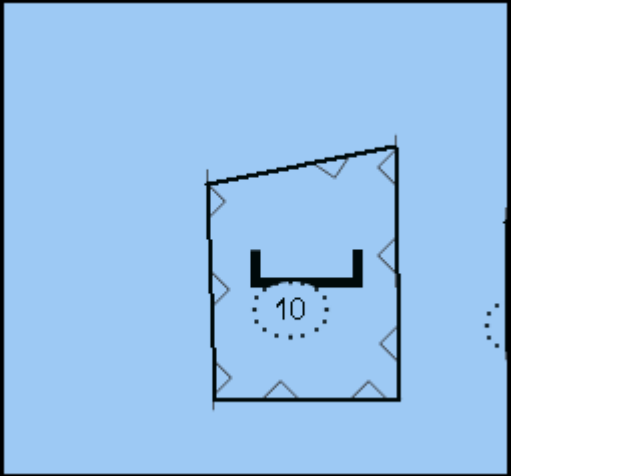
Screen Capture	
Expected test results	T1513: An error "illegal value of DSPM.HUNI" must be triggered.
Secondary errors	None.

Dataset Name	AA500013	S-58 test No.	T1515	Type	E
S-58 Description	Check that if an object contains a value for the attributes DATEND, DATSTA, PEREND, PERSTA, SORDAT, CPDATE, SUREND or SURSTA, that this value conforms to ISO 8601:1988.				
Test Case No. 1	BCNLAT x3 points with attributes captured. M_QUAL (A) with attributes captured.				

Location	32°29'23.80"S 60°52'03.92"E	S57 Encoding	BCNLAT (P) BCNLAT(P) BCNLAT(P) M_QUAL (A)	SORDAT=11112012 PERSTA=--3101 PEREND=--3107 DATSTA=25062010 DATEND=25122010 SURSTA=25252011 SUREND=25252010

Screen Capture	
Expected test results	T1515: Four errors "Check that if an object contains a value for the attributes DATEND, DATSTA, PEREND, PERSTA, SORDAT, CPDATE, SUREND or SURSTA that this value conforms to ISO 8601:1988" must be triggered.
Secondary errors	T0073: Three warnings "Check that Periodic Date, End (PEREND) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered for the objects created.

Test Case No. 2	M_PROD (A) with attributes captured.			
Location	32°29'03.14"S 60°52'09.90"E	**S57 Encoding**	M_PROD	CPDATE=27112012
Screen Capture				
Expected test results	T1515: errors "Check that if an object contains a value for the attributes DATEND, DATSTA, PEREND, PERSTA, SORDAT, CPDATE, SUREND or SURSTA that this value conforms to ISO 8601:1988" must be triggered.			
Secondary errors	T0504: An error "prohibited object Production information" must be triggered.			

Dataset Name	AA500013	**S-58 test No.**	T1516	**Type**	W
S-58 Description	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.				
Test Case No. 1	Captured BCNLAT point with attribute STATUS. Captured BCNLAT point with attributes PERSTA and PEREND.				
Location	32°29'24.12"S 60°52'02.71"E	**S57 Encoding**	BCNLAT(P)	STATUS=5 PERSTA=30.06.-- PEREND=01.01--	
Screen Capture					
Expected test results	T1516: A warning "periodic object without 'status: 5' Beacon lateral" must be triggered. T1516: A warning "periodic object without 'persta'/'perend' Beacon lateral "must be triggered.				
Secondary errors	T0073: A warning "Check that Periodic Date, End (PEREND) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered for the objects created.				

Dataset Name	AA500013	S-58 test No.	T1517	Type	E

S-58 Description	Check that if an object contains values for the attributes TIMSTA and TIMEND, that these values conform to the format defined in Chapter 2 of S-57 Appendix A.				
Test Case No. 1	Captured TS_TIS point with attribute value TIMSTA and TIMEND				

Location	32°29'23.68"S 60°52'02.38"E	S57 Encoding	TS_TIS (P)	TIMSTA=210708T20120629 TIMEND=210701T20120630

Screen Capture	

Expected test results	T1517: An error "Check that if an object contains values for the attributes TIMSTA and TIMEND, that these values conform to the format defined in Chapter 2 of S-57 Appendix A" must be triggered.
Secondary errors	T0073: A warnings "Check that Time End (TIMEND) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered. T0073: A warnings "Check that Time End (TIMSTA) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered.

Dataset Name	AA500013	S-58 test No.	T1520	Type	E

S-58 Description	Check that the value of the Edition Number (EDTN) subfield of the Data Set Identification field (DSID) is correct.				
Test Case No. 1	Assigned EDTN = 0 of the Data Set Identification field (DSID)				
Location	DSID Parameters	S57 Encoding			

Screen Capture	
Expected test results	T1520: An error "illegal value of DSID.EDTN" must be triggered.
Secondary errors	T0534: An error "a delete cell message only contains the DSID field with EDTN = 0" must be triggered.

Dataset Name	AA500013	S-58 test No.	T1523	Type	E
S-58 Description	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.				
Test Case No. 1	Assigned ISDT =27-11-2011 of the Data Set Identification field (DSID) less than Update application date(UADT)				
Location	DSID Parameters	**S57 Encoding**			
Screen Capture					
Expected test results	T1523: An error "illegal value of DSID.UADT - not equal to ISDT" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500013	S-58 test No.	T1525	Type	E
S-58 Description	Check that no M_QUAL object that has an attribute value for DRVAL1 contains a value for POSACC.				
Test Case No. 1	Captured M_QUAL area with attribute values DRVAL1 and POSACC.				
Location	32°29'24.06"S 60°51'58.85"E	**S57 Encoding**	M_QUAL (A)	DRVAL1=5 POSACC=10	

Screen Capture					

Expected test results	T1525: An error "attribute conflict between 'drval1' and 'posacc' in Quality of data" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500013	**S-58 test No.**	T1526	**Type**	E
S-58 Description	Check that any M_QUAL object, which has an attribute value for SOUACC, also has an attribute value for DRVAL1.				
Test Case No. 1	Captured M_QUAL area with attribute SOUACC and without attribute DRVAL1.				
Location	32°29'24.18"S 60°51'59.18"E	**S57 Encoding**	M_QUAL(A)	SOUACC=10	

Screen Capture					

Expected test results	T1526: An error "meaningless value of 'souacc' in Quality of data" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500013	**S-58 test No.**	T1529	**Type**	E
S-58 Description	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.				
Test Case No. 1	OBSTRN (A) with attribute TECSOU Captured. M_QUAL (A) without attribute TECSOU Captured.				
Location	32°29'24.37"S 60°51'58.34"E	**S57 Encoding**	M_QUAL (A) OBSTRN (A)	TECSOU=6	
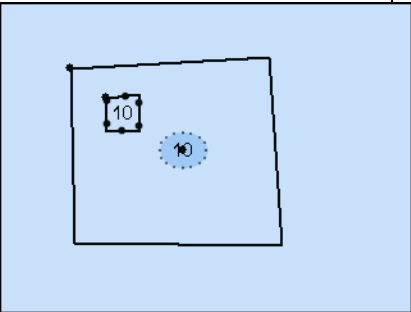
Screen Capture	
Expected test results	T1529: An error "redundant 'tecsou' is defined by 'm_qual' " must be triggered.
Secondary errors	None.

Dataset Name	AA500013	**S-58 test No.**	T1535	**Type**	E
S-58 Description	Check that no UWTROC object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL.				
Test Case No. 1	Captured UWTROC object with attribute SOUACC, falling within a given M_QUAL has an attribute SOUACC.				
Location	32°29'24.46"S 60°51'58.91"E	**S57 Encoding**	M_QUAL(A) UWTROC(P)	SOUACC=2 SOUACC=2 VALSOU=10	

Screen Capture	
Expected test results	T1535: An error "redundant 'souacc' is defined by 'm_qual' must be triggered.
Secondary errors	T1530: An error "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" must be triggered for the objects created.
Test Case No. 2	Captured UWTROC object with attribute SOUACC, falling within a given M_QUAL has an attribute SOUACC.

Location	32°29'24.45"S 60°51'59.07"E	**S57 Encoding**	M_QUAL(A)	SOUACC=0.6 CATZOC=5
			UWTROC(P)	SOUACC=1
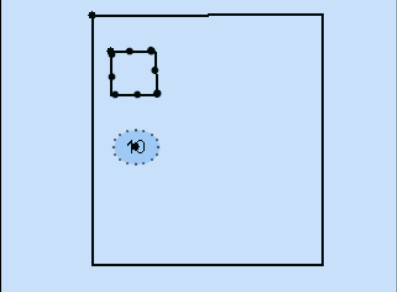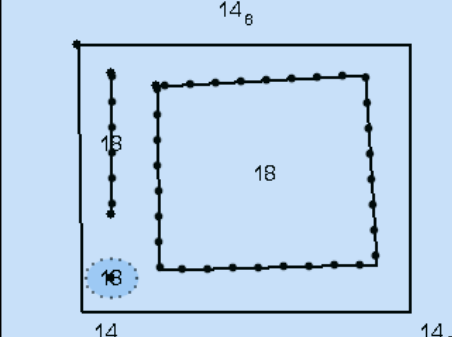
Screen Capture	
Expected test results	T1535: An error "redundant 'souacc' is defined by 'm_qual' " must be triggered.
Secondary errors	None.

Test Dataset:AA500014
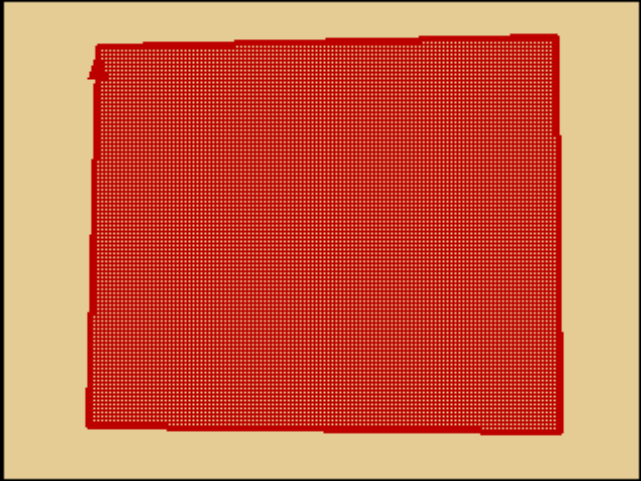
List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
1537	Check that no WRECKS object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL.
1539	Check that no OBSTRN object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL.
1541	Check that QUASOU when used on SOUNDG is not identical to the value in M_SREL.
1544	Check that no M_ACCY object contains the attributes HORACC, SOUACC and VERACC.
1545	Check that no object has an attribute value for HORACC without an attribute value for HORCLR.
1546	Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL.
1548	Check that any non-bathymetric object, which has an attribute value for SORIND has a corresponding attribute value for SORDAT.
1550	Check that no M_CSCL object has a value for the attribute CSCALE equal to that given in the Compilation Scale of data subfield (CSCL) of the Data Set Parameter field (DSPM).
1551	Check that no two M_CSCL objects overlap.
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.
1554	Check that no Group 1 objects and no meta objects have been encoded with the attribute SCAMIN.
1557	Check that all T_HMON objects have a value of (1) [simplified harmonic method of tidal prediction] or (2) [full harmonic method of tidal prediction] for the attribute T_MTOD.
1558	Check that all T_NHMN objects have a value of (3) [time and height difference non-harmonic method] for the attribute T_MTOD.
1560	Check that all TS_PRH objects have a value of (1) [simplified harmonic method of tidal prediction] or (2) [full harmonic method of tidal prediction] for the attribute T_MTOD.
1561	Check that all TS_PNH objects have a value of (3) [time and height difference non-harmonic method] for the attribute T_MTOD.
1563	Check that any RIVERS, CANALS, LAKARE, DOCARE or LOKBSN objects are covered by a LNDARE or UNSARE object of type Area.
1564	Check that no CTRPNT object contains the attributes VERDAT and VERACC.
1567	Check that no COALNE object contains the attributes VERDAT and VERACC.
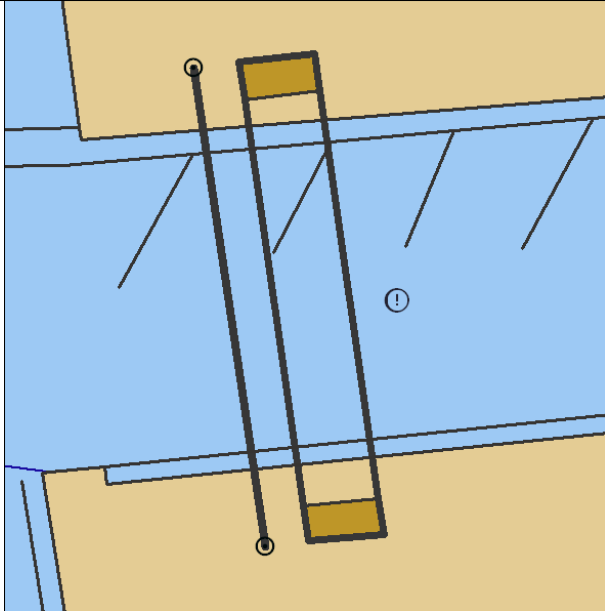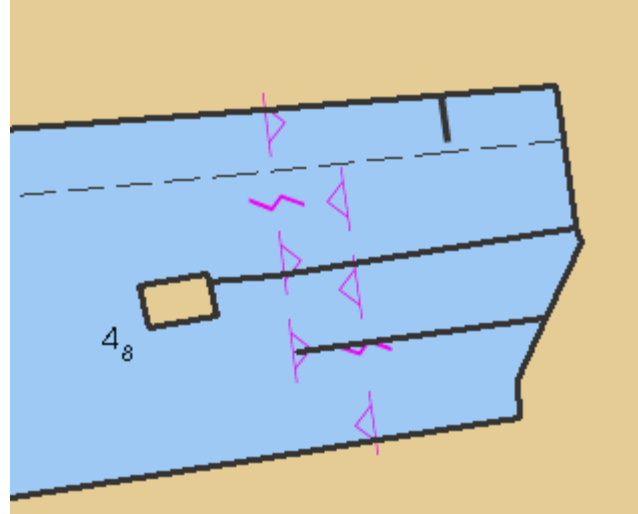
Dataset Name	AA500014			S-58 test No.		T1537	Type	E
S-58 Description	Check that no WRECKS object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL.							
Test Case No. 1	Captured WRECKS, SWPARE and M_QUAL objects with attribute SOUACC.							
Location	32°29'14.87"S 60°47'35.78"E			**S57 Encoding**	WRECKS(P, A) SWPARE (A) M_QUAL(A)	CATWRK=2 SOUACC=1 WATLEV=3 QUASOU=6 VALSOU=10 DRVAL1=10 CATZOC=5 SOUACC=2 DRVAL1=10		
Screen Capture								
Expected test results	T1537: Two errors "no WRECKS object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL." must be triggered.							
Secondary Errors	T1655: An error "no SWPARE object sharing the same geo-spatial position and geometry as a M_QUAL object contains the attribute POSACC if the SOUACC is encoded" must be triggered related to the feature objects created.							
Test Case No. 2	Captured WRECKS, SWPARE and M_QUAL objects with attribute SOUACC.							
Location	32°29'14.89"S 60°47'40.75"E			**S57 Encoding**	WRECKS(P, A) SWPARE (A) M_QUAL(A)	CATWRK=2 SOUACC=0.5 WATLEV=3 QUASOU=6 VALSOU=10 DRVAL1=10 CATZOC=5 SOUACC=1 DRVAL1=10		
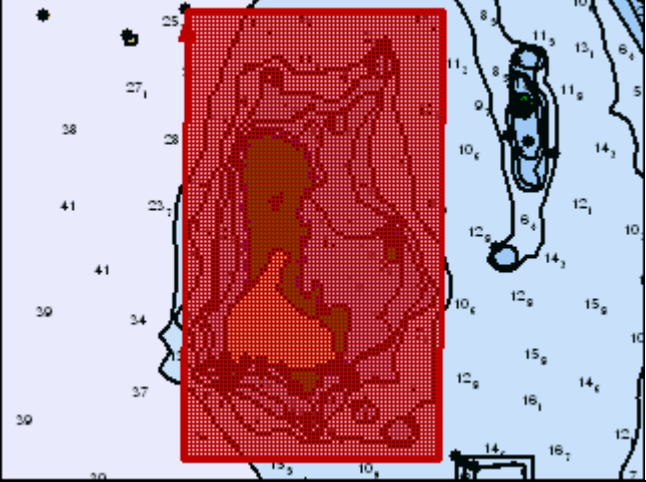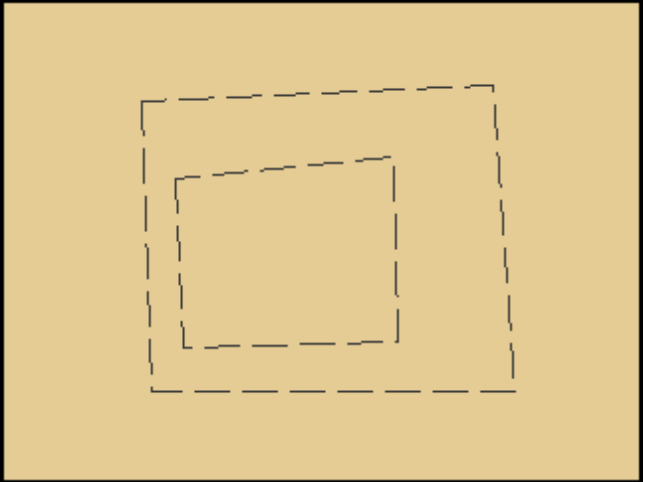
Screen Capture	
Expected test results	T1537: Two errors "no WRECKS object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL." must be triggered.
Secondary Errors	T1655: An error "no SWPARE object sharing the same geo-spatial position and geometry as a M_QUAL object contains the attribute POSACC if the SOUACC is encoded" must be triggered related to the feature objects created.

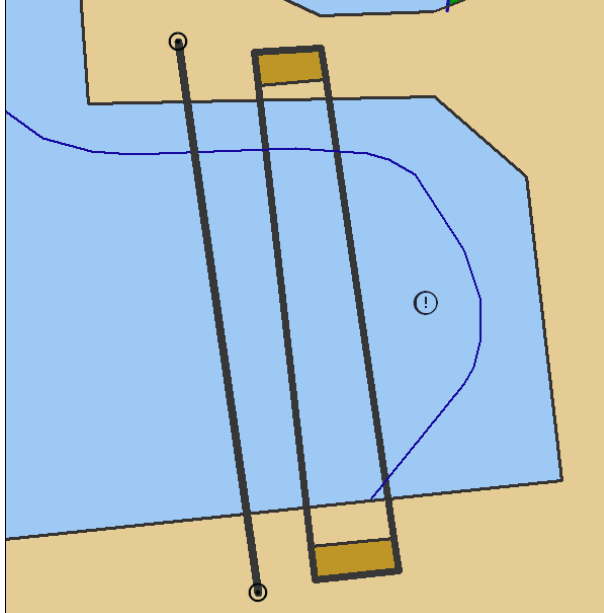| Dataset Name	AA500014			S-58 test No.	T1539	Type	E
S-58 Description	Check that no OBSTRN object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL.						
Test Case No. 1	Captured OBSTRN (A), SWPARE (A) and M_QUAL objects with attribute SOUACC.						

Location	32°29'13.66"S 60°47'56.18"E		**S57 Encoding**	OBSTRN(P, L, A) SWPARE (A) M_QUAL(A)	WATLEV=3 VALSOU=10 QUASOU=6 SOUACC=1 DRVAL1=10 CATZOC=5 SOUACC=2 DRVAL1=10

Screen Capture	
Expected test results	T1539: Three errors "no OBSTRN object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL." must be triggered.
Secondary Errors	T1655: An error "no SWPARE object sharing the same geo-spatial position and geometry as a M_QUAL object contains the attribute POSACC if the SOUACC is encoded" must be triggered related to the feature objects created.
Test Case No. 2	Captured OBSTRN (A) and M_QUAL objects with attribute SOUACC.

Location	32°29'15.53"S 60°47'48.28"E		**S57 Encoding**	OBSTRN(P, L, A)	WATLEV=3 VALSOU=10 QUASOU=6 SOUACC=0.5
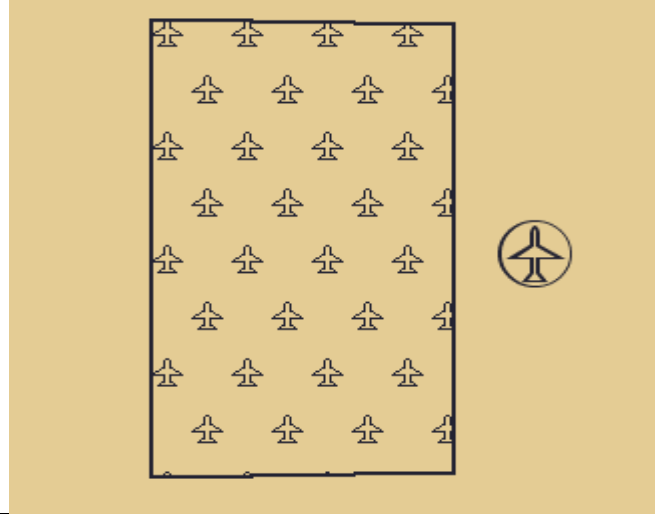
				SWPARE (A)	DRVAL1=10
				M_QUAL(A)	CATZOC=5 SOUACC=1 DRVAL1=10

Screen Capture	
Expected test results	T1539: Three errors "no OBSTRN object has a value for SOUACC that is equivalent to or degrades the SOUACC attribute on the object M_QUAL." must be triggered.
Secondary Errors	T1655: An error "no SWPARE object sharing the same geo-spatial position and geometry as a M_QUAL object contains the attribute POSACC if the SOUACC is encoded" must be triggered related to the feature objects created.

Dataset Name	AA500014		**S-58 test No.**	T1541	**Type**	E
S-58 Description	Check that QUASOU when used on SOUNDG is not identical to the value in M_SREL.					
Test Case No.1	Captured SOUNDG and M_SREL with identical attribute QUASOU.					
Location	32°28'05.46"S 60°46'33.46"E		**S57 Encoding**	SOUNDG(P) M_SREL(A)	QUASOU=8 QUASOU=8	
Screen Capture						
Expected test results	T1541: An error "redundant 'quasou' is defined by 'm_srel'" must be triggered.					
Secondary Errors	T0513: An error "The feature's value for the attribute QUASOU must not be equal to that of the M_SREL covering the feature" must be triggered related to the feature objects created.					

Dataset Name	AA500014		**S-58 test No.**	T1544	**Type**	E
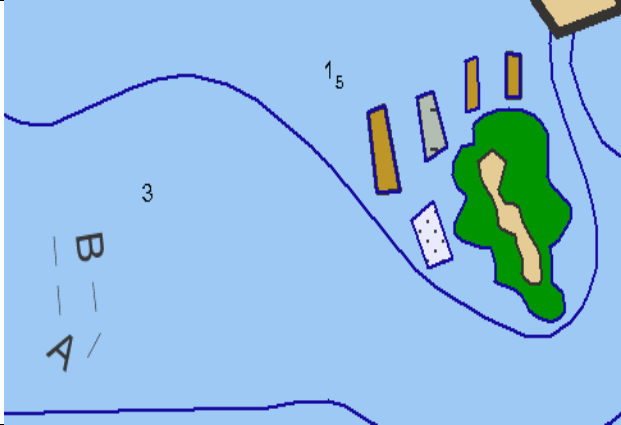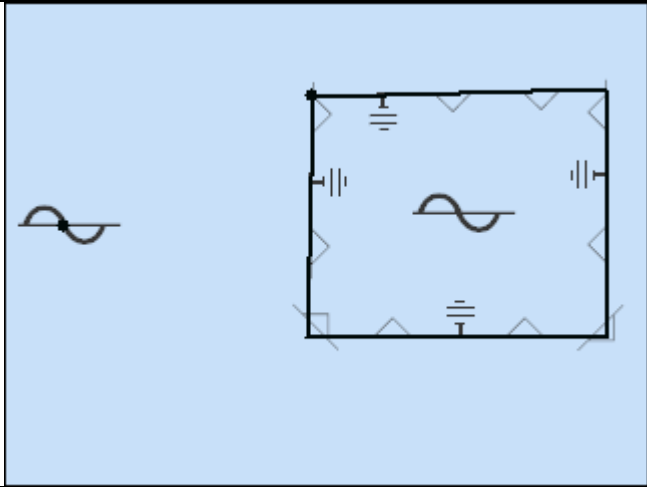
S-58 Description	Check that no M_ACCY object contains the attributes HORACC, SOUACC and VERACC.				
Test Case No.1	Captured M_ACCY object with attribute HORACC, SOUACC and VERACC.				
Location	32°29'12.53"S 60°49'03.38"E		**S57 Encoding**	M_ACCY (A)	HORACC=1 SOUACC=1 VERACC=1 POSSAC=1

Screen Capture	

Expected test results	T1544: An error "prohibited attribute 'horacc' in Accuracy of data" must be triggered. T1544: An error "prohibited attribute 'souacc' in Accuracy of data" must be triggered. T1544: An error "prohibited attribute 'veracc' in Accuracy of data" must be triggered.
Secondary Errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.

Dataset Name	AA500014		**S-58 test No.**	T1545	**Type**	E
S-58 Description	Check that no object has an attribute value for HORACC without an attribute value for HORCLR.					
Test Case No.1	Captured BRIDGE object with attribute HORACC without an attribute value for HORCLR.					
Location	32°29'14.81"S 60°48'38.94"E		**S57 Encoding**	BRIDGE (P, L, A)	CATBRG=1 HORACC=10	
				PYLONS(A,P)	CATPYL=4	
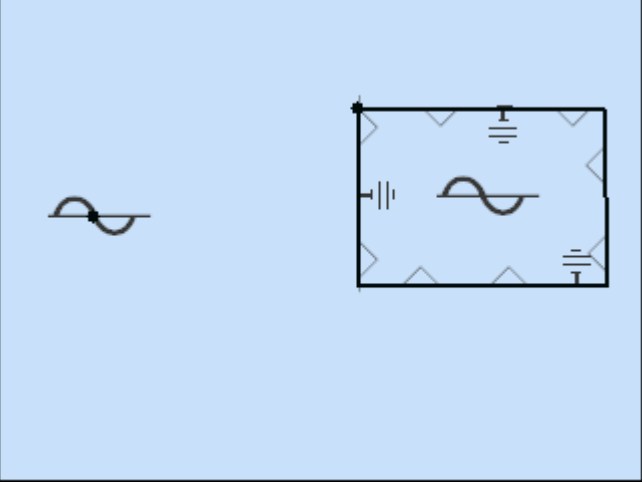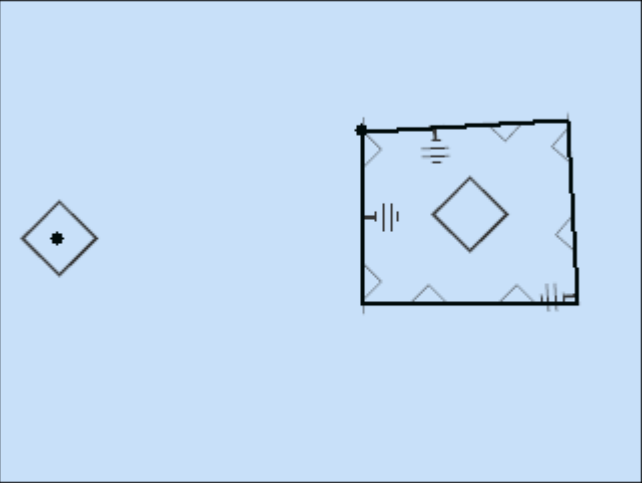
Screen Capture	
Expected test results	T1545: Three errors "prohibited attribute 'horacc' in Bridge" must be triggered.
Secondary Errors	T1797: A warning "the object bridge cannot be displayed in ECDIS" must be triggered for the point object created.

Dataset Name	AA500014			S-58 test No.	T1546	Type	E

S-58 Description	Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL.
Test Case No.1	Captured BRIDGE object with attribute VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL.

Location	32°29'17.70"S 60°48'36.76"E		**S57 Encoding**	BRIDGE(P, L, A)	CATBRG=1 VERACC=10
				PYLONS(A,P)	CATPYL=4

| Screen Capture | | | | | | |

Expected test results	T1546: Three errors "prohibited attribute 'veracc' in Bridge" must be triggered.					
Secondary Errors	T1797: A warning "the object bridge cannot be displayed in ECDIS" must be triggered for the point object created.					

Dataset Name	AA500014			S-58 test No.	T1548	Type	W
S-58 Description	Check that any non-bathymetric object, which has an attribute value for SORIND has a corresponding attribute value for SORDAT.						
Test Case No.1	Captured CBLARE object with attribute SORIND without SORDAT.						
Location	32°29'21.68"S 60°48'39.72"E			S57 Encoding	CBLARE (A)	CATCBL=1 SORIND=AA,AA,graph,chart0014	

Screen Capture	

Expected test results	T1548: Three warnings "'sorind' without 'sordat' (or vice versa) in CBLARE" must be triggered.
Secondary Errors	None.

Dataset Name	AA500014			S-58 test No.	T1550	Type	E
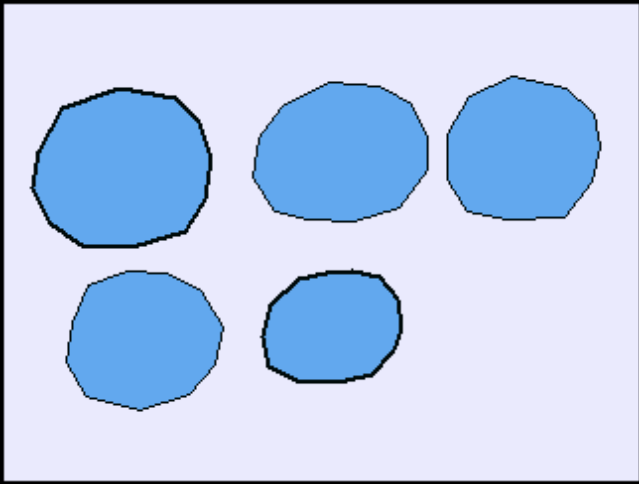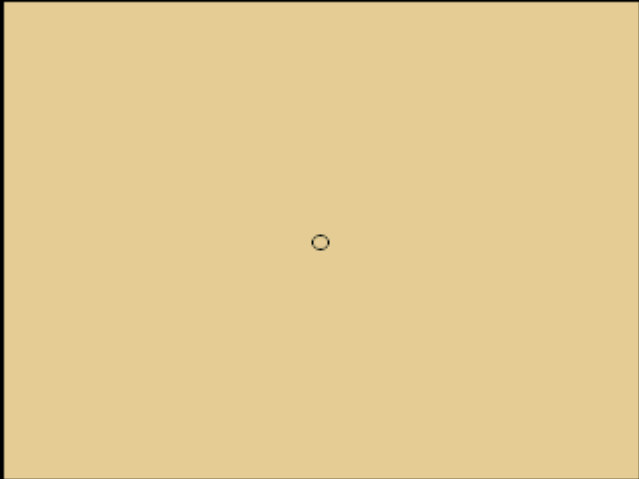
S-58 Description	Check that no M_CSCL object has a value for the attribute CSCALE equal to that given in the Compilation Scale of data subfield (CSCL) of the Data Set Parameter field (DSPM).				
Test Case No.1	Captured M_CSCL object with attribute CSCALE is equal to that given in the compilation scale of data subfield of the Data Set Parameter field.				
Location	32°28'46.54"S 60°47'33.94"E		S57 Encoding	M_CSCL (A)	CSCALE=20000
Screen Capture					
Expected test results	T1550: An error "unnecessary META object of Compilation scale of data" must be triggered.				
Secondary Errors	None.				

Dataset Name	AA500014		S-58 test No.	T1551	Type	E
S-58 Description	Check that no two M_CSCL objects overlap.					
Test Case No.1	Captured M_CSCL object overlapping with each other with different compilation scales.					
Location	32°28'32.43"S 60°48'59.49"E		S57 Encoding	M_CSCL(A) M_CSCL(A)	CSCALE=25000 CSCALE=30000	
Screen Capture						
Expected test results	T1551: An error "object is overlapped by next M_CSCL" must be triggered. T1551: An error "object is overlapped by previous M_CSCL" must be triggered.					
Secondary Errors	None.					
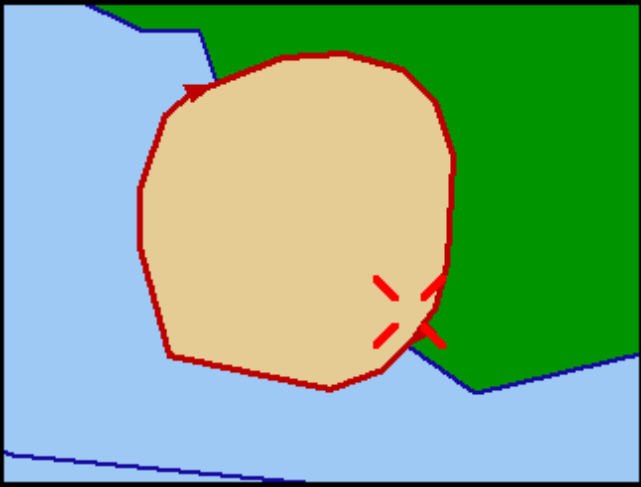
Dataset Name	AA500014			S-58 test No.	T1553	Type	E
S-58 Description	Check that any value of SCAMIN is set to a scale value smaller than or equal to the compilation scale of the data for the area.						
Test Case No.1	Captured AIRARE with attribute SCAMIN smaller than and equal to the compilation scale.						
Location	32°27'56.67"S 60°48'56.00"E			**S57 Encoding**	AIRARE (P, A)	SCAMIN=10000	
Screen Capture							
Expected test results	T1553: Two errors "value of 'scamin' is above compilation scale (object is invisible) in Airport area" must be triggered.						
Secondary Errors	None.						

Dataset Name	AA500014			S-58 test No.	T1554	Type	E
S-58 Description	Check that no Group 1 objects and no meta objects have been encoded with the attribute SCAMIN.						
Test Case No.1	Assigned attribute SCAMIN for 7 Group 1 objects and meta M_NSYS object.						
Location	32°28'34.91"S 60°48'25.59"E			**S57 Encoding**	DEPARE(A) LNDARE(A) UNSARE(A) FLODOC(A) PONTON(A) HULKES(A) DRGARE(A) M_NSYS	SCAMIN=25000 MARSYS=2 ORIENT=10 SCAMIN=25000	

Screen Capture	
Expected test results	T1554: An error "prohibited attribute 'scamin' in Depth area" must be triggered. T1554: An error "prohibited attribute 'scamin' in Land area" must be triggered. T1554: An error "prohibited attribute 'scamin' in Pontoon" must be triggered. T1554: An error "prohibited attribute 'scamin' in Unsurveyed area" must be triggered. T1554: An error "prohibited attribute 'scamin' in Hulk" must be triggered. T1554: An error "prohibited attribute 'scamin' in Floating dock" must be triggered. T1554: An error "prohibited attribute 'scamin' in Dredged area" must be triggered. T1554: An error "prohibited attribute 'scamin' in navigational system of marks in M_NSYS" must be triggered.
Secondary Errors	T547: Three errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.

Dataset Name	AA500014			**S-58 test No.**	T1557	**Type**	E
S-58 Description	Check that all T_HMON objects have a value of (1) [simplified harmonic method of tidal prediction] or (2) [full harmonic method of tidal prediction] for the attribute T_MTOD.						
Test Case No.1	Captured T_HOMN object with attribute T_MTOD.						
Location	32°27'37.14"S 60°47'57.01"E			**S57 Encoding**	T_HMON (P, A)	T_MTOD=3	
Screen Capture							
Expected test results	T1557: Two errors "meaningless value of 't_mtod' in Tide - harmonic prediction" must be triggered.						
Secondary Errors	T2000: Two warnings "T_HMON should not have value 3 [height and time difference non-harmonic method] for T_MTOD." must be triggered related to the feature objects created.						

Dataset Name	AA500014			S-58 test No.	T1558	Type	E

Test Case No.1	Captured T_NHMN object with attribute T_MTOD.						

S-58 Description: Check that all T_NHMN objects have a value of (3) [time and height difference non-harmonic method] for the attribute T_MTOD.

Location	32°27'43.98"S 60°47'52.54"E		S57 Encoding	T_NHMN (P, A)	T_MTOD=1

Screen Capture	

Expected test results	T1558: Two errors "meaningless value of 't_mtod' in Tide - non-harmonic prediction" must be triggered.
Secondary Errors	T2000: Two warnings "T_NHMN should not have value 1 [simplified harmonic method of tidal prediction] for T_MTOD" must be triggered related to the feature objects created.

Dataset Name	AA500014			S-58 test No.	T1560	Type	E

S-58 Description: Check that all TS_PRH objects have a value of (1) [simplified harmonic method of tidal prediction] or (2) [full harmonic method of tidal prediction] for the attribute T_MTOD.

Test Case No.1	Captured TS_PRH object with attribute T_MTOD.				
Location	32°27'51.80"S 60°47'52.06"E		S57 Encoding	TS_PRH (P, A)	T_MTOD=3

Screen Capture	

Expected test results	T1560: Two errors "meaningless value of 't_mtod' in <Tidal stream - harmonic prediction>
Secondary Errors	T2000: Two warnings "TS_PRH should not have value 3 [height and time difference non-harmonic method] for T_MTOD" must be triggered related to the feature objects created.

Dataset Name	AA500014			S-58 test No.	T1561	Type	E

S-58 Description	Check that all TS_PNH objects have a value of (3) [time and height difference non-harmonic method] for the attribute T_MTOD.
Test Case No.1	Captured TS_PNH object with attribute T_MTOD.

Location	32°28'02.10"S 60°47'56.41"E		S57 Encoding	TS_PNH (P, A)	T_MTOD=1

Screen Capture	
Expected test results	T1561: Two errors "meaningless value of 't_mtod' in Tidal stream - non-harmonic prediction" must be triggered.
Secondary Errors	T2000: Two warnings "TS_PNH should not have value 1 [simplified harmonic method of tidal prediction] for T_MTOD." must be triggered related to the feature objects created.

Dataset Name	AA500014			S-58 test No.	T1563	Type	E

S-58 Description	Check that any RIVERS, CANALS, LAKARE, DOCARE or LOKBSN objects are covered by a LNDARE or UNSARE object of type Area.
Test Case No.1	Captured RIVERS, CANALS, LAKARE, DOCARE and LOKBSN objects are overlying DEPARE.

Location	32°29'19.04"S 60°46'52.86"E		S57 Encoding	RIVERS(A) CANALS(A) LAKARE(A) DOCARE(A) LOKBSN(A)	
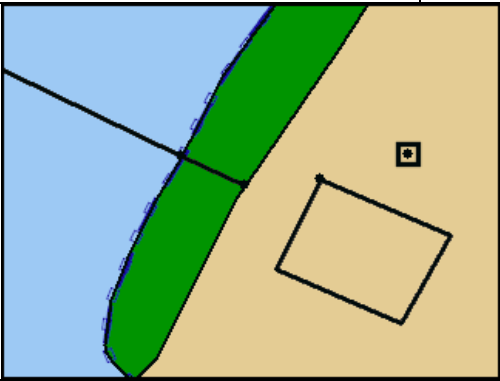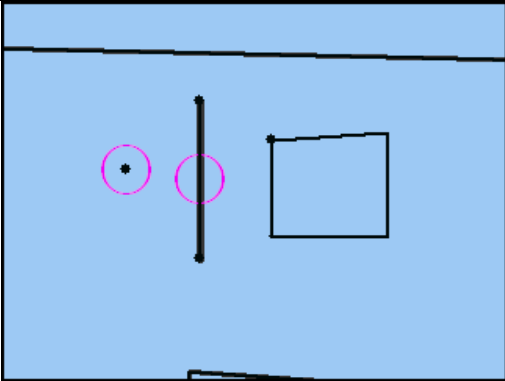
Screen Capture	
Expected test results	T1563: An error "River object is covered by prohibited 'depare'" must be triggered. T1563: An error "Canal object is covered by prohibited 'depare'" must be triggered. T1563: An error "Lake object is covered by prohibited 'depare'" must be triggered. T1563: An error "Dock area object is covered by prohibited 'depare'" must be triggered. T1563: An error "Lock basin object is covered by prohibited 'depare'" must be triggered.
Secondary Errors	None.

Dataset Name	AA500014			**S-58 test No.**	T1564	**Type**	E

S-58 Description	Check that no CTRPNT object contains the attributes VERDAT and VERACC.

Test Case No.1	Captured CTRPNT object with attributes VERDAT and VERACC.

Location	32°28'49.13"S 60°48'47.10"E		**S57 Encoding**	CTRPNT(P)	VERDAT=27 VERACC=1 ELEVAT=10

Screen Capture	
Expected test results	T1564: An error "prohibited attribute 'verdat' in Control point" must be triggered. T1564: An error "prohibited attribute 'veracc' in Control point" must be triggered.
Secondary Errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.

