



IHB File N° S3/4405

CIRCULAR LETTER 07/2012
26 January 2012

CHART SPECIFICATIONS OF THE IHO (S-4)

1. Source/ZOC Diagrams
2. Historic wrecks
3. Berthside obstructions
4. Lighthouses
5. Depiction of imprecise shoal areas
6. Development dredging
7. Yellow, amber and orange lights
8. Symbol for diving prohibited

References: a) IHO Publication S-4 Part B: Chart Specifications of the IHO
b) INT1: Symbols, Abbreviations, Terms used on Charts

Dear Hydrographer,

1 Under its Terms of Reference 3a.ii, the IHO Chart Standardization and Paper Chart Working Group (CSPCWG) has a responsibility to *'advise the IHO on suggestions put forward by Member States to update S-4, in accordance with IHO Specification B-160, with the goal of achieving the maximum possible adherence by Member States to the Regulations and Specifications'*.

2 Based on various questions or proposals raised by Member States, the CSPCWG has recently considered in detail several subjects that are listed in the title above.

3 As a result, the CSPCWG proposes certain new and revised specifications for inclusion in S-4 and one new symbol for inclusion in INT1. Drafts of the new or revised specifications and the new symbol are attached at Annex A to this Circular Letter for Member States to review. According to Specification B-160, Member States should inform the IHB (info@ihb.mc) within three months if they have any major objections to the adoption of these revised or additional specifications and symbols, or any other comments. Therefore, Member States' comments should reach the IHB **no later than 25 April 2012**, using the Response Form at Annex B. If no objections are received, the IHB will announce in a follow-up Circular Letter that the revised specifications have come into force. The CSPCWG will then include them in S-4 at the next opportunity.

On behalf of the Directing Committee
Yours sincerely,

Robert WARD
Director

Annex A: Draft new specifications (with brief explanations)
Annex B: Response form

PROPOSED NEW AND REVISED SPECIFICATIONS AND SYMBOL

1. Source/ZOC Diagrams
2. Historic wrecks
3. Berthside obstructions
4. Lighthouses
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6. Development dredging
7. Yellow, amber and orange lights
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1. Source/ZOC diagrams.

Background: The CSPCWG considered how and why to include details of surveys assessed for charting, even when the bathymetry is largely unchanged. For example, an area compiled from a single-beam 1990 survey may have been resurveyed in 2010 by multi-beam, which demonstrated that the bathymetry is generally unchanged. It was agreed that some additional guidance should be added to S-4 in B-290 as an option to include evaluated sources on Source/ZOC Diagrams and also to include an additional NM criterion in B-620.

Proposed additions and amendments to S-4 shown in red.

B-290.6 Updating: Source diagrams should be updated when New Editions of charts are compiled. *Source diagrams may be updated by NM, when a new survey in a navigationally significant area has been included on the chart by NM Block, or has been assessed for significant changes with none being found; see B-294.4.*

B-294 DETAILS OF SOURCES: DATE AND SCALE

B-294.1 The date of a survey must be given on conventional Source diagrams. It gives an indication of:

- The adequacy of the equipment used
- The thoroughness of examinations of dangers at particular depths (based on the maximum draught of vessels afloat at that date)
- The likelihood of later changes in depths, particularly in areas of mobile or unstable seabed or coral growth.

For ZOC diagrams, see B-297.8.

The date of the edition of a published chart used can be misleading (as the source data may be much older) but may have some value.

Year dates only should normally be used.

B-294.2 Guidance on the practical significance of survey dates should be given in a national publication that advises users on the reliability of charts; see B-290.5.

B-294.3 The scale of a controlled survey (see B-295.2) may provide some indication of the thoroughness and the line-spacing, and should be stated in the form 1:5 000, 1:15 000, etc, on conventional Source diagrams. The scale of a chart source may have some value. If considered useful, line-spacing may be added to the details of a survey, e.g. '200m', under the heading 'Line-spacing', or equivalent. For surveys gathered by systems using multibeam, interferometric, laser or Lidar technologies, scale has little relevance; a statement of whether full sea floor coverage has been achieved, or not achieved, should be given instead.

