



IHO/HSSC

Hydrographic Surveys Project Team

1st Meeting / 20-21-22 June 2017 / PARIS

3d day outcomes

## Second day: debriefing / discussions / 2 breakout sessions



- Step 1: Limitations of the S-44: 10 topics highlighted (at this time), with ideas to fix the issues (except topic #1 related to “Table 1”)

- Step 2: Three proposals to enhance/overwrite “Table 1”





## Third day: debriefing of breakout sessions #2

- Three proposals : update “Table 1”, consider a “Matrix”, use both

Reference	Order	Special	1a	1b	2
Chapter 1	Description of areas.	Areas where under-keel clearance is critical	Areas shallower than 100 metres where under-keel clearance is less critical but <i>features</i> of concern to surface shipping may exist.	Areas shallower than 100 metres where under-keel clearance is not considered to be an issue for the type of surface shipping expected to transit the area.	Areas generally deeper than 100 metres where a general description of the sea floor is considered adequate.
Chapter 2	Maximum allowable THU 95% Confidence level	2 metres	5 metres + 5% of depth	5 metres + 5% of depth	20 metres + 10% of depth
Para 3.2 and note 1 Glossary and note 2	Maximum allowable TVU 95% Confidence level <i>Full Sea floor Search</i>	a = 0.25 metre b = 0.0075 Required	a = 0.5 metre b = 0.013 Required	a = 0.5 metre b = 0.013 Not required	a = 1.0 metre b = 0.023 Not required
Para 3.1 Para 3.4 Para 3.5 and note 3	<i>Feature Detection</i>	Cubic <i>features</i> > 1 metre	Cubic <i>features</i> > 2 metres, in depths up to 40 metres; 10% of depth beyond 40 metres	Not Applicable	Not Applicable
Para 3.6 and note 4	Recommended maximum Line Spacing	Not defined as <i>full sea floor search</i> is required	Not defined as <i>full sea floor search</i> is required	3 x average depth or 25 metres, whichever is greater For bathymetric lidar a spot spacing of 5 x 5 metres	4 x average depth
Chapter 2 and note 5	Positioning of fixed aids to navigation and topography significant to navigation. (95% Confidence level)	2 metres	2 metres	2 metres	5 metres
Chapter 2 and note 5	Positioning of the Coastline and topography less significant to navigation (95% Confidence level)	10 metres	20 metres	20 metres	20 metres
Chapter 2 and note 5	Mean position of floating aids to navigation (95% Confidence level)	10 metres	10 metres	10 metres	20 metres

	A	B	C	D	E	F
Total Horizontal Uncertainty						
Total Vertical Uncertainty						
Seabed search						
Feature detection						
Line spacing						
Fixing shore objects						
Floating nav aids						
Structure heights						
VRF error						
Etc.						



## - Table update

Reference	Order	Special	1a	1b	2
<a href="#">Chapter 1</a>	Description of areas.	Areas where under-keel clearance is critical	Areas shallower than 100 metres where under-keel clearance is less critical but <i>features</i> of concern to surface shipping may exist.	Areas shallower than 100 metres where under-keel clearance is not considered to be an issue for the type of surface shipping expected to transit the area.	Areas generally deeper than 100 metres where a general description of the sea floor is considered adequate.
<a href="#">Chapter 2</a>	Maximum allowable THU <sup>1</sup>	2 metres	5 metres + 5% of depth	5 metres + 3% of depth	20 metres + 10% of depth
<a href="#">Para 3.2 and note 1</a>	Maximum allowable TVU <sup>2</sup>	a = 0.25 metre b = 0.0075	a = 0.5 metre b = 0.013	a = 0.5 metre b = 0.013	a = 1.0 metre b = 0.025
<a href="#">Glossary and note 4</a>	<a href="#">Full Sea floor Search</a>	Required	Required	Not required	Not required
<a href="#">Para 2.1</a> <a href="#">Para 3.4</a> <a href="#">Para 3.5</a> <a href="#">and note 3</a>	<a href="#">Feature Detection</a>	Cubic <i>features</i> > 1 metre	Cubic <i>features</i> > 2 metres, in depths up to 40 metres; 10% of depth beyond 40 metres	Not Applicable	Not Applicable
<a href="#">Para 3.6 and note 4</a>	Recommended maximum Line Spacing	Not defined as <a href="#">full sea floor search</a> is required	Not defined as <a href="#">full sea floor search</a> is required	3 x average depth or 25 metres, whichever is greater For bathymetric lidar a spot spacing of 5 x 5 metres	4 x average depth
<a href="#">Chapter 2 and note 5</a>	Positioning of fixed aids to navigation and topography significant to navigation. (95% Confidence level)	2 metres	2 metres	2 metres	5 metres
<a href="#">Chapter 2 and note 5</a>	Positioning of the Coastline and topography less significant to navigation (95% Confidence level)	10 metres	20 metres	20 metres	20 metres
<a href="#">Chapter 2 and note 5</a>	Mean position of floating aids to navigation (95% Confidence level)	10 metres	10 metres	10 metres	20 metres

## + Pros

Very familiar and focused on charting.  
Can be revised with least effort.  
Backward compatible and consistent with old version.