Dataset Name	AA500014			**S-58 test No.**	T1567	**Type**	E
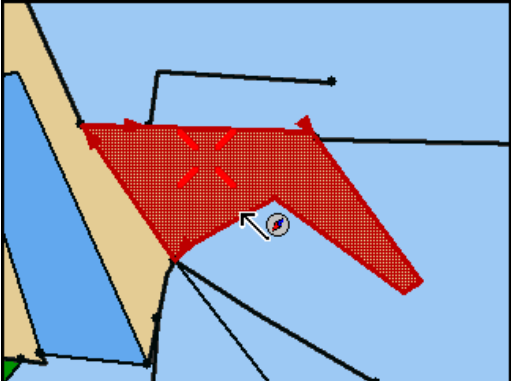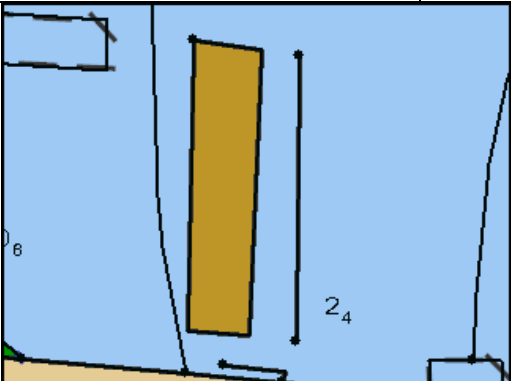
S-58 Description	Check that no COALNE object contains the attributes VERDAT and VERACC.				
Test Case No.1	Assigned VERDAT and VERACC attribute values for COALNE.				
Location	32°29'04.15"S 60°47'32.72"E		**S57 Encoding**	COALNE(L)	VERDAT=27 VERACC=1 ELEVAT=10
Screen Capture					
Expected test results	T1567: An error "prohibited attribute 'verdat' in Coastline" must be triggered. T1567: An error "prohibited attribute 'veracc' in Coastline" must be triggered.				
Secondary Errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.				

Test Dataset:AA500015
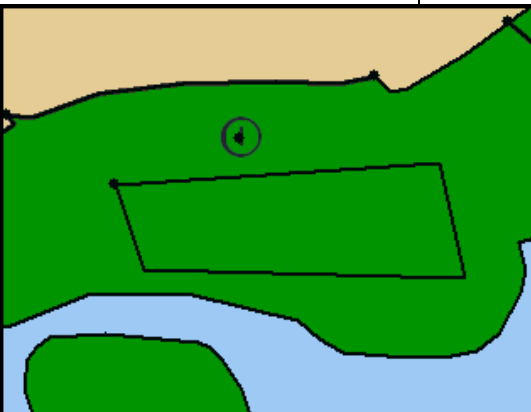
List of S58 Recommended ENC Validation Checks covered in this section:
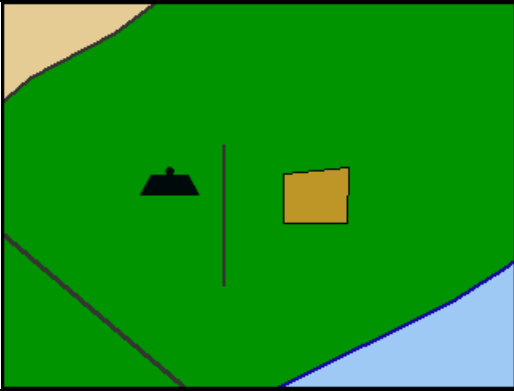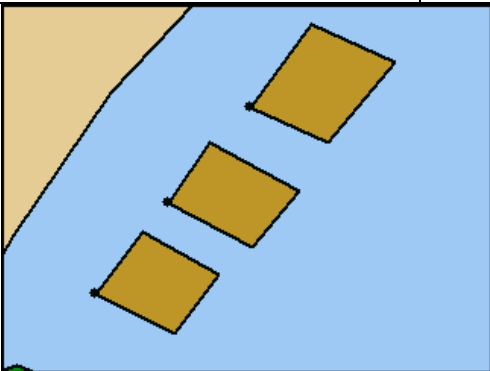
S58 Test	Description
1570	Check that no SLCONS object contains the attributes VERDAT and VERACC.
1571	Check that no BERTHS object contains the attribute VERDAT.
1572	Check that no DRYDOC object contains the attribute VERDAT.
1575	Check that no FLODOC object contains the attributes VERDAT and VERACC.
1577	Check that no DOCARE object shares the same geo-spatial position and geometry as a SEAARE object.
1578	Check that no GATCON object has an attribute value for VERDAT without an attribute value for VERCLR.
1581	Check that no LOKBSN object shares the same geo-spatial position and geometry as a SEAARE object.
1582	Check that no GRIDRN object contains the attributes HORACC and VERACC.
1583	Check that no MORFAC object contains the attributes VERDAT and VERACC.
1584	Check that any area MORFAC object with a WATLEV attribute value of 1 [partly submerged at high water], 2 [always dry] or 6 [subject to inundation or flooding] is covered by a LNDARE object of type Area.
1585	Check that no PILPNT object contains the attributes VERDAT and VERACC.
1586	Check that no PONTON object contains the attribute VERACC.
1587	Check that no HULKES object contains the attributes HORACC and VERACC.
1589	Check that any object having a value of (1) [under construction], (3) [under reclamation] or (5) [planned construction] for the attribute CONDTN contains the year or date of the information in SORDAT.
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).
1591	Check that no LNDELV object contains the attributes VERDAT and VERACC.
1592	Check that any COALNE object adjacent to a LNDRGN object with a value of (2) [marsh] for CATLND contains a value of (8) [marshy shore] for the attribute CATCOA, and that the coastline's spatial object has a value of (4) [approximate] for the attribute QUAPOS.
1593	Check that no SLOGRD object contains the attributes NATCON and NATQUA.
1594	Check that no SLOTOP object contains the attributes NATCON, NATQUA, VERACC and VERDAT.
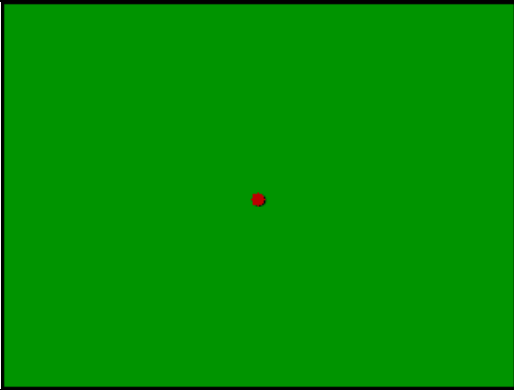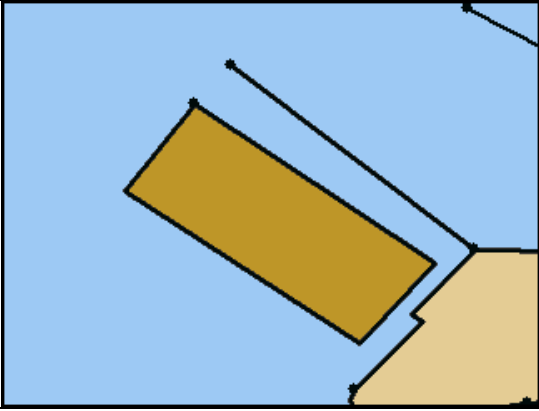
Dataset Name	AA500015		S-58 test No.	T1570	Type	E
S-58 Description	Check that no SLCONS object contains the attributes VERDAT and VERACC.					
Test Case No. 1	Captured SLCONS (P, L, A) object with attributes VERDAT and VERACC.					
Location	32°28'57.01"S 60°44'50.90"E		S57 encoding	SLCONS (P, L, A)	VERDAT=3 VERACC=3 HEIGHT=3	
Screen Capture						
Expected test results	T1570:Three errors "prohibited attribute 'verdat' in Shoreline construction" must be triggered. T1570: Three errors "prohibited attribute 'veracc' in Shoreline construction" must be triggered.					
Secondary Errors	T547: Three errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created..					
Dataset Name	AA500015		S-58 test No.	T1571	Type	E
S-58 Description	Check that no BERTHS object contains the attribute VERDAT.					
Test Case No. 1	Captured BERTHS (P, L, A) objects with attribute VERDAT.					
Location	32°29'00.52"S 60°46'01.31"E		S57 encoding	BERTHS (P, L, A)	VERDAT=3	
Screen Capture						
Expected test results	T1571: Three errors: "prohibited attribute 'verdat' in Berth" must be triggered.					
Secondary Errors	T547: 3 Error "Object contains attribute outside of the list of permissible attributes for the object class" must be triggered for the objects created.					
Dataset Name	AA500015		S-58 test No.	T1572	Type	E
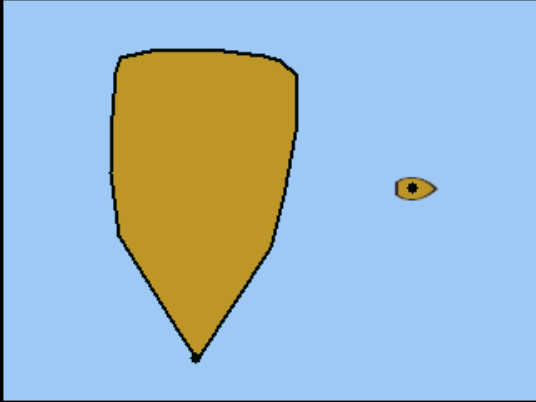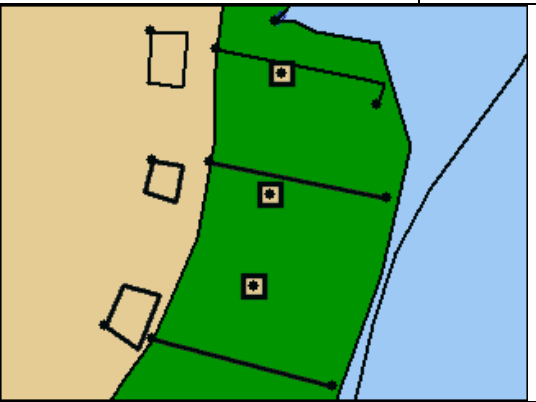
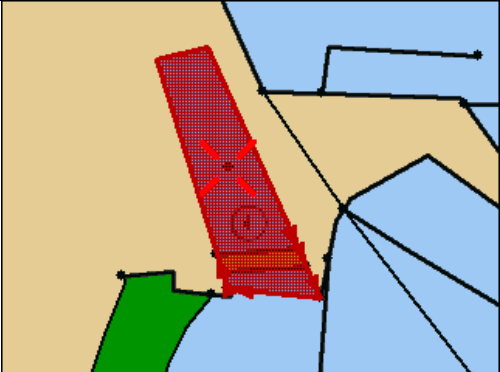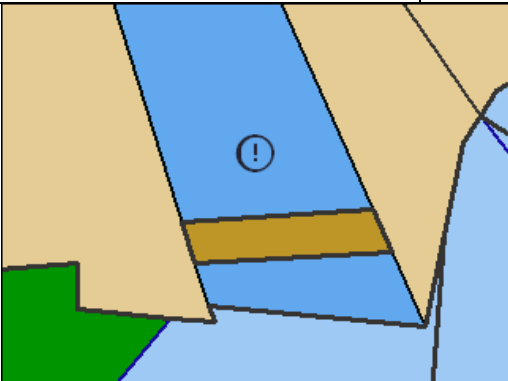| S-58 Description	Check that no DRYDOC object contains the attribute VERDAT.			
Test Case No. 1	Dry dock area captured with attribute VERDAT.			
Location	32°29'00.30"S 60°45'59.19"E	**S57 encoding**	DRYDOC (A)	VERDAT=3
Screen Capture				
Expected test results	T1572: An error "prohibited attribute 'verdat' in Dry dock" must be triggered.			
Secondary Errors	T547: An error "Object contains attribute outside of the list of permissible attributes for the object class" must be triggered for the objects created.			

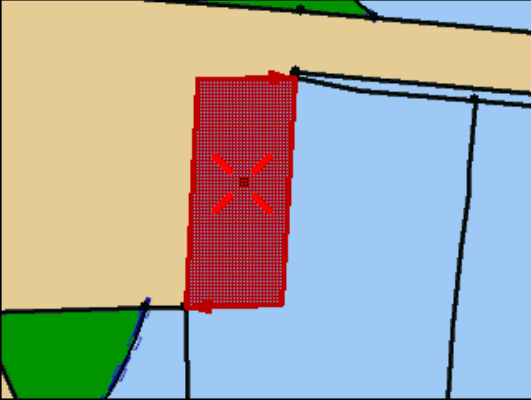|				
Dataset Name	AA500015	**S-58 test No.**	T1575	**Type**	E
S-58 Description	Check that no FLODOC object contains the attributes VERDAT and VERACC.			
Test Case No. 1	Captured FLODOC (L, A) object with attributes VERDAT and VERACC.			
Location	32°28'56.55"S 60°46'01.05"E	**S57 encoding**	FLODOC (L, A)	VERDAT=3 VERACC=3
Screen Capture				
Expected test results	T1575: Two errors "prohibited attribute 'verdat' in Floating dock" must be triggered. T1575: Two errors "prohibited attribute 'veracc' in Floating dock" must be triggered.			
Secondary Errors	T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.			

Dataset Name	AA500015	**S-58 test No.**	T1577	**Type**	E
S-58 Description	Check that no DOCARE object shares the same geo-spatial position and geometry as a SEAARE object.			
Test Case No. 1	Dock area object captured overlapping with sea area.			
Location	32°29'00.63"S 60°45'58.17"E	**S57 encoding**	SEAARE (P, A)	OBJNAM=Denis
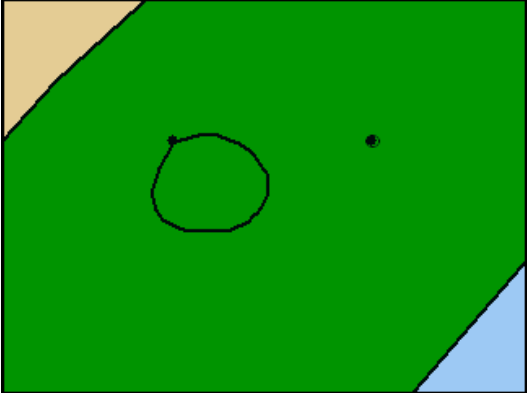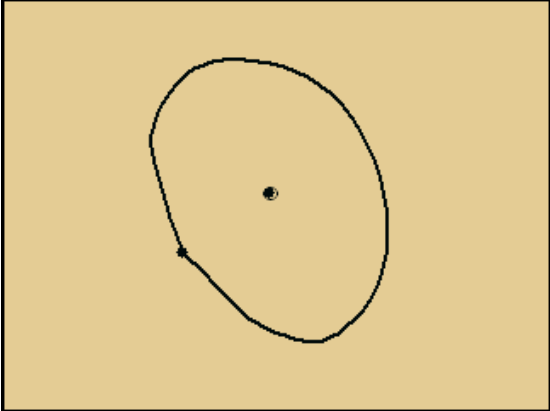
	DOCARE (A)		

Screen Capture	
Expected test results	T1577: Two errors "object overlaps the prohibited 'docare' Sea area/named water area" must be triggered.
Secondary Errors	None.

Dataset Name	AA500015	**S-58 test No.**	T1578	**Type**	E
S-58 Description	Check that no GATCON object has an attribute value for VERDAT without an attribute value for VERCLR.				
Test Case No. 1	Captured GATCON (P, L, A) objects with attribute VERDAT.				
Location	32°29'01.19"S 60°45'58.35"E	**S57 encoding**	GATCON(P, L, A)	VERDAT=3 HORCLR=3 (for line feature)	
Screen Capture					
Expected test results	T1578: Three errors "prohibited attribute 'verdat' in Gate" must be triggered.				
Secondary Errors	T1503: warning "no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created.				

Dataset Name	AA500015	**S-58 test No.**	T1581	**Type**	E
S-58 Description	Check that no LOKBSN object shares the same geo-spatial position and geometry as a SEAARE object.				
Test Case No. 1	Lock basin area object captured overlapping with sea area.				
Location	32°28'58.28"S 60°45'58.82"E	**S57 encoding**	LOKBSN (A) SEAARE (P, A)	OBJNAM=Denis	
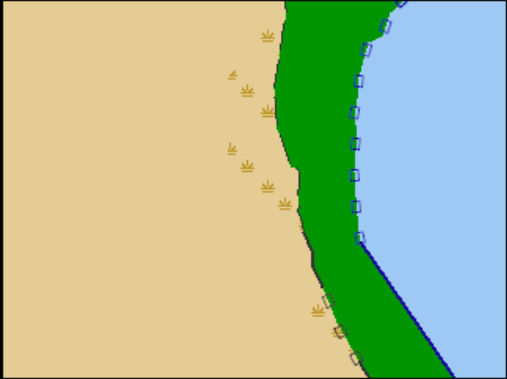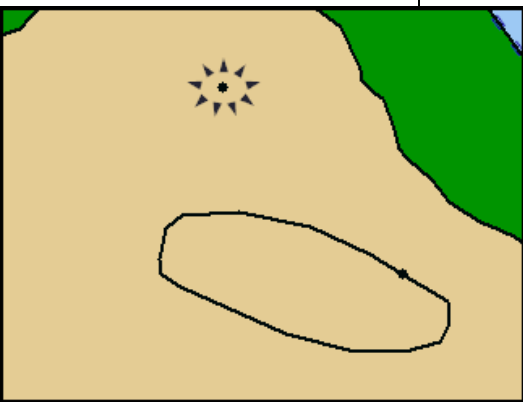
Screen Capture					
Expected test results	T1581: Two errors "object overlaps the prohibited 'lokbsn' Sea area/named water area" must be triggered.				
Secondary Errors	None.				
Dataset Name	AA500015	S-58 test No.	T1582	Type	E
S-58 Description	Check that no GRIDRN object contains the attributes HORACC and VERACC.				
Test Case No. 1	Captured GRIDRN (P, A) objects with attributes HORACC and VERACC.				
Location	32°28'37.15"S 60°46'17.65"E	S57 encoding	GRIDRN (P, A)	HORACC=50 VERACC=3	
Screen Capture					
Expected test results	T1582: Two errors "prohibited attribute 'horacc' in Gridiron" must be triggered. T1582: Two errors "prohibited attribute 'veracc' in Gridiron" must be triggered.				
Secondary Errors	T1797: warning "the object gridrn [FE-000349] cannot be displayed in ECDIS" must be triggered for the point feature created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.				
Dataset Name	AA500015	S-58 test No.	T1583	Type	E
S-58 Description	Check that no MORFAC object contains the attributes VERDAT and VERACC.				
Test Case No. 1	Captured MORFAC (P, L, A) with attributes VERDAT and VERACC.				
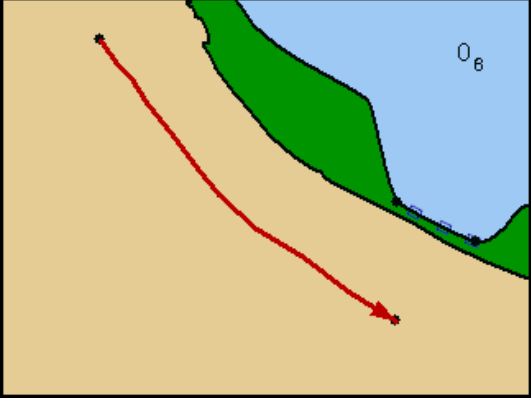
Location	32°28'36.20"S 60°46'19.83"E	**S57 encoding**	MORFAC (P, L, A)	VERDAT=3 VERACC=3 CATMOR=1 HEIGHT=3
Screen Capture				
Expected test results	T1583: Three errors "prohibited attribute 'verdat' in Mooring/warping facility" must be triggered. T1583: Three errors "prohibited attribute 'veracc' in Mooring/warping facility" must be triggered.			
Secondary Errors	T547: Three errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.			

Dataset Name	AA500015	**S-58 test No.**	T1584	**Type**	E
S-58 Description	Check that any area MORFAC object with a WATLEV attribute value of 1 [partly submerged at high water], 2 [always dry] or 6 [subject to inundation or flooding] is covered by a LNDARE object of type Area.				
Test Case No. 1	Captured MORFAC (A) objects with attribute WATLEV without covering a LNDARE (A) object.				
Location	32°28'42.07"S 60°46'08.40"E	**S57 encoding**	MORFAC (A)	WATLEV=1,2 and 6 CATMOR=1	
Screen Capture					
Expected test results	T1584: "object is not covered by a mandatory 'lndare' Mooring/warping facility" must be triggered.				
Secondary Errors	T1786: A warning "any objects of type Area with WATLEV = 2 [always dry] are covered by a LNDARE object of type Area" must be triggered related to the feature objects created.				

Dataset Name	AA500015	**S-58 test No.**	T1585	**Type**	E
S-58 Description	Check that no PILPNT object contains the attributes VERDAT and VERACC.				
Test Case No. 1	PILPNT point captured with attributes VERDAT, HEIGHT and VERACC.				

Location	32°28'14.89"S 60°45'34.56"E	S57 encoding	PILPNT (P)	VERDAT=3 VERACC=3 HEIGHT=3
Screen Capture				
Expected test results	T1585: An error "prohibited attribute 'verdat' in Pile "must be triggered. T1585: An error "prohibited attribute 'veracc' in Pile" must be triggered.			
Secondary Errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.			

Dataset Name	AA500015	S-58 test No.	T1586	Type	E
S-58 Description	Check that no PONTON object contains the attribute VERACC.				
Test Case No. 1	PONTON (L, A) captured with attribute VERACC.				
Location	32°28'58.93"S 60°44'48.40"E	S57 encoding	PONTON(L, A)	VERACC=3	
Screen Capture					
Expected test results	T1586: Two errors "prohibited attribute 'veracc' in Pontoon" must be triggered.				
Secondary Errors	T0547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.				

Dataset Name	AA500015	S-58 test No.	T1587	Type	E
S-58 Description	Check that no HULKES object contains the attributes HORACC and VERACC.				
Test Case No. 1	HULKES (P, A) captured with attributes HORACC and VERACC.				
Location	32°29'01.28"S 60°44'50.21"E	S57 encoding	HULKES(P, A)	HORACC=50.0 VERACC=3	

Screen Capture					
Expected test results	T1587: Two errors "prohibited attribute 'horacc' in Hulk" must be triggered. T1587:Two errors "prohibited attribute 'veracc' in Hulk" must be triggered.				
Secondary Errors	T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.				
Dataset Name	AA500015	S-58 test No.	T1589	Type	W
S-58 Description	Check that any object having a value of (1) [under construction], (3) [under reclamation] or (5) [planned construction] for the attribute CONDTN contains the year or date of the information in SORDAT.				
Test Case No. 1	Captured SLCONS (P, L, A) objects with attribute CONDTN.				
Location	32°28'31.85"S 60°46'24.83"E	S57 encoding	SLCONS (P, L, A)	CONDTN=1,3 and 5	
Screen Capture					
Expected test results	T1589:3 Warning "'sordat' must exist for 'condtn:1' Shoreline construction" must be triggered. T1589:3 Warning "'sordat' must exist for 'condtn:3' Shoreline construction" must be triggered. T1589:3 Warning "'sordat' must exist for 'condtn:5' Shoreline construction" must be triggered.				
Secondary Errors	None				
Dataset Name	AA500015	S-58 test No.	T1590	Type	E
S-58 Description	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).				
Test Case No. 1	Captured LNDRGN (P, A) objects within a DEPARE.				
Location	32°28'33.73"S 60°46'23.75"E	S57 encoding	LNDRGN (P, A)	OBNMAM=Denis	

Screen Capture	
Expected test results	T1590: Two errors "land region without land area Land region" must be triggered.
Secondary Errors	None

Dataset Name	AA500015	**S-58 test No.**	T1591	**Type**	E
S-58 Description	Check that no LNDELV object contains the attributes VERDAT and VERACC.				
Test Case No. 1	LNDELV (P, L) captured with attributes VERDAT, ELEVAT and VERACC.				
Location	32°27'55.76"S 60°45'50.11"E	**S57 encoding**	LNDELV (P, L)	VERDAT=3 VERACC=3 ELEVAT=10	
Screen Capture					
Expected test results	T1591:Two errors "prohibited attribute 'veracc' in Land elevation" must be triggered. T1591:Two errors "prohibited attribute 'verdat' in Land elevation" must be triggered.				
Secondary Errors	T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.				

Dataset Name	AA500015	**S-58 test No.**	T1592	**Type**	W
S-58 Description	Check that any COALNE object adjacent to a LNDRGN object with a value of (2) [marsh] for CATLND contains a value of (8) [marshy shore] for the attribute CATCOA, and that the coastline's spatial object has a value of (4) [approximate] for the attribute QUAPOS.				
Test Case No. 1	Captured LNDRGN (A) object with attribute CATLND, adjacent to COALNE object. • Assigned attributes CATCOA=8 for COALNE. • Assigned attributes CATCOA= UNDEFINED and QUAPOS=4 for COALNE.				
Location	32°27'57.68"S 60°45'59.63"E	**S57 encoding**	COALNE (L) LNDRGN (A)	CATCOA=8 CATLND =2	
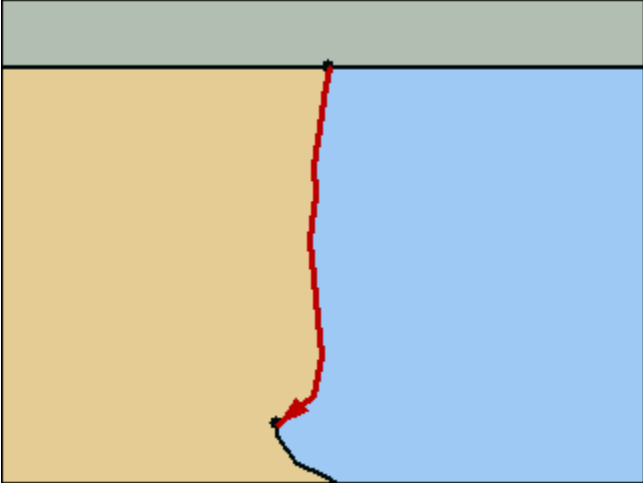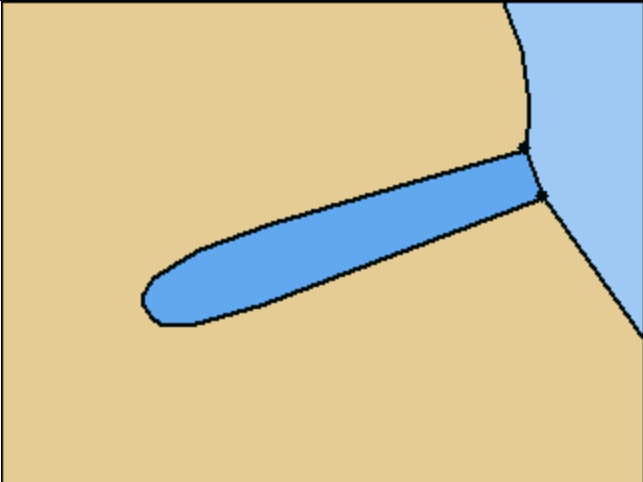
Screen Capture					
Expected test results	T1592: 2 Warnings "marshy shore without 'catcoa: 8' or 'quapos: 4'" must be triggered.				
Secondary Errors	None				
Dataset Name	AA500015	**S-58 test No.**	T1593	**Type**	E
S-58 Description	Check that no SLOGRD object contains the attributes NATCON and NATQUA.				
Test Case No. 1	Sloping ground (P, A) captured with attributes NATCON and NATQUA.				
Location	32°28'08.40"S 60°46'23.28"E	**S57 encoding**	SLOGRD(P, A)	NATCON=3 NATQUA=3 CATSLO=6	
Screen Capture					
Expected test results	T1593: Two errors "prohibited attribute 'natcon' in Sloping ground" must be triggered. T1593: Two errors "prohibited attribute 'natqua' in Sloping ground" must be triggered.				
Secondary Errors	T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.				
Dataset Name	AA500015	**S-58 test No.**	T1594	**Type**	E
S-58 Description	Check that no SLOTOP object contains the attributes NATCON, NATQUA, VERACC and VERDAT.				
Test Case No. 1	SLOTOP (L) objects captured with attributes NATCON, NATQUA, VERACC and VERDAT.				
Location	32°28'07.69"S 60°46'04.80"E	**S57 encoding**	SLOTOP (L)	NATCON=3 NATQUA=3 VERACC=3 VERDAT=3 ELEVAT=3	
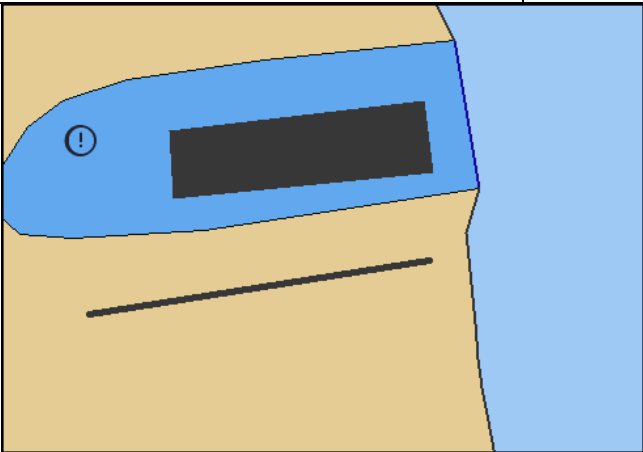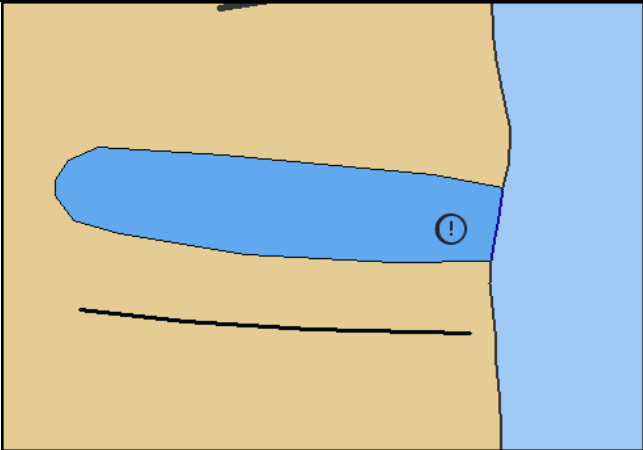
Screen Capture	
Expected test results	T1594: An error "prohibited attribute 'natcon' in Slope topline" must be triggered. T1594: An error "prohibited attribute 'natqua' in Slope topline" must be triggered. T1594: An error "prohibited attribute 'veracc' in Slope topline" must be triggered. T1594: An error "prohibited attribute 'verdat' in Slope topline" must be triggered.
Secondary Errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered for the objects created.
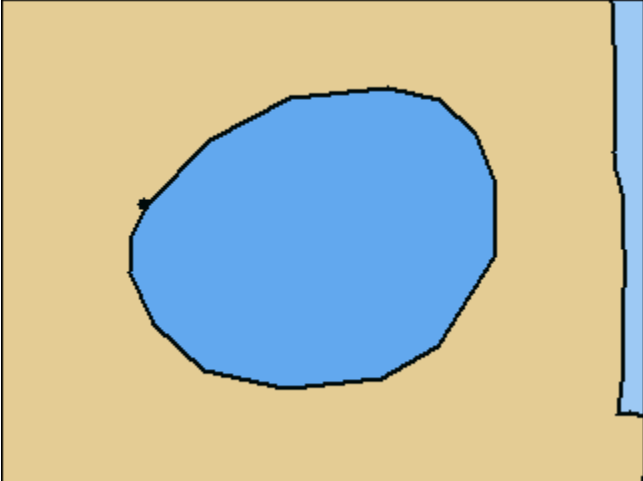
Test Dataset:AA500016
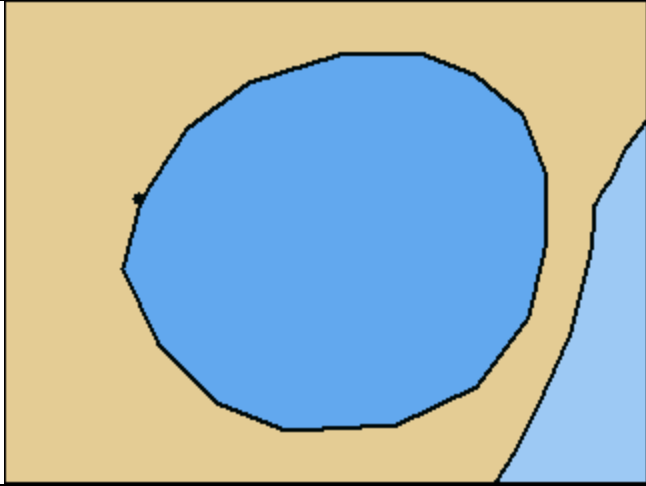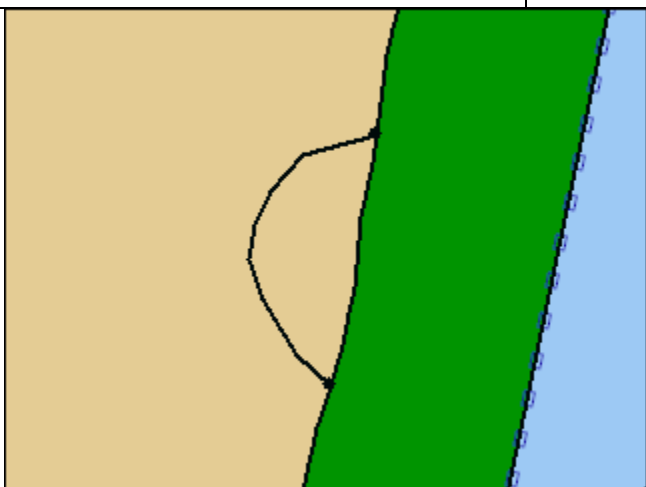
List of S58 Recommended ENC Validation Checks covered in this section:
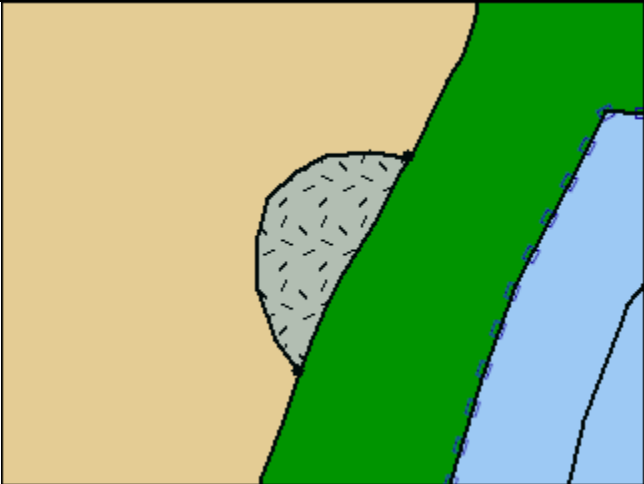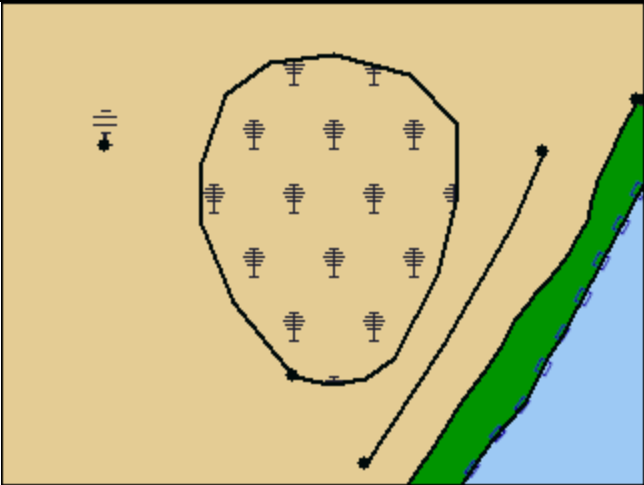
S58 Test	Description
1595	Check that no SLOTOP object with a value of (6) [cliff] for the attribute CATSLO shares the same geo-spatial position and geometry as a COALNE object.
1597	Check that no RIVERS object shares the same geo-spatial position and geometry as a SEAARE object.
1598	Check that no RAPIDS object contains the attribute VERACC.
1600	Check that no WATFAL object contains the attribute VERACC.
1601	Check that no LAKARE object contains the attributes VERACC and VERDAT.
1602	Check that no LAKARE object shares the same geo-spatial position and geometry as a SEAARE object.
1604	Check that any COALNE object adjacent to a LNDRGN object with a value of (15) [salt pan] for CATLND contains a value of (2) [flat coast] for the attribute CATCOA.
1606	Check that any COALNE object adjacent to an ICEARE object with a value of (5) [glacier] for CATICE contains a value of (6) [glacier (seaward end)] for the attribute CATCOA.
1608	Check that no VEGATN object contains the attributes VERACC and VERDAT.
1609	Check that no CANALS object shares the same geo-spatial position and geometry as a SEAARE object.
1610	Check that no RAILWY object contains the attribute VERACC.
1611	Check that no TUNNELS object contains the attribute BURDEP.
1613	Check, for any TUNNEL object, which covers a CANALS object, that the attributes HORACC, HORCLR, VERACC and VERCLR are not encoded.
1614	Check that no TUNNEL objects has any other non-hydrographic object (RAILWY, ROADWY etc) encoded within it.
1616	Check that no DAMCON object contains the attributes VERACC and VERDAT.
1618	Check that no DYKCON object contains the attributes VERDAT and VERACC.
1620	Check for any edge of a DYKCON object which is shared by both a LNDARE object of type area and a DEPARE, DRGARE or UNSARE object of type area, that it is also shared by a linear SLCONS object without a value for CATSLC.
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.
1626	Check that no AIRARE object contains the attribute CONVIS.
1627	Check that no RUNWAY object contains the attribute CONVIS.
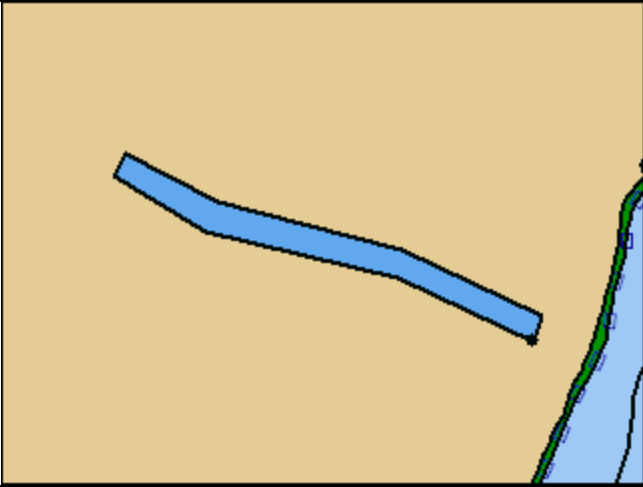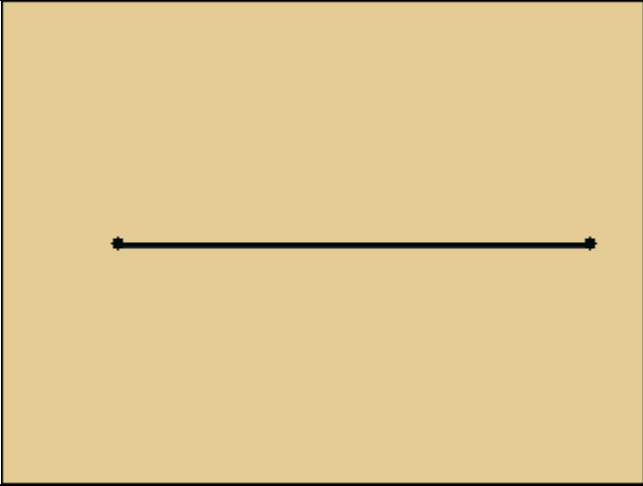
Dataset Name	AA500016		S-58 test No.	T1595	Type	W
S-58 Description	Check that no SLOTOP object with a value of (6) [cliff] for the attribute CATSLO shares the same geo-spatial position and geometry as a COALNE object.					
Test Case No. 1	Captured SLOTOP (L) object with attribute CATSLO, shares the same geometry of COALNE.					
Location	32°27'33.01"S 60°43'03.10"E		**S57 Encoding**	SLOTOP (L) COALNE (L)	CATSLO=6	
Screen Capture						
Expected test results	T1595: A warning "cliff along coast line" must be triggered.					
Secondary errors	None.					

Dataset Name	AA500016		S-58 test No.	T1597	Type	E
S-58 Description	Check that no RIVERS object shares the same geo-spatial position and geometry as a SEAARE object.					
Test Case No. 1	Captured RIVERS (A) object shares with the same geometry as SEAARE (A) object.					
Location	32°27'36.20"S 60°43'03.57"E		**S57 Encoding**	RIVERS (A) SEAARE (A)	OBJNAM=UNKNOWN	
Screen Capture						
Expected test results	T1597: An error "object overlaps the prohibited rivers" must be triggered.					
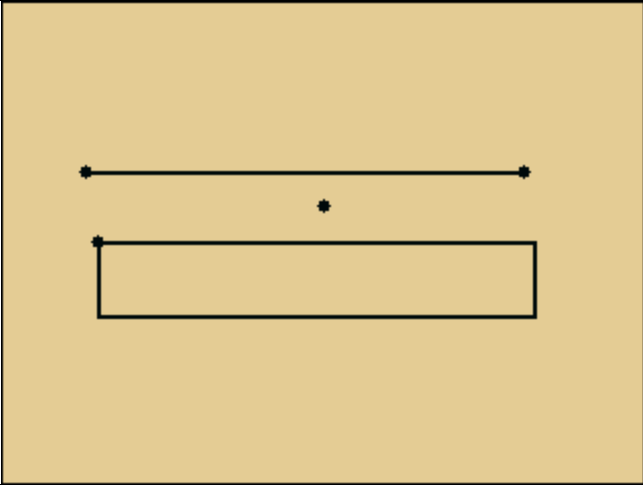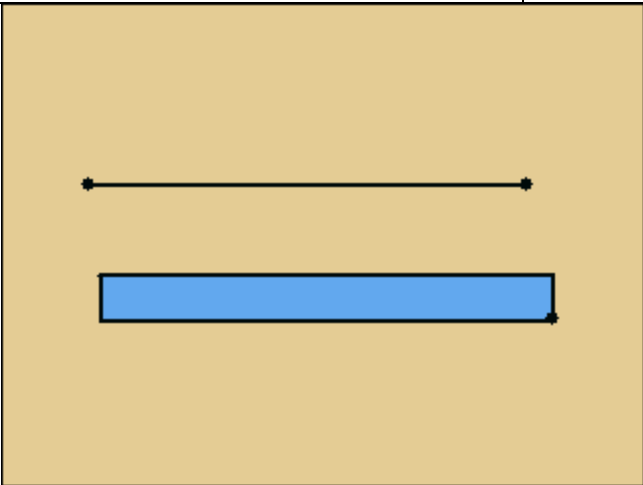
Secondary errors	None.

