1. **Test Dataset: AA500005**

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

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| **S‐58 Check** | **Description** |
| 18a | For each feature object of geometric primitive area where the number of exterior boundaries is Not equal to 1. |
| 18b | For each feature object of geometric primitive area where the exterior boundary is not referenced first. |
| 18c | For each feature object of geometric primitive area with one or more interior boundaries where any interior boundary does not have USAG set to 2 (interior boundary). |
| 31 | For each edge where SG2D coordinates are identical to the beginning or end node coordinates. |
| 89a | For each master object which references the same slave more than once. |
| 89b | For each slave object which is referenced by more than one master object. |

**Secondary Errors**

Critical – 12, 15, 20b, 507,1015

16, 17, 80a, 80c, 88b

Error –67a, 87, 509, 2000

Warnings –19, 44, 65, 90b, 1771, 571, 1772a,

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Dataset Name** | AA500005 | | | **S‐58 Check** | | 18a | | | **Type** | | C |
| **S-58 Description** | For each feature object of geometric primitive area where the number of exterior boundaries is Not equal to 1. | | | | | | | | | | |
| **Message** | Area object without an exterior boundary or with several exterior boundaries. | | | | | | | | | | |
| **Solution** | Amend geometry so that area object has one exterior boundary. | | | | | **Conformity** | | Part 3 (4.7.3.2)  and (4.7.3.3) | | | |
| **Test Case No. 1** | ACHARE (A) feature with multiple exterior boundaries. | | | | | | | | | | |
| **Location** | | **Feature** | **Attributes** | | **FRID** | | **FOID** | | | **VRID** | |
| 32°31'14.25"S 60°59'08.84"E | | ACHARE (A) | - | | FE-54 | | AA 1522649022 00001 | | | VE-17; VE-18; VE-19; | |
| **Screen Capture/ASCII** |  | | | | | | | | | | |
| **Expected Test Results** | 18a: error “Area object without an exterior boundary or with several exterior boundaries” must be triggered. | | | | | | | | | | |
| **Secondary Critical Errors** | ~~None.~~ 80a: interior contour is within another interior contour | | | | | | | | | | |
| **Test Case No. 2** | Captured CTNARE (A) feature without an exterior boundary according to S-58 description. | | | | | | | | | | |
| **Location** | | **Feature** | **Attributes** | | **FRID** | | **FOID** | | | **VRID** | |
| 32°30'41.46"S 60°59'28.50"E | | CTNARE (A) | - | | FE-56 | | AA 1522649058 00001 | | | VE-20; VE-21 | |
| **Screen Capture/ASCII** |  | | | | | | | | | | |
| **Expected Test Results** | 18a: error “Area object without an exterior boundary or with several exterior boundaries” must be triggered | | | | | | | | | | |
| **Secondary Critical Errors** | None. | | | | | | | | | | |
|  | | | | | | | | | | | |
| **Dataset Name** | AA500005 | | | **S‐58 Check** | | 18b | | | **Type** | | C |
| **S-58 Description** | For each feature object of geometric primitive area where the exterior boundary is not referenced  first. | | | | | | | | | | |
| **Message** | Area object with exterior boundary which is not referenced first. | | | | | | | | | | |
| **Solution** | Amend geometry so that the exterior boundary is referenced first. | | | | | **Conformity** | | Part 3 (4.7.3.1),  (4.7.3.2) and  (4.7.3.3) | | | |
| **Test Case No. 1** | Captured ACHBRT (A) feature where the exterior boundary is not referenced first according to S-58 description. | | | | | | | | | | |
| **Location** | | **Feature** | **Attributes** | | **FRID** | | **FOID** | | | **VRID** | |
| 32°31'08.34"S 60°59'47.52"E | | ACHBRT (A) | - | | FE-55 | | AA 1522649040 00001 | | | VE-22; VE-23; VE-24 | |
| **Screen Capture/ASCII** |  | | | | | | | | | | |
| **Expected Test Results** | 18b An error “Area object with exterior boundary which is not referenced first” must be triggered. | | | | | | | | | | |
| **Secondary Critical Errors** | 16: external contour has wrong direction  17: internal contour has wrong direction  80a: interior contour is within another interior contour  80c: exterior contour is within interior contour | | | | | | | | | | |
|  | | | | | | | | | | | |
| **Dataset Name** | AA500005 | | | **S‐58 Check** | | 18c | | | **Type** | | C |
| **S-58 Description** | For each feature object of geometric primitive area with one or more interior boundaries where any interior boundary does not have USAG set to 2 (interior boundary). | | | | | | | | | | |
| **Message** | Interior boundary has invalid USAG value. | | | | | | | | | | |