B-294.4 *When a new survey is received and assessed by a hydrographic office, the Source diagram would not normally be modified if it is judged that:*

- *changes to the charted depths are of no navigational significance so a New Edition of the relevant chart is not necessary; or*

- all navigationally significant depth changes can be promulgated by NM (especially on smaller scale charts).

However, if the mariner may be influenced to avoid an area because of the nature (eg age) of the currently charted data, then a New Edition must be considered to incorporate the new survey (and update the Source or ZOC diagram) even if the depths show little change. Consideration may be given to updating the Source or ZOC diagram details by NM (or NM Block). If this method is used, because the new details would not reflect the actual source used on the chart, an explanatory note should be added, eg '(most recent data used or assessed for charting)', or equivalent, directly under the Source diagram's title.

B-297.4 The quality of the hydrographic source data is assessed according to six categories: five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data which has not been assessed. If none of the hydrographic sources used on a chart have been assessed, a ZOC diagram indicating only 'U' values should not be added to the chart, as it would not include any information of use to the mariner.

The assessment of hydrographic data quality and classification into zones is based on a combination of:

- a. Position accuracy,
- b. Depth accuracy, and
- c. Sea floor coverage (certainty of significant feature detection).

Where a charted survey is supplemented by occasional soundings from a less accurate source, only the main survey should normally be categorised. The less accurate depths may be indicated as hairline/upright sounding figures (see B-417.3) on the chart.

When a new survey of better (or possibly worse) CATZOC than shown in the diagram is assessed between editions, consideration may be given to updating the ZOC diagram by NM (or NM Block). For a fuller explanation, see B-294.4. A high category survey in an area of mobile seabed may need to be downgraded if a later sketch survey proves that the earlier survey is now inaccurate.

B-620.3 Information considered to be navigationally significant,

- n. **Chart references.** References to adjoining and other scale charts when a NC (or NE with changed limits) is published, see B-635.2.
- o. **Source (or ZOC) diagrams** for surveys assessed for charting of more recent date or different CATZOC than currently shown. For explanation, see B-290.6 and B-294.4.

2. Historic Wrecks

Background. In Australia (and possibly elsewhere), wrecks over 75 years old are automatically classified as historic wrecks. This status implies that certain activities on the wreck are not allowed (eg diving), but no area is specified. Existing S-4 specifications do not quite cover this situation, as the INT1 'symbol' is limited to a restricted area with legend. It was agreed that historic wrecks, with or without an associated area, should be indicated by a magenta legend. The S-4 specification should be amended accordingly and relocated in the wrecks area (B-422), thereby changing the emphasis to the wreck rather than an area. INT1 N26 was considered to be redundant (and has been removed from the latest editions of INT1).

Proposed additions and amendments to S-4 shown in red.

B-422 [instead of B-449.5]

- i **Historic wrecks.** Many nations have designated certain wrecks to be of historical or cultural importance (eg due to age, as sea graves), to protect the wrecks from unauthorised interference (eg by diving, salvage, anchoring). Such wrecks must be indicated, if required, by a magenta legend 'Historic Wk', or equivalent, adjacent to the symbol. Any wreck detail and associated buoyage must be shown in black. If there is an associated area in which restrictions apply, this must be shown, if required, by the symbol for a restricted area (N2.1) on the largest scale charts.

An explanatory note may be added, in magenta, **if required**, eg:

HISTORIC WRECKS

The sites of historic wrecks are protected from unauthorised interference. Diving, fishing, anchoring and salvage are prohibited.

B-449.5 Not currently used.