Dataset Name	AA500016		**S-58 test No.**	T1598	**Type**	E
S-58 Description	Check that no RAPIDS object contains the attribute VERACC.					
Test Case No.1	Captured RAPIDS (P, L, A) object with attribute VERACC of the overlying River area.					
Location	32°27'37.61"S 60°43'03.97"E		**S57 Encoding**	RIVERS (A) RAPIDS (P,L&A)	VERACC=1	
Screen Capture						
Expected test results	T1598: Three errors "prohibited attribute 'veracc' in Rapids" must be triggered.					
Secondary errors	T1797: A warning "the object rapids cannot be displayed in ECDIS" must be triggered for the point object created.					

Dataset Name	AA500016		**S-58 test No.**	T1600	**Type**	E
S-58 Description	Check that no WATFAL object contains the attribute VERACC.					
Test Case No.1	Captured WATFAL (P, L) objects with attribute VERACC of the overlying RIVERS (A).					
Location	32°27'39.33"S 60°43'04.55"E		**S57 Encoding**	RIVERS(A) WATFAL (P&L)	VERACC=1	
Screen Capture						
Expected test results	T1600: Two errors "prohibited attribute 'veracc' in Waterfall" must be triggered.					

Secondary errors	T1797: A warning "the object watfal cannot be displayed in ECDIS" must be triggered for the point object created.

Dataset Name	AA500016		S-58 test No.	T1601	Type	E
S-58 Description	Check that no LAKARE object contains the attributes VERACC and VERDAT.					
Test Case No.1	Captured Lake area object with attributes VERACC and VERDAT.					
Location	32°27'41.50"S 60°43'02.88"E		S57 Encoding	LAKARE(A)	VERACC=1 VERDAT=1	
Screen Capture						
Expected test results	T1601: An error "prohibited attribute 'veracc' in Lake" must be triggered. T1601: An error "prohibited attribute 'verdat' in Lake" must be triggered.					
Secondary errors	None.					

Dataset Name	AA500016		S-58 test No.	T1602	Type	E
S-58 Description	Check that no LAKARE object shares the same geo-spatial position and geometry as a SEAARE object.					
Test Case No.1	Captured Lake area object shares with the same geometry as SEAARE (A) object.					
Location	32°27'44.84"S 60°43'01.29"E		S57 Encoding	LAKARE (A) SEAARE (A)	OBJNAM=UNKNOWN	
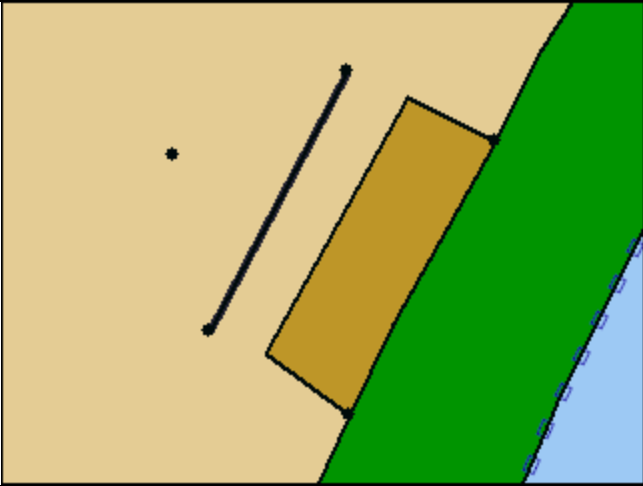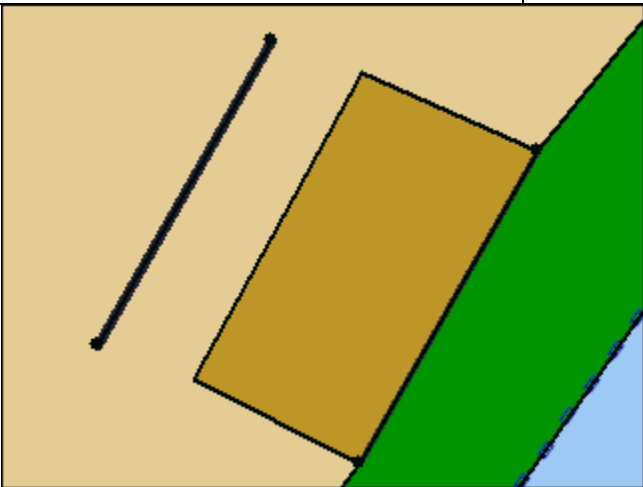
Screen Capture	

Expected test results	T1602: An error "seaare object overlaps the prohibited lakare" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500016	**S-58 test No.**	T1604	**Type**	W
S-58 Description	Check that any COALNE object adjacent to a LNDRGN object with a value of (15) [salt pan] for CATLND contains a value of (2) [flat coast] for the attribute CATCOA.				
Test Case No.1	Captured LNDRGN (A) object with attribute CATLND, adjacent to COALNE without attribute CATCOA.				
Location	32°28'45.10"S 60°42'40.61"E	**S57 Encoding**	LNDRGN (A) COALNE (L)	CATLND=15	

Screen Capture	

Expected test results	T1604: A warning "salt pan without catcoa: 2" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500016	**S-58 test No.**	T1606	**Type**	W
S-58 Description	Check that any COALNE object adjacent to an ICEARE object with a value of (5) [glacier] for CATICE contains a value of (6) [glacier (seaward end)] for the attribute CATCOA.				
Test Case No.1	Captured ICEARE (A) object with attribute CATICE, adjacent to COALNE without attribute CATCOA.				
Location	32°28'35.43"S 60°42'43.50"E	**S57 Encoding**	ICEARE(A)	CATICE=5	

		COALNE (L)	

Screen Capture	
Expected test results	T1606: A warning "glacier without catcoa: 6" must be triggered.
Secondary errors	None.

Dataset Name	AA500016	**S-58 test No.**	T1608	**Type**	E
S-58 Description	Check that no VEGATN object contains the attributes VERACC and VERDAT.				
Test Case No.1	Captured VEGATN (A, L & P) object with attributes VERACC and VERDAT.				
Location	32°28'30.06"S 60°42'45.07"E	**S57 Encoding**	VEGATN(P,L,A)	VERACC=1 VERDAT=1	

Screen Capture	
Expected test results	T1608: Three errors "prohibited attribute 'veracc' in Vegetation" must be triggered. T1608: Three errors "prohibited attribute 'verdat' in Vegetation" must be triggered.
Secondary errors	None.

Dataset Name	AA500016	**S-58 test No.**	T1609	**Type**	E
S-58 Description	Check that no CANALS object shares the same geo-spatial position and geometry as a SEAARE object.				
Test Case No.1	Captured CANALS (A) object shares with the same geometry as SEAARE (A) object				
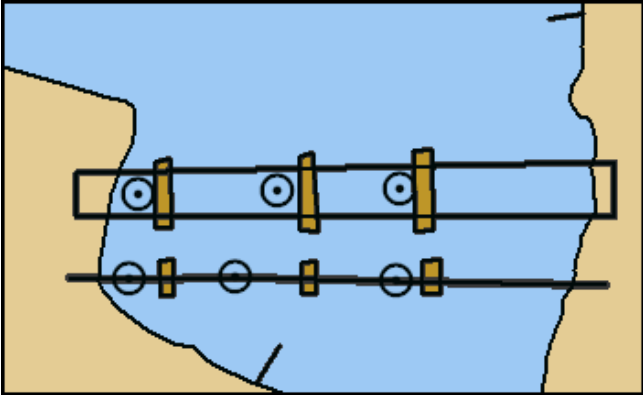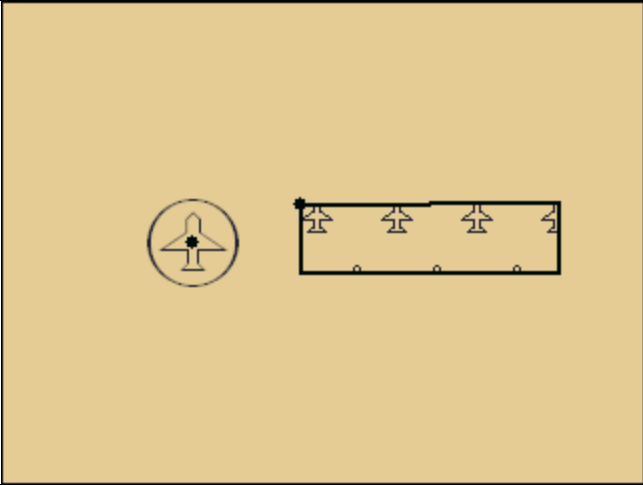
Location	32°28'18.41"S 60°42'43.63"E	**S57 Encoding**	CANALS (A) SEAARE (A)	OBJNAM=UNKNOWN
Screen Capture				
Expected test results	T1609: An error "seaare object overlaps the prohibited canals" must be triggered.			
Secondary errors	None.			

Dataset Name	AA500016	**S-58 test No.**	T1610	**Type**	E
S-58 Description	Check that no RAILWY object contains the attribute VERACC.				
Test Case No.1	Captured RAILWY object with attribute VERACC.				
Location	32°27'40.25"S 60°42'09.61"E	**S57 Encoding**	RAILWY (L)	VERACC=1	
Screen Capture					
Expected test results	T1610: An error "prohibited attribute 'veracc' in Railway" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500016	**S-58 test No.**	T1611	**Type**	E
S-58 Description	Check that no TUNNELS object contains the attribute BURDEP.				

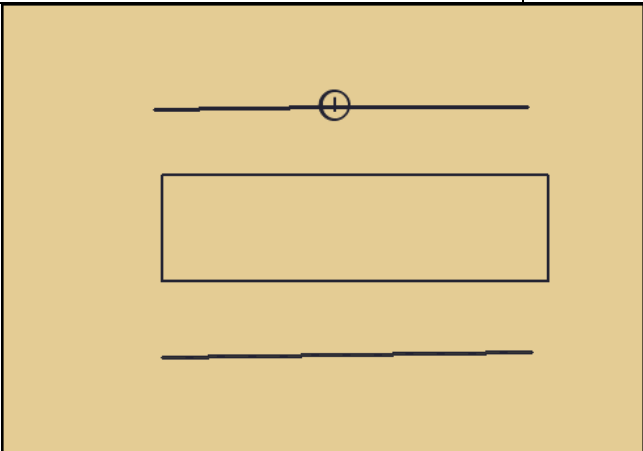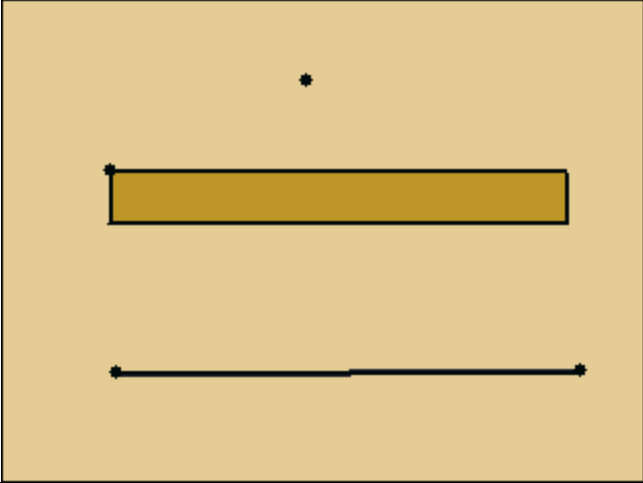| Test Case No.1	Captured TUNNELS (L, A & P) objects with attribute BURDEP.			
Location	32°27'41.02"S 60°42'43.57"E	**S57 Encoding**	TUNNEL(L,A& P)	BURDEP=1
Screen Capture				
Expected test results	T1611: Three errors "prohibited attribute 'burdep' in Tunnel" must be triggered.			
Secondary errors	T1797: A warning "the object tunnel cannot be displayed in ECDIS" must be triggered for the point object created.			

Dataset Name	AA500016	**S-58 test No.**	T1613	**Type**	E
S-58 Description	Check, for any TUNNEL object, which covers a CANALS object, that the attributes HORACC, HORCLR, VERACC and VERCLR are not encoded.				
Test Case No.1	Captured TUNNEL (L&A) objects with attributes HORACC, HORCLR, VERACC and VERCLR, which covers CANALS (L&A).				
Location	32°27'51.57"S 60°42'41.77"E	**S57 Encoding**	CANALS (L&A) TUNNEL (L&A)	HORCLR=1 HORACC=1 VERACC=1 VERCLR=1	
Screen Capture					
Expected test results	T1613: Two errors "meaningless value of 'horacc' in Tunnel" must be triggered. T1613: Two errors "meaningless value of 'horclr' in Tunnel" must be triggered. T1613: Two errors "meaningless value of 'veracc' in Tunnel" must be triggered.				

	T1613: Two errors "meaningless value of 'verclr' in Tunnel" must be triggered.
Secondary errors	None.

Dataset Name	AA500016	**S-58 test No.**	T1614	**Type**	E
S-58 Description	Check that no TUNNEL objects has any other non-hydrographic object (RAILWY, ROADWY etc) encoded within it.				
Test Case No.1	Captured TUNNEL (L & A) objects have a non-hydrographic object ROADWY (L & A).				
Location	32°28'03.57"S 60°42'19.06"E	**S57 Encoding**	TUNNEL (A,L&P) ROADWY(L&A)		
Screen Capture					
Expected test results	T1614: Four errors "tunnel with roadwy" must be triggered.				
Secondary errors	T1797: A warning "the object tunnel cannot be displayed in ECDIS" must be triggered for the point object created.				

Dataset Name	AA500016	**S-58 test No.**	T1616	**Type**	E
S-58 Description	Check that no DAMCON object contains the attributes VERACC and VERDAT.				
Test Case No.1	Captured DAMCON (P, L, A) objects with attributes VERACC and VERDAT.				
Location	32°28'09.87"S 60°42'55.19"E	**S57 Encoding**	DAMCON(L,A &P)	VERACC=1 VARDAT=1	

Screen Capture	
Expected test results	T1616: Three errors "prohibited attribute 'veracc' in Dam" must be triggered. T1616: Three errors "prohibited attribute 'verdat' in Dam" must be triggered.
Secondary errors	T1797: additional warning "DAMCON of type point, with attribute CATDAM ≠ 3", which do not display in ECDIS, are present in the dataset" must be triggered related to the feature objects created.

Dataset Name	AA500016		**S-58 test No.**	T1618	**Type**	E

S-58 Description	Check that no DYKCON object contains the attributes VERDAT and VERACC.

Test Case No.1	Captured DYKCON (L & A) objects with attributes VERDAT and VERACC.

Location	32°28'05.49"S 60°42'57.94"E	**S57 Encoding**	DYKCON(L&A)	VERACC=1 VERDAT=1

Screen Capture	
Expected test results	T1618: Two errors "prohibited attribute 'veracc' in Dyke" must be triggered. T1618: Two errors "prohibited attribute 'verdat' in Dyke" must be triggered.
Secondary errors	None.

Dataset Name	AA500016		**S-58 test No.**	T1620	**Type**	E

S-58 Description	Check for any edge of a DYKCON object which is shared by both a LNDARE object of type area and a DEPARE, DRGARE or UNSARE object of type area, that it is also shared by a linear SLCONS object without a value for CATSLC.

Test Case No.1	Captured DYKCON (A) object which is shared by a LNDARE (A), DEPARE (A), DRGARE and UNSARE, that it is also not shared by a linear SLCONS object.			
Location	32°28'39.16"S 60°40'46.90"E	**S57 Encoding**	DRGARE (A) DYKCON (A) UNSARE (A)	DRVAL1=1
Screen Capture				
Expected test results	T1620: Three errors "open border of dykcon" must be triggered.			
Secondary errors	None.			
Test Case No.2	Captured DYKCON (A) object which is shared by a LNDARE (A), DEPARE (A), DRGARE and UNSARE, that it is also shared by a linear SLCONS object with CATSLC.			
Location	32°28'51.47"S 60°40'52.58"E	**S57 Encoding**	DYKCON (A) UNSARE (A) DRGARE(A) SLCONS (L)	DRVAL1=1 CTASLC=10 WATLEV=2
Screen Capture				
Expected test results	T1620: Three errors "open border of dykcon" must be triggered.			
Secondary errors	None.			

Dataset Name	AA500016	**S-58 test No.**	T1623	**Type**	E
S-58 Description	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.			
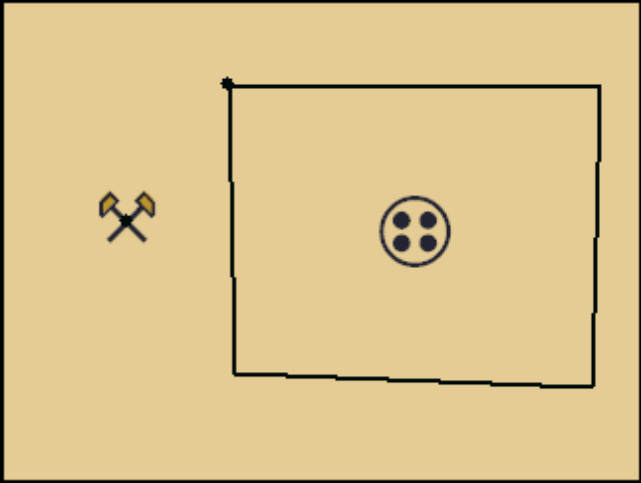
Test Case No.1	Captured PYLONS (P, A) objects, which supports the bridge in a navigable water with attribute CATPYL.				
Location	32°29'15.69"S 60°41'04.90"E	**S57 Encoding**	BRIDGE (A) PYLONS(P&A)	CATBRG=1 VERCLR=UNKNOWN CATPYL=1,2 or 3	
Screen Capture					
Expected test results	T1623: 12 errors "wrong 'catpyl' for bridge support Pylon" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500016	**S-58 test No.**	T1626	**Type**	E
S-58 Description	Check that no AIRARE object contains the attribute CONVIS.				
Test Case No.1	Captured AIRARE (P, A) objects with attribute CONVIS.				
Location	32°29'11.95"S 60°42'33.72"E	**S57 Encoding**	AIRARE(P&A)	CONVIS=1	
Screen Capture					
Expected test results	T1626: Two errors "prohibited attribute 'convis' in Airport area" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500016	**S-58 test No.**	T1627	**Type**	E
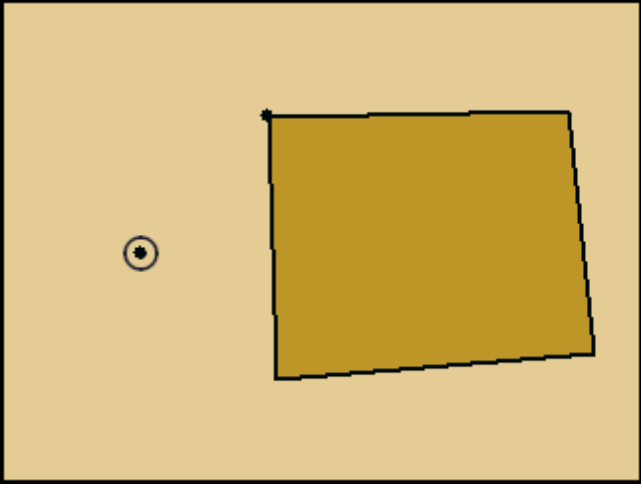
S-58 Description	Check that no RUNWAY object contains the attribute CONVIS.			
Test Case No.1	Captured RUNWAY (P, L, A) objects with attribute CONVIS.			
Location	32°29'18.96"S 60°42'37.14"E	**S57 Encoding**	RUNWAY(P, L & A)	CONVIS=1
Screen Capture				
Expected test results	T1627: Three errors "prohibited attribute 'convis' in Runway" must be triggered.			
Secondary errors	T1797: A warning "the object runway cannot be displayed in ECDIS" must be triggered for the point object created.			
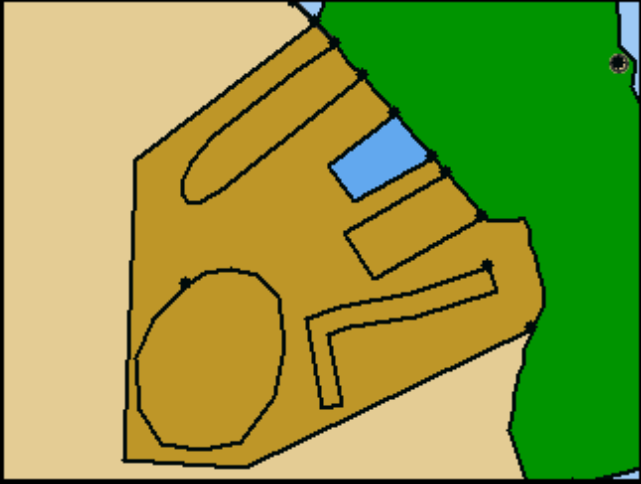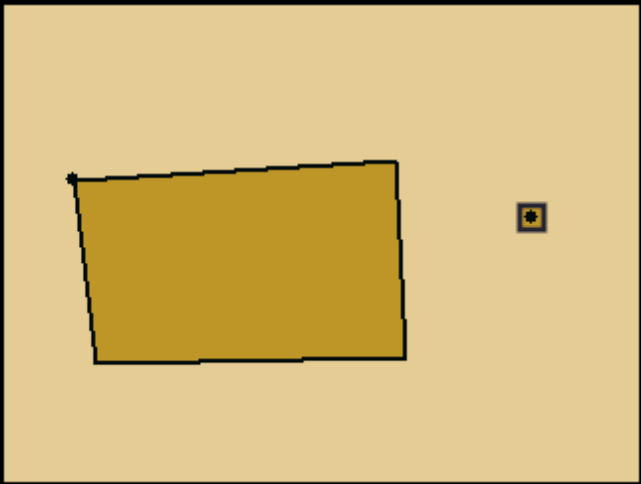
Test Dataset:AA500017
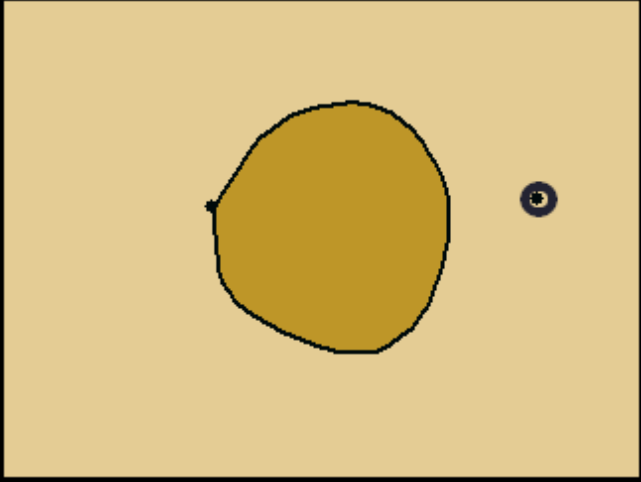
List of S58 Recommended ENC Validation Checks covered in this section:
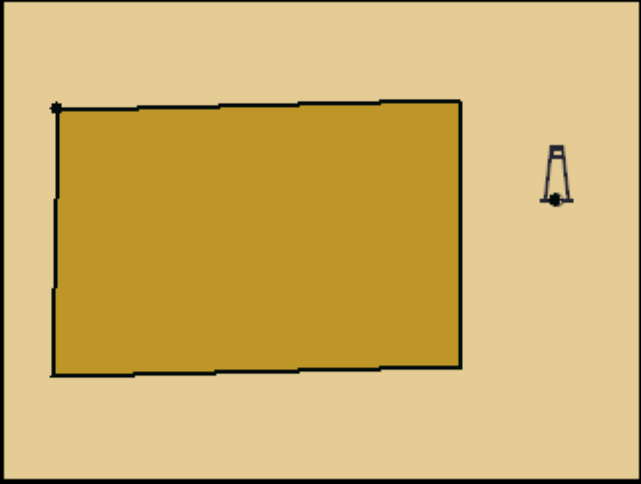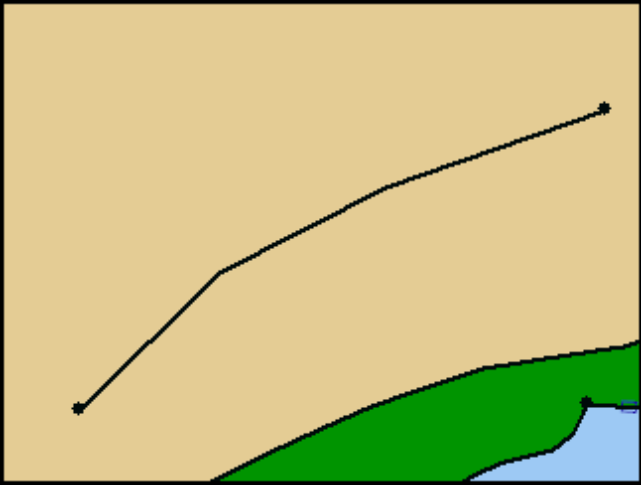
S58 Test	Description
1628	Check that no PRDARE object contains the attributes VERDAT and VERACC.
1629	Check that no BUAARE object contains the attributes VERDAT and VERACC.
1630	Check that no RIVERS, LOKBSN, DOCARE, LAKARE or CANALS object of type Area overlaps a BUAARE object.
1631	Check that no BUISGL object contains the attributes VERDAT and VERACC.
1632	Check that no SILTNK object contains the attributes VERDAT and VERACC.
1633	Check that no LNDMRK object contains the attributes VERDAT and VERACC.
1634	Check that no FNCLNE object contains the attributes VERDAT and VERACC.
1635	Check that no FORSTC object contains the attributes VERDAT and VERACC.
1636	Check that no PYLONS object contains the attributes VERDAT and VERACC.
1638	Check that any picture files that form part of the ENC are in TIFF format.
1639	Check that no DEPCNT object contains the attribute VERDAT.
1640	Check that no SOUNDG object contains the attribute VERDAT.
1641	Check that no UWTROC object shares the same spatial position as a SOUNDG object.
1642	Check that no DEPARE object contains the attributes VERDAT and SOUACC.
1644	Check that the data set's outermost DEPARE objects of type Area are bounded by line spatial objects without associated geo objects.
1646	Check for any DRGARE object, if a value exists for the attribute DRVAL2, that it is different to the value for DRVAL1.
1647	Check that no DRGARE object contains the attribute VERDAT.
1650	Check that no SWPARE object contains the attribute VERDAT.
1653	Check that where a SWPARE falls within an M_QUAL object and the attribute SOUACC is encoded for M_QUAL the SOUACC value refers to the area inside the SWPARE as well as the soundings outside.
1654	Check for any SWPARE object, if the attribute TECSOU is encoded, that the value is (6) [swept by wire-drag] , (8) [swept by vertical acoustic system] or (13) [swept by side-scan sonar].
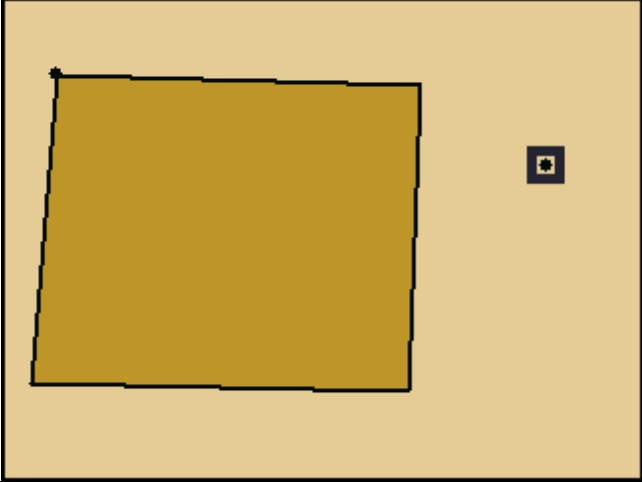
Dataset Name	AA500017	S-58 test No.	T1628	Type	E

S-58 Description	Check that no PRDARE object contains the attributes VERDAT and VERACC.

Test Case No. 1	PRDARE (A&P) captured with attributes VERDAT and VERACC.

Location	32°29'28.91"S 60°42'36.35"E	S57 Encoding	PRDARE(A&P)	CATPRA=8 or 1 VERACC=3 VERDAT=3 HEIGHT=1.0

Screen Capture	

Expected test results	T1628: Two errors "prohibited attribute 'veracc' in Production/storage area" must be triggered. T1628: Two errors "prohibited attribute 'verdat' in Production/storage area" must be triggered.
Secondary errors	T1546: Two errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500017	S-58 test No.	T1629	Type	E

S-58 Description	Check that no BUAARE object contains the attributes VERDAT and VERACC.

Test Case No. 1	BUAARE (A &P) captured with attributes VERDAT and VERACC.

Location	32°29'42.40"S 60°42'29.21"E	S57 Encoding	BUAARE(A &P)	VERACC=3 VERDAT=3 HEIGHT=1.0
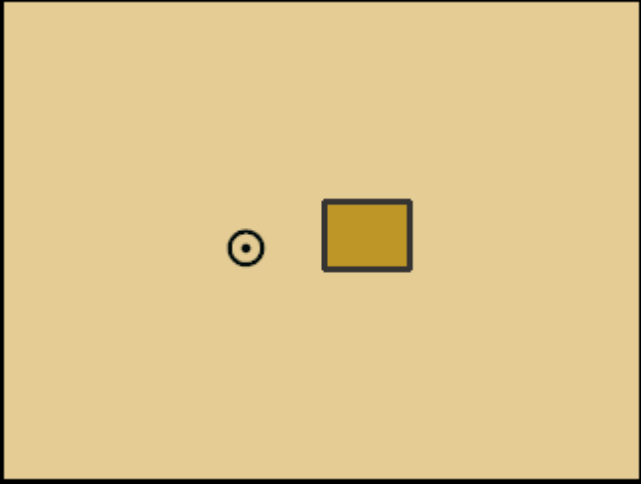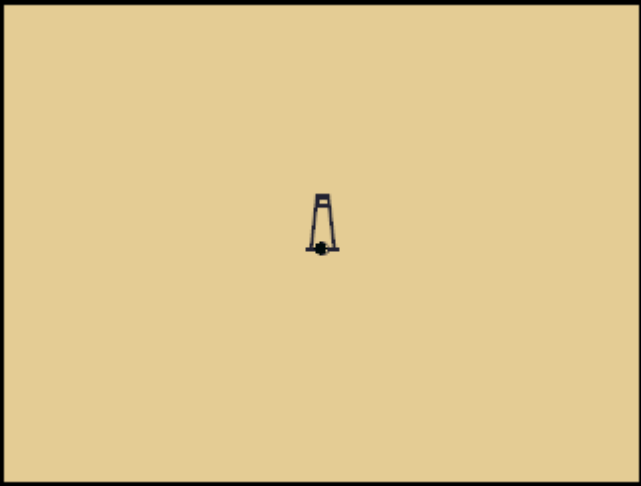
Screen Capture	
Expected test results	T1629: Two errors "prohibited attribute 'veracc' in Built-up area" must be triggered. T1629: Two errors "prohibited attribute 'verdat' in Built-up area" must be triggered.
Secondary errors	T1546: Two errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500017	**S-58 test No.**	T1630	**Type**	E
S-58 Description	Check that no RIVERS, LOKBSN, DOCARE, LAKARE or CANALS object of type Area overlaps a BUAARE object.				
Test Case No. 1	RIVERS (A) captured on Built-up area LOKBSN (A) captured on Built-up area DOCARE (A) captured on Built-up area LAKARE (A) captured on Built-up area CANALS (A) captured on Built-up area				
Location	32°29'49.62"S 60°42'51.53"E	**S57 Encoding**	BUAARE(A) RIVERS(A) LOKBSN(A) DOCARE(A) LAKARE(A) CANALS(A)		
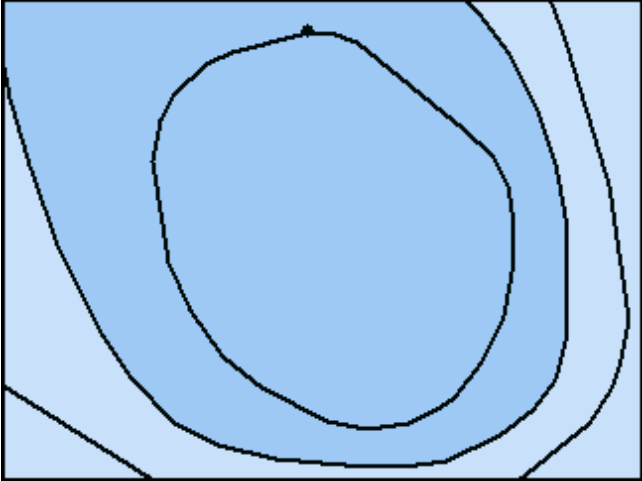
Screen Capture	
Expected test results	T1630: An error "object overlaps the prohibited rivers" must be triggered. T1630: An error "object overlaps the prohibited lokbsn" must be triggered. T1630: An error "object overlaps the prohibited docare" must be triggered. T1630: An error "object overlaps the prohibited lakare" must be triggered. T1630: An error "object overlaps the prohibited canals" must be triggered.
Secondary errors	None.

Dataset Name	AA500017	**S-58 test No.**	T1631	**Type**	E

S-58 Description	Check that no BUISGL object contains the attributes VERDAT and VERACC.
Test Case No. 1	BUISGL (A &P) captured with attributes VERDAT and VERACC.

Location	32°29'56.73"S 60°42'51.39"E	**S57 Encoding**	BUISGL(P&A)	VERACC=3 VERDAT=3 HEIGHT=1.0

Screen Capture	
Expected test results	T1631: Two errors "prohibited attribute 'veracc' in Building, single" must be triggered. T1631: Two errors "prohibited attribute 'verdat' in Building, single" must be triggered.
Secondary errors	T1546: Two errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the

	object class" must be triggered related to the feature objects created.				

Dataset Name	AA500017	**S-58 test No.**	T1632	**Type**	E
S-58 Description	Check that no SILTNK object contains the attributes VERDAT and VERACC.				
Test Case No. 1	SILTNK (A&P) captured with attributes VERDAT and VERACC.				
Location	32°30'06.75"S 60°42'50.07"E	**S57 Encoding**	SILTNK(P&A)	CATSIL=2 VERACC=3 VERDAT=3 HEIGHT=1.0	
Screen Capture					
Expected test results	T1632: Two errors "prohibited attribute 'veracc' in Silo/tank" must be triggered. T1632: Two errors "prohibited attribute 'verdat' in Silo/tank" must be triggered.				
Secondary errors	T1546: Two errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.				

Dataset Name	AA500017	**S-58 test No.**	T1633	**Type**	E
S-58 Description	Check that no LNDMRK object contains the attributes VERDAT and VERACC.				
Test Case No. 1	LNDMRK (A&P) captured with attributes VERDAT and VERACC.				
Location	32°30'18.20"S 60°42'45.79"E	**S57 Encoding**	LNDMRK(A&P)	CATLMK=9 or 17 CONVIS=2 VERACC=3 VERDAT=3 HEIGHT=1.0	
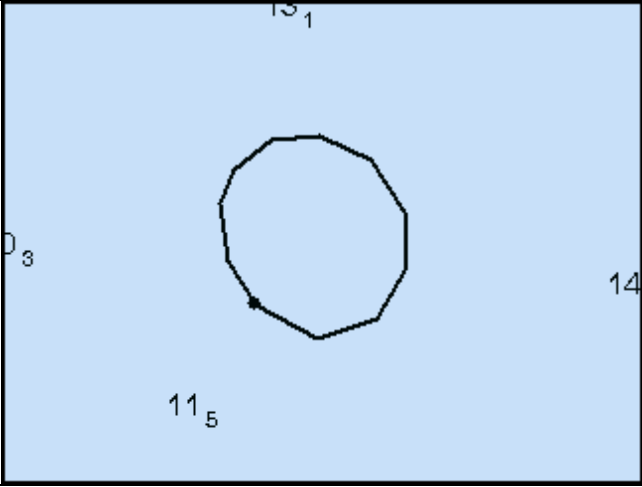
Screen Capture	
Expected test results	T1633: Two errors "prohibited attribute 'veracc' in Landmark" must be triggered. T1633: Two errors "prohibited attribute 'verdat' in Landmark" must be triggered.
Secondary errors	T1546: Two errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500017	**S-58 test No.**	T1634	**Type**	E
S-58 Description	Check that no FNCLNE object contains the attributes VERDAT and VERACC.				
Test Case No. 1	FNCLNE (L) captured with attributes VERDAT and VERACC.				
Location	32°30'19.36"S 60°42'18.89"E	**S57 Encoding**	FNCLNE(L)	VERACC=3 VERDAT=3 HEIGHT=1.0	
Screen Capture					
Expected test results	T1634: An error "prohibited attribute 'veracc' in Fence/wall" must be triggered. T1634: An error "prohibited attribute 'verdat' in Fence/wall" must be triggered.				
Secondary errors	T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created.				

	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500017	S-58 test No.	T1635	Type	E

S-58 Description	Check that no FORSTC object contains the attributes VERDAT and VERACC.

Test Case No. 1	FORSTC (A&P) captured with attributes VERDAT and VERACC.

Location	32°30'35.41"S 60°41'59.42"E	S57 Encoding	FORSTC(P&A)	CATFOR=1 VERACC=3 VERDAT=3 HEIGHT=1.0

Screen Capture	

Expected test results	T1635: Two errors "prohibited attribute 'veracc' in Fortified structure" must be triggered. T1635: Two errors "prohibited attribute 'verdat' in Fortified structure" must be triggered.

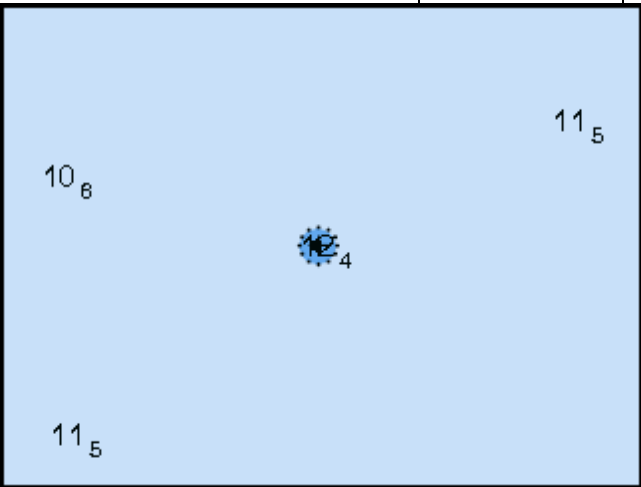| Secondary errors	T1546: Two errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500017	S-58 test No.	T1636	Type	E

S-58 Description	Check that no PYLONS object contains the attributes VERDAT and VERACC.

Test Case No. 1	PYLONS (P, A) captured with attributes VERDAT and VERACC.

Location	32°30'56.29"S 60°42'02.96"E	S57 Encoding	PYLONS(P, A)	CATPYL=1 VERACC=3 VERDAT=3 HEIGHT=1.0
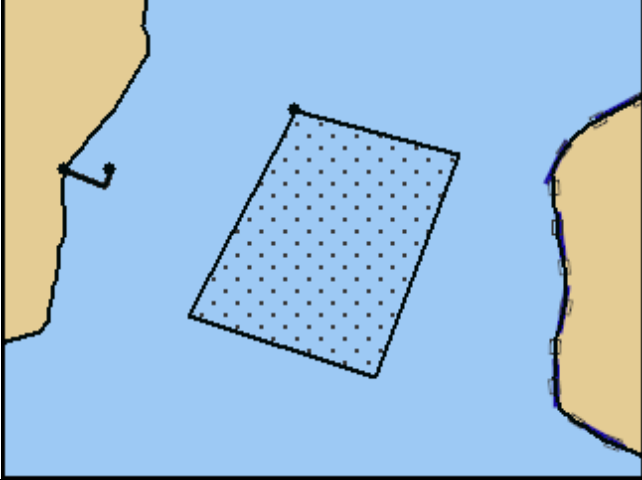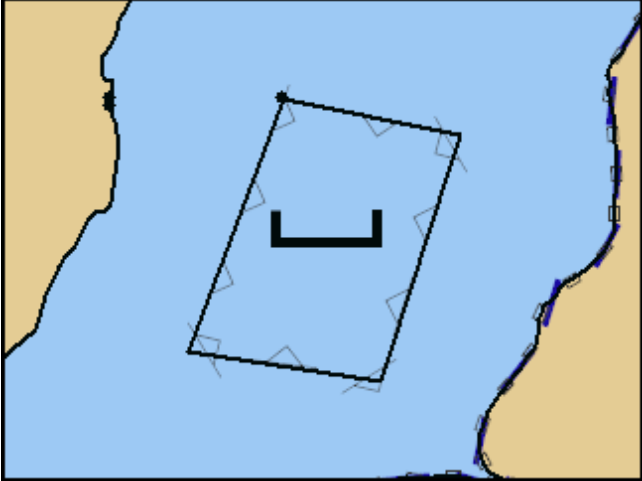
Screen Capture				
Expected test results	T1636: Two errors "prohibited attribute 'veracc' in Pylon/bridge support" must be triggered. T1636: Two errors "prohibited attribute 'verdat' in Pylon/bridge support" must be triggered.			
Secondary errors	T1546: Two errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.			

