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## NAUTICAL CARTOGRAPHY WORKING GROUP

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### NCWG Letter 08/2024

To NCWG Members

05 December 2024

#### NCWG 10 Item 6.5 Swept depth definition amended to High Confidence Depths

Dear Colleagues,

NCWG members have discussed revising the wording in S-4 for swept wrecks to reflect the changes in technology used to survey wrecks and obstructions. At the 6th NCWG meeting, members agreed proposed new wording which indicates to uncertainty of the least depth indicated, rather than the specific methodology used. There is a need to adjust the definition of the wreck symbols K26, K27 and K30 to allow for modern best survey practice as well as past techniques and future techniques not yet developed. To this end we recommend that the definition should be system independent and focus on the fact that the depth has been found to the highest reliability and with least uncertainty. This aligns with the ethos of the S-44 survey standards in regard of being independent of technology. The mariner should not need to be concerned with the method employed to obtain a depth, they need to be able to understand the level of uncertainty. It is also considered that depths on wrecks measured using appropriate MBES water column data analysis can be at least as reliable (if not more so) than wire sweeping. To avoid introducing a new symbol to S-4, NCWG proposes to change the definitions of the current symbols. This was agreed by DQWG17. At NCWG 10, it was proposed, and agreed, to simplify the wording further to *high confidence depth*.

A draft of all the changes can be found at **Annex A**. Please limit your comments to wording since high confidence proposal is already approved. As this is not a new subject, the response time is 6 weeks. Reply using the Response form at Annex B, **no later than 17 January 2025**. I ask you to use the 'Reply to all' option for responses, to ensure the full Working Group membership is aware of developing discussions.

Yours sincerely

Mikko Hovi

Chair NCWG

Attachments:


Annex A: S-4 amendments

Annex B: Response Form to NCWG Letter 08/2024


Extracts from S-4 in black with:

- Comments in blue
- Proposed additional words in green.
- Proposed deletions ~~crossed through~~.


**B-415 HIGH CONFIDENCE ~~SWEPT~~ DEPTHS AND AREAS; AREAS INVESTIGATED FOR DEEP DRAUGHT VESSELS**

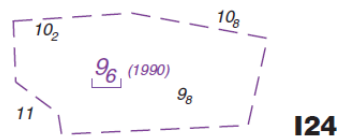
High confidence ~~Swept~~ depths must be shown by the symbol  K2, for example:



The use of the symbol  K2, must be confined to areas investigated using the most reliable currently available survey techniques, resulting in a depth with the highest confidence. While a depth can never be guaranteed, the use of this symbol should be reserved for investigations that leave little doubt that the minimum depth has been determined. ~~swept by wire drag or investigated by diver. Areas investigated by sonar, laser or multibeam echo sounder must not be described as 'swept' on charts.~~

For high confidence ~~swept~~ depths over wrecks and obstructions, see B-422.

- B-415.1 High confidence depth ~~Swept~~ areas.** Extensive areas investigated using the most reliable currently available survey techniques, resulting in a depth with the highest confidence ~~swept by wire drag~~ must be delimited by magenta dashed lines enclosing large magenta soundings with the high confidence depth symbol  (K2) beneath them. The date of the investigation should be indicated in brackets:




- B-415.2 Areas investigated by sonar** should not be distinguished on charts unless it is necessary to show the limits of a channel specially investigated for deep draught vessels, see B-435.3. However, in exceptional cases, it may be important to indicate the limits of sonar swept areas on the Source diagram, or even in situ on the chart if navigators need to know precisely the limits of a survey within dangerous waters. In such cases, the symbol for a maritime limit in general (N1.1) should be used, with a legend such as 'Surveyed 2013 (see Note)' or 'Surveyed 2013 (see Source Diagram)' placed along the surveyed side of the limit. Any additional information should be given in a charted note.

This paragraph should remain unchanged but may be reviewed in future


## B-417 AREAS WITH INADEQUATE DEPTH INFORMATION

In most areas which have not been wire-swept or fully insonified, there is a possibility that depths somewhat shoaler than those charted may exist. Navigators normally allow for that and other uncertainties by allowing safety margins. This specification is concerned with areas which are so inadequately surveyed as to need special cartographic measures to put the mariner on his guard, so he may avoid the areas or proceed with extra caution.

This paragraph should remain unchanged but may be reviewed in future.



- B-422.3** A wreck which has been **investigated wire swept**, using the most reliable currently available survey techniques, resulting in a depth with the highest confidence and leaving little doubt that the minimum depth has been determined. ~~or has had its least depth determined by a diver~~; This must be shown by sounding numerals showing the depth to which it has been measured, surrounded by a danger line, with the abbreviation 'Wk'; the **high confidence swept** depths symbol  K2 must be inserted under the danger line, for example:



- B-422.4** A wreck over which the least depth that is known has been found by **investigation sounding only** using reliable survey techniques, must be shown as in B-422.3 but without the **high confidence swept** depth symbol , for example:



- B-422.5** A wreck with **estimated safe clearance**. For a wreck (in water less than 200m deep) over which the least depth is unknown, a safe clearance depth must be estimated if possible.

