

Proposals for Consideration by S-101PT

Additional Value of Vertical Datum

Submit by:	CA
Resume	Allow 13: <i>Low Water</i> as an allowed encoding value for vertical datum in S-101
Related documents	S-101 DCEG, S-57 to S-101 Conversion guidance
Related projects	S-101 vs S-57

Introduction and Background

In non-tidal waters, Canada is using the same datum for elevations and soundings (*13: Low water*). This allows mariners and especially pilots to use water-level predictions and forecasts using the sounding datum to easily calculate the instant water column and air drafts. No other reference level is accurately known in non-tidal waters.

Analysis/Discussion

While S-57 recommended not to use *13: Low Water* as the Vertical datum, S-101 prohibits its use.

Extract of UoC [2.1.2] shows that S-57 recommends not to use *13: Low water*, but permits it.

The vertical datum populated for VDAT and VERDAT on **M_VDAT** should be taken from the following table:

ID	Meaning
3	Mean sea level
16	Mean high water
17	Mean high water springs
18	High water
19	Approximate mean sea level
20	High water springs
21	Mean higher high water
24	Local datum
25	International Great Lakes datum 1985
26	Mean water level
28	Higher high water large tide
29	Nearly highest high water
30	Highest astronomical tide (HAT)

Extract of DCEG [3.9] shows that S-101 does not permit the use of 13: *Low water*

3.9 Vertical datum

<p>IHO Definition: VERTICAL DATUM OF DATA. Any level surface (for example Mean Sea Level) taken as a surface of reference to which the elevations within a data set are reduced. Also called datum level, reference level, reference plane, levelling datum, datum for heights. (Adapted from IHO Dictionary – S-32).</p>					
<p>S-101 Metadata Feature: Vertical Datum of Data (M_VDAT)</p>					
<p>Primitives: Surface</p>					
<p><i>Real World</i></p>		<p><i>Paper Chart Symbol</i></p>		<p><i>ECDIS Symbol</i></p>	
<p>S-101 Attribute</p>		<p>S-57 Acronym</p>	<p>Allowable Encoding Value</p>	<p>Type</p>	<p>Multiplicity</p>
<p>vertical datum</p>		<p>(VERDAT)</p>	<p>3 : mean sea level 16 : mean high water 17 : mean high water springs 18 : high water 19 : approximate mean sea level 20 : high water springs 21 : mean higher high water 24 : local datum 25 : international great lakes datum 1985 26 : mean water level 28 : higher high water large tide 29 : nearly highest high water 30 : highest astronomical tide 44 : baltic sea chart datum 2000</p>	<p>EN</p>	<p>1,1</p>

Conclusions

The use of the 13: *Low water* datum for elevations in Canadian non-tidal waters is strongly anchored in navigation practices and has been efficiently used by CHS, the pilots, the Canadian coast guard and the shipping industry for decades. As we approach the January 2026 deadline, it is unrealistic to change the current practices and achieve a satisfying level of efficiency between the different actors.

Recommendations

Canada is asking to allow, at least, the encoding value 13: *Low water* for the vertical datum attribute. A recommendation could be added to the DCEG not to use the said value where possible.

Justification and Impacts

By prohibiting value 13: *Low water* for vertical datum, Canada will have to take additional measures to conform with the S-101 specification which will result in inaccurate information for the mariner. Additional explanations will be required in cautionary notes to explain the discrepancy between the dataset's metadata and the reality.

Action Required of [HSSC] [Relevant HSSC WG]

The S-101PT is invited to:

- a. **endorse X**
- b. agree
- c. note