Dataset Name	AA500017	**S-58 test No.**	T1638	**Type**	E
S-58 Description	Check that any picture files that form part of the ENC are in TIFF format.				
Test Case No. 1	Land mark point captured.				
Location	32°31'09.56"S 60°42'07.20"E	**S57 Encoding**	LNDMRK(P)	PICREP=AA123456.TXT	

Screen Capture	
Expected test results	T1638: An error "unexpected format of external file in 'picrep' landmark" must be triggered.
Secondary errors	T0073: A warning "Check that no attribute value contains a leading or a trailing space, and that no attribute of type List contains any space" must be triggered related to the feature objects created. T0527: An error "Check that all files referenced by TXTDSC, NTXTDS and PICREP attributes exist and that the file names are in accordance with the ENC Product Specification" must be triggered

related to the feature objects created.					

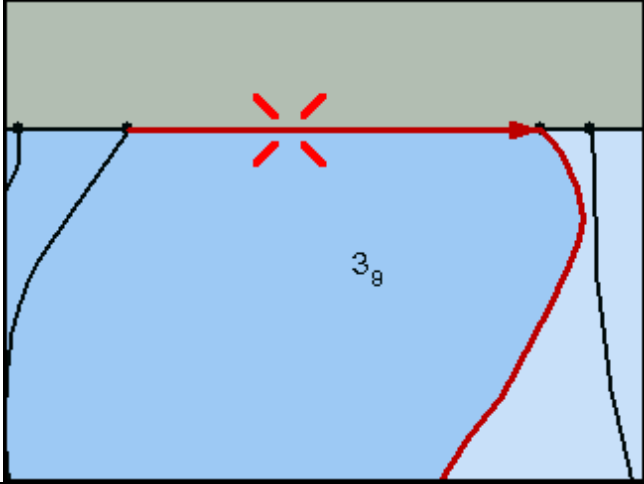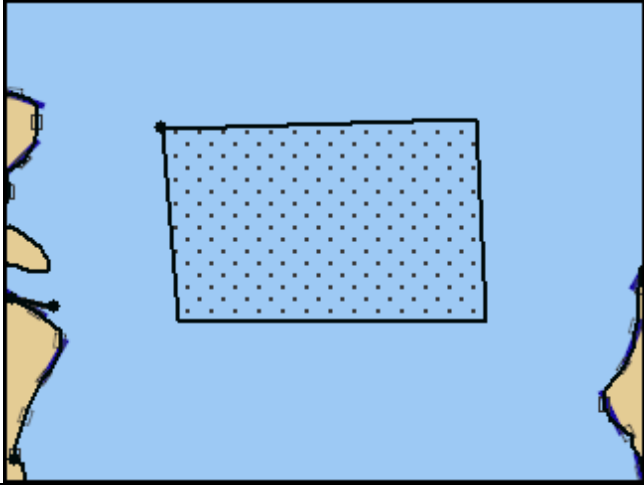|					
Dataset Name	AA500017	**S-58 test No.**	T1639	**Type**	E
S-58 Description	Check that no DEPCNT object contains the attribute VERDAT.				
Test Case No. 1	Depth contour line captured with attribute VERDAT.				
Location	32°31'00.27"S 60°42'46.34"E	**S57 Encoding**	DEPCNT(L)	VALDCO=3.6 VERDAT=3	
Screen Capture					
Expected test results	T1639: An error "prohibited attribute 'verdat' in Depth contour" must be triggered.				
Secondary errors	T1503: A warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.				

Dataset Name	AA500017	**S-58 test No.**	T1640	**Type**	E
S-58 Description	Check that no SOUNDG object contains the attribute VERDAT.				
Test Case No. 1	Sounding captured with attribute VERDAT.				
Location	32°31'04.78"S 60°43'09.93"E	**S57 Encoding**	SOUNDG	VERDAT=3	
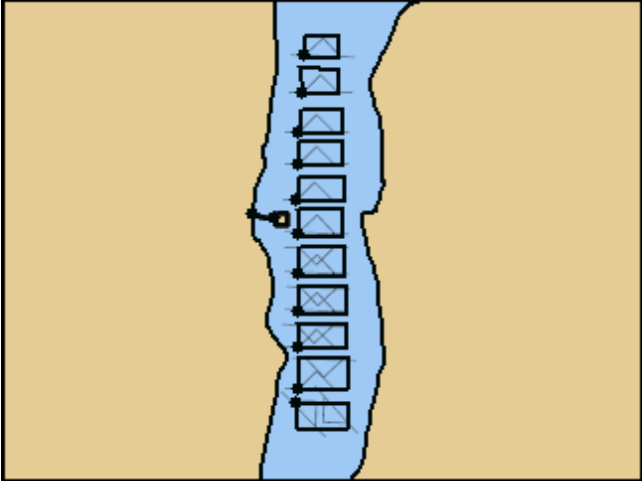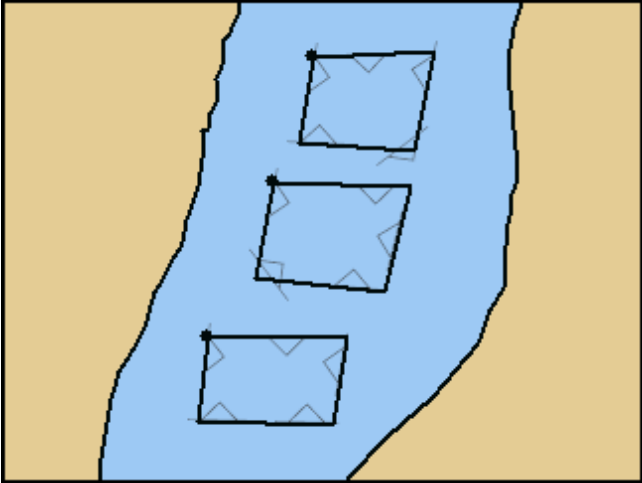
Screen Capture	14

Expected test results	T1640: An error "prohibited attribute 'verdat' in Sounding" must be triggered.
Secondary errors	T1503: A warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500017	**S-58 test No.**	T1641	**Type**	E
S-58 Description	Check that no UWTROC object shares the same spatial position as a SOUNDG object.				
Test Case No. 1	Underwater rock and sounding points captured using same spatial node.				

Location	32°31'09.85"S 60°42'40.71"E	**S57 Encoding**	SOUNDG(P) UWTROC(P)	QUASOU=2 WATLEV=3 VALSOU=UNKNOWN

Screen Capture	11 5 10 6 12 4 11 5

Expected test results	T1641: An error "rock and spot sounding at the same position Underwater/awash rock" must be triggered.
Secondary errors	None.

Dataset Name	AA500017		**S-58 test No.**	T1642		**Type**	E
S-58 Description	Check that no DEPARE object contains the attributes VERDAT and SOUACC.						
Test Case No. 1	Depth area captured with attributes VERDAT and SOUACC.						
Location	32°30'26.25"S 60°43'16.18"E		**S57 Encoding**	DEPARE(A)	DRVAL1=5.4 DRVAL2=9.1 SOUACC=3 VERDAT=3		
Screen Capture							
Expected test results	T1642: An error "prohibited attribute 'verdat' in Depth area" must be triggered. T1642: An error "prohibited attribute 'souacc' in Depth area" must be triggered.						
Secondary errors	T1503: A warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.						
Dataset Name	AA500017		**S-58 test No.**	T1644		**Type**	W
S-58 Description	Check that the data set's outermost DEPARE objects of type Area are bounded by line spatial objects without associated geo objects.						
Test Case No. 1	Depth contour line extended along the data limit border.						
Location	32°29'24.55"S 60°42'57.47"E		**S57 Encoding**	DEPCNT (L)	VALDCO=5.4		

Screen Capture	
Expected test results	T1644: A warning "depare is bounded by unexpected object depcnt" must be triggered.
Secondary errors	T0043: An error "Check that all DEPCNT objects coincide with a boundary of two Group 1 objects, except for cases where they appear within an UNSARE or DRGARE" must be triggered related to the feature objects created.

Dataset Name	AA500017	**S-58 test No.**	T1646	**Type**	W
S-58 Description	Check for any DRGARE object, if a value exists for the attribute DRVAL2, that it is different to the value for DRVAL1.				
Test Case No. 1	Captured DRGARE object with attributes DRVAL1 and DRVAL2.				
Location	32°31'09.12"S 60°40'54.00"E	**S57 Encoding**	DRGARE(A)	DRVAL1=4.5 DRVAL2=4.5	
Screen Capture					
Expected test results	T1646: A warning "drval1 equal to drval2 Dredged area" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500017	**S-58 test No.**	T1647	**Type**	E
S-58 Description	Check that no DRGARE object contains the attribute VERDAT.				
Test Case No. 1	Dredged area captured with attribute VERDAT.				

Location	32°30'54.96"S 60°40'54.79"E	**S57 Encoding**	DRGARE(A)	DRVAL1=3 VERDAT=3

Screen Capture				

Expected test results	T1647: An error "prohibited attribute 'verdat' in Dredged area" must be triggered.

Secondary errors	T1503: A warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500017	**S-58 test No.**	T1650	**Type**	E
S-58 Description	Check that no SWPARE object contains the attribute VERDAT.				
Test Case No. 1	Swept area captured with attribute VERDAT.				
Location	32°30'42.87"S 60°41'01.70"E	**S57 Encoding**	SWPARE(A)	DRVAL1=1 VERDAT=3	

Screen Capture	

Expected test results	T1650: An error "prohibited attribute 'verdat' in Swept area" must be triggered.
Secondary errors	T1503: A warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and
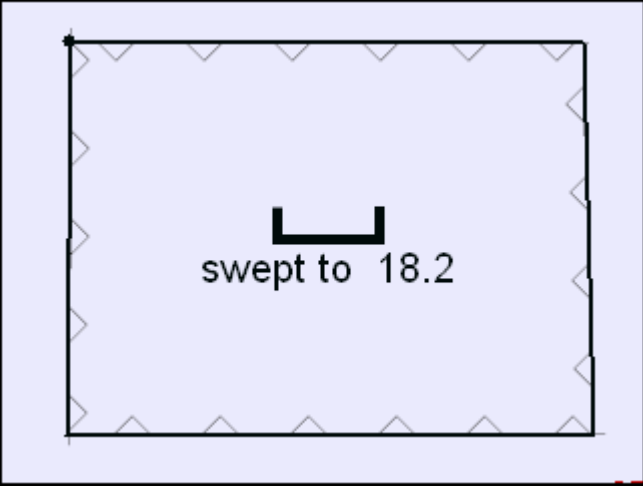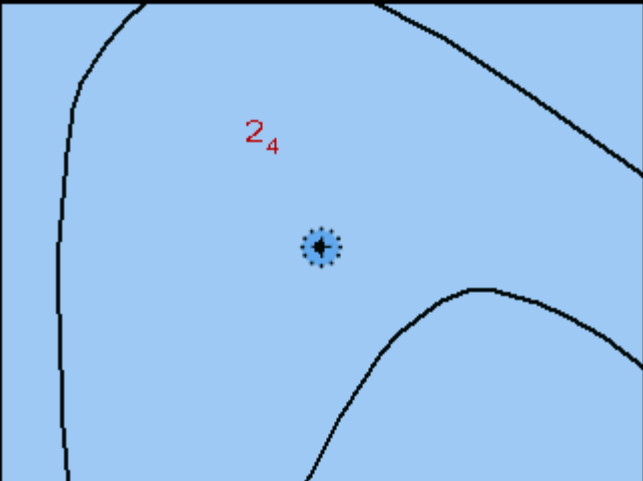
	M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500017	**S-58 test No.**	T1653	**Type**	E

S-58 Description	Check that where a SWPARE falls within an M_QUAL object and the attribute SOUACC is encoded for M_QUAL that the SOUACC value refers to the area inside the SWPARE as well as the soundings outside.

Test Case No. 1	Swept area and Quality of data Area captured with attributes.

Location	32°30'56.72"S 60°43'16.00"E	**S57 Encoding**	SWPARE(A) M_QUAL(A) SOUNDG	DRVAL1=2 SOUACC=1 CATZOC=2 DRVAL1=2 SOUACC=10 SOUACC=1

Screen Capture	

Expected test results	T1653: An error "Check that where a SWPARE falls within an M_QUAL object and the attribute SOUACC is encoded for M_QUAL that the SOUACC value refers to the area inside the SWPARE as well as the soundings outside" must be triggered.

Secondary errors	T1530: An error "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" must be triggered related to the feature objects created. T1531: An error "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" must be triggered related to the feature objects created.

Dataset Name	AA500017	**S-58 test No.**	T1654	**Type**	E

S-58 Description	Check for any SWPARE object, if the attribute TECSOU is encoded, that the value is (6) [swept by wire-drag] (8) [swept by vertical acoustic system] or (13) [swept by side-scan sonar].

Test Case No. 1	SWPARE(A) captured with attribute TECSOU=1 SWPARE(A) captured with attribute TECSOU=2 SWPARE(A) captured with attribute TECSOU=3 SWPARE(A) captured with attribute TECSOU=4
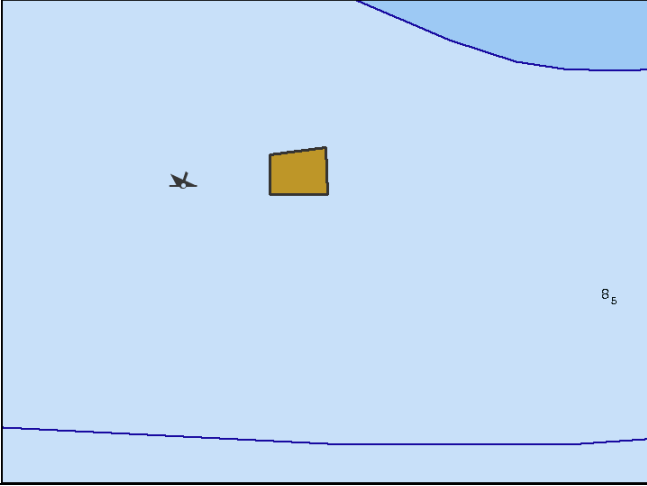
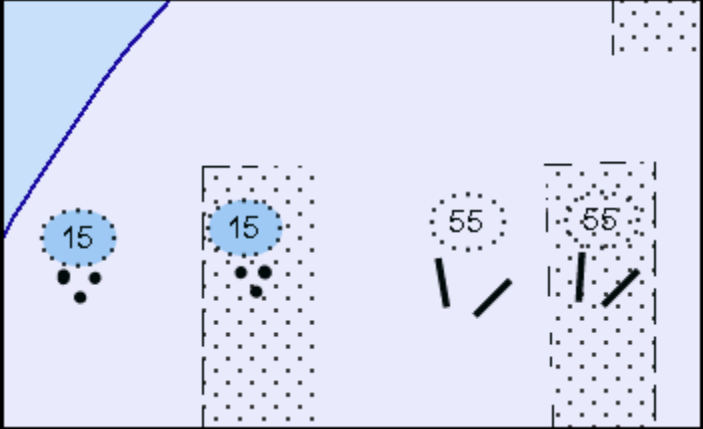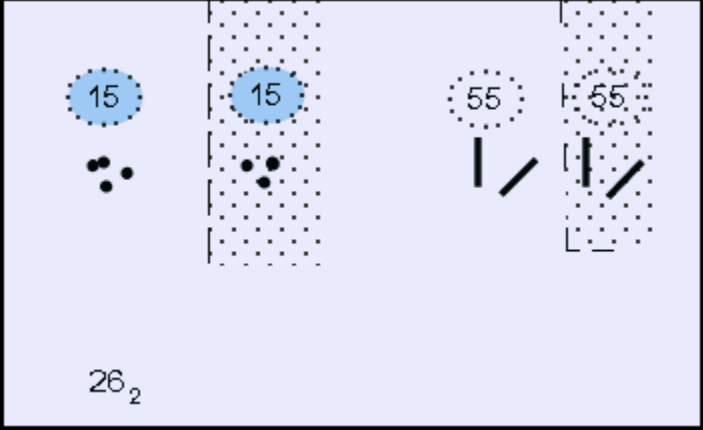|	SWPARE(A) captured with attribute TECSOU=5			
	SWPARE(A) captured with attribute TECSOU=7			
	SWPARE(A) captured with attribute TECSOU=9			
	SWPARE(A) captured with attribute TECSOU=10			
	SWPARE(A) captured with attribute TECSOU=11			
	SWPARE(A) captured with attribute TECSOU=12			
	SWPARE(A) captured with attribute TECSOU=14			
Location	32°30'03.73"S 60°41'04.53"E	**S57 Encoding**	SWPARE(A)	DRVAL1=1 TECSOU=1,2,3,4,5,7,9, 10,11,12 or 14
Screen Capture				
Expected test results	T1654: 11 errors "meaningless value of 'tecsou' in Swept area" must be triggered.			
Secondary errors	T2000: 11 warnings "Check for any SWPARE object, if the attribute TECSOU is not encoded, that the value is (6) [swept by wire-drag], (8) [swept by vertical acoustic system] or (13) [swept by side-scan sonar]" must be triggered related to the feature objects created.			
Test Case No. 2	SWPARE(A) captured with attribute TECSOU=6 SWPARE(A) captured with attribute TECSOU=8 SWPARE(A) captured with attribute TECSOU=13			
Location	32°30'13.30"S 60°41'03.49"E	**S57 Encoding**	SWPARE(A)	DRVAL1=1 TECSOU=6,8 or 13
Screen Capture				
Expected test results	T1654: Three errors "meaningless value of 'tecsou' in Swept area" must not be triggered.			
Secondary errors	None.			

Test Dataset:AA500018

List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
1655	Check that no SWPARE object sharing the same geo-spatial position and geometry as a M_QUAL object contains the attribute POSACC if the SOUACC is encoded.
1656	Check that no UWTROC object contains the attribute VERDAT.
1658	Check that no WRECKS object contains the attributes VERDAT, VERACC and VERLEN.
1659	Check for any WRECKS object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (1) [within the range of depth of the surrounding depth area] or if EXPSOU is not Used, that the value for VALSOU is greater than DRVAL1 and less than or equal to DRVAL2 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if both DRVAL1 and DRVAL2 for the overlying Group 1 object are encoded with explicit and different attribute values.
1660	Check for any WRECKS object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (2) [shoaler than the range of depth of the surrounding depth area], that the value for VALSOU is less than or equal to DRVAL1 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if DRVAL1 for the overlying Group 1 object is not encoded as "unknown".
1661	Check for any WRECKS object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (3) [deeper than the range of depth of the surrounding depth area], that the value for VALSOU is: • greater than DRVAL2 of the overlying DEPARE, or • greater than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 of the DRGARE are encoded, or • Greater than DRVAL1 of the overlying DRGARE, when only DRVAL1 of the DRGARE is encoded. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object or DRVAL1 for the overlying DRGARE object are not encoded as "unknown".
1664	Check that no OBSTRN object contains the attribute VERACC or VERDAT.
1665	Check for any OBSTRN object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (1) [within the range of depth of the surrounding depth area] or if EXPSOU is not used, that the value for VALSOU is greater than DRVAL1 and less than or equal to DRVAL2 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if both DRVAL1 and DRVAL2 for the overlying Group 1 object are encoded with explicit and different attribute values.
1666	Check for any OBSTRN object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (2) [shoaler than the range of depth of the surrounding depth area], that the value for VALSOU is less than or equal to DRVAL1 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if DRVAL1 for the overlying Group 1 object is not encoded as "unknown".
1667	Check for any OBSTRN object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (3) [deeper than the range of depth of the surrounding depth area], that the value for VALSOU is: • greater than DRVAL2 of the overlying DEPARE, or • greater than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 for the DRGARE are encoded, or • Greater than DRVAL1 of the overlying DRGARE, when only DRVAL1 for the DRGARE is encoded. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object or DRVAL1 for the overlying DRGARE object are not encoded as "unknown".
1668	Check that no OBSTRN object has a value for the attribute PRODCT without a value of (2) [wellhead] or (3) [diffuser] for CATOBS.
1675	Check that no SNDWAV object contains the attribute VERACC.
1677	Check that no MORFAC object has a value for the attribute BOYSHP unless the object contains a value of (7) [mooring buoy] for the attribute CATMOR.
1678	Check that no RECTRC object contains the attributes VERDAT and DRVAL2.
1689	Check that no TSSCRS object overlaps a TSEZNE object.
1690	Check that no TSSRON object overlaps a TSEZNE object.
1691	Check that no DWRTPT object contains the attributes VERDAT and DRVAL2.
1695	Check that no DWRTCL object contains the attributes VERDAT and DRVAL2.
1697	Check that no RCRTCL object contains the attributes VERDAT and DRVAL2.

Dataset Name	AA500018		S-58 test No.	T1655	Type	E
S-58 Description	Check that no SWPARE object sharing the same geo-spatial position and geometry as a M_QUAL object contains the attribute POSACC if the SOUACC is encoded.					
Test Case No. 1	Captured SWPARE object sharing the same geometry of M_QUAL object with attributes POSACC and SOUACC.					
Location	32°30'36.02"S 60°45'57.44"E		S57 Encoding	SWPARE (A) M_QUAL(A)	DRVAL1=18.2 POSACC=1 SOUACC=1	
Screen Capture						
Expected test results	T1655: Two errors "prohibited attribute 'posacc' in Quality of data" must be triggered.					
Secondary errors	T1525: One additional error "Check that no M_QUAL object that has an attribute value for DRVAL1 contains a value for POSACC" must be triggered related to the feature objects created.					

Dataset Name	AA500018		S-58 test No.	T1656	Type	E
S-58 Description	Check that no UWTROC object contains the attribute VERDAT.					
Test Case No. 1	Captured UWTROC object with attribute VERDAT.					
Location	32°30'53.69"S 60°44'40.05"E		S57 Encoding	UWTROC(P)	VERDAT=1	
Screen Capture						

Expected test results	T1656: An error "prohibited attribute 'verdat' in Underwater/awash rock" must be triggered.
Secondary errors	T1503: One additional warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500018	**S-58 test No.**	T1658	**Type**	E
S-58 Description	Check that no WRECKS object contains the attributes VERDAT, VERACC and VERLEN.				
Test Case No. 1	Captured WRECKS (P, A) objects with attributes VERDAT, VERACC and VERLEN.				

Location	32°30'58.48"S 60°44'49.88"E	**S57 Encoding**	WRECKS (P&A)	VERDAT=1 VERACC=1 VERLEN=1

Screen Capture

Expected test results	T1658: Two errors "prohibited attribute 'veracc' in Wreck" must be triggered. T1658: Two errors "prohibited attribute 'verlen' in Wreck" must be triggered. T1658: Two errors "prohibited attribute 'verdat' in Wreck" must be triggered.
Secondary errors	T1546: Two additional errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500018	**S-58 test No.**	T1659	**Type**	E
S-58 Description	Check for any WRECKS object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (1) [within the range of depth of the surrounding depth area] or if EXPSOU is not used, that the value for VALSOU is greater than DRVAL1 and less than or equal to DRVAL2 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if both DRVAL1 and DRVAL2 for the overlying Group 1 object are encoded with explicit and different attribute values.				
Test Case No. 1	Captured WRECKS (P, A) objects with attributes VALSOU and EXPSOU. Assigned VALSOU for WRECKS less than DRVAL1 and greater than DRVAL2 of the overlying DEPARE (A) and DRGARE.				

Location	32°30'57.39"S 60°45'05.14"E	S57 Encoding	WRECKS(A,P)	EXPSOU=1 VALSOU=15 & 55
			DRGARE(A)	DRVAL1=20 DRVAL2=40
			DEPARE(A)	DRVAL1=18.2 DRVAL2=54.8

Screen Capture	

Expected test results	T1659: Eight errors "spot sounding shallower than enclosing 'depare' of Wreck" must be triggered.
Secondary errors	T1662: One additional error "Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area" must be triggered related to the feature objects created.
Test Case No. 2	Captured WRECKS (P, A) objects with attribute VALSOU. Assigned VALSOU for WRECKS less than DRVAL1 and greater than DRVAL2 of the overlying DEPARE (A) and DRGARE.

Location	32°31'01.09"S 60°45'05.65"E	S57 Encoding	WRECKS(A,P)	VALSOU=15 & 55
			DRGARE(A)	DRVAL1=20 DRVAL2=40
			DEPARE(A)	DRVAL1=18.2 DRVAL2=54.8

Screen Capture	

Expected test results	T1659: Eight errors "spot sounding shallower than enclosing 'depare' of Wreck" must be triggered.
Secondary errors	T1662: One additional error "Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area" must be triggered related to the feature objects created.

Dataset Name	AA500018		**S-58 test No.**	T1660	**Type**	E
S-58 Description	Check for any WRECKS object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (2) [shoaler than the range of depth of the surrounding depth area], that the value for VALSOU is less than or equal to DRVAL1 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if DRVAL1 for the overlying Group 1 object is not encoded as "unknown".					
Test Case No. 1	Captured WRECKS (P, A) objects with attributes VALSOU and EXPSOU. Assigned VALSOU greater than DRVAL1 of the overlying DEPARE (A) and DRGARE					

Location	32°30'52.31"S 60°45'07.62"E	**S57 Encoding**	DRGARE(A) WRECKS(A,P) DEPARE(A)	DRVAL1=20 EXPSOU=2 VALSOU=25 DRVAL1=18.2 DRVAL2=54.8

Screen Capture	

Expected test results	T1660: Four errors "bad sounding exposition in Wreck" must be triggered.
Secondary errors	T1662: One additional error "Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area" must be triggered related to the feature objects created.

Dataset Name	AA500018		**S-58 test No.**	T1661	**Type**	E
S-58 Description	Check for any WRECKS object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (3) [deeper than the range of depth of the surrounding depth area], that the value for VALSOU is: • greater than DRVAL2 of the overlying DEPARE, or • greater than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 of the DRGARE are encoded, or • Greater than DRVAL1 of the overlying DRGARE, when only DRVAL1 of the DRGARE is encoded. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object or DRVAL1 for the overlying DRGARE object are not encoded as "unknown".					
Test Case No. 1	Captured WRECKS (P, A) objects with attribute VALSOU and EXPSOU. • Assigned VALSOU for WRECKS less than DRVAL2 of the overlying the DEPARE (A) and DRGARE objects, when both DRVAL1 and DRVAL2 attribute are encoded for DEPARE (A) and DRGARE. • Assigned VALSOU for WRECKS less than DRVAL1 of the overlying DRGARE object, when only DRVAL1 attribute is encoded for DRGARE.					
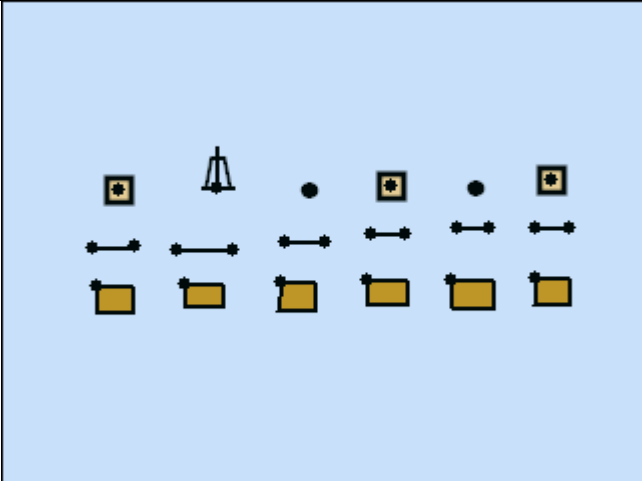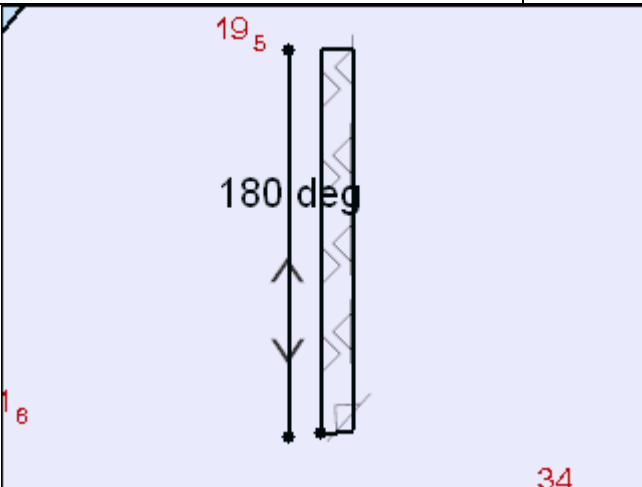
				WRECKS(P& A)	EXPSOU=3 VALSOU=25 or 19
Location	32°30'38.89"S 60°45'16.73"E		**S57 Encoding**	DRGARE(A)	DRVAL1=20 DRVAL2=40
				DEPARE(A)	DRVAL1=18.2 DRVAL2=54.8
Screen Capture					
Expected test results	T1661: 6 errors "bad sounding exposition in Wreck" must be triggered.				
Secondary errors	T1662: Two additional errors "Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area" must be triggered related to the feature objects created.				

Dataset Name	AA500018		**S-58 test No.**	T1664	**Type**	E
S-58 Description	Check that no OBSTRN object contains the attribute VERACC or VERDAT.					
Test Case No. 1	Captured OBSTRN (P, L, A) objects with attributes VERACC and VERDAT.					
Location	32°31'11.72"S 60°43'39.19"E		**S57 Encoding**	OBSTRN(P,L &A)	VERACC=1 VERDAT=1	
Screen Capture						
Expected test results	T1664: Three errors "prohibited attribute 'veracc' in Obstruction" must be triggered. T1664: Three errors "prohibited attribute 'verdat' in Obstruction" must be triggered.					
Secondary errors	T1546: Three additional errors "Check that no object has an attribute value for VERACC without a					

	corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created.
	T547: Three errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500018			S-58 test No.	T1665	Type	E
S-58 Description	Check for any OBSTRN object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (1) [within the range of depth of the surrounding depth area] or if EXPSOU is not used, that the value for VALSOU is greater than DRVAL1 and less than or equal to DRVAL2 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if both DRVAL1 and DRVAL2 for the overlying Group 1 object are encoded with explicit and different attribute values.						
Test Case No. 1	Captured OBSTRN (P, L, A) objects with attributes VALSOU and EXPSOU. Assigned VALSOU for OBSTRN less than DRVAL1 and greater than DRVAL2 of the overlying DEPARE (A) and DRGARE.						
Location	32°31'11.05"S 60°44'52.32"E			**S57 Encoding**	OBSTRN(A,P, L) DRGARE(A) DEPARE(A)	EXPSOU=1 VALSOU=15 & 55 DRVAL1=20 DRVAL2=40 DRVAL1=18.2 DRVAL2=54.8	
Screen Capture							
Expected test results	T1665: 12 errors "spot sounding shallower than enclosing 'depare' of Obstruction" must be triggered						
Secondary errors	T1662: One additional error "Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area" must be triggered related to the feature objects created.						
Test Case No. 2	Captured OBSTRN (P, L, A) objects with attribute VALSOU. Assigned VALSOU for OBSTRN less than DRVAL1 and greater than DRVAL2 of the overlying DEPARE (A) and DRGARE.						
Location	32°31'14.75"S 60°44'50.31"E			**S57 Encoding**	OBSTRN(P,A &L) DRGARE(A) DEPARE(A)	VALSOU=15 & 55 DRVAL1=20 DRVAL2=40 DRVAL1=18.2 DRVAL2=54.8	
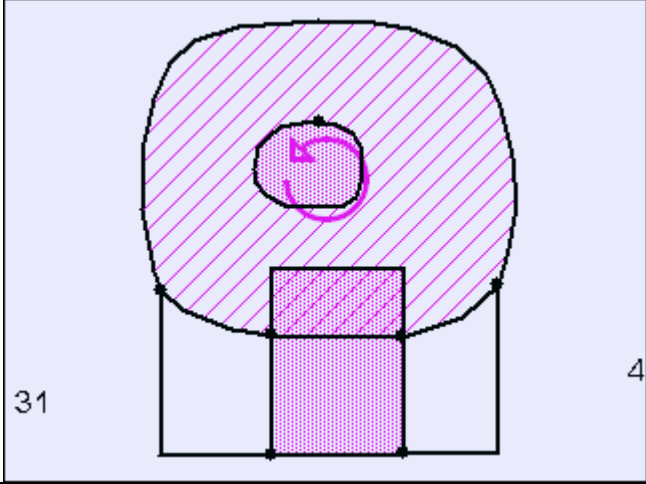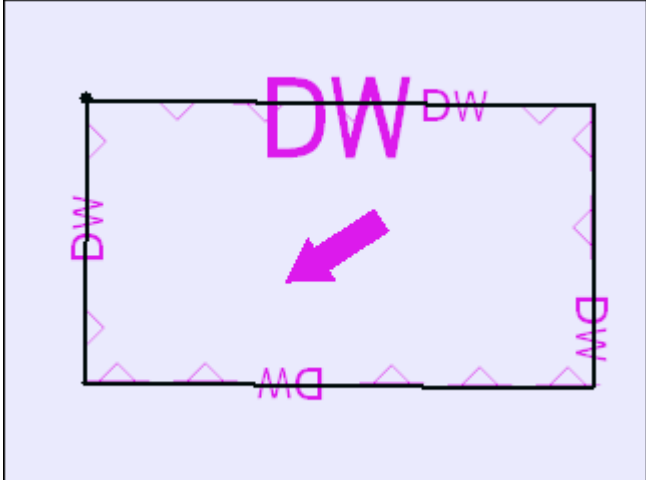
Screen Capture	
Expected test results	T1665: 12 errors "spot sounding shallower than enclosing 'depare' of Obstruction" must be triggered
Secondary errors	T1662: One additional error "Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area" must be triggered related to the feature objects created.

Dataset Name	AA500018		**S-58 test No.**	T1666	**Type**	E
S-58 Description	Check for any OBSTRN object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (2) [shoaler than the range of depth of the surrounding depth area], that the value for VALSOU is less than or equal to DRVAL1 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if DRVAL1 for the overlying Group 1 object is not encoded as "unknown".					
Test Case No. 1	Captured OBSTRN (P, L, A) objects with attributes VALSOU and EXPSOU. Assigned VALSOU greater than DRVAL1 of the overlying DEPARE (A) and DRGARE					
Location	32°30'45.90"S 60°45'13.04"E		**S57 Encoding**	OBSTRN(A,L &P) DRGARE(A) DEPARE(A)	VALSOU=25 EXPSOU=2 DRVAL1=20 DRVAL1=18.2 DRVAL2=54.8	
Screen Capture						
Expected test results	T1666: 6 errors "bad sounding exposition in Obstruction" must be triggered.					
Secondary errors	T1662: One additional error "Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area" must be triggered related to the feature objects created.					

Dataset Name	AA500018				S-58 test No.	T1667	Type	E

S-58 Description	Check for any OBSTRN object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (3) [deeper than the range of depth of the surrounding depth area], that the value for VALSOU is: • greater than DRVAL2 of the overlying DEPARE, or • greater than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 for the DRGARE are encoded, or • Greater than DRVAL1 of the overlying DRGARE, when only DRVAL1 for the DRGARE is encoded. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object or DRVAL1 for the overlying DRGARE object are not encoded as "unknown".

Test Case No. 1	Captured OBSTRN (P, L, A) objects with attribute VALSOU and EXPSOU. • Assigned VALSOU for OBSTRN less than DRVAL2 of the overlying the DEPARE (A) and DRGARE objects, when both DRVAL1 and DRVAL2 attributes are encoded for DEPARE (A) and DRGARE. • Assigned VALSOU for OBSTRN less than DRVAL1 of the overlying DRGARE object, when only DRVAL1 attribute is encoded for DRGARE.

Location	32°30'31.87"S 60°45'22.98"E	S57 Encoding	DRGARE(A) OBSTRN(P,L&A) DEPARE	DRVAL1=20 DRVAL2=40 VALSOU=25, 19 EXPSOU=3 DRVAL1=18.2 DRVAL2=54.8

Screen Capture	

Expected test results	T1667: Nine errors "bad sounding exposition in Obstruction" must be triggered.

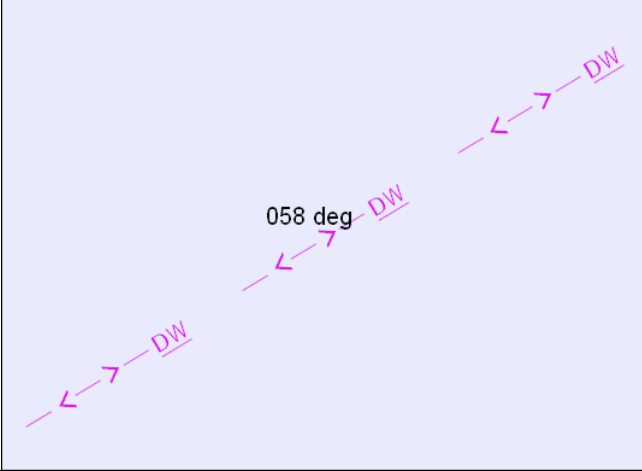| Secondary errors	T1662: Two additional errors "Check that any area WRECKS or area OBSTRN object is covered by a DEPARE, LNDARE or UNSARE object of type Area" must be triggered related to the feature objects created.

Dataset Name	AA500018				S-58 test No.	T1668	Type	W

S-58 Description	Check that no OBSTRN object has a value for the attribute PRODCT without a value of (2) [wellhead] or (3) [diffuser] for CATOBS.

Test Case No. 1	Captured OBSTRN (P, L, A) objects with attributes CATOBS and PRODCT.

Location	32°31'00.78"S 60°43'40.35"E	S57 Encoding	OBSTRN (P,L&A)	PRODCT=1 CATOBS=1,4,5,

	6,7,8,9 or 10

Screen Capture	
Expected test results	T1668: 24 warnings "meaningless value of 'prodct' in obstruction" must be triggered
Secondary errors	None

Dataset Name	AA500018	**S-58 test No.**	T1675	**Type**	E
S-58 Description	Check that no SNDWAV object contains the attribute VERACC.				
Test Case No. 1	Captured SNDWAV (P, L, A) objects with attribute VERACC.				
Location	32°30'44.77"S 60°43'40.00"E	**S57 Encoding**	SNDWAV(P,L &A)	VERACC=1	

Screen Capture	
Expected test results	T1675: Three errors "prohibited attribute 'veracc' in Sand waves" must be triggered.
Secondary errors	T1546: Three additional errors "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the feature objects created. T547: Three errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500018	**S-58 test No.**	T1677	**Type**	E

S-58 Description	Check that no MORFAC object has a value for the attribute BOYSHP unless the object contains a value of (7) [mooring buoy] for the attribute CATMOR.			
Test Case No. 1	Captured MORFAC (P, L, A) objects with attributes BOYSHP and CATMOR.			
Location	32°30'51.57"S 60°43'45.69"E	**S57 Encoding**	MORFAC(P,L&A)	BOYSHP=7 CATMOR=1,2,3,4,5 or 6
Screen Capture				
Expected test results	T1677: 18 errors "meaningless value of 'boyshp' in Mooring/warping facility" must be triggered.			
Secondary errors	None			

Dataset Name	AA500018		**S-58 test No.**	T1678	**Type**	E
S-58 Description	Check that no RECTRC object contains the attributes VERDAT and DRVAL2.					
Test Case No. 1	Captured RECTRC (L, A) objects with attributes VERDAT and DRVAL2.					
Location	32°31'09.22"S 60°44'58.87"E		**S57 Encoding**	RECTRC(A&L)	VERDAT=1 DRVAL2=25	
Screen Capture						
Expected test results	T1678: Two errors "prohibited attribute 'verdat' in Recommended track" must be triggered. T1678: Two errors "prohibited attribute 'drval2' in Recommended track" must be triggered.					
Secondary errors	T1503: Two additional warnings "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are					

	M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created.

T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500018		**S-58 test No.**	T1689	**Type**	E
S-58 Description	Check that no TSSCRS object overlaps a TSEZNE object.					
Test Case No. 1	Captured TSSCRS object overlapping with TSEZNE object.					
Location	32°31'08.01"S 60°45'30.79"E		**S57 Encoding**	TSSCRS (A) TSEZNE (A)		
Screen Capture						
Expected test results	T1689: An error "tsscrs object overlaps the prohibited 'tsezne'" must be triggered.					
Secondary errors	None					
Dataset Name	AA500018		**S-58 test No.**	T1690	**Type**	E
S-58 Description	Check that no TSSRON object overlaps a TSEZNE object.					
Test Case No. 1	Captured TSSRON (A) object overlapping with TSEZNE (A) object.					
Location	32°30'45.03"S 60°45'55.25"E		**S57 Encoding**	TSSRON (A) TSEZNE (A)		

Screen Capture					
Expected test results	T1690: An error "tssron object overlaps the prohibited 'tsezne'" must be triggered.				
Secondary errors	T1687: One additional warning "Check that any object encoded as TSEZNE separates either of the following: 1) Two traffic lanes, 2) Traffic lane and Inshore traffic zone, 3) Centre of roundabout" must be triggered related to the feature objects created.				
Dataset Name	AA500018	**S-58 test No.**	T1691	**Type**	E
S-58 Description	Check that no DWRTPT object contains the attributes VERDAT and DRVAL2.				
Test Case No. 1	Captured DWRTPT (A) object with attributes VERDAT and DRVAL2.				
Location	32°30'23.94"S 60°46'20.78"E	**S57 Encoding**	DWRTPT (A)	VERDAT=1 DRVAL2=25	
Screen Capture					
Expected test results	T1691: An error "prohibited attribute 'verdat' in Deep water route part" must be triggered. T1691: An error "prohibited attribute 'drval2' in Deep water route part" must be triggered.				
Secondary errors	T1503: One additional warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.				

