

Title: Additional Vertical Datums for S-104**S-100 Maintenance - Change Proposal Form**

Organisation	TWCWG	Date	18-Feb-2021.
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Change Proposal Type (*Select only one option*)

1.Clarification	2.Correction	3.Extension
		X

Location (*Identify all change proposal locations*)

No.	S-100 Version No.	Part No.	Section No.	Proposal Summary
1	5.0.0 draft	4a	App. 4a-D	Amend Figure 4A-D-4 and table S100_VerticalAndSoundingDatum to include additional vertical datums needed for S-104.
2			App. 4a-D	Amend Figure 4A-D-4 and table S100_VerticalAndSoundingDatum to change the datatype to an S-100 codelist to provide for vertical datums not listed in the enumeration.

Change Proposal

The change proposal adds vertical datums to the list in the S100_VerticalAndSoundingDatum enumeration for use by S-104 (Water Level Information). It also proposes replacing this enumeration with a codelist of the same name to allow product specifications to describe vertical datums that are not included among the enumerated values.

The application of proposal TSM8-6.5 (Vertical CRS vice Datum in Metadata) should be taken into account, e.g., the enumeration name should be changed as appropriate.

In the proposal details below, bracketed italic text indicates discussion of the proposal.

Item (1) Amendments to include additional vertical datums:**S100_VerticalAndSoundingDatum & Figure 4a-D-4**

[Add the following to the table S100_VerticalAndSoundingDatum. Amend the UML diagram in Figure 4a-D-4 to include the additional datums.

TWCWG will propose the new datums to the IHO GI Registry, the codes will be available after they are accepted.]

Role name	Name	Description	Code	Remarks
Value	ITRF2014	International Terrestrial	?	

		Reference Frame 2014		
Value	ITRF2020	International Terrestrial Reference Frame 2020		
Value	ellipsoidalHeightGeneric	Ellipsoidal height (generic)	?	Ellipsoidal height for an ellipsoid not specifically named in the list of datums. <i>[delete if proposal to change datatype is accepted.]</i>
Value	balticSeaChartDatum2000	Baltic Sea Chart Datum 2000	?	
Value	geoidGeneric	Geoid (generic)	?	Geoid not specifically named in the list of datums. <i>[delete if proposal to change datatype is accepted.]</i>
Value	internationalGreatLakesDatum2020	International Great Lakes Datum 2020	?	
Value	seaSurface	Sea surface	?	Local sea bottom
Value	seaBottom	Sea bottom	?	Local sea bottom reference

[ITRF2020 (determination underway) per Altamimi et al., IAU 2018, Vienna, August 27, 2018, "The International Terrestrial Reference Frame (ITRF) ITRF2014 and future plans"]

Item (2) Change of data type to codelist:

S100_VerticalAndSoundingDatum & Figure 4a-D-4

[Change the type of S100_VerticalAndSoundingDatum to S100_Codelist, either an "open enumeration" or a "closed dictionary". The tags (see S-100 4.0.0 clauses 1-4.8, 3-5.3.11, 3-6.7) must be one of the following sets:

codelistType=open enumeration

codelistType=closed dictionary

encoding=other: [something]

URI=urn:mrn:iho:spec:s100:5:0:vdatum

The decision whether to use an open enumeration or dictionary is left for TSM / S-100 WG discussion, but only one of the two alternatives should be adopted.

If a dictionary-type codelist is selected, dictionary format, distribution and management will have to be determined. The suggested approach is outlined below.

Format: Use the same format as the ISO 19115 metadata codelists. S-100 4.0.0 metadata codelists use the same format. These codelist files are included in the S-100 4.0.0 schemas on the S-100

GitHub site. The URL is: <https://github.com/IHO-S100WG/S100-Schemas>

Distribution: Distribution as for feature and portrayal catalogues.

Management (update and XML file generation): Using the IHO GI registry metadata register.

Since the questions of dictionary format, distribution, and management apply to all enumeration types in metadata, this proposal will not go into details. Those subjects should be part of a broader discussion.

An alternative solution instead of changing the type is to add an optional CharacterString type attribute: "otherVerticalDatum" to S100_DatasetDiscoveryMetadata.

If any of the proposed solutions is accepted, the two proposed generic values in the table for Item (1) are not needed and should be removed.]

Change Proposal Justification

(1) S-104 has a requirement for discovery and carrier (i.e. root/general) metadata to encode datums that are not in the current list of datums in the S100_VerticalAndSoundingDatums. The additional datums are proposed to satisfy this requirement.

(2) There are several ellipsoids and geoids, each of which would require its own entry in the datums list. Further, the list may need extension in the future. If S100_VerticalAndSoundingDatum is an enumeration, a product specification cannot encode in its discovery or carrier metadata a datum different from the existing members. Adding to the enumeration requires a revision to S-100. This means a product specification must either use a non-standard means of specifying other datums, or await a revision to S-100. Changing the type to an S-100 codelist provides flexibility to avoid delay.

Ongoing discussion within NOAA emphasizes a need to reference EPSG (or ISO Geodetic Registry) codes which convey more information on datums/CRS/transformations than simply a name of a datum on a list, e.g. S100_VerticalAndSoundingDatum. This probably emphasizes the need for changing S100_VerticalAndSoundingDatum to a codelist, to allow for EPSG references, e.g. "other: EPSG NNNN", along with a mechanism to add a new entry into the EPSG registry (which could take at least 6 months?) if an EPSG code doesn't exist for a datum.

What parts of the S-100 Infrastructure will this proposal affect?

- S-100 Feature Concept Dictionary Interface or Database
- S-100 Portrayal Register
- S-100 Feature Catalogue Builder
- S-100 Portrayal Catalogue Builder
- S-100 UML Models
- S-100 GitHub Schemas

Please send completed forms and supporting documentation to the secretary S-100WG.