1. **Test Dataset: AA400001**

**S‐58 Recommended ENC Validation Checks covered in this section:**

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| **S‐58 Check** | **Description** |
| 14 | For each feature object of geometric primitive area where the exterior boundary shares more than one node with an interior boundary. |
| 15 | For each feature object of geometric primitive area where the exterior boundary or an interior boundary is not closed. |
| 16 | For each feature object of geometric primitive area where the exterior boundary is not encoded clockwise. |
| 17 | For each feature object of geometric primitive area where an interior boundary is not encoded counter-clockwise. |
| 42 | For each edge which is referenced by Group 1 objects AND is not referenced by a M\_COVR meta object with CATCOV is Equal to 1 (coverage available) which does not appear twice with different ORNT (forward and reverse) values. |
| 54a | For each FORSTC, LNDMRK or SILTNK feature which is not COVERED\_BY a BRIDGE, COALNE, DAMCON, FLODOC, LNDARE, OFSPLF, PILPNT, PONTON, PYLONS, SLCONS or UWTROC feature object. |
| 54b | For each DAYMAR feature object which is not a slave in a master/slave relationship AND is not COVERED\_BY a BRIDGE, COALNE, DAMCON, FLODOC, LNDARE, OFSPLF, PILPNT, PONTON, PYLONS, SLCONS or UWTROC feature object. |