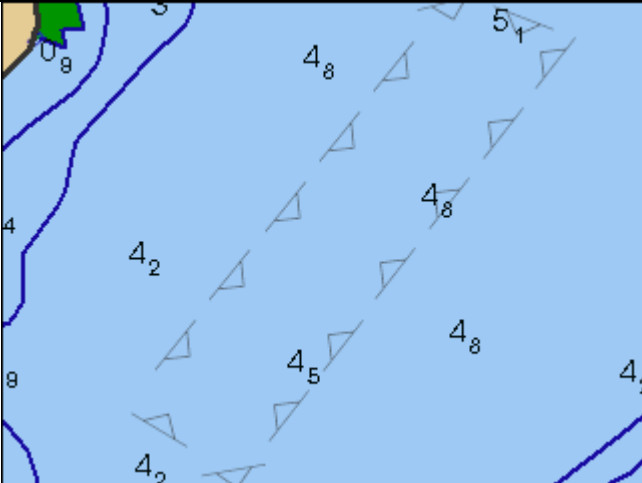| Dataset Name	AA500018		S-58 test No.	T1695	Type	E
S-58 Description	Check that no DWRTCL object contains the attributes VERDAT and DRVAL2.					
Test Case No. 1	Captured DWRTCL object with attributes VERDAT and DRVAL2.					
Location	32°30'45.86"S 60°45'25.18"E		**S57 Encoding**	DWRTCL (L)	VERDAT=1 DRVAL2=25	
Screen Capture						
Expected test results	T1695: An error "prohibited attribute 'drval2' in Deep water route centerline" must be triggered. T1695: An error "prohibited attribute 'verdat' in Deep water route centerline" must be triggered.					
Secondary errors	T1503: One additional warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.					

Dataset Name	AA500018		S-58 test No.	T1697	Type	E
S-58 Description	Check that no RCRTCL object contains the attributes VERDAT and DRVAL2.					
Test Case No. 1	Captured RCRTCL object with attributes VERDAT and DRVAL2.					
Location	32°31'07.52"S 60°45'48.69"E		**S57 Encoding**	RCRTCL (L)	VERDAT=1 DRVAL2=40	

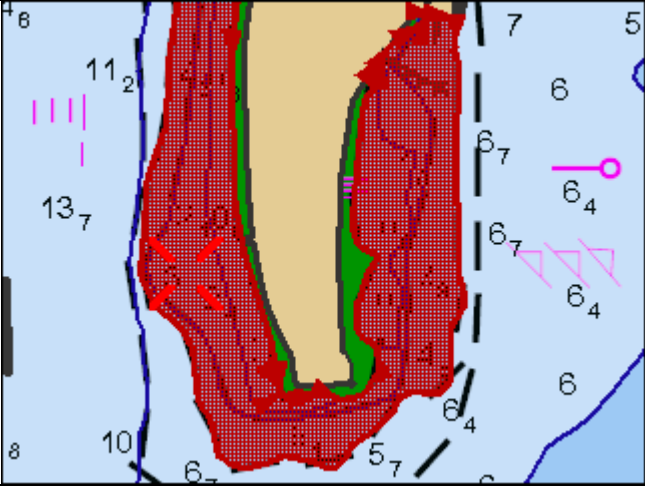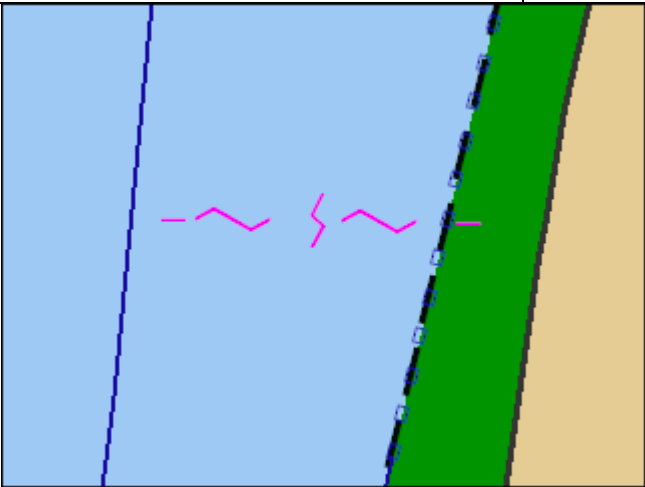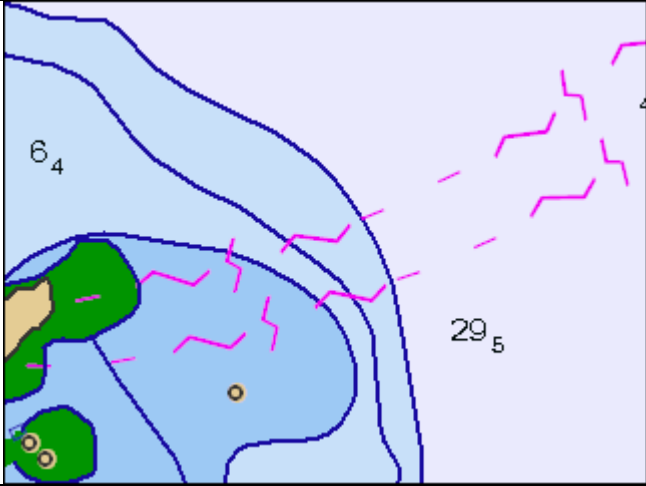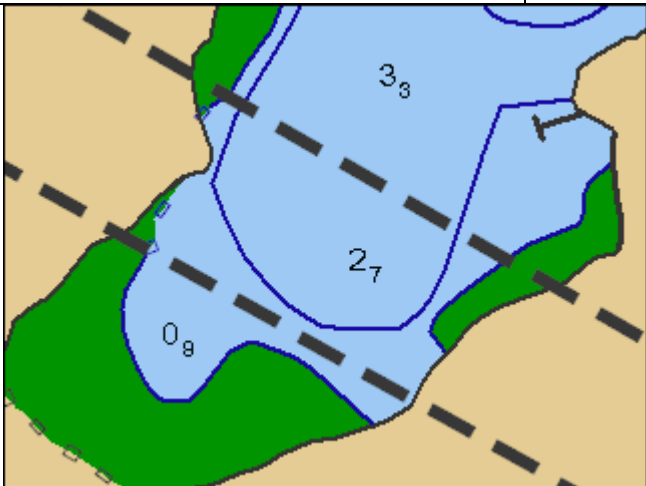|	
Screen Capture	
Expected test results	T1697: An error "prohibited attribute 'verdat' in Recommended route centerline" must be triggered. T1697: An error "prohibited attribute 'drval2' in Recommended route centerline" must be triggered.
Secondary errors	T1503: One additional warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created. T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Test Dataset:AA500019

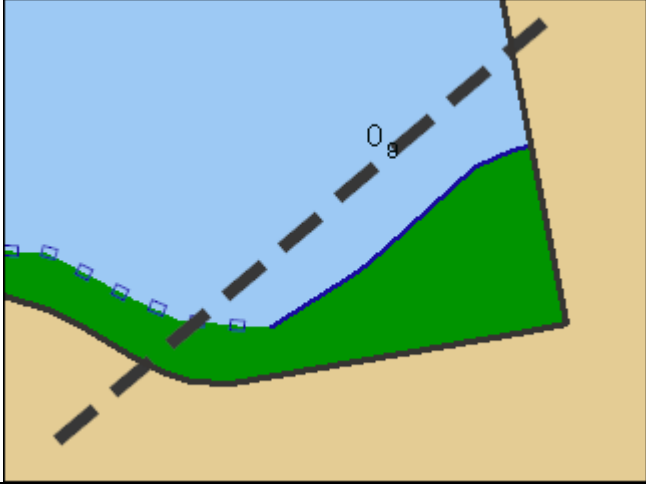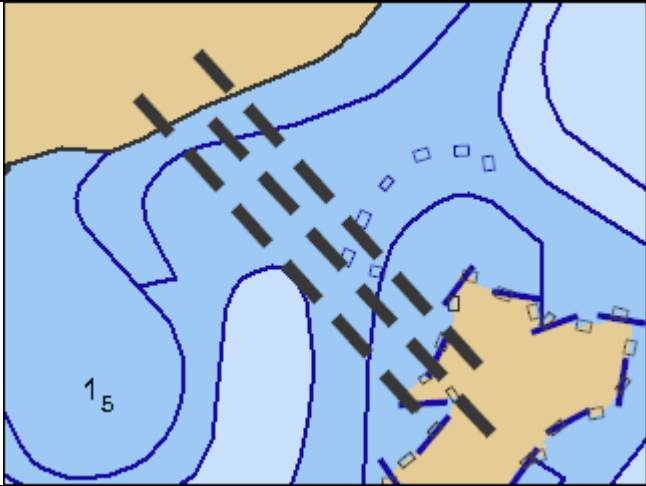## List of S58 Recommended ENC Validation Checks covered in this section:

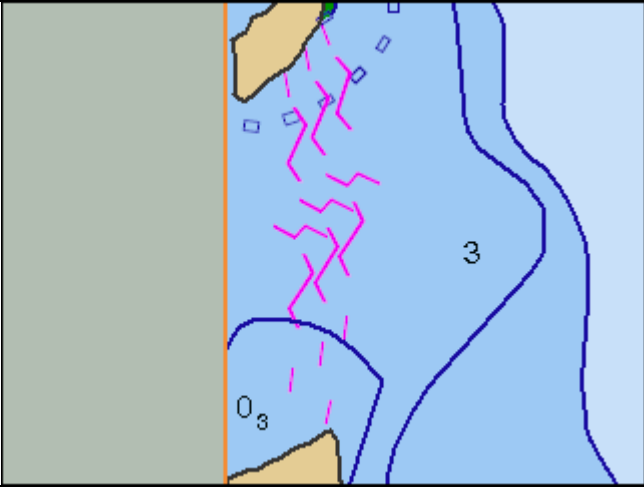| S58 Test	Description
1699	Check that no FAIRWY object contains the attribute VERDAT.
1700	Check that no TESARE object overlaps an EXEZNE object.
1701	Check that no CBLSUB object contains the attribute VERDAT.
1702	Check that no CBLSUB object that has a value of (4) [not in use] for the attribute STATUS has a value for the attribute CATCBL.
1703	Check for any CBLSUB object, if the attribute CATCBL is encoded, that the value is (1) [power line], (4) [telephone], (5) [telegraph] or (6) [mooring cable/chain].
1704	Check that no CBLOHD object contains an attribute value for VERDAT, without an attribute value for at least one of VERCLR or VERCSA.
1706	Check for any CBLOHD, CBLSUB, PIPSOL or PIPOHD object, if the attribute CONDTN is encoded, that the value is (1) [under construction] or (5) [planned construction].
1707	Check for any CBLARE object, if the attribute CATCBL is encoded, that the value is (1) [power line], (4) [telephone] or (5) [telegraph].
1708	Check that no PIPSOL object contains the attributes VERDAT and VERACC.
1709	Check that no PIPSOL object that has a value of (4) [not in use] for the attribute STATUS has a value for the attribute CATPIP.
1712	Check that no PIPOHD object that has a value of (4) [not in use] for the attribute STATUS has a value for the attributes CATPIP or PRODCT.
1713	Check that no PIPARE object contains the attribute CONDTN.
1715	Check that no OFSPLF object contains the attributes VERDAT and VERACC.
1716	Check that no OSPARE object contains the attribute VERACC.
1717	Check that no FSHFAC object contains the attribute VERACC.
1718	Check that no MARCUL object contains the attribute VERDAT.
1720	Check that no ICEARE object contains the attributes VERDAT and VERACC.
1723	Check that all point objects comprising a navigational aid are pointing to the same point spatial object.
1727	Check that no M_NSYS object with a value for MARSYS overlaps any other M_NSYS object that contains a value for MARSYS.
1728	Check that no M_NSYS object with a value for ORIENT overlaps any other M_NSYS object that contains a value for ORIENT.
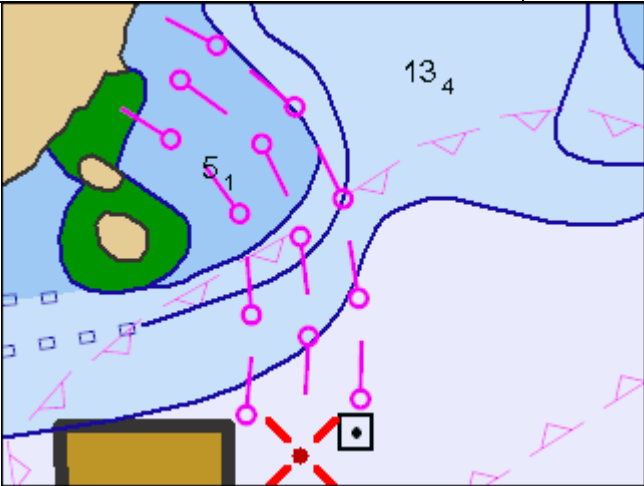
Dataset Name	AA500019		S-58 test No.	T1699	Type	E
S-58 Description	Check that no FAIRWY object contains the attribute VERDAT.					
Test Case No. 1	Captured FAIRWY (A) object with attribute VERDAT.					
Location	32°30'17.01"S 60°48'00.87"E		**S57 Encoding**	FAIRWY (A)	VERDAT=1	
Screen Capture						
Expected test results	T1699: An error "prohibited attribute 'verdat' in Fairway" must be triggered.					
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1503: additional warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created.					
Dataset Name	AA500019		**S-58 test No.**	T1700	**Type**	E
S-58 Description	Check that no TESARE object overlaps an EXEZNE object.					
Test Case No. 1	Captured TESARE (A) object overlapping with EXEZNE (A) object.					
Location	32°29'44.73"S 60°48'15.84"E		**S57 Encoding**	TESARE (A) EXEZNE (A)	
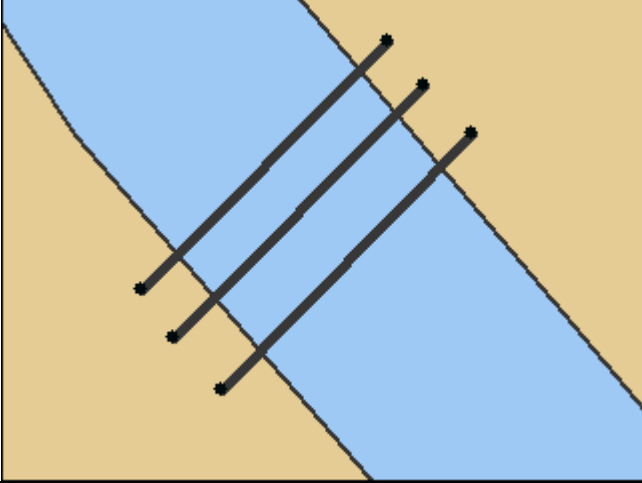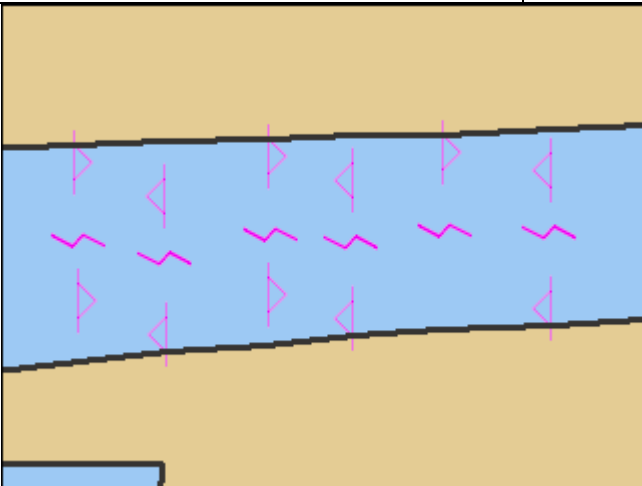
Screen Capture	
Expected test results	T1700: An error "Territorial sea area object overlaps the prohibited 'exezne'" must be triggered.
Secondary errors	None.

Dataset Name	AA500019		**S-58 test No.**	T1701	**Type**	E
S-58 Description	Check that no CBLSUB object contains the attribute VERDAT.					
Test Case No. 1	Captured CBLSUB (L) object with attribute VERDAT.					
Location	32°29'25.75"S 60°48'14.88"E		**S57 Encoding**	CBLSUB (L)	VERDAT=1	

Screen Capture	
Expected test results	T1701: An error "prohibited attribute 'verdat' in Cable, submarine" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1503: additional warning "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created.

Dataset Name	AA500019		**S-58 test No.**	T1702	**Type**	W

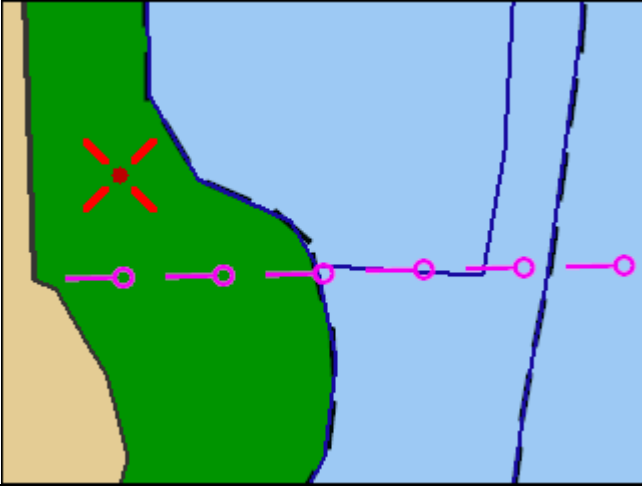| S-58 Description	Check that no CBLSUB object that has a value of (4) [not in use] for the attribute STATUS has a value for the attribute CATCBL.			
Test Case No. 1	Captured CBLSUB (L) objects with attributes CATCBL and STATUS.			
Location	32°29'35.60"S 60°48'12.99"E	**S57 Encoding**	CBLSUB (L)	CATCBL=1,3,4,5,6 STATUS=4
Screen Capture				
Expected test results	T1702: Five warnings "attribute conflict between 'status' and 'catcbl' in Cable, submarine" must be triggered			
Secondary errors	T1700: Four warnings "if the feature is a CBLSUB and the value of STATUS is 4 [disused], then it should not have the attribute CATCBL" must be triggered related to the objects created. T1703: A warning "Check for any CBLSUB object, if the attribute CATCBL is encoded, that the value is (1), (4), (5) or (6)" must be triggered related to the objects created. T2000: One error "CBLSUB should not have value 3 [transmission line] for CATCBL" must be triggered related to the feature objects created.			

Dataset Name	AA500019	**S-58 test No.**	T1703	**Type**	E
S-58 Description	Check for any CBLSUB object, if the attribute CATCBL is encoded, that the value is (1) [power line], (4) [telephone], (5) [telegraph] or (6) [mooring cable/chain].				
Test Case No. 1	Captured CBLSUB (L) object with attribute CATCBL.				
Location	32°29'43.54"S 60°46'52.21"E	**S57 Encoding**	CBLSUB (L)	CATCBL=2,3	
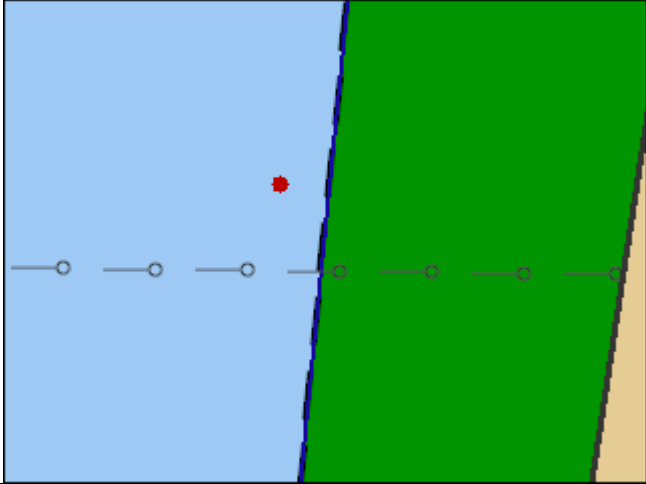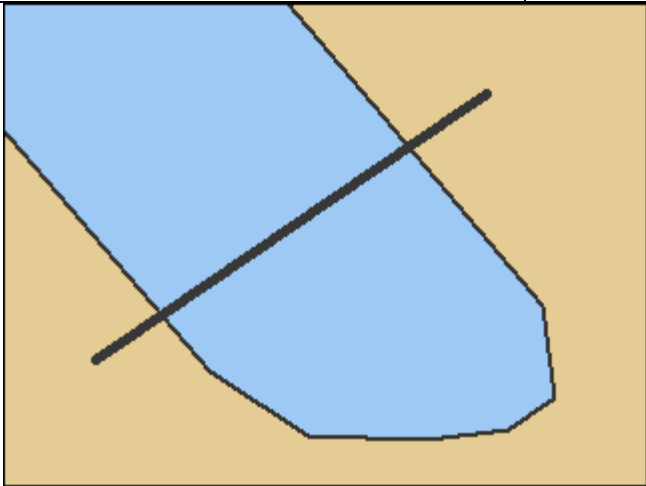
Screen Capture					
Expected test results	T1703: Two errors "meaningless value of 'catcbl' in Cable, submarine" must be triggered.				
Secondary errors	T2000: Two errors "CBLSUB should not have value 2, 3 [transmission line] for CATCBL" must be triggered related to the feature objects created.				
Dataset Name	AA500019	**S-58 test No.**	T1704	**Type**	E
S-58 Description	Check that no CBLOHD object contains an attribute value for VERDAT, without an attribute value for at least one of VERCLR or VERCSA.				
Test Case No. 1	Captured CBLOHD (L) objects with attribute VERDAT, with an attribute for at least one of VERCLR or VERCSA				
Location	32°30'32.37"S 60°47'47.98"E	**S57 Encoding**	CBLOHD (L)	VERCLR=UNKNOWN VERCSA=UNKNOWN VERDAT=1	
Screen Capture					
Expected test results	T1704: Two errors "prohibited attribute 'verdat' in Cable, overhead" must be triggered.				
Secondary errors	None.				
Test Case No. 2	Captured CBLOHD (L) object with attribute VERDAT, without an attribute value VERCLR and VERCSA.				
Location	32°30'05.51"S 60°48'57.98"E	**S57 Encoding**	CBLOHD (L)	VERDAT=1	
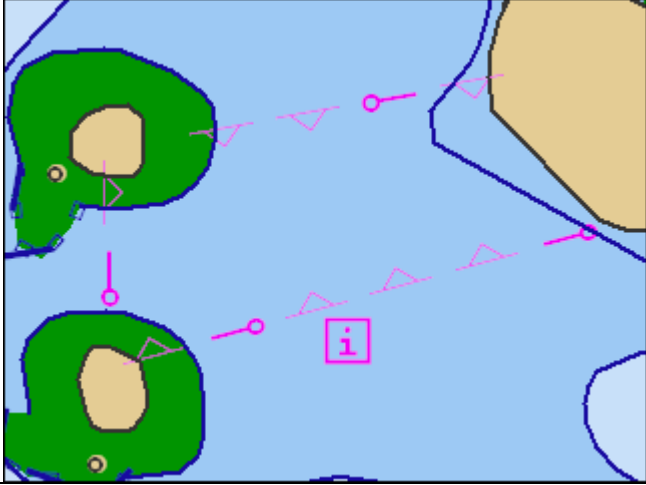
Screen Capture	
Expected test results	T1704: An error "prohibited attribute 'verdat' in Cable, overhead" must be triggered.
Secondary errors	T0507: Three errors "mandatory 'vercsa' and 'verclr' not found in Cable, overhead" must be triggered related to the objects created. T1503: Three additional warnings "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created.

Dataset Name	AA500019		**S-58 test No.**	T1706	**Type**	E

S-58 Description	Check for any CBLOHD, CBLSUB, PIPSOL or PIPOHD object, if the attribute CONDTN is encoded, that the value is (1) [under construction] or (5) [planned construction].
Test Case No. 1	Captured CBLOHD (L) object with attribute CONDTN.

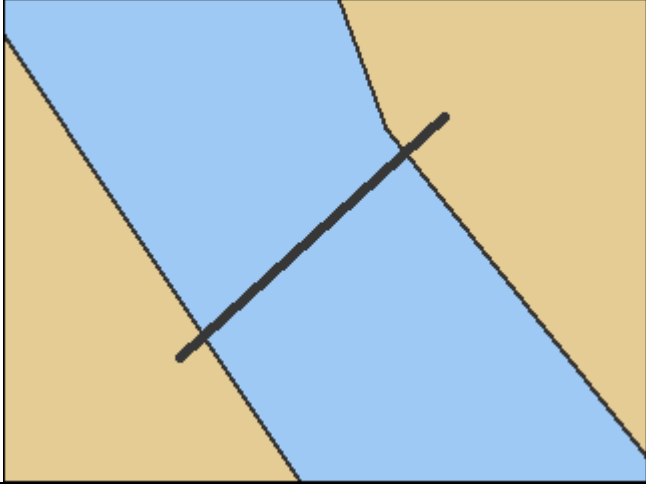| **Location**	32°29'59.32"S 60°46'39.64"E	**S57 Encoding**	CBLOHD (L)	CONDTN=2,3,4

Screen Capture	
Expected test results	T1706: Three errors "meaningless value of 'condtn' in Cable, overhead" must be triggered.
Secondary errors	T1785: A warning "Check that only LNDMRK objects having CATLMK = 18[windmill] or 19[windmotor], have been encoded with CONDTN = 4 [wingless]" must be triggered related to the objects created. T2000 : Three errors "CBLOHD should not have value 2,3,4 [under reclamation] for CONDTN"
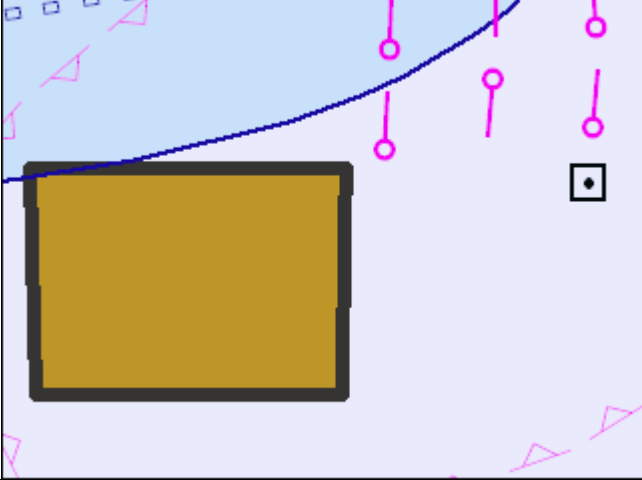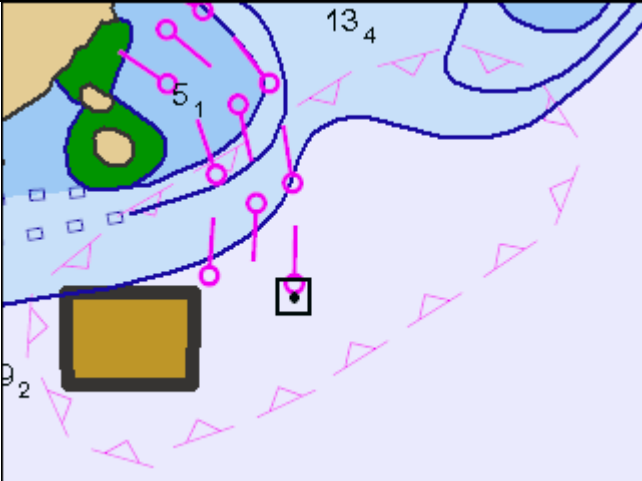
	must be triggered related to the objects created.			
Test Case No. 2	Captured CBLSUB (L) object with attribute CONDTN.			
Location	32°29'40.62"S 60°46'30.09"E	**S57 Encoding**	CBLSUB (L)	CONDTN=2,3,4
Screen Capture				
Expected test results	T1706: Three errors "meaningless value of 'condtn' in Cable, submarine" must be triggered.			
Secondary errors	T1785: A warning "Check that only LNDMRK objects having CATLMK = 18[windmill] or 19[windmotor], have been encoded with CONDTN = 4 [wingless]" must be triggered related to the feature objects created. T2000 : Three errors "CBLSUB should not have value 2,3,4 [under reclamation] for CONDTN" must be triggered related to the feature objects created.			
Test Case No. 3	Captured PIPSOL (P, L) object with attribute CONDTN.			
Location	32°30'06.31"S 60°46'32.58"E	**S57 Encoding**	PIPSOL (P,L)	CONDTN=2,3,4
Screen Capture				
Expected test results	T1706: 6 errors "meaningless value of 'condtn' in Pipeline, submarine/on land" must be triggered.			
Secondary errors	T1785: A warning "Check that only LNDMRK objects having CATLMK = 18[windmill] or 19[windmotor], have been encoded with CONDTN = 4 [wingless]" must be triggered related to the feature objects created. T1797: Three warnings "PIPSOL the object pipsol cannot be displayed in ECDIS" must be triggered related to the features objects created.			

	T2000 : 6 Errors "PIPSOL should not have value 2,3,4 [under reclamation] for CONDTN" must be triggered related to the feature objects created.				
Test Case No. 4	Captured PIPOHD (L) object with attribute CONDTN.				
Location	32°30'34.04"S 60°48'10.24"E	**S57 Encoding**	PIPOHD (L)	CONDTN=2,3,4	
Screen Capture					
Expected test results	T1706: Three errors "meaningless value of 'condtn' in Pipeline, overhead" must be triggered.				
Secondary errors	T2000: Three errors "PIPOHD should not have value 2, 3, 4 [ruined] for CONDTN" must be triggered related to the features objects created.				

Dataset Name	AA500019	**S-58 test No.**	T1707	**Type**	E
S-58 Description	Check for any CBLARE object, if the attribute CATCBL is encoded, that the value is (1) [power line], (4) [telephone] or (5) [telegraph].				
Test Case No. 1	Captured CBLARE (A) objects with attribute CATCBL.				
Location	32°29'33.14"S 60°49'01.88"E	**S57 Encoding**	CBLARE (A)	CATCBL=2,3,6	
Screen Capture					
Expected test results	T1707: Three errors "meaningless value of 'catcbl' in Cable area" must be triggered.				
Secondary errors	T2000: Three errors "CBLARE should not have value 2,3,6 [unknown value 2,3,6] for CATCBL" must be triggered related to the feature objects created.				
Dataset Name	AA500019	**S-58 test No.**	T1708	**Type**	E

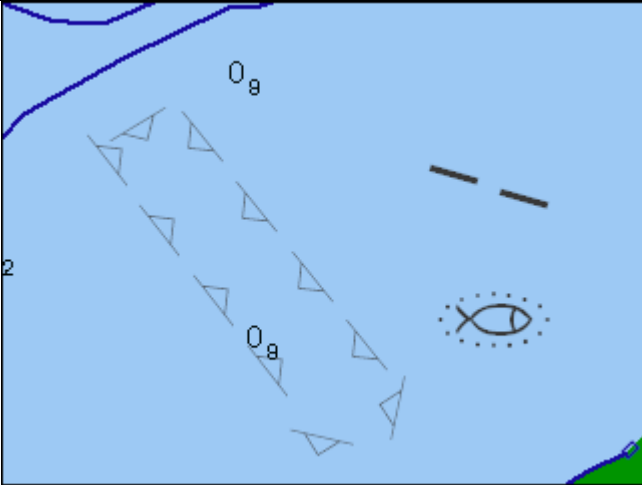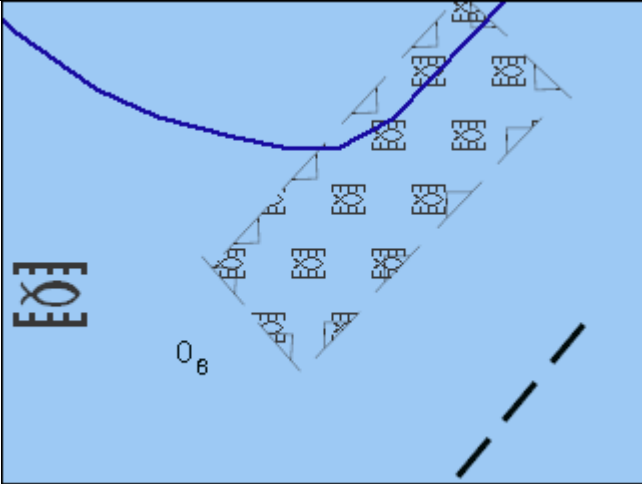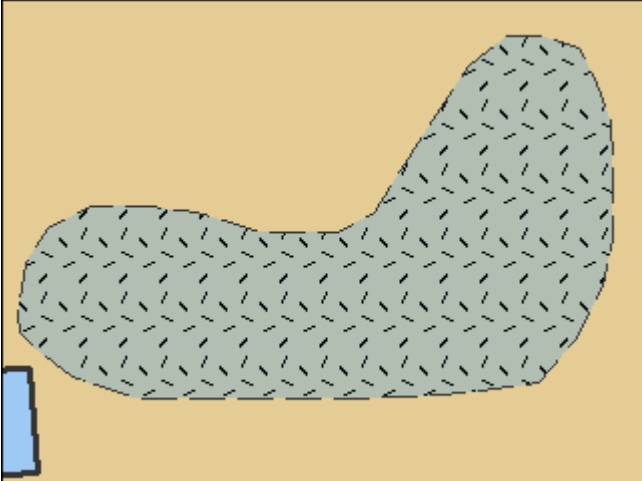| S-58 Description	Check that no PIPSOL object contains the attributes VERDAT and VERACC.			
Test Case No. 1	Captured PIPSOL (P, L) objects with attributes VERDAT and VERACC			
Location	32°29'45.06"S 60°48'21.85"E	**S57 Encoding**	PIPSOL (P,L)	VERDAT=1 VERACC=1
Screen Capture				
Expected test results	T1708: Two errors "prohibited attribute 'veracc' in Pipeline, submarine" must be triggered. T1708: Two errors "prohibited attribute 'verdat' in Pipeline, submarine" must be triggered.			
Secondary errors	T1797: A warning "PIPSOL the object pipsol cannot be displayed in ECDIS" must be triggered related to the features objects created. T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1503: Two additional warnings "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered related to the feature objects created.			

Dataset Name	AA500019	**S-58 test No.**	T1709	**Type**	W
S-58 Description	Check that no PIPSOL object that has a value of (4) [not in use] for the attribute STATUS has a value for the attribute CATPIP.				
Test Case No. 1	Captured PIPSOL (P, L) object with attributes STATUS and CATPIP.				
Location	32°29'30.60"S 60°48'14.84"E	**S57 Encoding**	PIPSOL (P,L)	CATPIP=4 STATUS=4	
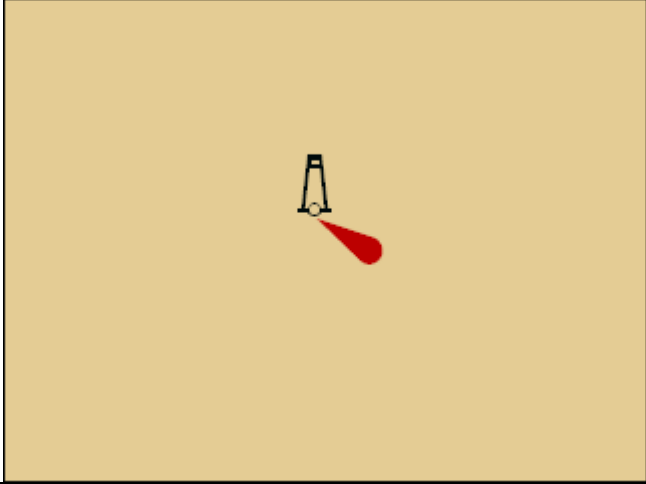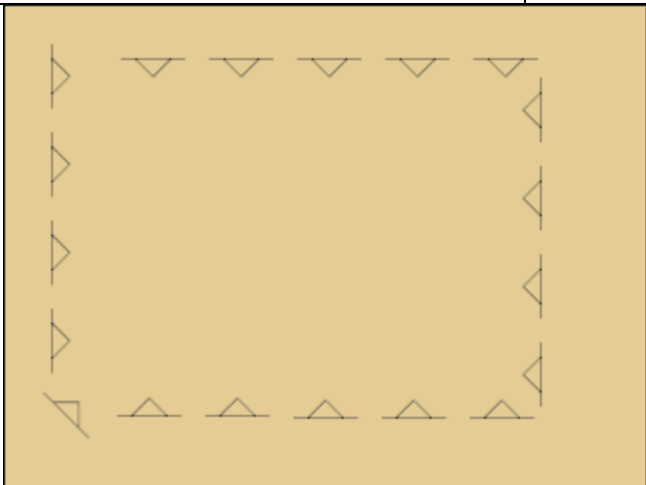
Screen Capture				
Expected test results	T1709: Two warnings "attribute conflict between 'status' and 'catpip' in Pipeline, submarine" must be triggered.			
Secondary errors	T1797: A warning "PIPSOL the object pipsol cannot be displayed in ECDIS" must be triggered related to the features objects created.			
Dataset Name	AA500019	**S-58 test No.**	T1712	**Type**	W
S-58 Description	Check that no PIPOHD object that has a value of (4) [not in use] for the attribute STATUS has a value for the attributes CATPIP or PRODCT.			
Test Case No. 1	Captured PIPOHD (L) objects with attributes CATPIP and STATUS			
Location	32°30'38.34"S 60°48'14.79"E	**S57 Encoding**	PIPOHD (L)	CATPIP=4 STATUS=4
Screen Capture				
Expected test results	T1712: A warning "attribute conflict between 'status' and 'catpip' in Pipeline, overhead" must be triggered.			
Secondary errors	None.			
Test Case No. 2	Captured PIPOHD (L) objects with attributes PRODCT and STATUS			
Location	32°30'29.72"S 60°48'06.96"E	**S57 Encoding**	PIPOHD (L)	PRODCT=3 STATUS=4
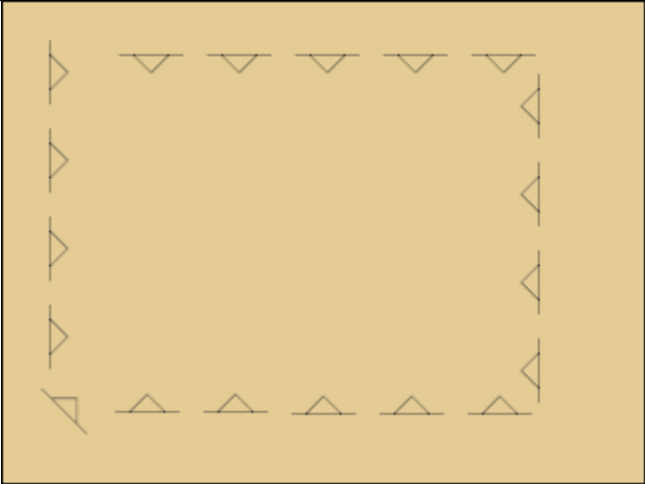
Screen Capture					
Expected test results	T1712: A warning "attribute conflict between 'status' and 'prodct' in Pipeline, overhead" must be triggered.				
Secondary errors	None.				
Dataset Name	AA500019	**S-58 test No.**	T1713	**Type**	E
S-58 Description	Check that no PIPARE object contains the attribute CONDTN				
Test Case No. 1	Captured PIPARE (P, A) objects with attribute CONDTN				
Location	32°29'50.26"S 60°46'44.51"E	**S57 Encoding**	PIPARE (P,A)	CONDTN=1	
Screen Capture					
Expected test results	T1713: Two errors "prohibited attribute 'condtn' in Pipeline area" must be triggered.				
Secondary errors	T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.				
Dataset Name	AA500019	**S-58 test No.**	T1715	**Type**	E
S-58 Description	Check that no OFSPLF object contains the attributes VERDAT and VERACC.				
Test Case No. 1	Captured OFSPLF (P, A) objects with attributes VERDAT and VERACC				

Location	32°30'08.68"S 60°46'32.41"E		**S57 Encoding**	OFSPLF (P,A)	VERDAT=1 VERACC=1

Screen Capture	

Expected test results	T1715: Two errors "prohibited attribute 'veracc' in Offshore platform" must be triggered. T1715: Two errors "prohibited attribute 'verdat' in Offshore platform" must be triggered.
Secondary errors	T547: Two errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500019	**S-58 test No.**	T1716	**Type**	E
S-58 Description	Check that no OSPARE object contains the attribute VERACC				
Test Case No. 1	Captured OSPARE (A) object with attribute VERACC.				
Location	32°30'08.63"S 60°46'32.91"E	**S57 Encoding**	OSPARE (A)	VERACC=1	

Screen Capture	

Expected test results	T1716: An error "prohibited attribute 'veracc' in Offshore production area" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

Dataset Name	AA500019	**S-58 test No.**	T1717	**Type**	E
S-58 Description	Check that no FSHFAC object contains the attribute VERACC				

Test Case No. 1	Captured FSHFAC (P, L, A) object with attribute VERACC.			
Location	32°30'03.93"S 60°48'46.21"E	**S57 Encoding**	FSHFAC (P, L, A)	VERACC=1
Screen Capture				
Expected test results	T1717: Three errors "prohibited attribute 'veracc' in Fishing facility" must be triggered.			
Secondary errors	T547: Three errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.			