| **Solution** | Amend edge to USAG = 2 (interior boundary). | | | | | **Conformity** | | Part 3 (4.7.3.2)  and (4.7.3.3) | | | |
| **Test Case No. 1** | Captured RESARE (A) feature with more than one interior boundary without USAG=2. | | | | | | | | | | |
| **Location** | | **Feature** | **Attributes** | | **FRID** | | **FOID** | | | **VRID** | |
| 32°31'41.86"S 60°59'24.97"E | | RESARE (A) | CATREA=’’; RESTRN=1; | | FE-57 | | AA 1522650247 00001 | | |  | |
| **Screen Capture/ASCII** |  | | | | | | | | | | |
| **Expected Test Results** | 18c: An error “Interior boundary has invalid USAG value” must be triggered. | | | | | | | | | | |
| **Secondary Critical Errors** | 88b: invalid value of USAG = {255} | | | | | | | | | | |
|  | | | | | | | | | | | |
| **Dataset Name** | AA500005 | | | **S‐58 Check** | | 31 | | | **Type** | | C |
| **S-58 Description** | For each edge where SG2D coordinates are identical to the beginning or end node coordinates. | | | | | | | | | | |
| **Message** | Edge where beginning or end node coordinates are the same as the SG2D coordinates. | | | | | | | | | | |
| **Solution** | Amend SG2D coordinates to differ from beginning and  end node coordinates. | | | | | **Conformity** | | Part 3 (7.7.1.6) | | | |
| **Test Case No. 1** | Captured SLCONS (L) feature | | | | | | | | | | |
| **Location** | | **Feature** | **Attributes** | | **FRID** | | **FOID** | | | **VRID** | |
| 32°30'31.00"S 60°58'48.09"E | | SLCONS (L) | CATSLC= 1; WATLEV=2 | | FE-58 | | AA 1522733964 00001 | | | VE-28 | |
| **Screen Capture/ASCII** |  | | | | | | | | | | |
| **Expected Test Results** | 31: error “Edge where beginning or end node coordinates are the same as the SG2D coordinates” must be triggered. | | | | | | | | | | |
| **Secondary Critical Errors** | None | | | | | | | | | | |
| **Secondary Errors** | 87: Consecutive vertices are coincident. | | | | | | | | | | |
| **Secondary Warning** | 571: vertex density exceeds the allowable tolerance | | | | | | | | | | |
|  | | | | | | | | | | | |
| **Dataset Name** | AA500005 | | | **S‐58 Check** | | 89a | | | **Type** | | C |
| **S-58 Description** | For each master object which references the same slave more than once. | | | | | | | | | | |
| **Message** | Master object references the same slave more than once. | | | | | | | | | | |
| **Solution** | Remove duplicate reference to slave object. | | | | | **Conformity** | | Part 3 (6.3);  Appendix B.1  (3.9) and  Appendix B.1,  Annex A (12.1.2) | | | |
| **Test Case No. 1** | Captured one master object and two slave objects BCNSPP and LIGHTS | | | | | | | | | | |
| **Location** | | **Feature** | **Attributes** | | **FRID** | | **FOID** | | | **VRID** | |
| 32°30'29.57"S 60°58'22.01"E | | BCNSPP(P) | CATSPM=1; BCNSHP=1; COLOUR=1; | | FE-59 | | AA 1522734040 00001 | | | VI-39 | |
| 32°30'29.57"S 60°58'22.01"E | | LIGHTS(P) | LITCHR=2; COLOUR=5; SIGGRP=(1); SIGPER=4 | | FE-60 | | AA 1522734208 00001 | | | VI-39 | |
| **Screen Capture** |  | | | | | | | | | | |
| **Expected Test Results** | 89a: An error “Master object references the same slave more than once” must be triggered. | | | | | | | | | | |
| **Secondary Critical Errors** | None | | | | | | | | | | |
|  | | | | | | | | | | | |
| **Dataset Name** | AA500005 | | | **S‐58 Check** | | 89b | | | **Type** | | C |
| **S-58 Description** | For each slave object which is referenced by more than one master object. | | | | | | | | | | |
| **Message** | Slave object has more than one master. | | | | | | | | | | |
| **Solution** | Remove incorrect master from slave object. | | | | | **Solution** | | Remove incorrect master from slave object. | | | |
| **Test Case No. 1** | Master-Slave Relationship has been created for single slave object with two master objects. | | | | | | | | | | |
| **Location** | | **Feature** | **Attributes** | | **FRID** | | **FOID** | | | **VRID** | |
| 32°30'29.57"S 60°58'22.01"E | | LIGHTS(P) | LITCHR=2; COLOUR=5; SIGGRP=(1); SIGPER=4 | | FE-60 | | AA 1522734208 00001 | | | VI-39 | |
| 32°30'29.57"S 60°58'22.01"E | | BCNSPP(P) | CATSPM=1; BCNSHP=1; COLOUR=1; | | FE-59 | | AA 0343173794 00017 | | | VI-39 | |
| 32°30'29.57"S 60°58'22.01"E | | LIGHTS(P) | LITCHR=2; COLOUR=5; SIGGRP=(1); SIGPER=4 | | FE-61 | | AA 1522734256 00001 | | | VI-39 | |
| **ASCII** |  | | | | | | | | | | |
| **Expected Test Results** | 89: An error “Slave object has more than one master” must be triggered. | | | | | | | | | | |
| **Secondary Critical Errors** | 517: An additional error “Feature is a slave to more than one feature” must be triggered. | | | | | | | | | | |