**Secondary Errors**

**Critical - 13, 13c, 13d, 82, 519a, 519b, 1775**

**Error - 1565**

**Warnings - 90b (4), 571 (7), 1722a**

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| **Dataset Name** | AA400001 | | | **S‐58 Check** | | 14 | | **Type** | | | C | | |
| **S-58 Description** | | For each feature object of geometric primitive area where the exterior boundary shares more than one node with an interior boundary. | | | | | | | | | | | |
| **Message** | | Exterior and interior boundaries share more than one node. | | | | | | | | | | | |
| **Solution** | | Amend boundary to share at most one node. | | | | | | | **Conformity** | | | Part 3 (4.7.3) | |
| **Test Case No. 1** | | Exterior boundary of SBDARE (A) shares two nodes with its interior boundary. | | | | | | | | | | | |
| **Location** | | | **Feature** | | **Attributes** | | **FRID** | | | **FOID** | | | **VRID** |
| 32°20'25.03"S 60°54'41.85"E | | | SBDARE | | NATSUR=9; WATLEV=4 | | FE-66 | | | AA 1516773422 00001 | | | VC-81; VC-91 |
| **Screen Capture** | |  | | | | | | | | | | | |
| **Expected Test Results** | | Check 14:  “Exterior and interior boundaries share more than one node.” must be triggered. | | | | | | | | | | | |
| **Secondary Critical Errors** | | Check 82: “Object references the same edge more than once.” | | | | | | | | | | | |
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| **Dataset Name** | AA400001 | | | **S‐58 Check** | | 15 | | **Type** | | | C | | |
| **S-58 Description** | | For each feature object of geometric primitive area where the exterior boundary or an interior boundary is not closed. | | | | | | | | | | | |
| **Message** | | First and last edge of an area boundary do not meet at a common connected node. | | | | | | | | | | | |
| **Solution** | | Amend edges bounding the area to meet at a common connected node. | | | | | | | **Conformity** | | | Part 3 (4.7.3.1) | |
| **Test Case No. 1** | | SLCONS bounding an area without meeting at a common connected node. | | | | | | | | | | | |
| **Location** | | | **Feature** | | **Attributes** | | **FRID** | | | **FOID** | | | **VRID** |
| 32°20'22.23"S 60°54'35.90"E | | | SLCONS | | WATLEV=2 | | FE-55 | | | AA 1513852500 00001 | | | VE-77; VE-79; VE-78 |
| **Screen Capture** | |  | | | | | | | | | | | |
| **Expected Test Results** | | Check 15:  “First and last edge of an area boundary do not meet at a common connected node” must be triggered. | | | | | | | | | | | |
| **Secondary Critical Errors** | | Check 13c: ” Edges are not referenced sequentially.”  Check 13d: ” Sequential edges do not have the same end and beginning nodes.” | | | | | | | | | | | |
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| **Dataset Name** | AA400001 | | | **S‐58 Check** | | 16 | | **Type** | | | C | | |
| **S-58 Description** | | For each feature object of geometric primitive area where the exterior boundary is not encoded clockwise. | | | | | | | | | | | |
| **Message** | | Area exterior boundary not encoded clockwise. | | | | | | | | | | | |
| **Solution** | | Ensure area exterior boundary is encoded clockwise. | | | | | | | **Conformity** | | | Part 3 (4.7.3.2) | |
| **Test Case No. 1** | | SEAARE (A) outer boundary is not encoded clockwise. | | | | | | | | | | | |
| **Location** | | | **Feature** | | **Attributes** | | **FRID** | | | **FOID** | | | **VRID** |
| 32°20'28.17"S 60°54'34.61"E | | | SEAARE | | OBJNAM=2 | | FE-49 | | | AA 1513849309 00001 | | | VE-70 |
| **Screen Capture** | |  | | | | | | | | | | | |
| **Expected Test Results** | | Check 16:  “Area exterior boundary not encoded clockwise” must be triggered. | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | |
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| **Dataset Name** | AA400001 | | | **S‐58 Check** | | 17 | | **Type** | | | C | | |
| **S-58 Description** | | For each feature object of geometric primitive area where an interior boundary is not encoded counter-clockwise. | | | | | | | | | | | |
| **Message** | | Area interior boundary not encoded counter-clockwise. | | | | | | | | | | | |
| **Solution** | | Ensure area interior boundary is encoded counter-clockwise. | | | | | | | **Conformity** | | | Part 3 (4.7.3.2) | |
| **Test Case No. 1** | | CBLARE (A) inner boundary is encoded as clockwise. | | | | | | | | | | | |
| **Location** | | | **Feature** | | **Attributes** | | **FRID** | | | **FOID** | | | **VRID** |
| 32°20'22.19"S 60°54'46.96"E | | | CBLARE | | - | | FE-63 | | | AA 1516772927 00001 | | | VE-94 |
| **Screen Capture** | |  | | | | | | | | | | | |
| **Expected Test Results** | | Check 17: “Area interior boundary not encoded counter-clockwise.” must be triggered. | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | |
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| **Dataset Name** | AA400001 | | | **S‐58 Check** | | 42 | | **Type** | | | C | | |