Dataset Name	AA500019		**S-58 test No.**	T1718	**Type**	E
S-58 Description	Check that no MARCUL object contains the attribute VERDAT				
Test Case No. 1	Captured MARCUL (P, L, A) object with attribute VERDAT.				
Location	32°30'07.78"S 60°48'36.11"E		**S57 Encoding**	MARCUL (P, L, A)	VERDAT=1
Screen Capture					
Expected test results	T1718: Three errors "prohibited attribute 'verdat' in Marine farm/culture" must be triggered.				
Secondary errors	T547: Three errors "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1503: Three additional warnings "Check that no object has an attribute value for VERDAT without a value for at least one of ELEVAT, HEIGHT, VERCCL, VERCLR, VERCOP or VERCSA. Exceptions are M_VDAT and M_SDAT objects (subject to their own QA tests)" must be triggered				

	related to the feature objects created.				

Dataset Name	AA500019	**S-58 test No.**	T1720	**Type**	E
S-58 Description	Check that no ICEARE object contains the attributes VERDAT and VERACC.				
Test Case No. 1	Captured ICEARE (A) object with attributes VERDAT and VERACC.				
Location	32°29'30.41"S 60°49'14.14"E	**S57 Encoding**	ICEARE (A)	VERDAT=1 VERACC=1	

Screen Capture	
Expected test results	T1720: An error "prohibited attribute 'veracc' in Ice area" must be triggered. T1720: An error "prohibited attribute 'verdat' in Ice area" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

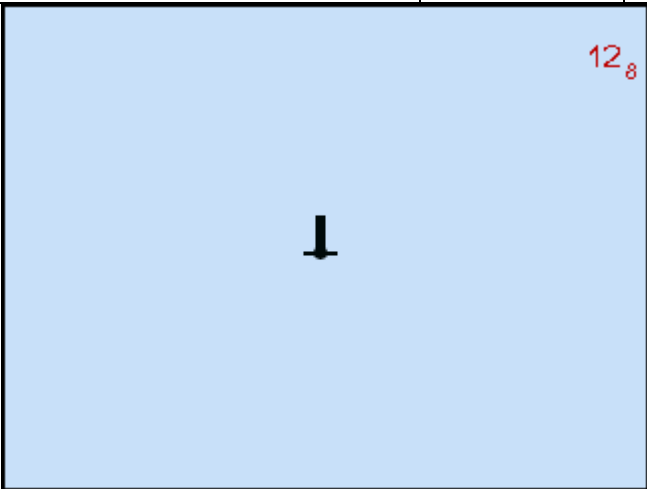|					
Dataset Name	AA500019	**S-58 test No.**	T1723	**Type**	E
S-58 Description	Check that all point objects comprising a navigational aid are pointing to the same point spatial object.				
Test Case No. 1	Captured LNDMRK(P) and LIGHTS (P) objects and created master/slave relationship between these two objects, having the different point spatial object.				
Location	32°30'48.69"S 60°47'54.53"E	**S57 Encoding**	LNDMRK (P) LIGHTS (P)		

Screen Capture	
Expected test results	T1723: An error "master and its slave do not share geometry" must be triggered.
Secondary errors	T0516: A warning "If the master object is of type point, check that the slave object is sharing the same node as the master object" must be triggered related to the objects created.

Dataset Name	AA500019	**S-58 test No.**	T1727	**Type**	E

S-58 Description	Check that no M_NSYS object with a value for MARSYS overlaps any other M_NSYS object that contains a value for MARSYS.			
Test Case No. 1	Captured M_NSYS (A) object overlapping with other M_NSYS object.			
Location	32°31'05.86"S 60°46'55.12"E	**S57 Encoding**	M_NSYS (A)	MARSYS=1,2
Screen Capture				
Expected test results	T1727: Two errors "M_NSYS is overlapped by previous M_NSYS" must be triggered.			
Secondary errors	T1726: An error "edge is open border of 'm_nsys' coverage"			

Dataset Name	AA500019	**S-58 test No.**	T1728	**Type**	E

S-58 Description	Check that no M_NSYS object with a value for ORIENT overlaps any other M_NSYS object that contains a value for ORIENT.			
Test Case No. 1	Captured M_NSYS (A) object with attribute ORIENT overlapping with other M_NSYS object that contains a value with ORIENT.			
Location	32°31'05.86"S 60°46'55.12"E	**S57 Encoding**	M_NSYS	MARSYS=1,2
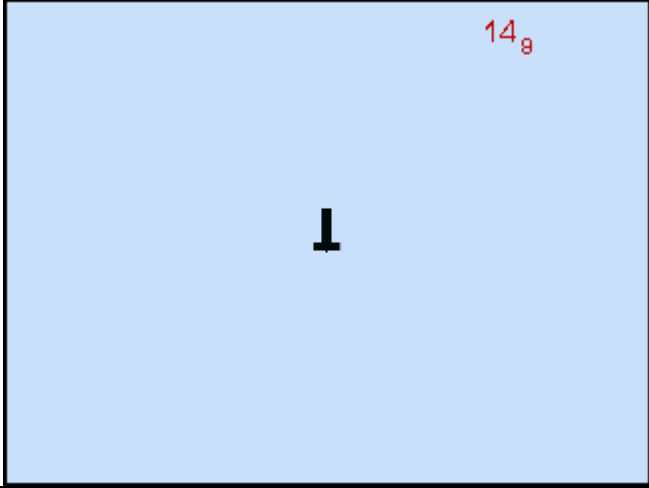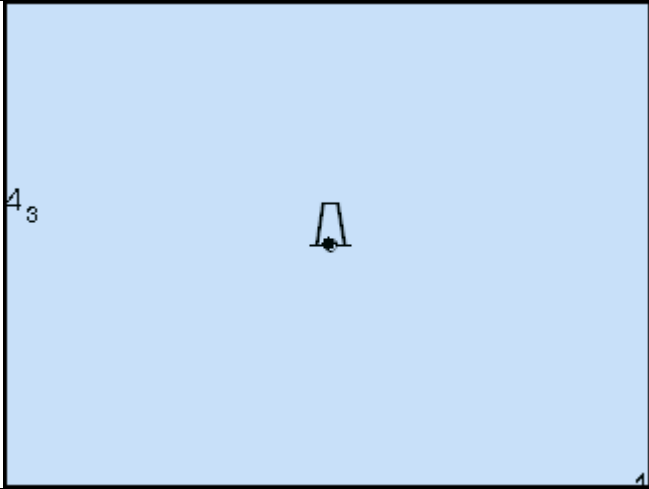
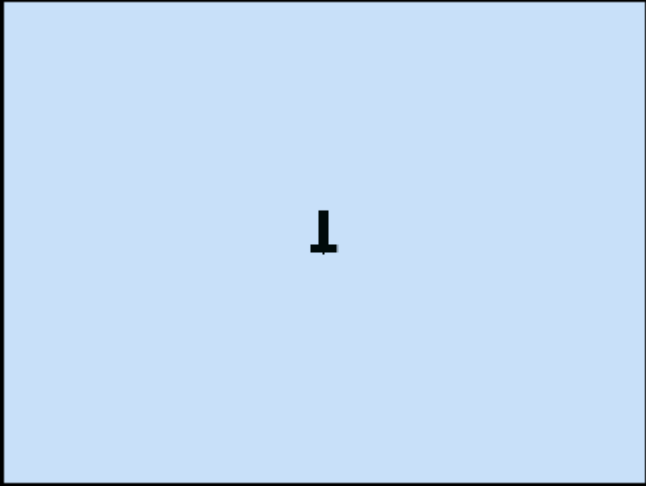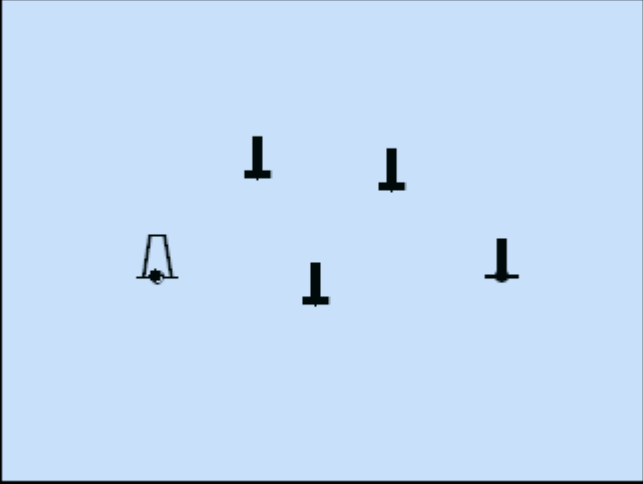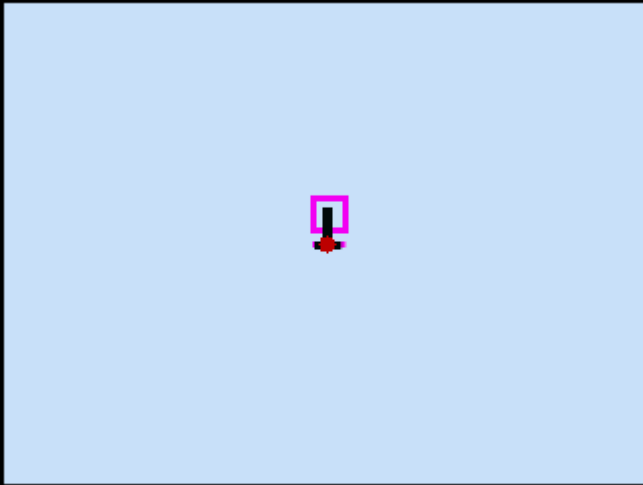|		(A)	ORIENT=60
Screen Capture			
Expected test results	T1728:Two errors "object with ORIENT is overlapped by next M_NSYS" must be triggered.		
Secondary errors	None.		

Test Dataset:AA500020

List of S58 Recommended ENC Validation Checks covered in this section:

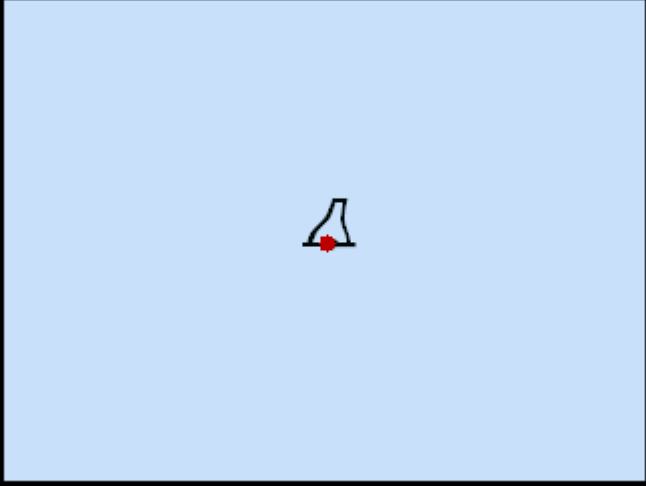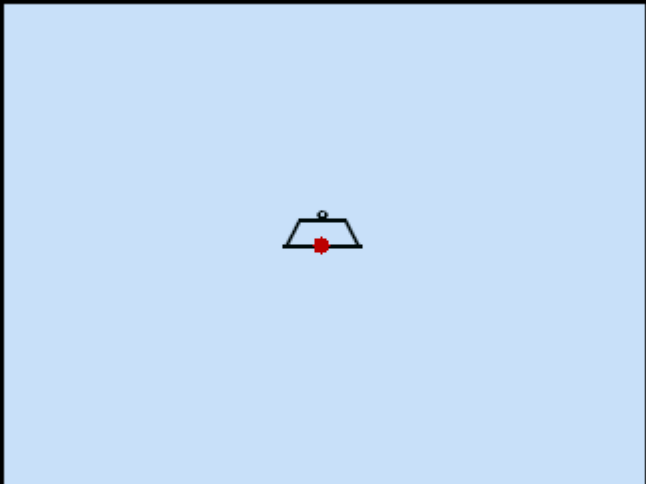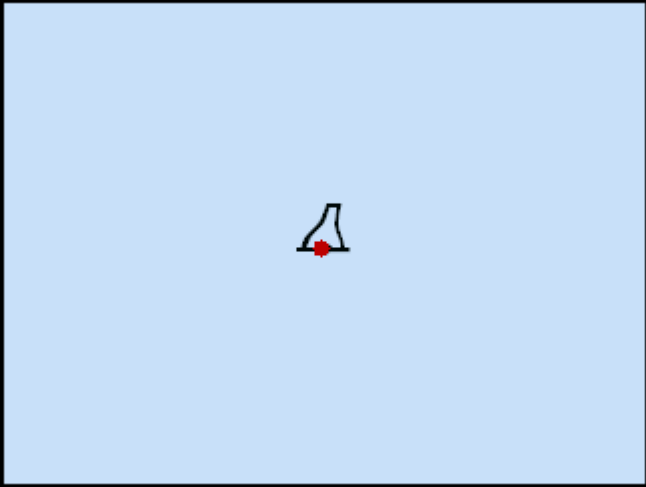| S58 Test	Description
1730	Check that no BCNCAR object contains the attributes VERDAT and VERACC.
1731	Check that no BCNISD object contains the attributes VERDAT and VERACC.
1733	Check that no BCNSAW object contains the attributes VERDAT and VERACC.
1734	Check that no BCNSPP object contains the attributes VERDAT and VERACC.
1735	Check that no Beacon object contains a value for the attribute MARSYS that is identical to the value for MARSYS within the object M_NSYS that covers the Beacon object.
1736	Check that no DAYMAR object contains the attributes VERDAT and VERACC.
1737	Check that no BOYCAR object contains the attribute VERACC.
1738	Check that no BOYINB object contains the attribute VERACC.
1739	Check that no BOYISD object contains the attribute VERACC.
1740	Check that no BOYLAT object contains the attribute VERACC.
1741	Check that no BOYSPP object contains the attribute VERACC.
1742	Check that no BOYSAW object contains the attribute VERACC.
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.
1744	Check that no LITVES object contains the attributes HORACC and VERACC.
1745	Check that no LITFLT object contains the attributes HORACC and VERACC.
1746	Check that no TOPMAR object contains the attributes VERACC, VERDAT, VERLEN, HEIGHT and MARSYS.
1747	Check that no RETRFL object contains the attributes VERACC and MARSYS.
1748	Check that no RETRFL object contains the attribute VERDAT.
1749	Check that no LIGHTS object contains the attribute VERACC.
1750	Check that no LIGHTS object that is a slave to a buoy object, has a value for the attribute HEIGHT.

Dataset Name	AA500020		S-58 test No.	T1730		Type	E
S-58 Description	Check that no BCNCAR object contains the attributes VERDAT and VERACC.						
Test Case No. 1	BCNCAR object captured with attributes VERDAT and VERACC.						
Location	32°30'31.87"S 60°51'11.79"E		**S57 Encoding**	BCNCAR(P)		VERDAT=3 VERACC=3 HEIGHT=1.0	
Screen Capture							
Expected test results	T1730: An error "prohibited attribute 'verdat' in Beacon, cardinal" must be triggered. T1730: An error "prohibited attribute 'veracc' in Beacon, cardinal" must be triggered.						
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.						

Dataset Name	AA500020		S-58 test No.	T1731		Type	E
S-58 Description	Check that no BCNISD object contains the attributes VERDAT and VERACC.						
Test Case No. 1	BCNISD object captured with attributes VERDAT and VERACC.						
Location	32°30'33.85"S 60°51'34.53"E		**S57 Encoding**	BCNISD(P)		VERDAT=3 VERACC=3 HEIGHT=1.0	

Screen Capture	
Expected test results	T1731: An error "prohibited attribute 'verdat' in Beacon, isolated danger" must be triggered. T1731: An error "prohibited attribute 'veracc' in Beacon, isolated danger" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

Dataset Name	AA500020	S-58 test No.	T1733	Type	E

S-58 Description	Check that no BCNSAW object contains the attributes VERDAT and VERACC.
Test Case No. 1	BCNSAW object captured with attributes VERDAT and VERACC.

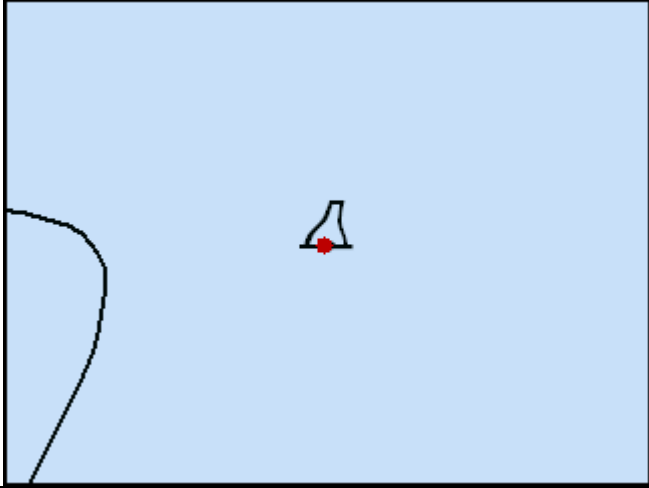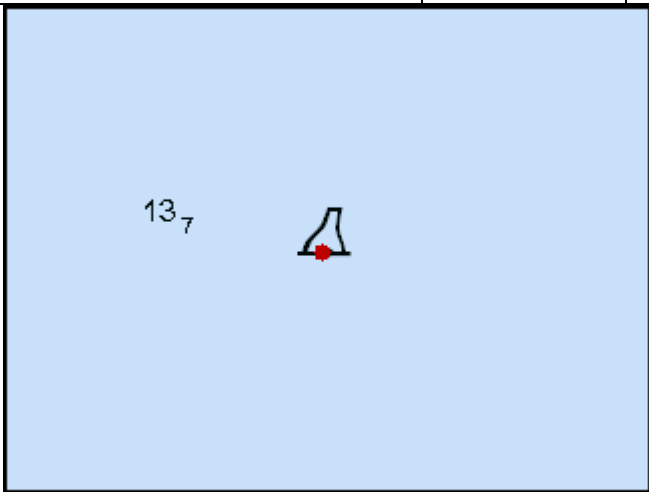| **Location**	32°30'38.89"S 60°51'21.50"E	**S57 Encoding**	BCNSAW(P)	VERDAT=3 VERACC=3 HEIGHT=1.0

Screen Capture	
Expected test results	T1733: An error "prohibited attribute 'verdat' in Beacon, safe water" must be triggered. T1733: An error "prohibited attribute 'veracc' in Beacon, safe water" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.

	T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.				

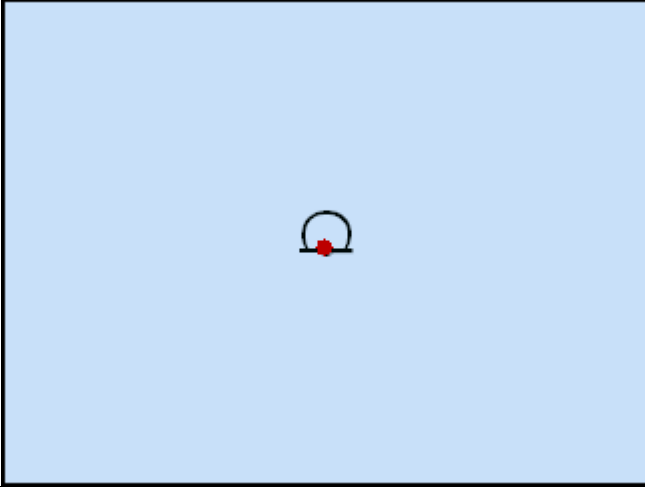| **Dataset Name**	AA500020	**S-58 test No.**	T1734	**Type**	E
S-58 Description	Check that no BCNSPP object contains the attributes VERDAT and VERACC.				
Test Case No. 1	BCNSPP object captured with attributes VERDAT and VERACC.				
Location	32°30'46.65"S 60°50'57.37"E	**S57 Encoding**	BCNSPP(P)	VERDAT=3 VERACC=3 HEIGHT=1.0	
Screen Capture					
Expected test results	T1734: An error "prohibited attribute 'verdat' in Beacon, special purpose/general" must be triggered. T1734: An error "prohibited attribute 'veracc' in Beacon, special purpose/general" must be triggered.				
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.				

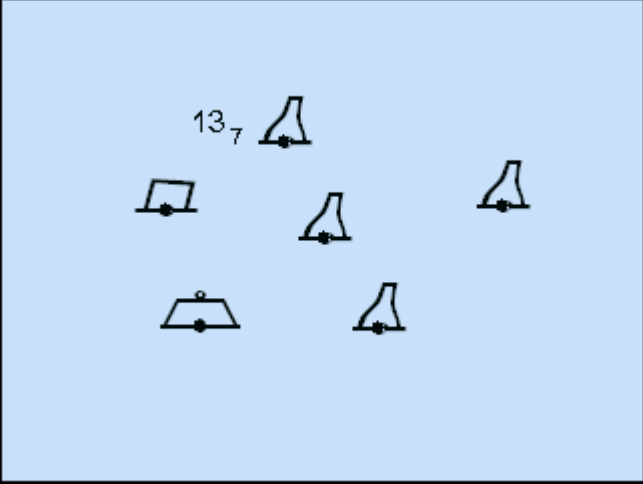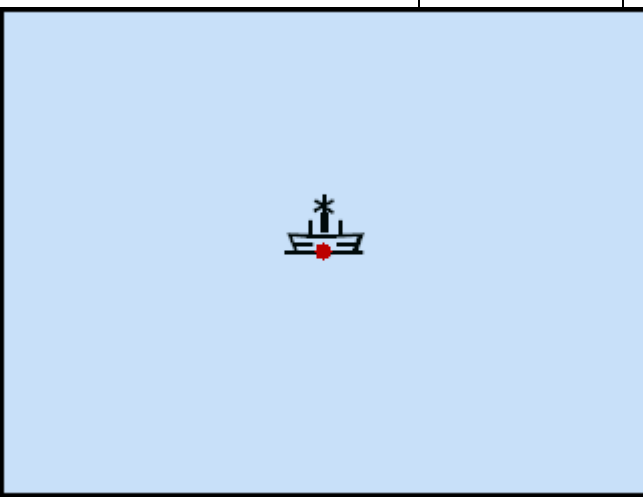| **Dataset Name**	AA500020	**S-58 test No.**	T1735	**Type**	E
S-58 Description	Check that no Beacon object contains a value for the attribute MARSYS that is identical to the value for MARSYS within the object M_NSYS that covers the Beacon object.				
Test Case No. 1	BCNCAR object captured with attribute MARSYS.				
Location	32°30'54.77"S 60°51'15.06"E	**S57 Encoding**	BCNCAR(P) BCNISD(P) BCNLAT(P) BCNSPP(P) BCNSAW(P) M_NSYS(A)	MARSYS=2	

Screen Capture	

Expected test results	T1735:Five errors "redundant 'marsys' is defined by 'm_nsys' Beacon, cardinal" must be triggered.
Secondary errors	T0513: Five errors "The feature's value for the attribute MARSYS must not be equal to that of the M_NSYS covering the feature" must be triggered related to the features objects created.

Dataset Name	AA500020		S-58 test No.	T1736		Type	E
S-58 Description	Check that no DAYMAR object contains the attributes VERDAT and VERACC.						
Test Case No. 1	DAYMAR object captured with attributes VERDAT and VERACC.						
Location	32°30'54.71"S 60°51'42.41"E		**S57 Encoding**	DAYMAR(P)		VERDAT=3 VERACC=3 HEIGHT=1.0	
Screen Capture							

Expected test results	T1736: An error "prohibited attribute 'verdat' in Daymark" must be triggered. T1736: An error "prohibited attribute 'veracc' in Daymark" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

Dataset Name	AA500020	S-58 test No.	T1737	Type	E

S-58 Description	Check that no BOYCAR object contains the attribute VERACC.

Test Case No. 1	BOYCAR object captured with attribute VERACC.

Location	32°30'32.06"S 60°51'55.42"E	S57 Encoding	BOYCAR(P)	VERACC=1

Screen Capture	

Expected test results	T1737: An error "prohibited attribute 'veracc' in Buoy, cardinal" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

Dataset Name	AA500020	S-58 test No.	T1738	Type	E

S-58 Description	Check that no BOYINB object contains the attribute VERACC.

Test Case No. 1	BOYINB object captured with attribute VERACC.

Location	32°31'01.67"S 60°50'47.93"E	S57 Encoding	BOYINB(P)	VERACC=1

Screen Capture	

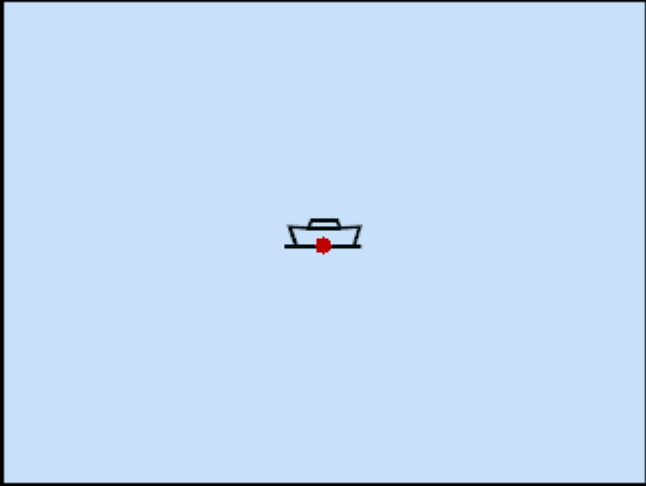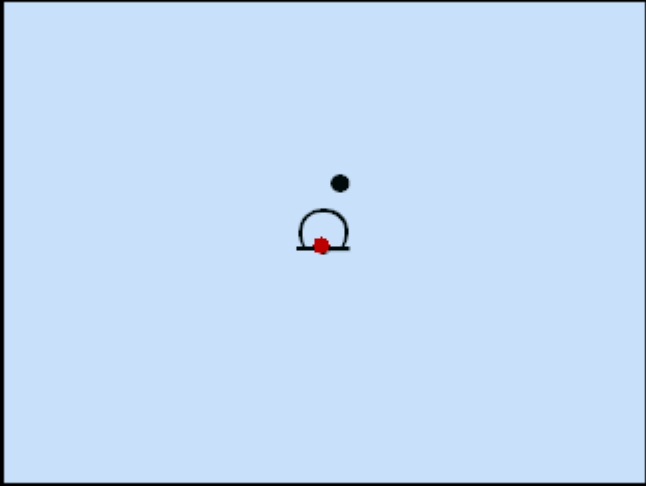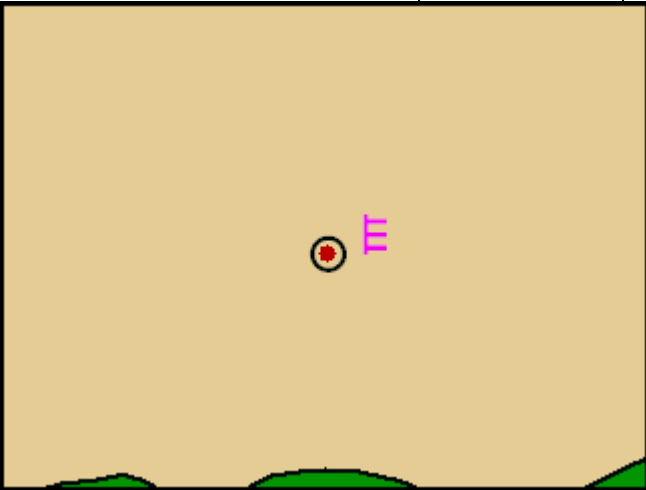| Expected test results	T1738: An error "prohibited attribute 'veracc' in Buoy, installation" must be triggered.				
Secondary errors	T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.				
Dataset Name	AA500020	**S-58 test No.**	T1739	**Type**	E
S-58 Description	Check that no BOYISD object contains the attribute VERACC.				
Test Case No. 1	BOYISD object captured with attribute VERACC.				
Location	32°30'16.86"S 60°51'42.40"E	**S57 Encoding**	BOYISD(P)	VERACC=1	
Screen Capture					
Expected test results	T1739: An error "prohibited attribute 'veracc' in Buoy, isolated danger" must be triggered.				
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.				
Dataset Name	AA500020	**S-58 test No.**	T1740	**Type**	E
S-58 Description	Check that no BOYLAT object contains the attribute VERACC.				
Test Case No. 1	BOYLAT object captured with attribute VERACC.				
Location	32°29'58.39"S 60°52'08.03"E	**S57 Encoding**	BOYLAT(P)	VERACC=1	

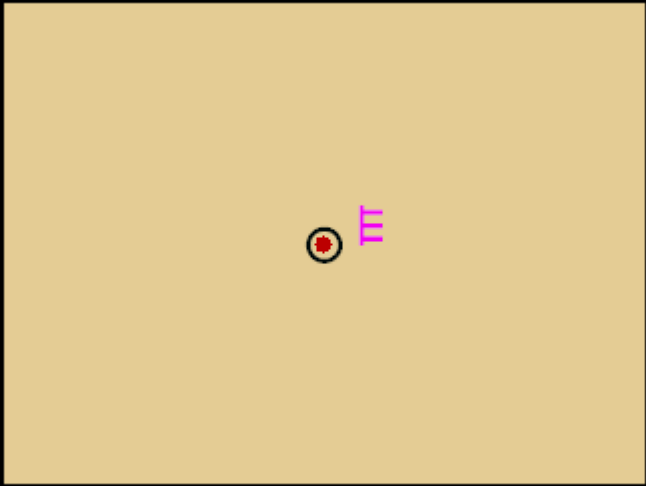|	
Screen Capture	
Expected test results	T1740: An error "prohibited attribute 'veracc' in Buoy, lateral" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

Dataset Name	AA500020	**S-58 test No.**	T1741	**Type**	E
S-58 Description	Check that no BOYSPP object contains the attribute VERACC.				
Test Case No. 1	BOYSPP object captured with attribute VERACC.				
Location	32°30'41.74"S 60°50'38.45"E	**S57 Encoding**	BOYSPP(P)	VERACC=1	

Screen Capture	
Expected test results	T1741: An error "prohibited attribute 'veracc' in Buoy, special purpose" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

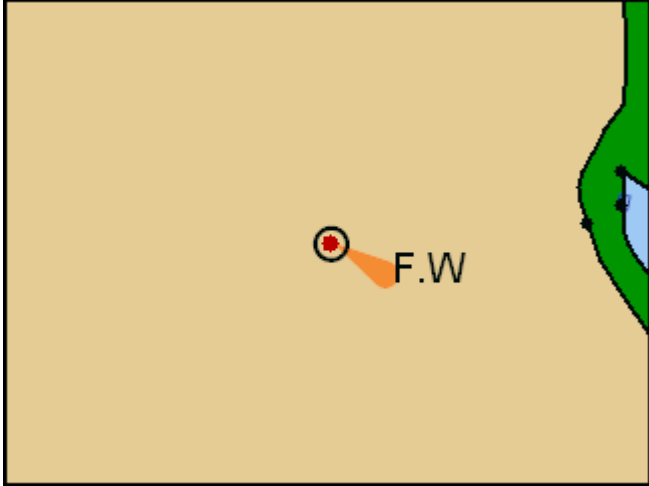| Dataset Name	AA500020		S-58 test No.	T1742		Type	E
S-58 Description	Check that no BOYSAW object contains the attribute VERACC.						
Test Case No. 1	BOYSAW object captured with attribute VERACC.						
Location	32°30'03.46"S 60°50'40.99"E		**S57 Encoding**	BOYSAW(P)		VERACC=1	
Screen Capture							
Expected test results	T1742: An error "prohibited attribute 'veracc' in Buoy, safe water" must be triggered.						
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.						

Dataset Name	AA500020		S-58 test No.	T1743		Type	E
S-58 Description	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.						
Test Case No. 1	BOYLAT object captured with attribute MARSYS.						
Location	32°30'48.95"S 60°50'36.98"E		**S57 Encoding**	BOYLAT(P) BOYCAR(P) BOYINB(P) BOYISD(P) BOYSAW(P) BOYSPP(P) M_NSYS(A)		MARSYS=2	

Screen Capture	
Expected test results	T1743: 6 errors "redundant 'marsys' is defined by 'm_nsys' Buoy, lateral" must be triggered.
Secondary errors	T0513: 6 errors "The feature's value for the attribute MARSYS must not be equal to that of the M_NSYS covering the feature" must be triggered.

Dataset Name	AA500020	**S-58 test No.**	T1744	**Type**	E
S-58 Description	Check that no LITVES object contains the attributes HORACC and VERACC.				
Test Case No. 1	LITVES object captured with attributes HORACC and VERACC.				
Location	32°31'05.30"S 60°52'01.14"E	**S57 Encoding**	LITVES(P)	VERACC=1 HORACC=1	

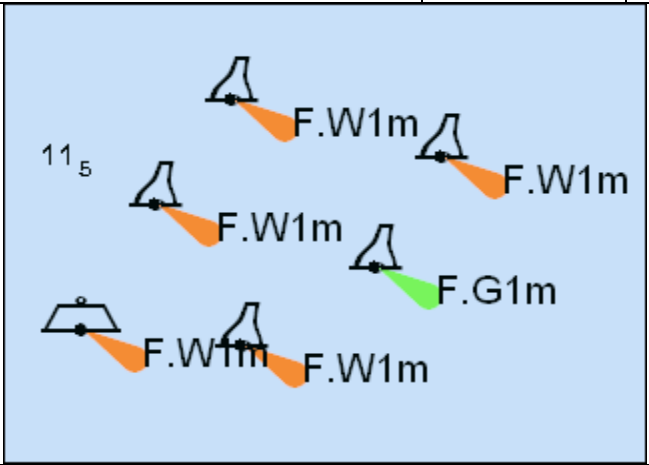| Screen Capture	
Expected test results	T1744: An error "prohibited attribute 'horacc' in Light vessel" must be triggered. T1744: An error "prohibited attribute 'veracc' in Light vessel" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1545: An error "Check that no object has an attribute value for HORACC without an attribute value for HORCLR" must be triggered related to the features objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

Dataset Name	AA500020		S-58 test No.	T1745		Type	E

S-58 Description	Check that no LITFLT object contains the attributes HORACC and VERACC.

Test Case No. 1	LITFLT object captured with attributes HORACC and VERACC.

Location	32°30'53.67"S 60°51'57.88"E	**S57 Encoding**	LITFLT(P)	VERACC=1 HORACC=1

Screen Capture	

Expected test results	T1745: An error "prohibited attribute 'horacc' in Light float" must be triggered. T1745: An error "prohibited attribute 'veracc' in Light float" must be triggered.

Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1545: An error "Check that no object has an attribute value for HORACC without an attribute value for HORCLR" must be triggered related to the features objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

Dataset Name	AA500020		S-58 test No.	T1746		Type	E

S-58 Description	Check that no TOPMAR object contains the attributes VERACC, VERDAT, VERLEN, HEIGHT and MARSYS.

Test Case No. 1	BOYSAW, TOPMAR captured with attributes VERACC, VERDAT, VERLEN, HEIGHT and MARSYS.

Location	32°30'01.66"S 60°50'53.07"E	**S57 Encoding**	BOYSAW(P) TOPMAR(P)	VERACC=1 VERLEN=2 VERDAT=3 HEIGHT=1 MARSYS=1

Screen Capture	
Expected test results	T1746: An error "prohibited attribute 'verlen' in Top mark" must be triggered. T1746: An error "prohibited attribute 'veracc' in Top mark" must be triggered. T1746: An error "prohibited attribute 'verdat' in Top mark" must be triggered. T1746: An error "prohibited attribute 'height' in Top mark" must be triggered. T1746: An error "prohibited attribute 'marsys' in Top mark" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

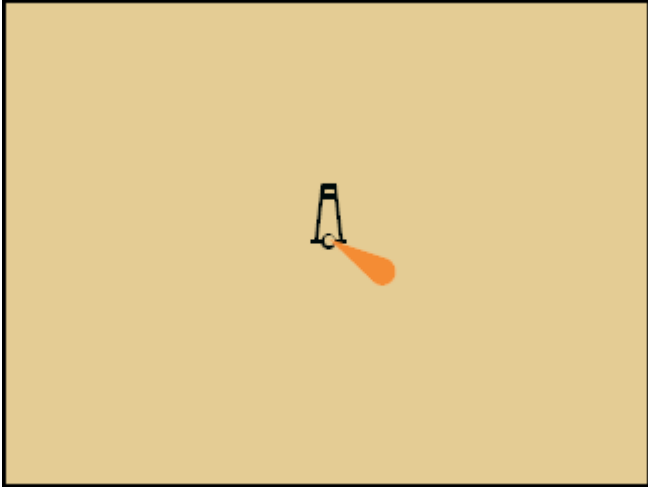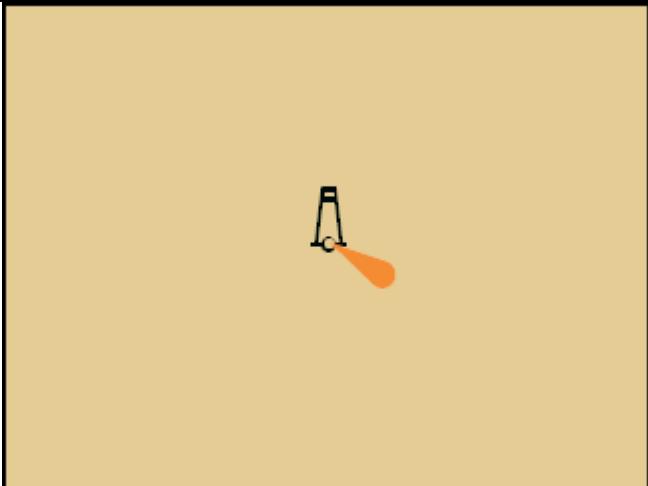|					
Dataset Name	AA500020	**S-58 test No.**	T1747	**Type**	E
S-58 Description	Check that no RETRFL object contains the attributes VERACC and MARSYS.				
Test Case No. 1	LNDMRK, RETRFL captured with attributes VERACC and MARSYS.				
Location	32°30'40.20"S 60°49'59.13"E	**S57 Encoding**	LNDMRK(P) RETFLT(P)	VERACC=1 MARSYS=2	
Screen Capture					
Expected test results	T1747: An error "prohibited attribute 'veracc' in Retro-reflector" must be triggered. T1747: An error "prohibited attribute 'marsys' in Retro-reflector" must be triggered.				

Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

Dataset Name	AA500020	S-58 test No.	T1748	Type	E
S-58 Description	Check that no RETRFL object contains the attribute VERDAT.				
Test Case No. 1	LNDMRK, RETRFL captured with attribute VERDAT.				
Location	32°30'35.97"S 60°50'02.88"E	**S57 Encoding**	LNDMRK(P) RETFLT(P)	VERDAT=3	
Screen Capture					
Expected test results	T1748: An error "prohibited attribute 'verdat' in Retro-reflector" must be triggered.				
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created.				

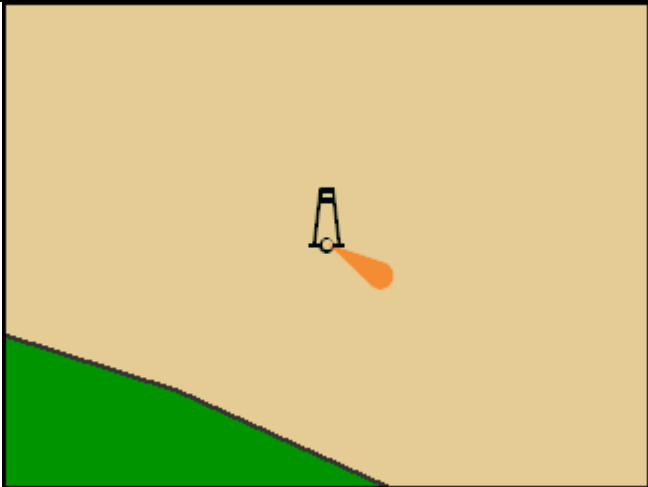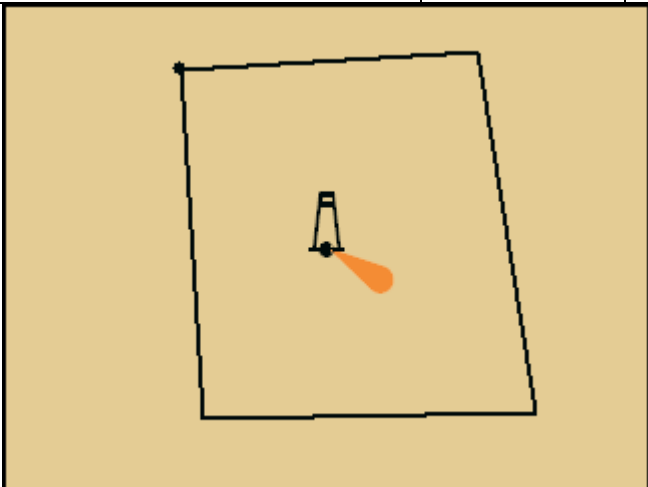| Dataset Name	AA500020	S-58 test No.	T1749	Type	E
S-58 Description	Check that no LIGHTS object contains the attribute VERACC.				
Test Case No. 1	LNDMRK, LIGHTS captured with attribute VERACC.				
Location	32°30'30.77"S 60°50'04.41"E	**S57 Encoding**	LNDMRK(P) LIGHTS(P)	VERACC=1	

Screen Capture	
Expected test results	T1749: An error "prohibited attribute 'veracc' in Light" must be triggered.
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the features objects created.

