



# Standardization Between S-44 and S-100 Maximum Allowable TVU

HSWG5

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INTERNATIONAL HYDROGRAPHIC ORGANIZATION

MEASURING THE PHYSICS & FEATURES OF THE OCEAN



	Equation	Fixed (a) Precision	Variable (b) Precision
<b>S-44</b>	$\sqrt{a^2 + (b \times d)^2}$	0.0 and 0.00	0.000 and 0.0000
<b>S-57/S-101</b>	$a + (b \times d)$	0.0	0.00

Maximum Allowable TVU thresholds differ in S-44 and S-100

- thresholds are calculated from different equations
- variables are rounded to different precision

Depending on HO implementation, this may cause problems because:

1. IHO Survey Order classification is insufficient to determine the CATZOC classification with respect to vertical uncertainty;
2. It is problematic to have inconsistent requirements within an international standards organization



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# Background

- S-44 and S-57 maximum allowable TVU thresholds were developed independently of each other
- This inconsistency has been raised but an appropriate solution has not been identified

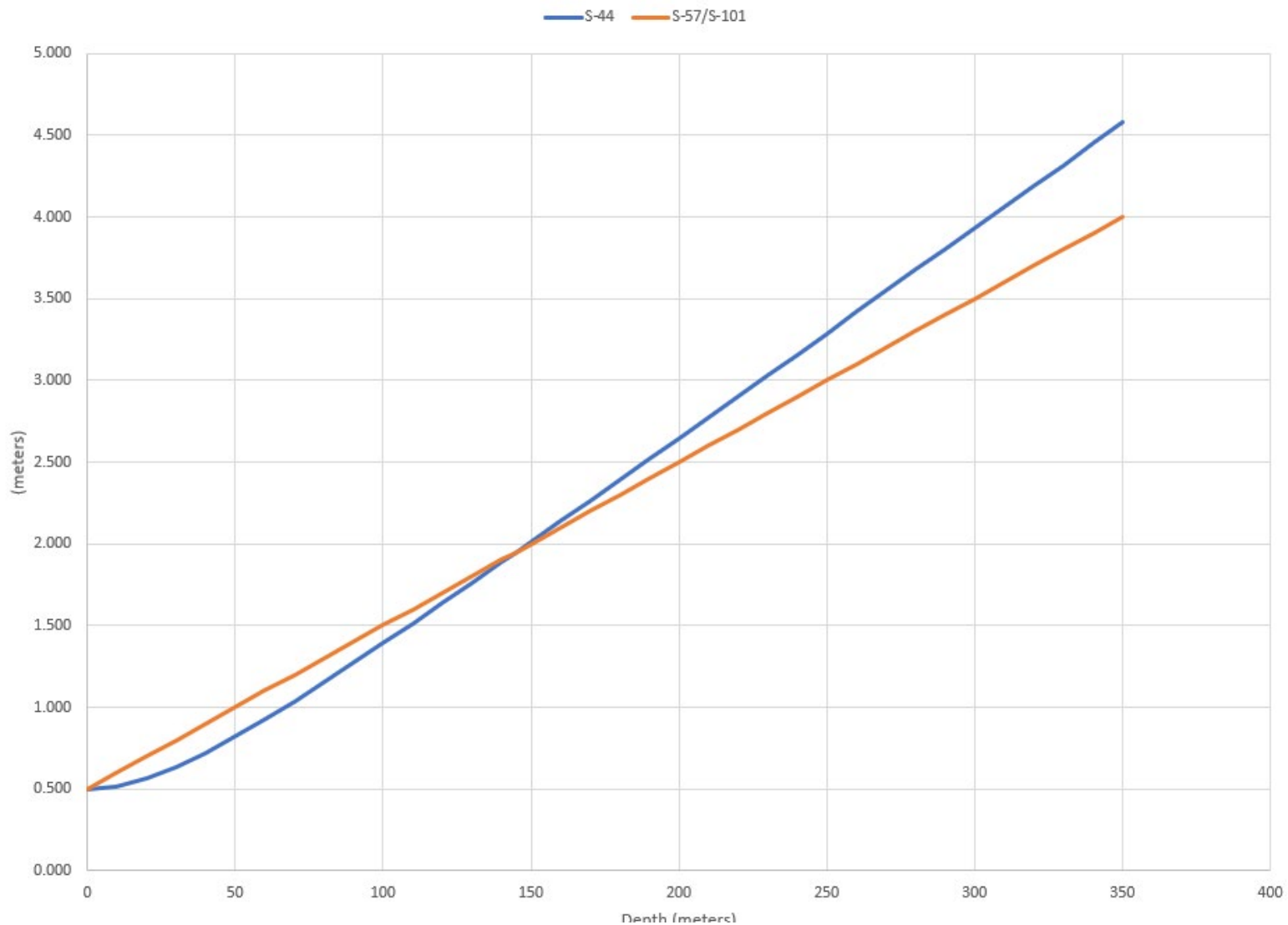


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# Order 1a&1b to CATZOC A1

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Max Allowable Uncertainty  
0-350 meters