3. Berthside obstructions

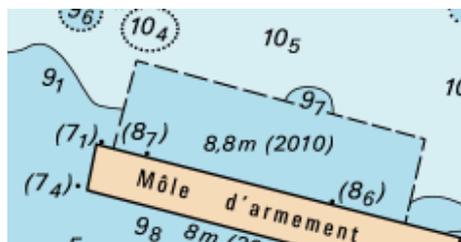
Background. Many berths are built with foundations which extend underwater. Changing ship design (from 'V'-shaped hulls to more 'U'-shaped hulls) means that such foundations, shoaler than the designed or dredged alongside depth, may be a hazard. CSPCWG agreed that some guidance should be added to S-4.

Proposed additions and amendments to S-4 shown in red.

B-410.1 Depths alongside berths. Berths are generally depicted on charts on the assumption that the construction consists of a vertical wall down to the harbour or river floor (often down to the charted dredged depth); however, this is not always the case. There may be an underwater slope or base structure supporting the wall, which protrudes below water into the berthing area above the sea floor (reportedly by up to 6m). For vessels with 'V'-shaped hulls, this is not usually an issue; however, for vessels with 'U'-shaped hulls, with near vertical sides, an underwater protrusion at a berth is more significant.

A protrusion of up to 2m is unlikely to create a problem and should not be charted, unless advised by the local authority. For larger protrusions, the charting options will depend largely on the scale of the chart. Consideration should be given to the following; more than one may be appropriate depending on circumstances:

- If the chart scale is sufficiently large, it may be possible to show the inner limit (dashed line) of the dredged area, if there is one, parallel with the wharf, so that navigators know that the dredged depth is not continuous right up to the edge of the berth. It may be possible to show some actual soundings in this narrow area, or 'out of position soundings' to show the 'alongside depth', as explained in B-412.2. Such soundings would need to be shown sufficiently frequently to indicate that it is not possible to avoid them by berthing between the soundings.
- Choice of colour tints may allow this area to be shown in blue tint while the dredged area is white, which will draw attention to shoaler depths and berth-side obstructions.
- If the scale is too small to show the dredged limit parallel with the berth, it is still possible to show some 'out of position' soundings alongside, in parentheses either within the dredged area or on the adjacent land, as explained in B-412.2; see also B-414.5, eg:



- A chart note may be used, advising the chart user to contact the harbour authority or pilot for advice whether it is possible to berth a particular vessel alongside. If applicable, the note may refer to an associated publication providing more details.
- A legend may be added on the land alongside the berth, eg 'Depth alongside 3.2m, 5m from wall', 'Depth alongside 3.2m (see Note)'. The note could explain that the foundations of the berth extend 5m underwater, for example.
- A large scale inset plan may be used to show more detail.

- A diagram showing the profile of the side of the wharf may be included.

A danger line should not be inserted alongside the wharf, as this indicates that the structure is not intended for berthing alongside, see B-322.1.

Note: If any Member State could provide examples of any of the above options which could be used to illustrate S-4, the Secretary of the CSPCWG would be grateful to receive them: email andrew.coleman@ukho.gov.uk.

4. Lighthouses

Background. Several different ways of depicting disused lighthouses have evolved. In the interests of standardization, CSPCWG agreed that clear guidance in one place in S-4 is desirable.

Proposed revisions to S-4 in red.

B-457.3 **Operational lighthouses**, ie **substantial** structures **housing** major marine navigational lights, must be shown as light stars (see B-470.5). As they are usually distinctive structures, in size, shape and colour, a small pictorial sketch may be placed nearby. It should normally be in magenta, but a different colour (other than black) may be used; see B-456.5.



E3.2

Disused lighthouses are likely to remain visually conspicuous or prominent by day, and should be indicated by an appropriate symbol (usually a tower – E20) or, if the structure is unknown, by a fixed point symbol (B22). The legend ‘LtHo (disused)’, or equivalent, may be inserted adjacent to the symbol, if this will help identify the distinctive shape of the structure. Associated pictorial sketches may be retained for disused lighthouses.