| **S-58 Description** | | For each edge which is referenced by Group 1 objects AND is not referenced by a M\_COVR meta object with CATCOV is Equal to 1 (coverage available) which does not appear twice with different  ORNT (forward and reverse) values. | | | | | | | | | | | |
| **Message** | | Group 1 coverage is not correct, a hole or an overlap exists. | | | | | | | | | | | |
| **Solution** | | Amend Group 1 coverage, to remove hole or overlap. | | | | | | | **Conformity** | | | Appendix B.1(3.10.1) | |
| **Test Case No. 1** | | Created edge which is referenced by only one Group 1 feature. Also created the overlap of group 1 features. | | | | | | | | | | | |
| **Location** | | | **Feature** | | **Attributes** | | **FRID** | | | **FOID** | | | **VRID** |
| 32°20'50.10"S 60°54'17.69"E | | | DEPARE (A) | | DRVAL1 =-2; DRVAL2=0 | | FE-03 | | | AA 3070002050 00022 | | | VE-103 |
| 32°20'50.72"S 60°54'17.94"E | | | LNDARE (A) | | - | | FE-71 | | | AA 1516774344 00001 | | | VE-104 |
| 32°20'50.72"S 60°54'17.94"E | | | DEPARE (A) | | DRVAL1 =-2; DRVAL2=0 | | FE-70 | | | AA 1516773533 00002 | | | VE-104 |
| **Screen Capture** | |  | | | | | | | | | | | |
| **Expected Test Results** | | Check 42 “Group 1 coverage is not correct, a hole or an overlap exists” must be triggered for edges VE-103 & VE-104 | | | | | | | | | | | |
| **Secondary Critical Errors** | | Check 519a: “Skin of the earth (Group1) objects do not cover the data coverage (M\_COVR = 1).”  Check 519b: “Skin of the earth (Group1) objects overlap.” | | | | | | | | | | | |
|  | | | | | | | | | | | | | |
| **Dataset Name** | AA400001 | | | **S‐58 Check** | | 54a | | **Type** | | | C | | |
| **S-58 Description** | | For each FORSTC, LNDMRK or SILTNK feature which is not COVERED\_BY a BRIDGE, COALNE, DAMCON, FLODOC, LNDARE, OFSPLF, PILPNT, PONTON, PYLONS, SLCONS or UWTROC feature object. | | | | | | | | | | | |
| **Message** | | FORSTC, LNDMRK or SILTNK not covered by a suitable supporting object. | | | | | | | | | | | |
| **Solution** | | Amend object to ensure it is situated on a suitable object. | | | | | | | **Conformity** | | | Logical consistency | |
| **Test Case No. 1** | | FORSTC, LNDMRK and SILTNK created in DEPARE (A). | | | | | | | | | | | |
| **Location** | | | **Feature** | | **Attributes** | | **FRID** | | | **FOID** | | | **VRID** |
| 32°20’13.96”S 60°54’52.42”E | | | SILTNK (A) | | - | | FE-38 | | | AA 1771863634 00048 | | | VE-62 |
| 32°20’13.79”S 60°54’52.42”E | | | SILTNK (P) | | - | | FE-39 | | | AA 4237372512 00049 | | | VI-04 |
| 32°20’16.56”S 60°54’52.47”E | | | LNDMRK (A) | | CATLMK=2; CONVIS=1 | | FE-40 | | | AA 3074409273 00050 | | | VE-63 |
| 32°20’16.52”S 60°54’50.30”E | | | LNDMRK (L) | | CATLMK=2; CONVIS=1 | | FE-42 | | | AA 0270223935 00052 | | | VE-64 |
| 32°20’16.53”S 60°54’54.87”E | | | LNDMRK (P) | | CATLMK=2; CONVIS=1 | | FE-41 | | | AA 1271734127 00051 | | | VI-51 |
| 32°20’19.13”S 60°54’52.45”E | | | FORSTC (A) | | - | | FE-44 | | | AA 1475377245 00054 | | | VE-66 |
| 32°20’19.14”S 60°54’50.34”E | | | FORSTC (L) | | - | | FE-43 | | | AA 3889370021 00053 | | | VE-65 |
| 32°20’19.09”S 60°54’54.74”E | | | FORSTC (P) | | - | | FE-45 | | | AA 2879784726 00055 | | | VI-57 |
| **Screen Capture** | |  | | | | | | | | | | | |
| **Expected Test Results** | | Check 54a: “FORSTC, LNDMRK or SILTNK not covered by a suitable supporting object.” must be triggered for each of the objects listed. | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | |
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| **Dataset Name** | AA400001 | | | **S‐58 Check** | | 54b | | **Type** | | | C | | |
| **S-58 Description** | | For each DAYMAR feature object which is not a slave in a master/slave relationship AND is not  COVERED\_BY a BRIDGE, COALNE, DAMCON, FLODOC, LNDARE, OFSPLF, PILPNT, PONTON, PYLONS,  SLCONS or UWTROC feature object. | | | | | | | | | | | |
| **Message** | | DAYMAR not covered by a suitable supporting object. | | | | | | | | | | | |
| **Solution** | | Amend object to ensure it is situated on a suitable object. | | | | | | | **Conformity** | | | Logical consistency | |
| **Test Case No. 1** | | Daymark point feature without any structure has been created in water. | | | | | | | | | | | |
| **Location** | | | **Feature** | | **Attributes** | | **FRID** | | | **FOID** | | | **VRID** |
| 32°20'49.15"S 60°54'15.26"E | | | DAYMAR (P) | | COLOUR=2; TOPSHP=1 | | FE-31 | | | AA 3074079070 00047 | | | VI-2 |
| **Screen Capture** | |  | | | | | | | | | | | |
| **Expected Test Results** | | 54b: An error “DAYMAR not covered by a suitable supporting object” must be triggered. | | | | | | | | | | | |
| **Secondary Critical Errors** | | 1775: An additional error “Equipment object within DEPARE, DRGARE or UNSARE without an appropriate supporting structure object or underlying object” must be triggered. | | | | | | | | | | | |