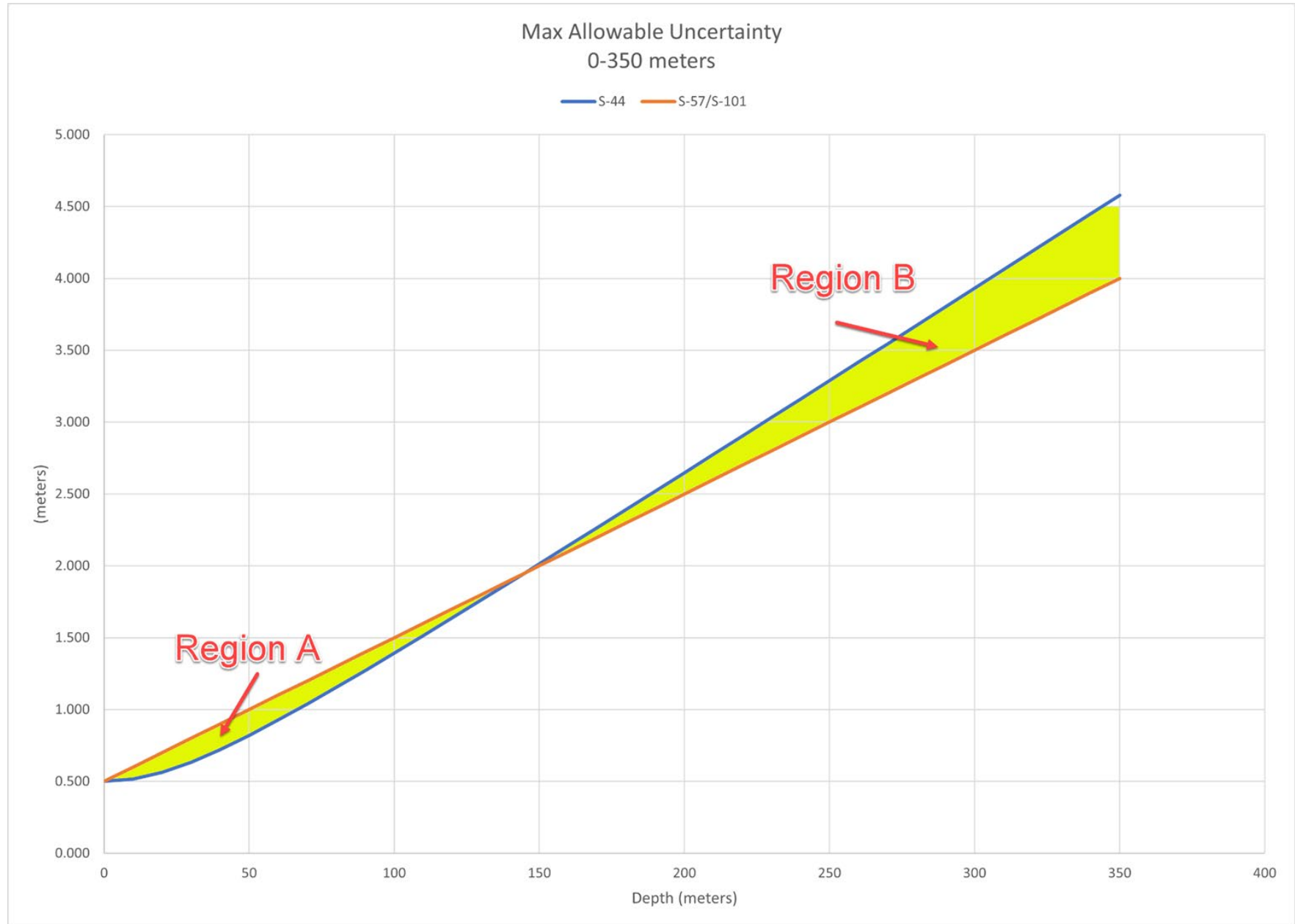




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# Areas of Interest/Discrepancy

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## 7.5 Check 5: Depth accuracy

Table 7-5 – Valid CATZOC Capabilities for the Survey Orders based on depth accuracy

Vertical Accuracy	Survey Order tolerance	$\sqrt{((0.15^2 + (0.0075 \cdot d)^2)}$	$\sqrt{((0.25^2 + (0.0075 \cdot d)^2)}$	$\sqrt{((0.5^2 + (0.013 \cdot d)^2)}$		$\sqrt{((0.5^2 + (0.013 \cdot d)^2)}$		$\sqrt{((1.0^2 + (0.023 \cdot d)^2)}$
ZOC tolerance	Survey Zoc/QoBD	Exclusive	Special	1a		1b		2
0.5m+0.01*d	A1/1			d≤145 m	d≥145 m	d≤145 m	d≥145 m	
1.0m+0.02*d	A2/2							
1.0m+0.02*d	B/3							
2.0m+0.05*d	C/4							
>2.0m+0.05*d	D/5							
N/A	U/6							
N/A	-/Oceanic							

d=depth