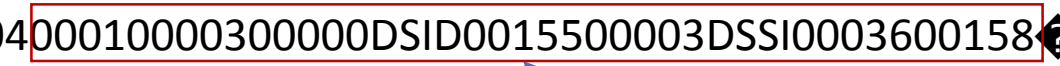
00261 D 00067
5504000100003000000SID0015500003DSSI0003600158 

AA400015.000202018033020180330 03.1TEST2.0THIS CELL IS CREATED BY IIC TECHNOLOGIES Pvt. Ltd., HYDERABAD, INDIA FOR UK HYDROGRAPHIC OFFICE. 


this bit

00261 D 00067 5504

ISO8211 records start with 5 bytes which hold the total length of the record (in ASCII).

So, many years ago someone realised that this was a problem because if you have lots of vertices, or very dense bathy you go over the 99,999 limit.

But there's another part of the record, the catalogue which comes straight after the initial 24 byte header in the record.

this means:

subfield name	length	starts at
0001	00003	00000
DSID	00155	00003
DSSI	00036	00158

so if you want to know how long the record is, just add up the 24 byte header, the length of the catalogue (42 in this case) and the individual record lengths (3 + 155 + 36) + record terminator (1 byte) = 261

This was dealt with in S-57 MD8

7.CI.10 The size of the record length field (LR RP 0-4) is set to 5 and a numeric representation must be used for its value in an S-57 conforming data set. This implies that the largest integer that can be encoded in the numeric form is 99999. However ISO/IEC 8211 does not restrict the record size to that number of bytes, neither does S-57. If a LR larger than 99999 bytes is encoded in an S-57 conforming data set, ISO/IEC 8211 specifies that the record length field (LR RP 0-4) must be set to 0. The actual record size must then be derived from the LR directory.

99,999 isn't a limit – 10^9-1 is because the part of the header that defines how many digits you can use to describe how long each subfield's data is and its offset in the record is 9. So, "999999999" is the maximum value you can represent here

So….

- The only hard limit in iso8211 is the length of the field which describes the subfield data length and offset, 999,999,999.
- Lengths of other fields is a hard limit – S-57 limits RCID values to 2^{32}-1 (because RCID is a b14 (a 4 byte integer)). = 4,294,967,295 so, 1bn is the lower of the two.
- Bytes per subfield
  - SG3D - 12
  - SG2D - 8
  - FSPT (1 reference) – 15
- A cell would need just under 66m FSPT references or 125m vertices to be un-describable in iso8211… Current cells don't exceed 500k vertices or 12k references.
- The MD8 wording was inserted to alert OEMs to the fact that this facility exists in iso8211 but previously no specific test was included. Arguably in S-64 one could be put in but it shouldn't be an S-58 test because it's not a non-conformity to have a record longer than 99,999 bytes. I believe in the past OEMs were consulted on this and very long catalog.031 files (when DVD exchange sets emerged) forced the issue.

Paper comments.

2. The S-57 ENC Product Specification places no limit on the number of spatial references for an object.

Disagree – 4 byte length of RCID limits this number to 2^{32}-1

S-57 Part 3 notes (2.7) that the only size restriction is a maximum field length of 10^9-1 bytes which is defined by ISO/IEC 8211.

agree

Within the definition of the ISO 8211 encoding at Annex A of S-57 Part 3 the Record Length has a Length value of 5 which suggests a limit of 12,499 references. In reality, limits should be considered as follows; for sounding VRID records a limit of 8250 3D coordinates, 12375 2D coordinates for edge VRID records and 12375 for FRID records referencing edges. Record lengths can be "extended" using the DDR leader as detailed in S-57 Annex A.

Agree, suggest but <u>does not impose</u>. Has been dealt with fully by MD8. Needs no further action

Clarify – using iso8211 subfield length width descriptor, ("size of field length field")

Entry map of DDR leader

RP	Sub-entry name	Len	Content
20	Size of field length field	1	Variable 1-9 (defined by encoder)
21	Size of field position field	1	Variable 1-9 (defined by encoder)
22	Reserved	1	"0"
23	Size of field tag field	1	"4"

table A.2