Dataset Name	AA500020	S-58 test No.	T1750	Type	E
S-58 Description	Check that no LIGHTS object that is a slave to a buoy object, has a value for the attribute HEIGHT.				
Test Case No. 1	BOYLAT, LIGHTS captured with attribute HEIGHT.				

Location	32°30'04.91"S 60°52'14.14"E	S57 Encoding	BOYLAT(P) BOYCAR(P) BOYINB(P) BOYISD(P) BOYSAW(P) BOYSPP(P) LIGHTS(P)	HEIGHT=1

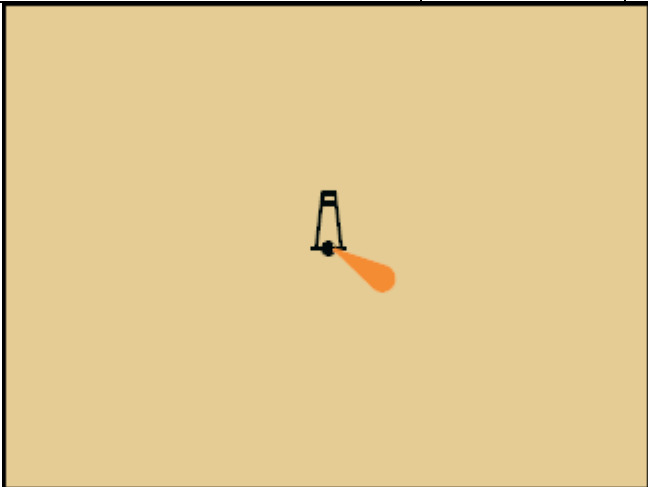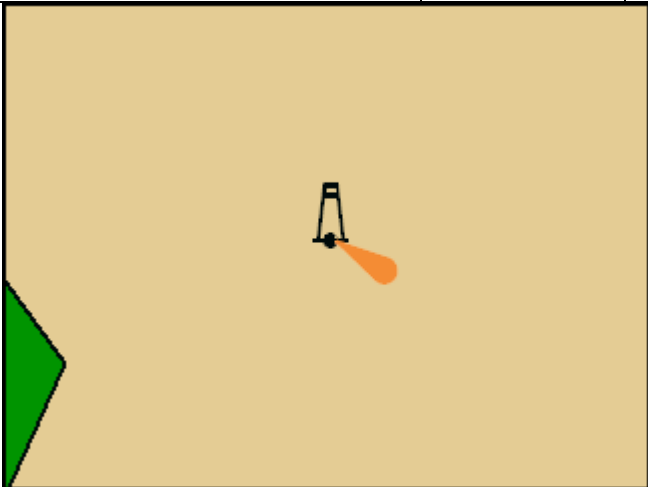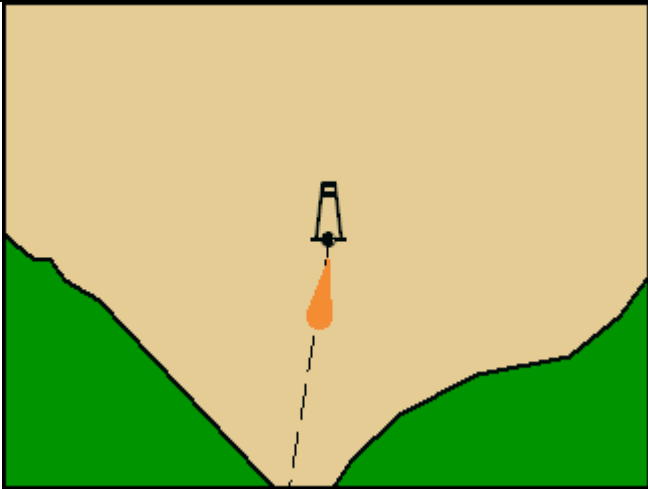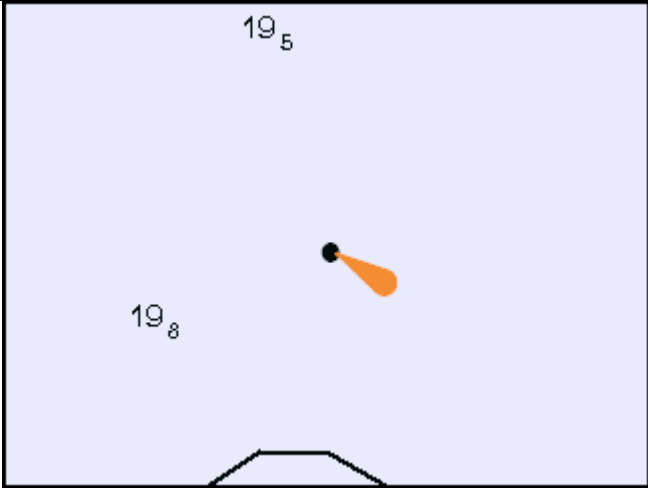|	
Screen Capture	
Expected test results	T1750: 6 errors "prohibited attribute 'height' in Light" must be triggered.
Secondary errors	No errors.

Test Dataset:AA500021

List of S58 Recommended ENC Validation Checks covered in this section:

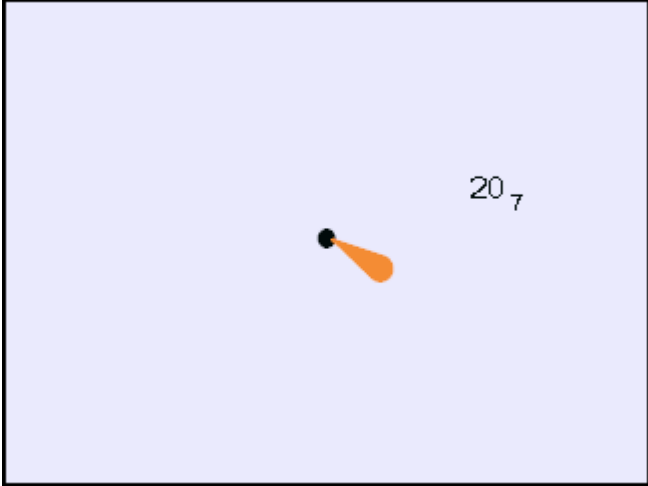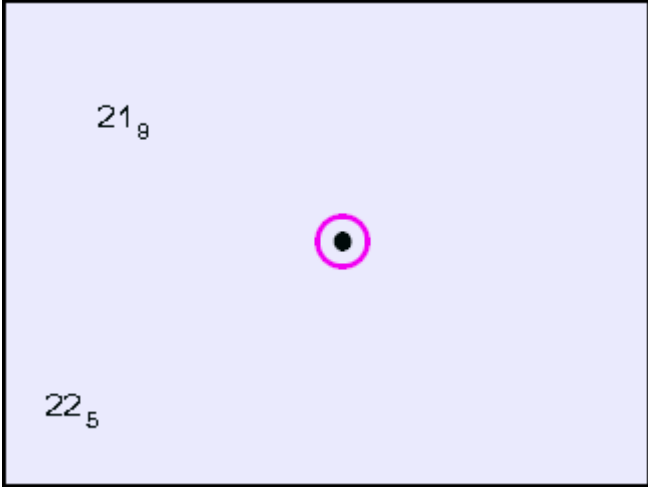| S58 Test	Description
1751	Check that no LIGHTS object has a value for ORIENT without a value of (1) [directional function] or (16) [moiré effect] for CATLIT.
1752	Check that no LIGHTS object with a value of (1) [fixed] for LITCHR contains the attributes SIGGRP, SIGPER and SIGSEQ.
1754	Check that no LIGHTS object has an attribute value for VERDAT that is identical to the VERDAT value within M_VDAT.
1755	Check that no LIGHTS object has an attribute value for VERDAT that is identical to the value given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM).
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].
1757	Check that any LIGHTS object having values of (19) [horizontally disposed] or (20) [vertically disposed] for the attribute CATLIT also has the number of lights encoded in MLTYLT.
1758	Check that no LIGHTS object has a value of (17) [emergency] for the attribute CATLIT without another LIGHTS object encoded with the same spatial position.
1759	Check that no RDOSTA object contains a value for the attribute ORIENT without a value of (2) [directional radio beacon] for the attribute CATROS.
1760	Check that no RADSTA object contains the attributes VERACC and VERDAT.
1761	Check that no RADRFL object contains the attributes VERACC and VERDAT.
1762	Check that no RADRFL object is encoded on an Area or Point type object, except for DAYMAR or PILPNT objects.
1764	Check that no permanent object with a value of (1) [permanent] for the attribute STATUS has PERSTA and/or PEREND encoded.
1768	Check for any SOUNDG object, that any depth value is greater than DRVAL1 of the overlying DEPARES or DRGARE object. Remark: This check must only be applied if DRVAL1 for the overlying DEPARE or DRGARE object is encoded with an explicit value.
1769	Check for any SOUNDG object, if the value for EXPSOU is not (3) [deeper than the range of depth of the surrounding depth area], that any depth value is shoaler than or equal to DRVAL2 of the overlying DEPARE object. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object is encoded with an explicit value.
1770	Check for any SOUNDG object, if the value for EXPSOU is (3) [deeper than the range of depth of the surrounding depth area], that any depth value is: • greater than DRVAL2 of the overlying DEPARE, or • greater than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 for the DRGARE are encoded, or • greater than DRVAL1 of the overlying DRGARE, when only DRVAL1 for the DRGARE is encoded. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object or DRVAL1 for the overlying DRGARE object are not encoded as "unknown".
1772	Check for any UWTROC object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (1) [within the range of depth of the surrounding depth area] or if EXPSOU is not used, that the value for VALSOU is greater than DRVAL1 and less than or equal to DRVAL2 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if both DRVAL1 and DRVAL2 for the overlying Group 1 object are encoded with explicit and different attribute values.
1773	Check for any UWTROC object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (2) [shoaler than the range of depth of the surrounding depth area], that the value for VALSOU is less than or equal to DRVAL1 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if DRVAL1 for the overlying Group 1 object is not encoded as "unknown".
1774	Check for any UWTROC object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (3) [deeper than the range of depth of the surrounding depth area], that the value for VALSOU is: • greater than DRVAL2 of the overlying DEPARE, or • greater than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 for the DRGARE are encoded, or • greater than DRVAL1 of the overlying DRGARE, when only DRVAL1 for the DRGARE is encoded. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object or DRVAL1 for the overlying DRGARE object are not encoded as "unknown".
1776	Check that any LIGHTS object having value 6, 7, 9, 10, 11 or 28 for LITCHR is encoded with the corresponding value for SIGGRP: • LITCHR = 6 [ultra quick-flashing], then SIGGRP = (1) • LITCHR = 7 [isophase], then SIGGRP = (1) • LITCHR = 9 [interrupted quick-flashing], then SIGGRP = () • LITCHR = 10 [interrupted very quick-flashing], then SIGGRP = () • LITCHR = 11 [interrupted ultra quick-flashing], then SIGGRP = () • LITCHR = 28 [alternating], then SIGGRP = ()
1779	Check that no area DEPARE object has DRVAL1 equal to DRVAL2.
507	Check for all mandatory attributes.
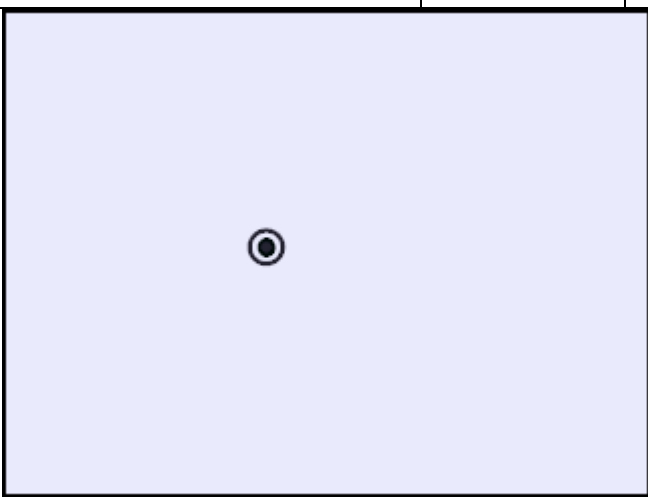
Dataset Name	AA500021		S-58 test No.	T1751		Type	E

S-58 Description	Check that no LIGHTS object has a value for ORIENT without a value of (1) [directional function] or (16) [moiré effect] for CATLIT.						

Test Case No. 1	Captured a LIGHTS object with attribute CATLIT and ORIENT						

Location	32°31'36.91"S 60°49'26.58"E	S57 Encoding	LIGHTS(P)	CATLIT=6 ORIENT=25

Screen Capture	

Expected test results	T1751: An error "meaningless value of 'orient' in Light" must be triggered.
Secondary errors	None.
Test Case No. 2	Captured a LIGHTS object with attribute ORIENT and undefined CATLIT.

Location	32°31'36.91"S 60°49'26.85"E	S57 Encoding	LIGHTS(P)	ORIENT=25

Screen Capture	

Expected test results	T1751: An error "meaningless value of 'orient' in Light" must be triggered.
Secondary errors	None.

Dataset Name	AA500021		S-58 test No.	T1752		Type	E

S-58 Description	Check that no LIGHTS object with a value of (1) [fixed] for LITCHR contains the attributes SIGGRP, SIGPER and SIGSEQ.						

Test Case No. 1	Captured LIGHTS with attributes LITCHR, SIGGRP, SIGPER and SIGSEQ.						

Location	32°31'37.19"S 60°49'27.75"E	**S57 Encoding**	LIGHTS(P)	LITCHR=1 SIGGRP=(1)
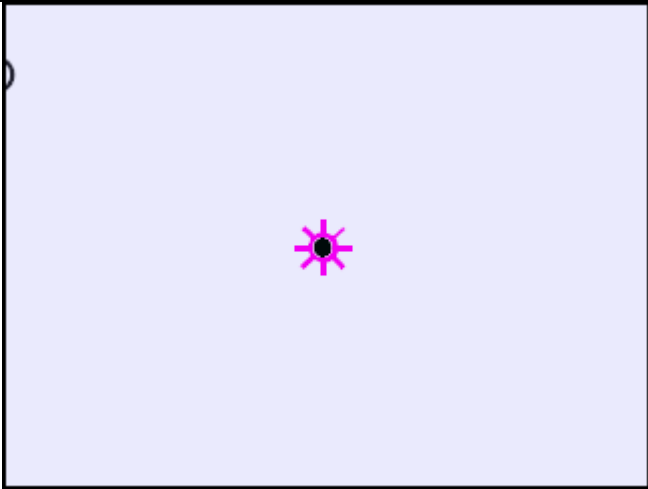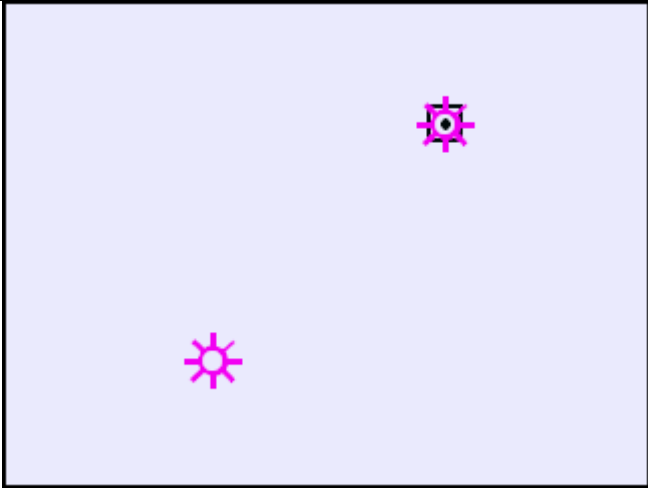
	SIGPER=4
	SIGSEQ=00.4+(03.6)

Screen Capture	
Expected test results	T1752: An error "fixed light with periodic signal in Light" must be triggered.
Secondary errors	T0541: An error "Check that the SIGGRP format is correct for all LIGHTS, except for fixed LIGHTS, which must not have a value for SIGGRP" must be triggered related to the objects created.

Dataset Name	AA500021	**S-58 test No.**	T1754		**Type**	E
S-58 Description	Check that no LIGHTS object has an attribute value for VERDAT that is identical to the VERDAT value within M_VDAT.					
Test Case No. 1	Captured a LIGHTS object with attribute VERDAT is equal to the VERDAT of the overlying M_VDAT					
Location	32°31'37.16"S 60°49'28.28"E	**S57 Encoding**	M_VDAT(A) LIGHTS(P)	VERDAT=28		

Screen Capture	
Expected test results	T1754: An error "redundant 'verdat' is defined by 'm_vdat' in Light" must be triggered.
Secondary errors	T0513: An error "Check that an attribute on an individual object does not have the same value as the general value defined by the meta object. Attribute VERDAT equals the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM)" must be triggered related to the objects created.

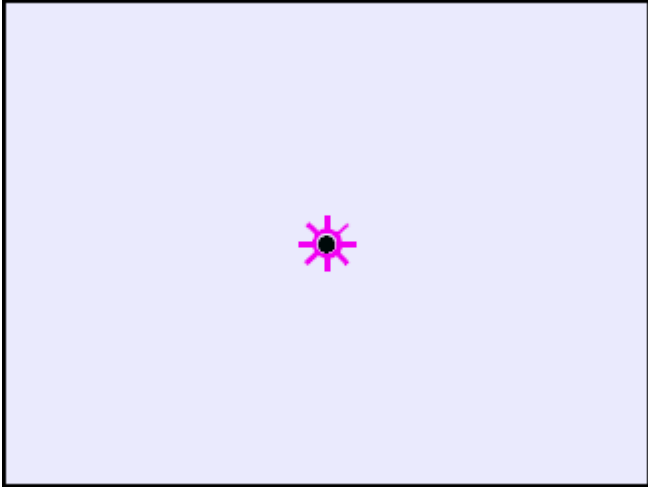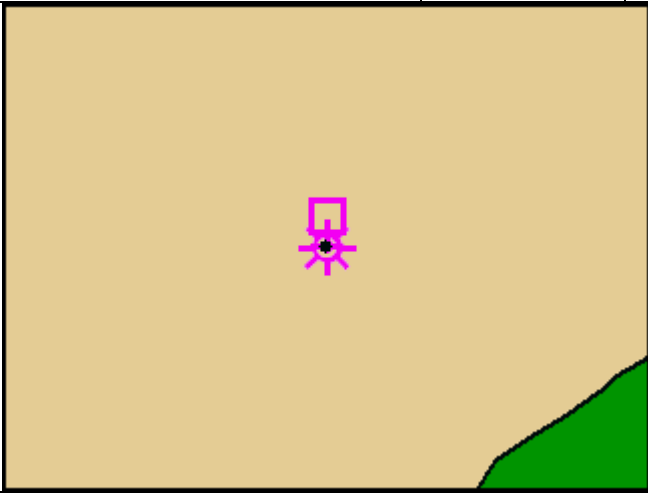| **Dataset Name**	AA500021	**S-58 test No.**	T1755		**Type**	E
S-58 Description	Check that no LIGHTS object has an attribute value for VERDAT that is identical to the value given in the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM).					

Test Case No. 1	Captured a LIGHTS object with attribute VERDAT is equal to the Vertical Datum subfield of the Data Set of Parameter field.			
Location	32°31'37.23"S 60°49'28.91"E	**S57 Encoding**	LIGHTS(P)	VERDAT=16
Screen Capture				
Expected test results	T1755: An error "prohibited attribute 'verdat' in Light" must be triggered.			
Secondary errors	T0513: An error "Check that an attribute on an individual object does not have the same value as the general value defined by the meta object. Attribute VERDAT equals the Vertical Datum subfield (VDAT) of the Data Set Parameter field (DSPM)" must be triggered related to the feature object created.			

Dataset Name	AA500021	**S-58 test No.**	T1756	**Type**	E
S-58 Description	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].				
Test Case No. 1	Captured a LIGHTS object with attribute CATLIT and ORIENT.				
Location	32°31'37.70"S 60°49'28.67"E	**S57 Encoding**	LIGHTS(P)	CATLIT=4 ORIENT=10	
Screen Capture					
Expected test results	T1756: An error "attribute conflict between 'catlit' and 'orient' in Light" must be triggered.				
Secondary errors	T1751: An error "If the feature is a LIGHTS and ORIENT has a known value, then CATLIT must contain one of the value(s) 1, 16" must be triggered related to the objects created.				
Test Case No. 2	Captured a LIGHTS object with attribute CATLIT and ORIENT.				
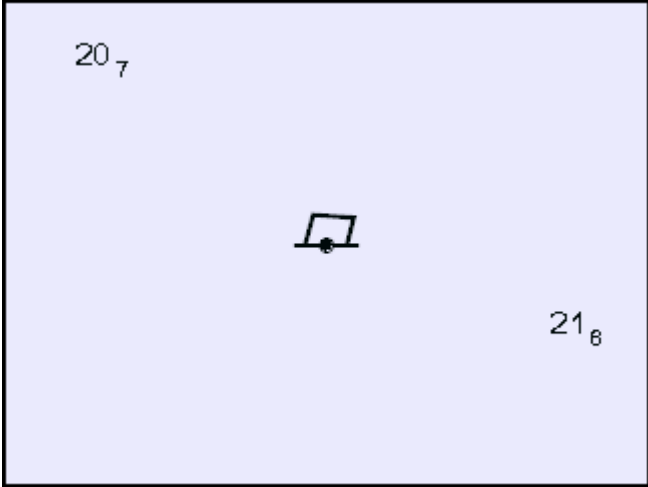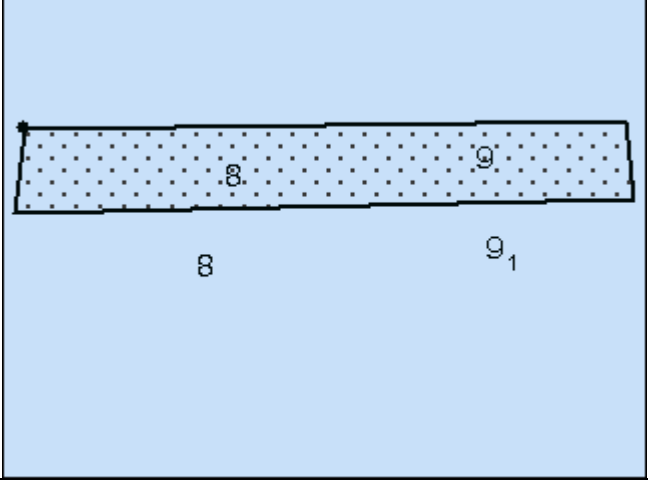
Location	32°31'38.46"S 60°49'29.18"E	**S57 Encoding**	LIGHTS(P)	CATLIT=1,4 ORIENT=10
Screen Capture				
Expected test results	T1756: An error "attribute conflict between 'catlit' and 'orient' in Light" must not be triggered.			
Secondary errors	None.			

Dataset Name	AA500021	**S-58 test No.**	T1757	**Type**	E
S-58 Description	Check that any LIGHTS object having values of (19) [horizontally disposed] or (20) [vertically disposed] for the attribute CATLIT also has the number of lights encoded in MLTYLT.				
Test Case No. 1	Captured a LIGHTS object with attribute CATLIT.				

Location	32°31'53.15"S 60°49'57.80"E	**S57 Encoding**	LIGHTS(P)	CATLIT=19 MLTYLT=UNDEFINED
Screen Capture				
Expected test results	T1757: An error "attribute conflict between 'catlit' and 'mltylt' in Light" must be triggered			
Secondary errors	None.			
Test Case No. 2	Captured a LIGHTS object with attribute CATLIT			
Location	32°31'52.88"S 60°50'06.07"E	**S57 Encoding**	LIGHTS(P)	CATLIT=20 MLTYLT=UNDEFINED
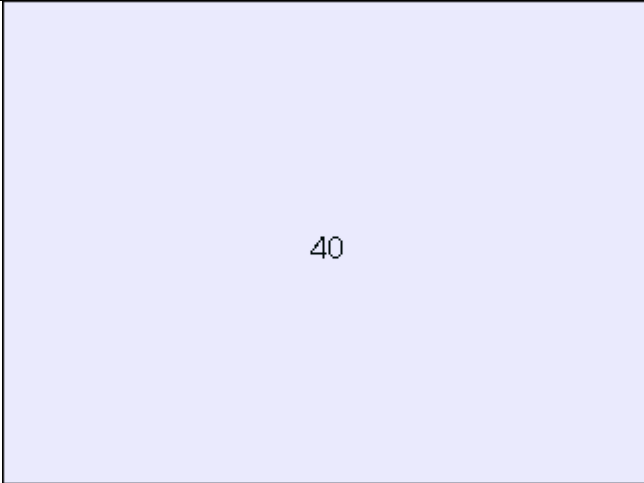
Screen Capture					
Expected test results	T1757: An error "attribute conflict between 'catlit' and 'mltylt' in light" must be triggered				
Secondary errors	None.				

Dataset Name	AA500021	**S-58 test No.**	T1758	**Type**	E
S-58 Description	Check that no LIGHTS object has a value of (17) [emergency] for the attribute CATLIT without another LIGHTS object encoded with the same spatial position.				
Test Case No. 1	Captured a LIGHTS object with attribute CATLIT.				
Location	32°32'01.85"S 60°50'05.28"E	**S57 Encoding**	LIGHTS(P)	CATLIT=17	
Screen Capture					
Expected test results	T1758: An error "meaningless value of 'catlit' in Light" must be triggered.				
Secondary errors	None.				

Dataset Name	AA500021	**S-58 test No.**	T1759	**Type**	E
S-58 Description	Check that no RDOSTA object contains a value for the attribute ORIENT without a value of (2) [directional radiobeacon] for the attribute CATROS.				
Test Case No. 1	Captured a RDOSTA object with attribute ORIENT without a value of CATROS=2[directional radiobeacon].				
Location	32°32'05.01"S 60°50'17.52"E	**S57 Encoding**	RDOSTA(P)	ORIENT=50 CATROS=7	

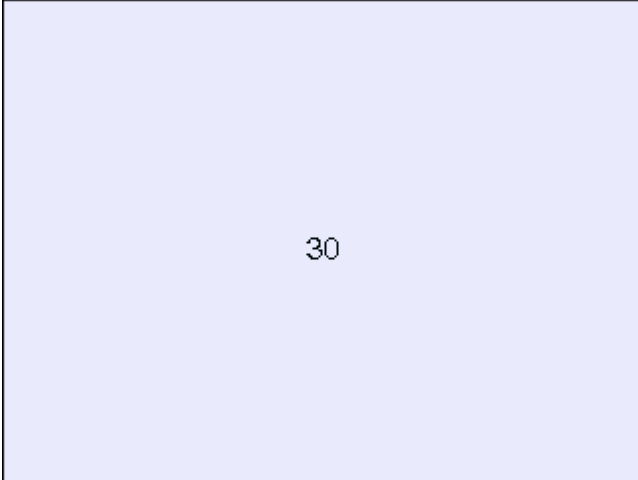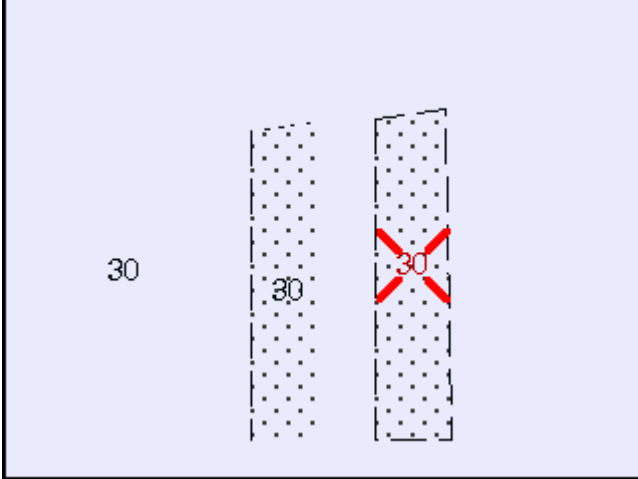|	
Screen Capture	
Expected test results	T1759: An error "meaningless value of 'orient' in Radio station" must be triggered.
Secondary errors	None.

Dataset Name	AA500021	**S-58 test No.**	T1760	**Type**	E
S-58 Description	Check that no RADSTA object contains the attributes VERACC and VERDAT.				
Test Case No. 1	Captured a RADSTA object contains the attributes VERACC and VERDAT.				
Location	32°32'09.02"S 60°50'26.67"E	**S57 Encoding**	RDASTA(P)	VERACC=3 VERDAT=1	
Screen Capture					
Expected test results	T1760: An error "prohibited attribute 'veracc' in Radar station" must be triggered. T1760: An error "prohibited attribute 'verdat' in Radar station" must be triggered.				
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered for the objects created.				

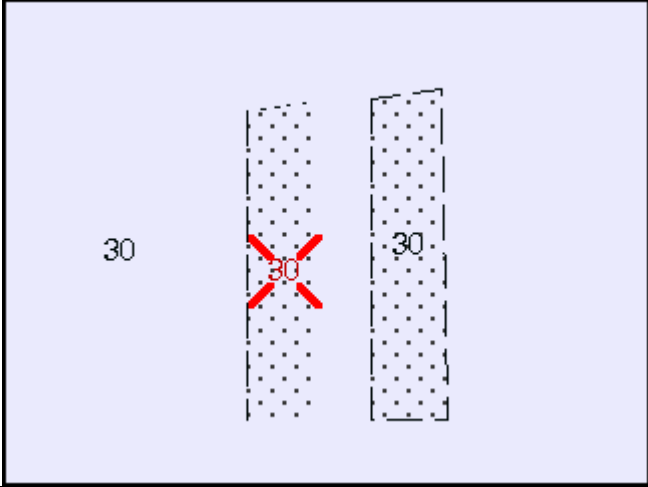|					
Dataset Name	AA500021	**S-58 test No.**	T1761	**Type**	E
S-58 Description	Check that no RADRFL object contains the attributes VERACC and VERDAT.				
Test Case No. 1	Captured a RADRFL object contains the attributes VERACC and VERDAT.				

Location	32°32'12.14"S 60°50'33.68"E	**S57 Encoding**	RDARFL(P)	VERACC=3 VERDAT=1
Screen Capture				
Expected test results	T1761: An error "prohibited attribute 'veracc' in Radar reflector" must be triggered. T1761: An error "prohibited attribute 'verdat' in Radar reflector" must be triggered.			
Secondary errors	T547: An error "Object contains attributes outside of the list of permissible attributes for the object class" must be triggered related to the feature objects created. T1546: An error "Check that no object has an attribute value for VERACC without a corresponding attribute value for at least one of VERCLR, VERCOP, VERCSA or VERCCL" must be triggered related to the objects created.			

Dataset Name	AA500021	**S-58 test No.**	T1762	**Type**	E
S-58 Description	Check that no RADRFL object is encoded on an Area or Point type object, except for DAYMAR or PILPNT objects.				
Test Case No. 1	Captured a RADRFL object on a depth area and offshore platform.				
Location	32°32'13.81"S 60°50'44.28"E	**S57 Encoding**	RADRFL(P)		
Screen Capture					
Expected test results	T1762:Two errors "RADRFL object is encoded on an Area or Point type object" must be triggered.				
Secondary errors	None.				
Test Case No. 2	Captured a RADRFL object on a PILPNT.				
Location	32°32'16.59"S 60°50'46.35"E	**S57 Encoding**	RADRFL(P) PILPNT(P)		

Screen Capture	
Expected test results	T1762: An error "RADRFL object is encoded on an Area or Point type object" must not be triggered.
Secondary errors	None.
Test Case No. 3	Captured a RADRFL object on a DAYMAR feature.

Location	32°31'33.58"S 60°49'30.58"E	**S57 Encoding**	RADRFL(P) DAYMAR(P)	

Screen Capture	
Expected test results	T1762: An error "RADRFL object is encoded on an Area or Point type object" must not be triggered.
Secondary errors	None.

Dataset Name	AA500021	**S-58 test No.**	T1764	**Type**	E
S-58 Description	Check that no permanent object with a value of (1) [permanent] for the attribute STATUS has PERSTA and/or PEREND encoded.				
Test Case No. 1	BOYLAT object captured with attributes STATUS has PERSTA and/or PEREND encoded.				
Location	32°31'55.41"S 60°50'14.36"E	**S57 Encoding**	BOYLAT(P)	STATUS=1 PERSTA=21.03.— PERSTA=21.03.--	

Screen Capture	
Expected test results	T1764: An error "permanent object with period specified Buoy, lateral" must be triggered.
Secondary errors	T1516: A warning "periodic object without 'status:5' in Buoy, lateral" must be triggered related to the feature object created. T0073: A warning "Check that Periodic Date, Start (PERSTA) does not contain a leading or a trailing space. Check that the format of the attribute is valid" must be triggered related to the feature object created.

Dataset Name	AA500021	**S-58 test No.**	T1768	**Type**	W
S-58 Description	Check for any SOUNDG object, that any depth value is greater than DRVAL1 of the overlying DEPARES or DRGARE object. Remark: This check must only be applied if DRVAL1 for the overlying DEPARE or DRGARE object is encoded with an explicit value.				
Test Case No. 1	Captured SOUNDG objects having the depth value. • Less than equal to DRVAL1 of the overlying the DEPARE • Less than equal to DRVAL1 of the overlying the DRGARE				

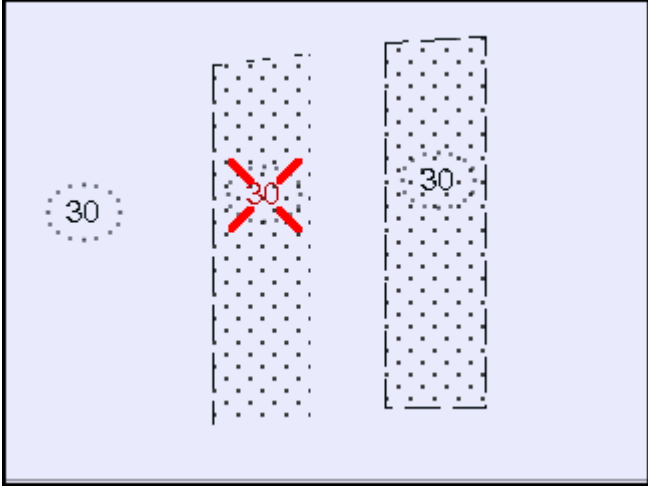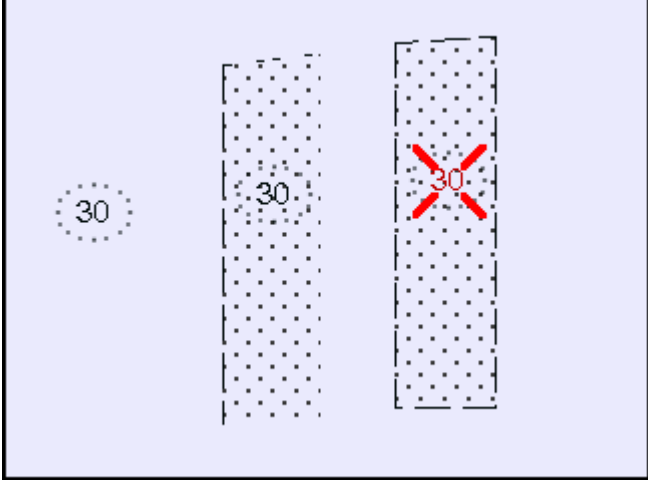| **Location**	32°31'44.03"S 60°52'04.86"E	**S57 Encoding**	SOUNDG(P) DRGARE(A) DEPARE(A)	8,9,8 and 9.1m DRVAL1=9 DRVAL1=9.1 DRVAL2=18.2
Screen Capture				
Expected test results	T1768: Four warnings "spot sounding shallower than enclosing 'depare'" must be triggered.			
Secondary errors	None.			

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Dataset Name	AA500021		S-58 test No.	T1769		Type	W
S-58 Description	Check for any SOUNDG object, if the value for EXPSOU is not (3) [deeper than the range of depth of the surrounding depth area], that any depth value is shoaler than or equal to DRVAL2 of the overlying DEPARE object. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object is encoded with an explicit value.						
Test Case No. 1	Captured a SOUNDG object having the depth value, greater than DRVAL2 for the overlying DEPARE.						
Location	32°32'50.92"S 60°50'57.47"E		S57 Encoding	SOUNDG(P)	40m		
Screen Capture							
Expected test results	T1769: A warning "bad sounding exposition (overlying depare" must be triggered.						
Secondary errors	None.						

Dataset Name	AA500021		S-58 test No.	T1770		Type	W
S-58 Description	Check for any SOUNDG object, if the value for EXPSOU is (3) [deeper than the range of depth of the surrounding depth area], that any depth value is: • greater than DRVAL2 of the overlying DEPARE, or • greater than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 for the DRGARE are encoded, or • greater than DRVAL1 of the overlying DRGARE, when only DRVAL1 for the DRGARE is encoded. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object or DRVAL1 for the overlying DRGARE object are not encoded as "unknown".						
Test Case No. 1	Captured SOUNDG object less than DRVAL2 of the overlying DEPARE.						
Location	32°32'52.89"S 60°51'30.07"E		S57 Encoding	SOUNDG(P) DEPARE(A)	EXPSOU=3 DRVAL1=18.2 DRVAL2=36.5		

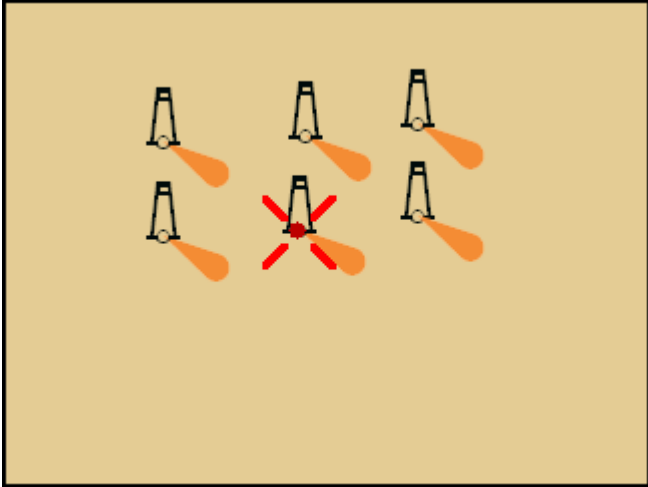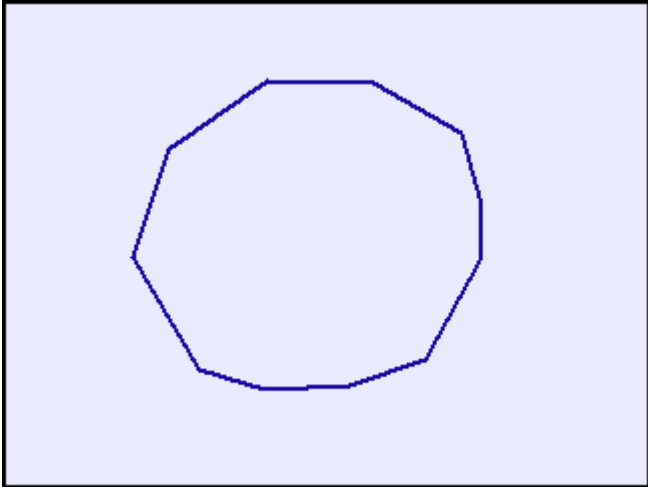| Screen Capture				
Expected test results	T1770: A warning "bad sounding exposition (overlying depare)" must be triggered.			
Secondary errors	None.			
Test Case No. 2	Captured SOUNDG object with value less than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 for the DRGARE are encoded.			
Location	32°32'52.76"S 60°51'50.00"E	**S57 Encoding**	SOUNDG(P) DRGARE(A)	EXPSOU=3 DRVAL1=31 DRVAL2=35
Screen Capture				
Expected test results	T1770: A warning "bad sounding exposition (overlying depare)" must be triggered.			
Secondary errors	None.			
Test Case No. 3	Captured SOUNDG object with value less than DRVAL1 of the overlying DRGARE.			
Location	32°32'54.16"S 60°51'41.53"E	**S57 Encoding**	SOUNDG(P) DRGARE(A)	EXPSOU=3 DRVAL1=35

Screen Capture	
Expected test results	T1770: A warning "bad sounding exposition (overlying depare)" must be triggered.
Secondary errors	None.

Dataset Name	AA500021	**S-58 test No.**	T1772	**Type**	E
S-58 Description	Check for any UWTROC object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (1) [within the range of depth of the surrounding depth area] or if EXPSOU is not used, that the value for VALSOU is greater than DRVAL1 and less than or equal to DRVAL2 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if both DRVAL1 and DRVAL2 for the overlying Group 1 object are encoded with explicit and different attribute values.				
Test Case No. 1	Captured UWTROC object with attributes EXPSOU and VALSOU. Assigning the VALSOU value less than DRVAL1 of the overlying DEPARE. Assigning the VALSOU value greater than DRVAL2 of the overlying DEPARE. Assigning the VALSOU value less than DRVAL1 of the overlying DRGARE. Assigning the VALSOU value greater than DRVAL2 of the overlying DRGARE. Assigning the EXPSOU=1 and VALSOU value less than DRVAL1 of the overlying DEPARE. Assigning the EXPSOU=1 and VALSOU value greater than DRVAL2 of the overlying DEPARE. Assigning the EXPSOU=1 and VALSOU value less than DRVAL1 of the overlying DRGARE. Assigning the EXPSOU=1 and VALSOU value greater than DRVAL2 of the overlying DRGARE.				
Location	32°33'01.57"S 60°50'03.67"E	**S57 Encoding**	UWTROC(P) DRGARE(A)	VALSOU=16 VALSOU=40 EXPSOU=1 DRVAL1=30 DRVAL2=35	

Screen Capture	

Expected test results	T1772: Four errors "spot sounding deeper than enclosing 'depare'" must be triggered. T1772: Four errors "spot sounding shallower than enclosing 'depare'" must be triggered.
Secondary errors	None.