To avoid the ambiguity in interpreting the symbols  and , the 'safe clearance bar' must be used for a wreck which is considered to have a safe clearance to the depth shown, for example:



**Method for estimating safe clearances.** Some data on the sunken vessel will be required (for example vertical length from keel to highest point), so that its likely height above the seabed can be determined. Any further information about the wreck should also be taken into account (for example it may be lying on its side, in which case the beam of the vessel will determine the height of the wreck).

Then obtain the most probable depth of the seabed in the charted position of the wreck. If known, take into account the sea floor topography. Consult latest surveys if possible. If the position of the wreck is approximate, use the shoalest depth in about a 2-mile radius.

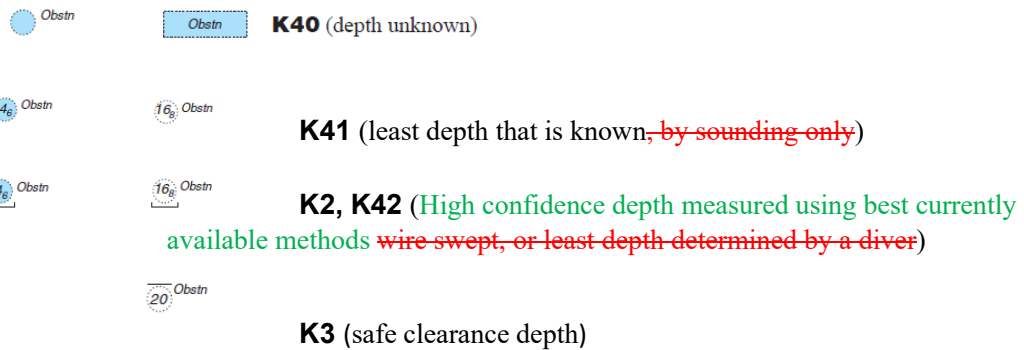
Next, obtain the 'probable clearance depth' by subtracting the maximum likely height of the wreck from the probable depth of the seabed.

Finally, subtract a safety margin of 5m from the probable clearance depth, to obtain the 'safe clearance depth'. In very shallow water, estimate a safe clearance only if confidence in the data supports a safety margin of less than 5m.

Safe clearance depths may also be estimated for **other obstructions** (for example: wellheads; diffusers; underwater turbines) where sufficient data (for example vertical length) about the obstruction is known, on the same principles as for wrecks. Note that some wellheads have safety cages that may significantly increase their height.

This paragraph should remain unchanged

**B-422.10** **Submerged obstructions** too small to be shown to scale must be charted similarly to wrecks (see B-422.3, 422.4, 422.7) but with the **international abbreviation** ‘*Obstn*’ in place of ‘*Wk*’. Further information may be provided by replacement of the legend ‘*Obstn*’ with appropriate legends to indicate the characteristics of the submerged obstruction, where known, for example: ‘*ODAS*’; ‘*Diffuser*’. Larger obstructions must be charted with a danger line and legend. Blue tint must be added over obstruction symbols in accordance with the charted depth, and in all cases where a depth numeral is not charted and the general depth of water is less than 100m.



**B-432.1** **The term ‘Recommended tracks’,** in its widest sense, includes all channels and fairways recommended for hydrographic reasons to lead safely between shoaler depths, obstructions, islands etc....

b. **Channels** may be entirely natural features such as passages between islands or sandbanks; apart from naming them, no other chart action should be required. Channels may also be artificially marked, and sometimes deepened. Such channels may have their outer limits shown, usually in part only, by:

- transits or ‘clearing lines’ (see B-433);
- light sectors (see B-475.5) or direction lights (see B-475.7);
- lateral buoys or beacons;
- dredged area (see B-414) or **high confidence depth swept** area (see B-415) limits.

It should not usually be necessary to chart the outer limits of a channel, as these should be defined by the appropriate symbols above. However, if the outer limits of a channel are not clear from natural or artificial features, but a regulatory authority requires or recommends certain vessels to navigate within defined limits, they should be charted by the appropriate Routeing Measure symbol (see B-435), in magenta.

**B-439.1** **The limits of non-restricted areas** must be represented by a dashed line (except where there is a specific symbol):

- in **black** when associated with depths (except **high confidence depth swept** areas and declared DW routes) or with permanent physical obstructions. If no other limit is specified, the general limit should be used:



- in **magenta** when regulated and where there is no permanent physical obstruction. If no other limit is specified, the general limit should be used:



Tint bands may be added for emphasis, see B-439.6.