## + Cons

Not flexible, linked to depth regimes,  
focused on charting and not complete enough to meet other requirements.  
Doesn't handshake CATZOC



## - Matrix

	A	B	C	D	E	F
Total Horizontal Uncertainty						
Total Vertical Uncertainty						
Seabed search						
Feature detection						
Line spacing						
Fixing shore objects						
Floating nav aids						
Structure heights						
VRF error						
Etc.						

### + Pros

Flexible proposal could be used for integrated data and multiple purposes (greater scope to address more of the limitations).

Expandability / forward thinking /

Possibility to keep backward compatibility

### + Cons

Radical change (revolution), can encounter resistance.

Could be confusing and it will demand greater explanation in text.

May drive safety of navigation to be more restrictive. Need limits and explanation to maintain orders



## - Combined / Mixed

	A	B	C	D	E	F
Total Horizontal Uncertainty						
Total Vertical Uncertainty						
Seabed search						
Feature detection						
Line spacing						
Fixing shore objects						
Floating nav aids						
Structure heights						
VRF error						
Etc.						

Reference	Order	Special	1a	1b	2
Chapter 1	Description of areas.	Areas where under-keel clearance is critical.	Areas shallower than 100 metres where under-keel clearance is less critical but <i>features</i> of concern to surface shipping may exist.	Areas shallower than 100 metres where under-keel clearance is not considered to be an issue for the type of surface shipping expected to transit the area.	Areas generally deeper than 100 metres where a general description of the sea floor is considered adequate.
Chapter 2	Maximum allowable THU: 95% Confidence level	2 metres	5 metres = 5% of depth	5 metres = 5% of depth	20 metres = 10% of depth
Para 3.2 and note 1	Maximum allowable TVU: 95% Confidence level	a = 0.25 metre b = 0.0075	a = 0.5 metre b = 0.013	a = 0.5 metre b = 0.013	a = 1.0 metre b = 0.023
Glossary and note 2	Full Sea floor Search	Required	Required	Not required	Not required
Para 3.1	Feature Detection	Cubic <i>features</i> > 1 metre	Cubic <i>features</i> > 2 metres, in depths up to 40 metres; 10% of depth beyond 40 metres	Not Applicable	Not Applicable
Para 3.4	Line Spacing	Not defined as <i>full sea floor search</i> is required	Not defined as <i>full sea floor search</i> is required	3 x average depth or 25 metres, whichever is greater	4 x average depth
Para 3.5 and note 3	Recommended maximum Line Spacing	Not defined as <i>full sea floor search</i> is required	Not defined as <i>full sea floor search</i> is required	For bathymetric data a spot spacing of 5 x 5 metres	
Chapter 2 and note 5	Positioning of fixed aids to navigation and topography significant to navigation. (95% Confidence level)	2 metres	2 metres	2 metres	5 metres
Chapter 2 and note 5	Positioning of the Coastline and topography less significant to navigation. (95% Confidence level)	10 metres	20 metres	20 metres	20 metres
Chapter 2 and note 5	Mean position of floating aid to navigation (95% Confidence level)	10 metres	10 metres	10 metres	20 metres

## + Pros

Familiar with safety of navigation criteria and offers specifications for other needs.

Provides a transition if it need be  
Best of the “both worlds” and gives user option to choose what they prefer  
“App” approach possible

## + Cons

Best/worth of the “both world”.  
Possible of overlapping criteria or cross-referencing between Table and Matrix  
Difficulty to articulate what the standard is

## Debriefing

### According to presentations, discussions and breakout sessions:

- HSPT1 identified 10 limitation points
- Ideas will be proposed to HSSC on how to improved the S-44
- A questionnaire is going to be defined, and circulated to surveyors ...

**Coordinating Editor ??**





## **Discussion regarding HSPT ToR and Work Plans (David Wyatt)**





**Date and venue of the next meeting – HSPT2 and intercessional activities**