

# B-12 Guidance on Crowdsourced Bathymetry

## ***Section 2: Data Collection***

Day 1 - Morning Session



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## SECTION 2 Team

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# PROPOSED AMENDMENTS – TECH AGNOSTIC

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Ref. to the text	Edition 2.0.3 text	Updated text	Writing team notes
Section 2.2.2 Understanding NMEA 0183		Remove	Filtered out in the technology agnostic spirit
2.1 Systems and sensors		Introducing the chapter “Bathymetric measurements have two components: 1) a vertical one (depth) and 2) a horizontal one (geographical position). “	
		Remaining focused on echosounders (in broad terms). Removed individual sections 2.1.1.1 and 2.1.1.2 on singlebeam and multibeam	Filtered out in the technology agnostic spirit + section 2.1.1.2 was mainly dealing on MB specific data transfer to the DCDB - Suggestion to add LIDAR was discarded

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# PROPOSED AMENDMENTS

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Ref. to the text	Edition 2.0.3 text	Updated text	Writing team notes
Section 2.1 Systems and sensors	to install a data logger, or enable logging software and/or a data modem to begin collecting and transferring CSB FUGRO: suggest a data modem be added to this list. Done	Added data modem in the list of equipment  Added the following sentence : “The intent is to collect observations from the vessels using data from the vessel’s standard navigation equipment as they perform their normal operations.”	Suggested by MZ (Farsounder)
Section 2.1.2		GNSS positions are typically provided once per second and are accompanied by a <b>date and time</b> stamp.	Suggested by RB,
		The GNSS can also output information about <b>course over ground, speed over ground, vessel heading</b> , the quality of the signal and interruptions in service, <b>and eventually roll and pitch</b> . All these data should also be logged, if possible.	Suggested by RB, DM, MZ (Farsounder)

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Ref. to the text	Edition 2.0.3 text	Updated text	Writing team notes
2.1.2 Positioning and motion sensor	2.1.2 Positioning and inertial system	2.1.2 Positioning and <b>motion sensor</b>	Suggested by CM
2.1.2 Positioning and motion sensor		any movement in three dimensions ( <b>pitch, roll and yaw</b> ) of the vessel. Accurate measurement of three dimensions is particularly needed when the echo-sounder emits narrow beams out of the nadir. In this case, heave, pitch, roll <b>and yaw</b> of the vessel are applied to the sounder measurements in order to locate horizontal and vertically the depth measurement, within the boat reference frame.	Suggest by RB

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Ref. to the text	Edition 2.0.3 text	Updated text	Writing team notes
2.2.1 Data loggers		Crowdsourced bathymetry data loggers are electronic devices or software that connect to a vessel's echo-sounder, <b>the</b> positioning system <b>and eventually the motion sensors</b> and record the sensor outputs.	Suggested by Carlos Marques
2.2.1		<p>Software-based data loggers may be available in an <b><u>ECDIS</u>, integrated navigational system or</b> electronic chart plotter that already incorporates input from the echo-sounder, the GNSS <b>and eventually the motion sensors</b>.</p> <p>Vessels that do not possess a suitable <b>chart plotter</b> system, or data logging software, will need to install a standalone logger.</p> <p>Current hardware-based data loggers typically require the installation of a simple, <b>small plug-and-play</b> electronic component that connects to the echo-sounder, the GNSS and <b>eventually the motion sensors</b> and records their output.</p>	<p>Suggest by DM</p> <p>Suggested by Carlos Marques</p> <p>Plug-and-play suggested by PW</p> <p>Suggested by Carlos Marques</p>

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Ref. to the text	Edition 2.0.3 text	Updated text	Writing team notes
2.2.2 Onboard data storage		<b>With onboard data loggers</b> , vessel owners and operators should ensure that they have adequate onboard data storage capabilities to log depth and positioning data until they can transfer the data <b>to shore or directly</b> to a Trusted Node.	Suggest by DM  Suggested by BJB (DK)
		If a vessel is installing a hardware-based data logger, the mariner should consult with the <b>data logger provider (or seek advice from the Trusted Node)</b> to determine the logger's data storage limits.	
2.2.3 Data transfer		After the CSB data are logged, the files should be transmitted <b>to shore (or directly to a Trusted Node)</b> .	Suggested by BJB (DK)



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Ref. to the text	Edition 2.0.3 text	Updated text	Writing team notes
2.3.1 Sensor offset		If this offset is not automatically integrated , mariners should record their sensor offsets , <b>plus the vertical measurement between the transducer and the waterline</b> , and relay that information to their Trusted Node.	Suggested by RB
		These offset measurements help correct the bathymetric data so that the position indicated by the GNSS is the same as the position of the transducer, <b>and the transducer-waterline measurement adjusts the depth to the waterline</b> . This greatly improves the positional <b>and vertical</b> accuracy of the depth data. Consequences of an inexistent or poor offset correction is detailed in	Suggested by RB



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# AMENDMENTS FOR FURTHER DISCUSSION

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Reference to the text	Points for discussion	Origin	Major or minor
Entire document	<p>Consistency is needed!!!!</p> <ul style="list-style-type: none"><li>• Single beam, single-beam, singlebeam</li><li>• Capitalize only the first word of the section title</li></ul> <p>Cross referencing: Eg Consequences of an inexistent or poor offset correction is detailed in Section 4, Figures 10, 11 and 12 of this document.</p>	<p>Rob Beaman, David Millar</p> <p>SHOM, BSH</p>	M
Section 2.1	<p>We can reference guidelines such as IMCA (International Marine Contractors Association), “Guidelines for The Use of Multibeam Echosounders for Offshore,” 2015 or any others known from the group</p>	SHOM	m



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# AMENDMENTS FOR FURTHER DISCUSSION

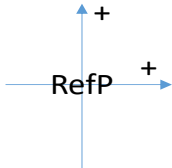
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Reference to the text	Points for discussion	Origin	Major or minor
2.2.1 Data loggers	<p>Suggest removing as this already covered in Section 1.</p> <p>“Trusted Nodes can provide mariners with data loggers and/or modems (for vessels equipped with suitable communication systems), as well as installation guidance and assistance.</p>	DK	M
2.2.3 Onboard data storage	<p>suggest removing as too specific</p> <p>“If additional storage is needed, the mariner should ask the Trusted Node if it is possible to transfer data from the logger to ancillary storage (such as an external hard drive or even shore-based storage) while underway.”</p>	DK	M
2.2.4 Data transfer	<p>Suggest removing as already covered in section 1 + new concept of data aggregator not yet defined</p> <p>“Each Trusted Node or data aggregator will provide mariners with the appropriate procedure for CSB data delivery. Bélen (DK) does not make a difference between TN and data aggregator. We should remove this term.”</p>	DK	M

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Reference to the text	Points for discussion	Origin	Major or minor
2.3.1 Sensor offset	This offset method is likely the most simple and easy to use. Few ECS manufacturers have however implemented the reference to the GPS sensor I have noticed so hence a work to be done in that area.	Anders Bergstom (FLIR)	m
2.3.1 Sensor offset	Suggest discussing this sentence, as it might not be easy for the mariner to be sure of it: “If this offset is not automatically integrated, mariners should record their sensor offsets”	Carlos Marques (IHPT)	M
2.3.1 Sensor offset	Suggestion to make it more clear how they should record sensor offsets. Perhaps providing a drawing similar to the one in figure 5? CIDCO suggests adding a figure with axis and angular conventions 	DK, CIDCO	M