For lights which have been temporarily extinguished, see B-473.7.

B-470.5 **Position of lights.** The position of a light (including **one exhibited from a lighthouse**, see B-457.3) should normally be shown by a five-pointed star in one of two sizes.



P1

The larger star should be used for the majority of lights, **including all major lights**, see B-472.1. The smaller star may be used where there are numerous minor lights, eg the corners of quays and dolphins in a harbour.

5. Depiction of imprecise shoal depth areas

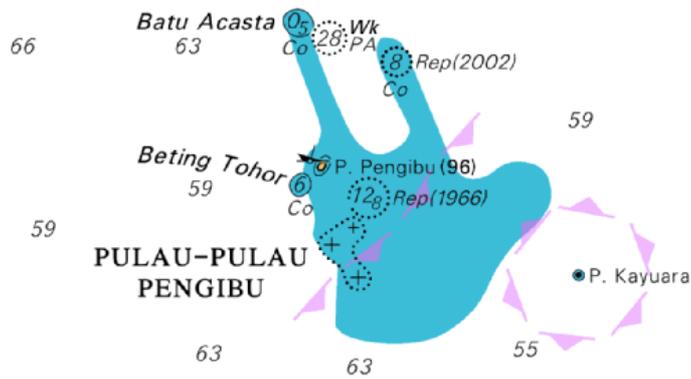
Background. Various methods of depicting the possible existence of shoal areas (eg derived from satellite imagery, satellite altimetry) have been developed. While there is no invariable cartographic solution, CSPCWG decided that some general guidance and examples in S-4 would be helpful.

Draft additions and amendments to S-4 shown in red.

B-424.7 Imprecise Shoal Areas. It is important to depict known or suspected shoal areas on charts, so that the prudent mariner can avoid them, even where the actual depths cannot be shown because of the limitations of the source data. In areas where reliable hydrographic survey data is very limited or non-existent, it is sometimes possible to identify the existence of shoal patches by satellite imagery.

If confidence in the data is low, such areas should be charted by an area of full shallow water blue tint, without limiting line or contour. This is to avoid implying that the full extent or depth of the shoal has been established and also avoid conflicting line styles with any charted shoals from other sources that may lie close to or within the area.

Example:

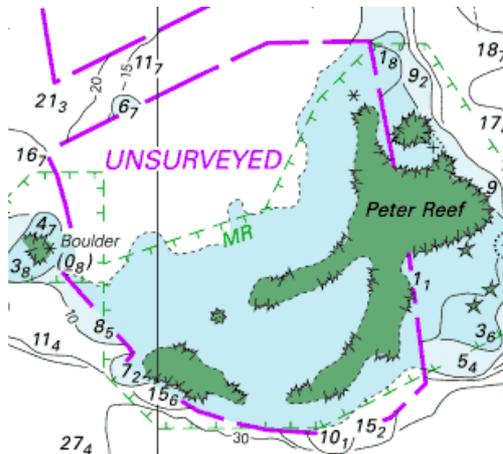


An explanatory note should be included on the chart, eg:

SHOAL AREAS

The shoal areas depicted within the area of this chart without contours, thus: , have been derived from satellite imagery. Uncharted dangers may exist.

Where confidence in the data allows, fine dashed lines may be used to bound areas of appropriate tint. For areas which may dry, small sections of symbols, eg rock, coral, may be inserted where known, eg:



An explanatory note should be included on the chart, eg:

REEF AND SHOAL LIMITS

Where reefs and shoals have not been surveyed, their limits have been determined from satellite imagery. They are not conclusive and dangers may exist outside the charted limits.

It is also possible to predict the existence of shoal areas (potentially dangerous only to sub-surface operations) by use of other techniques, eg gravimetric data. In such cases, an appropriate selection from B-424.1-5 should be made. If the depth can be reasonably estimated to lie between two extremes, particularly if the lower extreme can be confidently predicted to be greater than 30m, a legend, eg: *Shoal 30-100m rep (2011)*, or equivalent, may be inserted within or adjacent to the area. A dashed limit (N1.1) may be used to define the area, if necessary.