Dataset Name	AA500021		S-58 test No.	T1773		Type	E
S-58 Description	Check for any UWTROC object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (2) [shoaler than the range of depth of the surrounding depth area], that the value for VALSOU is less than or equal to DRVAL1 of the overlying DEPARE or DRGARE object. Remark: This check must only be applied if DRVAL1 for the overlying Group 1 object is not encoded as "unknown".						
Test Case No. 1	Captured UWTROC object with attribute VALSOU and EXPSOU. Assigning the VALSOU for UWTROC greater than DRVAL1 of the overlying DEPARE. Assigning the VALSOU for UWTROC greater than DRVAL1 of the overlying DRGARE.						
Location	32°33'02.66"S 60°50'39.06"E		**S57 Encoding**	UWTROC(P) DRGARE(A) DEPARE(A)	VALSOU=25 EXPSOU=2 DRVAL1=20 DRVAL1=18.2 DRVAL2=36.5		

Screen Capture	

Expected test results	T1773: Two errors "bad sounding exposition" must be triggered.
Secondary errors	None.
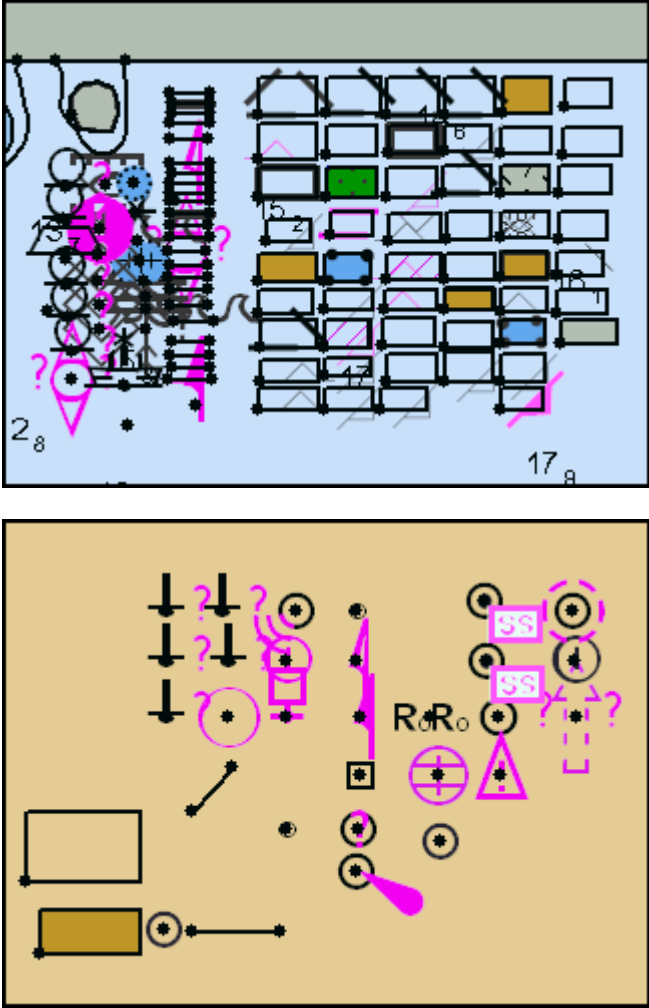
Dataset Name	AA500021		S-58 test No.	T1774		Type	
S-58 Description	Check for any UWTROC object with VALSOU encoded with an explicit attribute value, if the value for EXPSOU is (3) [deeper than the range of depth of the surrounding depth area], that the value for VALSOU is: • greater than DRVAL2 of the overlying DEPARE, or • greater than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 for the DRGARE are encoded, or • greater than DRVAL1 of the overlying DRGARE, when only DRVAL1 for the DRGARE is encoded. Remark: This check must only be applied if DRVAL2 for the overlying DEPARE object or DRVAL1 for the overlying DRGARE object are not encoded as "unknown".						
Test Case No. 1	Captured UWTROC object with attribute VALSOU and EXPSOU. Assigning the VALSOU for UWTROC object less than DRVAL2 of the overlying DEPARE.						
Location	32°32'32.09"S 60°50'53.00"E		**S57 Encoding**	UWTROC(P) DEPARE(A)	VALSOU=30 EXPSOU=3 DRVAL1=18.2 DRVAL2=36.5		
Screen Capture							
Expected test results	T1774: An error "bad sounding exposition" must be triggered						
Secondary errors	None.						
Test Case No. 2	Assigning the VALSOU for UWTROC object less than DRVAL2 of the overlying DRGARE, when both DRVAL1 and DRVAL2 are encoded.						
Location	32°32'32.19"S 60°51'03.60"E		**S57 Encoding**	UWTROC(P) DRGARE	VALSOU=30 EXPSOU=3 DRVAL1=31 DRVAL2=35		

Screen Capture	
Expected test results	T1774: An error "bad sounding exposition" must be triggered
Secondary errors	None.
Test Case No. 3	Assigning the VALSOU for UWTROC object less than DRVAL1 of the overlying DRGARE.

Location	32°32'31.21"S 60°51'13.49"E	**S57 Encoding**	UWTROC(P) DRGARE(A)	VALSOU=30 EXPSOU=3 DRVAL1=31

Screen Capture	
Expected test results	T1774: An error "bad sounding exposition" must be triggered
Secondary errors	None.

Dataset Name	AA500021	**S-58 test No.**	T1776	**Type**	W
S-58 Description	Check that any LIGHTS object having value 6, 7, 9, 10, 11 or 28 for LITCHR is encoded with the corresponding value for SIGGRP: • LITCHR = 6 [ultra quick-flashing], then SIGGRP = (1) • LITCHR = 7 [isophase], then SIGGRP = (1) • LITCHR = 9 [interrupted quick-flashing], then SIGGRP = () • LITCHR = 10 [interrupted very quick-flashing], then SIGGRP = () • LITCHR = 11 [interrupted ultra quick-flashing], then SIGGRP = () • LITCHR = 28 [alternating], then SIGGRP = ()				
Test Case No. 1	Captured LIGHTS objects with attribute LITCHR (6,7,9,10,11 and 28) and SIGGRP				

Location	32°31'17.24"S 60°49'28.28"E	S57 Encoding	LIGHTS(P)	LITCHR=6,7,9,10,11,28 SIGGRP=UNKNOWN SIGPER=UNKNOWN
Screen Capture				
Expected test results	T1776: 6 warnings "'siggrp' does not agree with given 'litchr' in Light" must be triggered.			
Secondary errors	None.			

Dataset Name	AA500021	S-58 test No.	T1779	Type	E
S-58 Description	Check that no area DEPARE object has DRVAL1 equal to DRVAL2.				
Test Case No. 1	Captured DEPARE with DRVAL1 and DRVAL2 both are same value.				
Location	32°31'58.45"S 60°49'56.93"E	S57 Encoding	DEPARE(A)	DRVAL1=18.2 DRVAL2=18.2	
Screen Capture					
Expected test results	T1779: An error "'drval1' equal to 'drval2' of Depth area" must be triggered.				
Secondary errors	T1771: A warning "Edge depth contour does not correspond to depth area limit" must be triggered related to the features objects created.				

Dataset Name	AA500021	S-58 test No.	T0507	Type	E
S-58 Description	Check for all mandatory attributes.				
Test Case No. 1	Created objects as shown below in 4th column without mandatory attributes.				

Location	32°31'24.04"S 60°50'09.53"E 32°31'22.18"S 60°49'35.56"E	S57 Encoding	ADMARE(A) BCNCAR(P) BCNISD(P) BCNLAT(P) BCNSAW(P) BCNSPP(P) BERTHS(A,P,L) BOYCAR(P) BOYINB(P) BOYISD(P) BOYLAT(P) BOYSAW(P) BOYSPP(P) BRIDGE(A,L,P) CBLOHD(L) CONVYR(L, A) CONZNE(A) COSARE(A) CTNARE(P,A) CURENT(P) CUSZNE(A) DAYMAR(P) DEPARE(L,A) DEPCNT(L) DRGARE(A) DWRTCL(L) DWRTPT(A) EXEZNE(A) FERYRT(L,A) FOGSIG(P) FSHZNE(A) GATCON(P,L,A) HRBFAC(P,A) ICEARE(A) LITVES(P) LIGHTS(P) LITFLT(P) LNDELV(L,P) LNDMRK(A,P,L) LNDRGN(P,A) LOCMAG(P,A,L) MAGVAR(P,L,A) MARCUL(P,A,L) MORFAC(P,L,A) NAVLNE(L) OBSTRN(P,L,A) PIPOHD(L) PRCARE(A) PRDARE(A,P) PYLONS(P, A) RADLNE(L) RCRTCL(L) RCTLPT(P,L)	

			RDOCAL(P,L) RECTRC(A,L) RESARE(A) RTPBCN(P) SBDARE(L,P,A) SEAARE(A,P) SISTAT(P) SISTAW(P) SMCFAC(A,P) STSLNE(L) SWPARE(A) TESARE(A) TOPMAR(P) TSSLPT(A) TWRTPT(A) UWTROC(P) VEGATN(P,A,L) WATTUR(L,P,A) WRECKS(P,A) M_ACCY(A) M_COVR(A) M_CSCL(A) M_HOPA(A) M_NSYS(A) M_QUAL(A) M_SDAT(A) M_VDAT(A) T_TIMS(P,A) T_NHMN(P,A) T_HMON(P,A) TS_FEB(P) TS_PAD(P) TS_PNH(P,A) TS_PRH(P,A) TS_TIS(P,A) ARCSLN(A) ASLXIS (L) NEWOBJ (A,L,P)	

Screen Capture	
Expected test results	T0507: 223 errors "mandatory attributes not found" must be triggered.
Secondary errors	T0509: Two warnings "meaningless object Depth area" must be triggered related to the feature objects created

T0509: A warning "Mandatory attribute Orientation (ORIENT) is not specified for Deep water route part (DWRTPT) object. Attribute is meaningless without a value." must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Depth range value 1 (DRVAL1) is not specified for Dredged area (DRGARE) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Value of depth contour (VALDCO) is not specified for Depth contour (DEPCNT) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "At least one of the following mandatory attributes is not specified for object Depth area (DEPARE): Depth range value 1 (DRVAL1) or Depth range value 2 (DRVAL2). Attributes are meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Nationality (NATION) is not specified for Custom zone (CUSZNE) object. Attribute is meaningless without a value" must be triggered related to the feature |

object created.

T0509: A warning "Mandatory attribute Elevation (ELEVAT) is not specified for Land elevation (LNDELV) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Tidal stream - panel values (TS_TSP) is not specified for Tidal stream panel data (TS_PAD) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Nationality (NATION) is not specified for Territorial sea area (TESARE) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Nationality (NATION) is not specified for Continental shelf area (COSARE) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Nationality (NATION) is not specified for Contiguous zone (CONZNE) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Nationality (NATION) is not specified for Archipelagic Sea Lane Axis (ASLXIS) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Orientation (ORIENT) is not specified for Deep water route centerline (DWRTCL) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Nationality (NATION) is not specified for Archipelagic Sea Lane (ARCSLN) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Depth range value 1 (DRVAL1) is not specified for Swept area (SWPARE) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "At least one of the following mandatory attributes is not specified for object New Object (NEWOBJ): Object Class Definition (CLSDEF) or Object Class Name (CLSNAM). Attributes are meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Value of magnetic variation (VALMAG) is not specified for Magnetic variation (MAGVAR) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: Two warnings "Mandatory attribute Orientation (ORIENT) is not specified for Recommended traffic lane part (RCTLPT) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: Two warnings "Mandatory attribute Nationality (NATION) is not specified for Straight territorial sea baseline (STSLNE) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Nationality (NATION) is not specified for Fishery zone (FSHZNE) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0509: A warning "Mandatory attribute Nationality (NATION) is not specified for Exclusive economic zone (EXEZNE) object. Attribute is meaningless without a value" must be triggered related to the feature object created.

T0566: Three warnings "This use of NEWOBJ is forbidden unless it has been approved by an IHO ENC Encoding Bulletin" must be triggered related to the feature object created.

T0562: Three warnings "Check for any NEWOBJ object, that at least one of the attributes INFORM or TXTDSC contains the name of the feature object. The text must commence with the approved object class name of the feature (New Object)" must be triggered related to the feature object created.

T0508: An error "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" must be triggered related to the feature object created.

T1558: Two warnings "If the feature is a T_NHMN, then the value of T_MTOD should be 3 [height and time difference non-harmonic method]" must be triggered related to the feature object created.

T1560: Two warnings "If the feature is a TS_PRH, then the value of T_MTOD should be 1 [simplified harmonic method of tidal prediction] or the value of T_MTOD should be 2 [full harmonic method of tidal prediction]" must be triggered related to the feature object created.

T1561: Two warnings "If the feature is a TS_PNH, then the value of T_MTOD should be 3 [height and time difference non-harmonic method]" must be triggered related to the feature object created.

T1797: Two warnings "the object vegatn cannot be displayed in ECDIS" must be triggered related to the feature object created.

T1797: A warning "the object prdare cannot be displayed in ECDIS" must be triggered related to the feature object created.

T1797: Two warnings "the object bridge cannot be displayed in ECDIS" must be triggered related to the feature object created.

T1671: An error "line 'depare' shares geometry with identical area 'depare'" must be triggered related to the feature object created.

T1726: An error "Edge is open border of 'm_nsys' coverage" must be triggered related to the feature object created.

T1765: Three warnings "Edge is open border of 'm_qual' coverage" must be triggered related to the feature object created.

T0554: A warning "Edge is shared by M_COVR with CATCOV=1 and has no TG1 object" must be triggered related to the feature object created.

T0519: An error "Check that all group 1 areas are covered by M_COVR areas with CATCOV=1 without gaps or overlaps" must be triggered related to the feature object created.

T01557: An error "Check that all T_HMON objects have a value of (1) or (2) for the attribute T_MTOD" must be triggered related to the feature object created.

T01729: Four warnings "If the feature is a BOYCAR, then the value of BOYSHP should be 4 [pillar] or the value of BOYSHP should be 5 [spar (spindle)]
If the feature is a BOYISD, then the value of BOYSHP should be less than 6 [barrel (tun)]
If the feature is a BOYSAW, then the value of BOYSHP should be greater than 2 [can (cylindrical)]
If the feature is a BOYSAW, then the value of BOYSHP should be less than 6 [barrel (tun)]" must be triggered related to the feature object created.

T1512: An error "spatial conflict between 'depare' and meta object 'm_sdat'" must be triggered related to the feature object created.

T1657: A warning "Check for any UWTROC object that the combination of attribute values corresponds to the following table:

VALSOU	QUASOU	WATLEV	TECSOU/SOUACC
=======	=======	=======	==============
unknown	2 or undefined	3, 4 or 5	undefined
unknown	2 or undefined	unknown	undefined
< 0	1, 3, 4, 6, 8, 9 or undefined	4	any value
< 0	7	4	undefined
0	1, 3, 4, 6, 8, 9 or undefined	5	any value
0	7	5	undefined
> 0	1, 3, 4, 6, 8, 9 or undefined	3	any value
> 0	7	3	undefined

Enter valid values for VALSOU, QUASOU, WATLEV, TECSOU, and SOUACC. must be triggered related to the feature object created.

T1669: A warning "Check for any OBSTRN object that the combination of attribute values corresponds to the following table:

VALSOU	WATLEV	QUASOU	TECSOU/SOUACC	HEIGHT
=======	=======	=======	==============	=======
unknown	3,4,5 or unknown	2 or undefined	undefined	undefined
unknown	1 or 2	undefined	undefined	any value
unknown	7	undefined	undefined	undefined
< 0	4	1,3,4,6,8,9 or undefined	any value	undefined

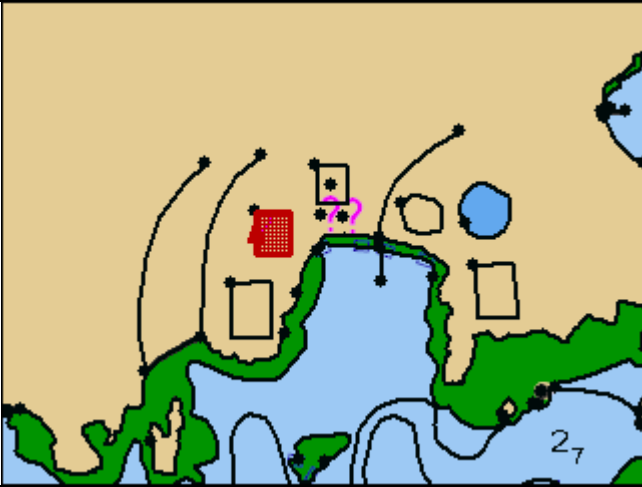| < 0 | 4 | 7 | undefined | undefined |
0	5	1,3,4,6,8,9 or undefined	any value	undefined
> 0	3	1,3,4,6,8,9 or undefined	any value	undefined
> 0	3	7	undefined	undefined

Enter valid values for VALSOU, WATLEV, QUASOU, TECSOU, SOUACC and HEIGHT" must be triggered related to the feature object created.

T1719: A warning "Check for any MARCUL object that the combination of attribute values corresponds to the following table:

WATLEV	VALSOU	QUASOU
========	========	========
1, 2, 5 or 7	undefined	undefined
4	< 0	1,3,4,6,7,8,9 or undefined
4	undefined or unknown	2 or undefined
5	0	1,3,4,6,8,9 or undefined
5	undefined or unknown	2 or undefined
3	> 0	1,3,4,6,7,8,9 or undefined
3	unknown	2 or undefined
unknown	unknown	2 or undefined

Enter valid values for WATLEV, VALSOU and QUASOU." must be triggered related to the feature object created.

T1663: A warning "Check for any WRECKS object that the combination of attribute values corresponds to the following table:

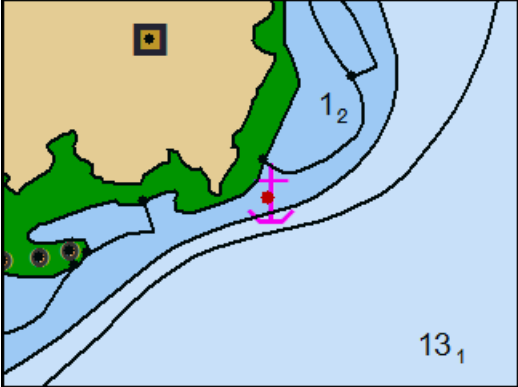| VALSOU | WATLEV | CATWRK | QUASOU | HEIGHT | TECSOU/SOUACC |
======	====== =============	======	======	======	======
undefined	3 or unknown	1,2,3 or unknown	2 or undefined	undefined	undefined
undefined	4 or 5	any value	2 or undefined	undefined	undefined
undefined	1 or 2	4,5 or unknown	undefined	any value	undefined
unknown	3 or unknown	1,2,3 or not encoded	2 or undefined	undefined	undefined
unknown	4 or 5	any value	2 or undefined	undefined	undefined

unknown	1 or 2	4, 5 or not encoded	undefined	any value	undefined
< 0	4	any value	7	undefined	undefined
< 0	4	any value	1,3,4,6,8,9 or undefined	undefined	any value
0	5	any value	1,3,4,6,8,9 or undefined	undefined	any value
> 0	3	1,2,3 or undefined	7	undefined	undefined
> 0	3	1,2,3 or undefined	1,3,4,6,8,9 or undefined	undefined	any value

Enter valid values for VALSOU, WATLEV, CATWRK, QUASOU, HEIGHT, TECSOU and SOUACC" must be triggered related to the feature object created.

Test Dataset:AA500022

List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
504	Check for all prohibited object classes for ENC.
73	Check that no attribute value contains a leading or a trailing space, and that no attribute of type List contains any space.
523	Check that HDAT = 2 [WGS 84]

Dataset Name	AA500022		S-58 test No.	T0504	TYPE	E

S-58 Description	Check for all prohibited object classes for ENC.					

Test Case No. 1	Captured prohibited object classes for ENC					

Location	32°31'29.49"S 60°47'18.91"E	**S57 Encoding**	$AREAS(A) $LINES(L) $TEXTS(P) $CSYMB(P) $COMPS(P) C_STAC SQUARE(A) RIVBNK(L) CANBNK(L) LAKSHR(L) M_HDAT(A) M_PROD(A) M_UNIT(A)	

Screen Capture	

Expected test results	T0504: An error "prohibited object Horizontal datum of data" must be triggered. T0504: An error "prohibited object Production information" must be triggered T0504: An error "prohibited object Compass" must be triggered T0504: An error "prohibited object Stacked on/stacked under" must be triggered T0504: An error "prohibited object Cartographic area" must be triggered T0504: An error "prohibited object Cartographic line" must be triggered T0504: An error "prohibited object Square" must be triggered T0504: An error "prohibited object River bank" must be triggered T0504: An error "prohibited object Lake shore" must be triggered T0504: An error "prohibited object Canal bank" must be triggered T0504: An error "prohibited object Units of measurement of data" must be triggered T0504: An error "prohibited object Cartographic symbol" must be triggered T0504: An error "prohibited object Text" must be triggered

Secondary Errors	T0545: An error "Check that each object has a valid object class code as defined by the Object Catalogue and S-57 Supplement No 2." must be triggered related to the feature objects created.

Dataset Name	AA500022		S-58 test No.	T0073	TYPE	W

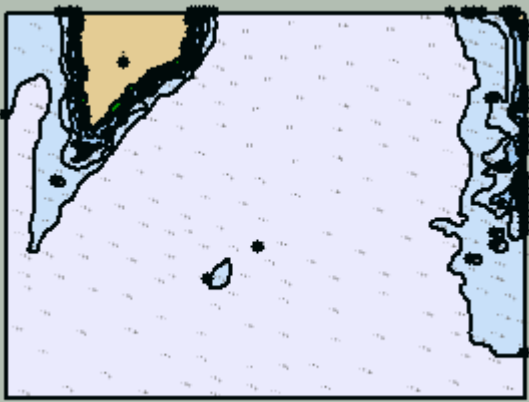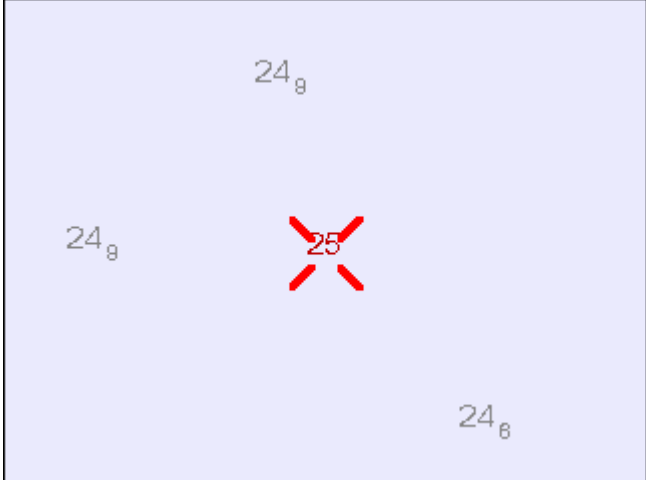| S-58 Description	Check that no attribute value contains a leading or a trailing space, and that no attribute of type List contains any space.				
Test Case No. 1	BUISGL captured with leading space in OBJNAM and trailing space in INFORM.				
Location	32°31'44.88"S 60°47'51.76"E	**S57 Encoding**	BUISGL	OBJANM= TEST INFORM=TEST	
Screen Capture					
Expected test results	T0073: A warning "unnecessary spaces in 'objnam'" must be triggered. T0073: A warning "unnecessary spaces in 'inform'" must be triggered.				
Secondary Errors	None.				
Test Case No. 2	ACHARE point captured with space in CATACH.				
Location	32°31'47.19"S 60°47'53.78"E	**S57 Encoding**	ACHARE	CATACH=1 1	
Screen Capture					
Expected test results	T0073: A warning "Forbidden 'space' symbol in attribute field of type 'list'" must be triggered.				
Secondary Errors	None.				
Dataset Name	AA500022	**S-58 test No.**	T0523	**TYPE**	E
S-58 Description	Check that HDAT = 2 [WGS 84]				
Test Case No. 1	HDAT changed to 4 (Potsdam Datum).				
Location	-	**S57 Encoding**	DSPM	HDAT=Potsdam Datum	

Screen Capture	SID Field DSPM Field DSSI Field Geodetic Param Title — Value Horizontal geodetic datum [HDAT] — Potsdam Datum Vertical datum [VDAT] — Mean high wate Sounding datum [SDAT] — Mean lower low Compilation scale of data [CSCL] — 20000 Units of depth measurement [DUNI] — metres Units of height measurement [HUNI] — metres Units of positional accuracy [PUNI] — metres Coordinate units [COUN] — LL - Latitude / Lo Coordinate multiplication factor [C... — 10000000 3-D (sounding) multiplication factor... — 10
Expected test results	T0523: An error "illegal value of DSPM:HDAT" must be triggered.
Secondary Errors	None

Test Dataset:AA500023

List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
505	Check for mandatory meta object classes.
512	Check for numeric attribute values (i.e. of type float ('F') or integer('I')) padded with non-significant zeroes.
535	Check that the CRC value computed on the received file is the same as the CRC value transmitted.
545	Check that each object has a valid object class code as defined by the Object Catalogue and S-57 Supplement No 2.

Dataset Name	AA500023		S-58 test No.	T0505	Type	E

S-58 Description	Check for mandatory meta object classes.

Test Case No. 1	Entire dataset Meta objects M_COVR, M_QUAL & M_NYS objects are not captured.

Location	32°32'08.26"S 60°44'51.13"E	**S57 Encoding**		

Screen Capture	

Expected test results	T0505: An error "mandatory object 'm_covr' not found" must be triggered. T0505: An error "mandatory object 'm_qual' not found" must be triggered. T0505: An error "mandatory object 'm_nsys' not found" must be triggered.

Secondary errors	T1726: An error "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" must be triggered related to the feature objects created. T1565: Three warnings "open border of 'lndare'" must be triggered. T0011: 47 Errors "edge is not shared by 'm_covr' with 'coverage available', but has USAG=C in object DEPARE" must be triggered. T0549: 39 error 'object is not properly covered by M_QUAL" must be triggered. T0548: 6 errors "A geographic feature must be covered by an M_COVR with CATCOV = 1 [coverage]" must be triggered. T0042: An error "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]" must be triggered.

Dataset Name	AA500023		S-58 test No.	T0512	Type	E

S-58 Description	Check for numeric attribute values (i.e. of type float ('F') or integer ('I')) padded with non-significant zeroes.

Test Case No. 1	Sounding captured with attribute values.

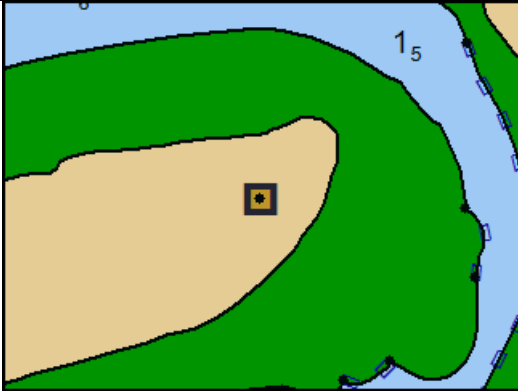| **Location**	32°32'19.96"S 60°44'32.98"E	**S57 Encoding**	SOUNDG(P)	AGENCY=20.00 0000000000

Screen Capture	
Expected test results	T0512: An error "Attribute value contains non-significant zeros" must be triggered.
Secondary errors	T0547: An error "attribute 'agency' not allowed in Sounding" must be triggered related to the feature objects created.

Dataset Name	AA500023	**S-58 test No.**		T0535	**Type**	E
S-58 Description	Check that the CRC value computed on the received file is the same as the CRC value transmitted.					
Test Case No. 1	N/A					
Location	N/A	**S57 Encoding**		CATALOG.031		
Screen Capture	N/A					
Expected test results	T0535: An error "CRC of the data file is not equal to CRC subfield of catalog record" must be triggered.					
Secondary errors	None					

Dataset Name	AA500023	**S-58 test No.**		T0545	**Type**	E
S-58 Description	Check that each object has a valid object class code as defined by the Object Catalogue and S-57 Supplement No 2.					
Test Case No. 1	Security Classification Information area captured.					
Location	32°32'41.36"S 60°44'56.31"E	**S-58 test No.**		m_clas(A)		
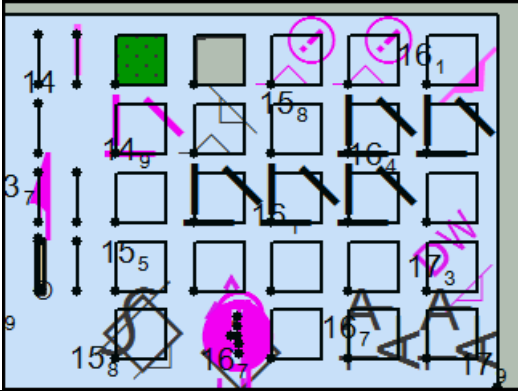
Screen Capture	
Expected test results	T0545: An error "Unknown object label OBJL" must be triggered.
Secondary errors	T0021: An error "Check that all vector record pointer (VRPT) fields are pointed to by an edge vector record" must be triggered related to the feature objects created. T0028: An error "Wrong number of records in DSSI" must be triggered related to the feature object created. T0090: Four warnings "Unexpected tag in DDR directory" must be triggered related to the feature object created. T0504: One additional error "Object class code does not exist for the ENC product specification" must be triggered related to the feature objects created.

Test Dataset:AA500024

List of S58 Recommended ENC Validation Checks covered in this section:

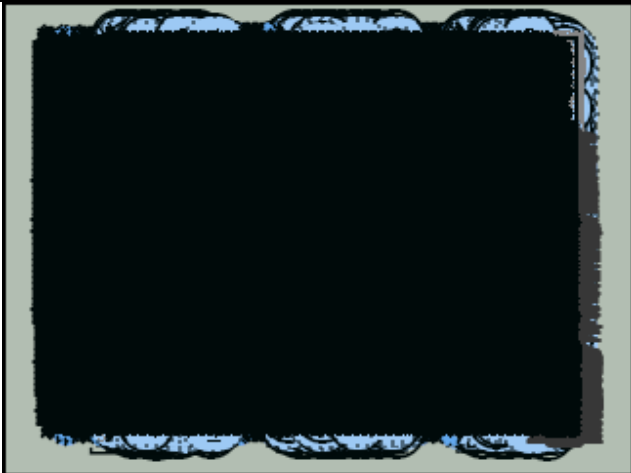| S58 Test	Description
68	Check if there is an update to an object without the corresponding text/graphic file.
509	Check for all the following cases that the mandatory attribute has a value: ARCSLN: NATION ASLXIS: NATION CTNARE: INFORM or TXTDSC DEPARE: DRVAL1 and DRVAL2 DRGARE: DRVAL1 NEWOBJ: CLSDEF and CLSNAM SWPARE: DRVAL1 DEPCNT: VALDCO LNDELV: ELEVAT MAGVAR: VALMAG CONZNE: NATION COSARE: NATION CUSZNE: NATION EXEZNE: NATION FSHZNE: NATION STSLNE: NATION TESARE: NATION M_COVR: CATCOV M_CSCL: CSCALE M_QUAL: CATZOC M_SDAT: VERDAT M_VDAT: VERDAT TS_PAD: TS_TSP DWRTPT: ORIENT DWRTCL: ORIENT M_NSYS: MARSYS or ORIENT RCTLPT: ORIENT Remark: For these objects, the above mandatory attributes are meaningless without values.

Dataset Name	AA500024		S-58 test No.	T0068		Type	W

S-58 Description	Check if there is an update to an object without the corresponding text/graphic file.

Test Case No. 1	Captured BUISGL with TXTDSC and PICREP.

Location	32°32'13.38"S 60°41'26.40"E	S57 Encoding	BUISGL (P)	TXTDSC=US654321.TXT PICREP=US654321.TIF

Screen Capture	

Expected test results	T0068: A warning "external file for 'picrep' not found" must be triggered. T0068: A warning "external file for 'txtdsc' not found" must be triggered.

Secondary error	None.

Dataset Name	AA500024		S-58 test No.	T0509		Type	W

S-58 Description	Check for all the following cases that the mandatory attribute has a value: ARCSLN: NATION ASLXIS: NATION CTNARE: INFORM or TXTDSC DEPARE: DRVAL1 and DRVAL2 DRGARE: DRVAL1 NEWOBJ: CLSDEF and CLSNAM SWPARE: DRVAL1 DEPCNT: VALDCO LNDELV: ELEVAT MAGVAR: VALMAG CONZNE: NATION COSARE: NATION CUSZNE: NATION EXEZNE: NATION FSHZNE: NATION STSLNE: NATION TESARE: NATION M_COVR: CATCOV M_CSCL: CSCALE M_QUAL: CATZOC M_SDAT: VERDAT M_VDAT: VERDAT TS_PAD: TS_TSP DWRTPT: ORIENT DWRTCL: ORIENT M_NSYS: MARSYS or ORIENT

	RCTLPT: ORIENT Remark: For these objects, the above mandatory attributes are meaningless without values.			
Test Case No. 1	Captured all above said objects.			
Location	32°31'30.67"S 60°43'09.38"E	**S57 Encoding**	ARCSLN (A) ASLXIS (L) CTNARE (P,A) DEPARE (L,A) DRGARE (A) NEWOBJ (P,L,A) SWPARE (A) DEPCNT (L) LNDELV (P,L) MAGVAR (P,L,A) CONZNE (A) COSARE (A) CUSZNE (A) EXEZNE (A) FSHZNE (A) STSLNE (L) TESARE (A) M_COVR (A) M_CSCL (A) M_QUAL (A) M_SDAT (A) M_VDAT (A) TS_PAD (P,A) DWRTPT (A) DWRTCL (L) M_NSYS (A) RCTLPT (P,A)	NATION=UNKNOWN NATION=UNKNOWN INFORM=UNKNOWN TXTDSC=UNKNOWN DRVAL1=UNKNOWN DRVAL2=UNKNOWN DRVAL1=UNKNOWN CLSDEF=UNKNOWN CLSNAM=UNKNOWN DRVAL1=UNKNOWN VALDCO=UNKNOWN ELEVAT=UNKNOWN VALMAG=UNKNOWN NATION=UNKNOWN NATION=UNKNOWN NATION=UNKNOWN NATION=UNKNOWN NATION=UNKNOWN NATION=UNKNOWN NATION=UNKNOWN CATCOV=UNKNOWN CSCALE=UNKNOWN CATZOC=UNKNOWN VERDAT=UNKNOWN VERDAT=UNKNOWN TS_TSP=UNKNOWN ORIENT=UNKNOWN ORIENT=UNKNOWN MARSYS=UNKNOWN ORIENT=UNKNOWN ORIENT=UNKNOWN
Screen Capture				
Expected test results	T0509: 42 warnings "value of 'xxxxxx' makes the object meaningless" must be triggered.			
Secondary error	T0043: A warning "Edge depth contour without depth area" must be triggered related to the object created. T0074: An error "depth contour value does not agree with surrounding 'depare'" must be triggered related to the object created.			

	T0548: An error "Edge is open border of 'm_covr', but not on the chart borders" must be triggered related to the object created. T1726: An error "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" must be triggered related to the object created. T0554: An error "Edge is shared by M_COVR with CATCOV=1 and has one TG1 object" must be triggered related to the object created. T0519: An error "Check that all group 1 areas are covered by M_COVR areas with CATCOV=1 without gaps or overlaps" must be triggered related to the objects created. T1771: A warning "Check for any edge which is shared by a depth contour (VALDCO) and two area depth areas (DRVAL1, DRVAL2), but by no line depth area, that: (Maximum value of DRVAL2) > VALDCO > (Minimum value of DRVAL1), and (Minimum value of DRVAL2) = VALDCO." must be triggered related to the object created. T0566: Three warnings "Check that there is no NEWOBJ object in the data that has not been approved by an IHO ENC Encoding Bulletin." must be triggered related to the objects created. T0562: Three errors "Check for any NEWOBJ object, that at least one of the attributes INFORM or TXTDSC contains the name of the feature object. The text must commence with the approved object class name of the feature (New Object)." must be triggered related to the objects created. T0527: Two errors "Filename (no filename) referenced by feature is not in accordance with ENC Product Specification: Invalid file name format" must be triggered related to the objects created. T1779: An error "If the feature is a DEPARE and the spatial type is area, then the value of DRVAL1 must not be the value of DRVAL2" must be triggered.
Remarks	"xxxxxx" indicates respective attribute acronym.

Test Dataset: AA400001

List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
1657	Check for any UWTROC 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.

For each specific case, when QUASOU and TECSOU (attributes of type List) are encoded, they should contain one or more values Selected from the lists of allowed values given in the table. In addition, other attributes which do not appear in the table may be Encoded.

VALSOU	QUASOU	WATLEV	TECSOU SOUACC
Unknown	2 or undefined	3, 4 or 5	Undefined
	2 or undefined	Unknown	Undefined
< 0	1, 3, 4, 6, 8, 9 or undefined	4	any value
	7	4	undefined
0	1, 3, 4, 6, 8, 9 or undefined	5	any value
	7	5	undefined
> 0	1, 3, 4, 6, 8 or 9 or undefined	3	any value
	7	3	undefined

S58 Test	Description
502	Check that the dataset file contains no more than 5 megabytes of data.

Dataset Name	AA400001		**S-58 test No.**	T1657	**Type**	W

S-58 Description	Check for any UWTROC 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. For each specific case, when QUASOU and TECSOU (attributes of type List) are encoded, they should contain one or more values Selected from the lists of allowed values given in the table. In addition, other attributes which do not appear in the table may be Encoded.

VALSOU	QUASOU	WATLEV	TECSOU SOUACC
Unknown	2 or undefined	3, 4 or 5	Undefined
	2 or undefined	Unknown	Undefined
< 0	1, 3, 4, 6, 8, 9 or undefined	4	any value
	7	4	undefined
0	1, 3, 4, 6, 8, 9 or undefined	5	any value
	7	5	undefined
> 0	1, 3, 4, 6, 8 or 9 or undefined	3	any value
	7	3	undefined

Test Case No. 1	Captured UWTROC (27124) objects that the combination of attribute values does not correspond to the above table.

Location	32°34'06.17"S 60°50'55.55"E	**S57 Encoding**	UWTROC(P)	

Screen Capture	

Expected test results	T1657: 35129 warnings "meaningless value of 'quasou' in Underwater/awash rock" must be triggered.

Secondary errors	T2000: 24526 warnings "meaningless value of 'watlev' in Underwater/awash rock" must be triggered. T0507: 8712 warnings "mandatory 'valsou' not found in Underwater/awash rock" must be triggered.

Dataset Name	AA400001		**S-58 test No.**	T0502	**Type**	E

S-58 Description	Check that the dataset file contains no more than 5 megabytes of data.			
Test Case No. 1	Data captured more than 5 megabytes of data.			
Location	N/A	S57 Encoding		
Screen Capture	N/A			
Expected test results	T0502: Opening error "Cell file is too big" must be triggered.			
Secondary errors	None.			

Test Dataset: AA400025

List of S58 Recommended ENC Validation Checks covered in this section:

S58 Test	Description
1792	Check that no cell crosses the 180° meridian.

Dataset Name	AA400025		**S-58 test No.**	T1792		**Type**	W
S-58 Description	Check that no cell crosses the 180° meridian.						
Test Case No. 1	Cell created at 180E.						
Location	32°40'36.12"S 180°00'00.00"E		**S57 Encoding**				
Screen Capture							
Expected test results	T1792: A warning "Current cell crosses the 180 meridian" must be triggered.						
Secondary errors	Following errors/warnings may be triggered when running tests on the dataset. However it may vary depending on the S58 testing tool: T0501: An error "dataset is not rectangular" must be triggered. T0078: An error "Check for any area object that no boundary crosses itself" must be triggered. T0001: 228 warnings "pairs of vertexes are identical" must be triggered. T0077: An error "depth contour crosses another depth contour" must be triggered. T1768: 6 warnings "Check for any SOUNDG object, that any depth value is greater than DRVAL1 of the overlying DEPARE or DRGARE object" must be triggered. T0519: Eight errors "Check Group 1 coverage and consistency" must be triggered. T0011: 18 Errors "edge is not shared by 'm_covr' with 'coverage available', but has USAG=C in object" must be triggered. T0554: 6 Errors "edge is shared by M_COVR with CATCOV=1 and has no TG1 object" must be triggered. T0549: Four errors "Check that all DEPARE and DRGARE objects are covered by M_QUAL objects without gaps or overlaps" must be triggered. T0548: An error "Check that M_COVR meta objects provide exhaustive non-overlapping coverage of the whole cell" must be triggered. T0042: An error "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]" must be triggered.						

	T1726: An error "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" must be triggered. T0016: An error "Check that area outer boundaries are encoded clockwise" must be triggered. T0017: An error "Check that area inner boundaries are encoded counter clockwise" must be triggered. T0080: An error" Check that no area feature has incorrect topology. At least one of the following has been detected: 1. An inner ring is within or overlaps another inner ring; 2. An inner ring is outside of or overlaps the outer ring; or 3. The outer ring is inside of an inner ring" must be triggered. T0019: A warning "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]" must be triggered. T0042: An error "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]" must be triggered.