See the appropriate specifications for particular types of areas (which may include length of dashes and line weights). A list of the more common areas is given below:

## **BLACK**

Works in progress, reclamation	see B-329
Dredged areas, channels, turning basins	see B-414
Inadequately surveyed	see B-417
Unsurveyed	see B-418
Foul ground	see B-422.8
Moorings	see B-431.7
Wind farms, current farms	see B-445
Spoil ground	see B-446
Marine farms	see B-447.3 and 447.6
Log pond	see B-449.2

## **MAGENTA**

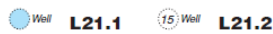
High confidence depth <del>Swept</del> area	see B-415.1
Inadequately surveyed	see B-417
Unsurveyed	see B-418
Harbour authority limit	see B-430.1
Swinging circle around anchor berth	see B-431.2
Anchorage areas	see B-431.3
Waiting areas	see B-431.9
Fairway, channel	see B-432.1
Routeing measure boundaries	see B-435
ESSA (if green not available)	see B-437
Customs limit	see B-440.2
Dredging area	see B-446.4
Shellfish beds (without obstructions)	see B-447.4
Cargo transshipment	see B-449.4

### **B-445.1 Wells, Wellheads, Templates and Manifolds.**

b. A **submerged wellhead** is a submarine structure projecting some distance above the sea floor and capping a temporarily abandoned (or 'suspended') oil or gas well. Their associated pipes and other equipment usually project some 2 - 6 metres, but in some cases as much as 15 metres, above the sea floor. Some may be covered by steel cages to avoid snagging trawling gear. Note: In certain instances, a wellhead may project above the sea surface, see g.

Wellheads must be charted on at least the largest scale charts, together with associated buoys, as a hazard to fishing and, dependant on depth, as a hazard to deep-draught vessels and towed structures.

The symbol must be a danger circle with the legend 'Well'. Where the depth of water over the top of the wellhead is known, it may be inserted within the danger circle (as for any other obstruction, see B-422.9).



High confidence depth Swept (K2) or safe clearance (K3) symbols should be added if appropriate. Blue tint appropriate to the depth should also be added. If no depth can be inserted, solid blue tint should be added if the surrounding depths are less than 100m (see B-411.6). Some countries have national laws prescribing 500 metres radius 'safety zones' around suspended wells (see B-445.6).

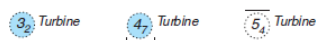
f. **Templates and Manifolds.** A number of wells may be drilled from one rig by using a structure, termed a 'template', placed on the sea floor below the rig to guide the drill. A 'template' may stand as much as 15 metres above the sea floor. The output from a number of wells may sometimes be collected in an **Underwater Manifold Centre (UMC)**, a large steel structure up to 20 metres in height above the sea floor, for delivery to a production platform. A **Pipeline End Manifold (PEM)** is, typically, a steel frame secured to the sea floor with piles to anchor the end of a submarine pipeline. They are normally associated with those pipelines which terminate at offshore tanker berths, for example Single Buoy Mooring (see B-445.4). Flexible hoses, provided with buoyancy aids, rise vertically upwards from the PEM and connect with the underside of the SBM, or directly to the tanker.

These installations must be charted, if required, as obstructions (see B-422.9) with the legends 'Template', 'Manifold', or equivalent, instead of 'Obstr'. If it is required to chart a PEM, it must be charted as a manifold. High confidence depth Swept (K2) or safe clearance (K3) symbols should be added if appropriate. Blue tint appropriate to the depth should be added. If no depth can be inserted, solid blue tint should be added if the surrounding depths are less than 100m (see B-411.6).

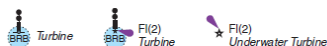
**B-445.10 Underwater turbines, for generating electricity from tidal currents, must be represented:**



Where the depth of water over the turbine is known, it may be inserted within the danger circle. The rules for blue tint, high confidence depth swept and safe clearance depths must be applied as for wrecks and other obstructions (see B-411.6, B-415, B-422.5 and B-422.9), for example:



Where part of the structure is above water, and marked (for example with a beacon or light), the appropriate symbols must be used. On small-scale charts, where it may not be practicable to show the danger circle, the legend 'Underwater Turbine' should be used, for example:



**Annex B to NCWG Letter 08/2024**

Amendments to S-4 from NCWG10

Response Form (please return to NCWG Chair and Secretary by **17 January 2025**)

[mikko.hovi@traficom.fi](mailto:mikko.hovi@traficom.fi), [PSheatsley@esri.com](mailto:PSheatsley@esri.com),

If you answer 'No', please explain in the 'Comments' section. You can also use that section to record other suggestions and comments.

No.	Do you agree to the following?	Yes	No
1	Proposed changes to B-415.		
2	Proposed changes to B-415.1.		
3	Proposed changes to B-422.3.		
4	Proposed changes to B-422.4.		
5	Proposed changes to B-422.10.		
6	Proposed changes to B-432.1, B439.1., B-445.1., and B-445.10.		

Further comments:

Date:

Name:

Organisation: