

Paper for Consideration by TSMAD

An analytical assessment for the revised large scale values for spatial resolution in S-101

Submitted by:	S-101 Work Item Leader
Executive Summary:	TSMAD25 agreed that there needs to be more specification for spatial resolution at the upper and lower end of the range. This paper presents an analysis of the different values used in existing ENC data and makes a recommendation for consideration by TSMAD.
Related Documents:	S-101 Product Specification
Related Projects:	S-101

Introduction / Background

Prior to TSMAD25 the United States submitted a comment regarding the lack of specification in S-101 regarding the lower end and the upper end of the spatial resolution table. As S-101 is intended to be more specific and is implementing a new algorithm of data loading and unloading, the US felt that the use of the < operator implied a lack of specificity, which would allow for values greater than the maximum value specified. In reality, it would allow for many different values at large scales. The other concern was that on the smaller end of the scale that there needed to be a value smaller than 3,000,000 to account for those cells that are compiled at the 10,000,000 scale and represent a true overview of the world. .

TSMAD25 agreed in principle to the comment, but the general consensus was that the new values should not be arbitrary, but based on actual values used by Hydrographic offices in S-57 ENCs.

Analysis/Discussion

In S-101 the current table for spatial resolution is as follows:

NOTE: ISO defines scale as spatial resolution and thus S-101 uses the term spatial resolution.

Scale
1:3,000,000
1:1,500,000
1:700,000
1:350,000
1:180,000
1:90,000
1:45,000
1:22,000
1:12,000
1:8,000
1:4,000
<1:4,000

In order to properly understand what the appropriate scales should be at the larger range and to assign another scale at the smaller range, the UKHO provided the United States with a spread sheet that contained every cell in their AVCS service and the accompanying scale value, which amounted to 12,012 cells. The United States used the pivot table function to create a count of every scale to determine data clusters of ENCs for both small scale and large scale spatial resolution. The full table is attached as Annex A to this paper.

At the smallest scales the spread of values are as follows:

Scale	No. of Cells
3000000	17
3121170	1
3500000	76
3604872	1
3750000	1
4860700	1
7000000	1
10000000	9
20000000	5

Thus it is recommended that TSMAD add an additional scale of 10,000,000 to reflect the upper range of spatial resolutions.

At the largest scales the spread of values are as follows:

Scale	No. of Cells
500	1
750	1
1000	12
1250	3
1500	17
1800	1
2000	93
2250	2
2400	5
2500	90
3000	46
3500	35
3600	3
3750	8
3800	3
3999	6
4000	775

It should be noted that most the large scale ENC's fall at 4000, which the largest value in S-101 is currently. However, based on this analysis it is recommended that TSMAD also add the following values:

3000, 2000, and 1000

Anything larger would be an ENC such as a port ENC that is built for a specific purpose and would have a specific product specification.

Recommendations

It is recommended that TSMAD consider this proposal and accept the additional spatial resolutions for S-101.

Action Required of TSMAD26

The TSMAD is invited to:

Agree to adding the following spatial resolutions to S-101: 10,000,000; 3,000; 2,000 and 1,000.