6. Development dredging

Background. The CSPCWG considered that guidance is required for charting port areas planned for dredging, but not in such a way that the mariner may assume that what is charted already exists.

Draft additions and amendments to S-4 shown in red (except where magenta).

414.6 Areas being dredged. If it is considered useful to provide the mariner with detailed dredging plans (eg during port development), then the following options may be used, listed in the most likely order of application:

- Issue a preliminary (P) NM, including if useful a diagram showing the planned layout and depths of dredged areas; see B-634. Note: any diagram should be in accordance with B-634.5.
- Insert the outline of the planned dredged area on the chart in magenta (N1.2), by NM or New Edition as appropriate. Add sloping magenta legends within or adjacent to the area, as appropriate, stating, eg: '*Being dredged to 6,5m (2011)*', or equivalent. Existing depth information, if any, must not be deleted until confirmation has been received that the dredging has been completed. Consider adding a note explaining the situation, eg:

DEPTHS - DREDGING PLANS

Planned dredged depths and limits of access channels are shown in magenta and not confirmed. The Port Authority must be consulted for the latest information.

- In exceptional circumstances, publish a preliminary edition of the chart, as detailed in B-621.

For new constructions, areas being reclaimed and works in progress, see B-329; in these cases, the dashed lines, legends and tints make it clear that these works may be incomplete.

7. Yellow, amber and orange lights

Background. A proposal was received to remove the option (at S-4 B-450.2) to chart orange and amber lights as yellow, to facilitate the population of the appropriate enumerates in S-57. A counter-proposal was to retain the existing options and leave the orange and amber enumerates in S-57 unpopulated (and delete them from S-101). As the proposals dealt with the colours of lights, it was decided that the issue should be referred to IALA for advice.

The following response was received from the Chairman of IALA's Aids to Navigation Management Committee:

The differentiation of orange, amber and yellow light by the human eye in anything other than good visibility can be seriously degraded over distance. Therefore within the maritime buoyage system and the international convention for the prevention of collisions at sea (the rule of the road) only red, green, white and yellow are used. In terms of charting therefore, whilst it may be of interest to denote an orange or amber light, these colour differentiations should not be used with respect to light signals. It is the opinion of ANM that charting for marine use should stick to the colour yellow when referring to lights but may differentiate if referring to structure colours e.g. orange Or tower.'

It is proposed to amend the note under the table at B-450.2 to read:

The differentiation of orange, amber and yellow light by the human eye in anything other than good visibility can be seriously degraded over distance. For this reason only red, green, white and yellow lights are used within the IALA Maritime Buoyage System and the International Regulations for Preventing of Collisions at Sea (COLREGs). IALA advises therefore that orange and amber lights should be charted as 'Y'.

8. Symbol for diving prohibited

Several hydrographic offices have developed similar national symbols for diving prohibited. The CSPCWG agreed that an INT symbol for diving prohibited would be useful. It had been suggested that a simpler symbol was needed for ease of hand drawing, but no simpler, intuitive symbol could be devised. However, the CSPCWG considered that there is no need for the symbol to be very simple, as it is not expected that it should be inserted by NM and therefore need to be hand drawn.

Proposal for INT1 (actual size 4mm long, based on Swedish version)



Suggested location in INT1: Divide N21 into 21.1 (Fishing prohibited) and 21.2 (diving prohibited).

Proposal for S-4

Add:

- An example at B-439.3 (underneath N21)
- An example of a small area with centred symbol at B-439.4.

There does not seem any need for further additions to S-4. No specifications beyond these examples are included for N2.2 and N21. Examples of small seaplane operations area (N13), one or two ESSAs (from N22) and possibly the individual mine symbol (N23.1) could also be added to the examples at B-439.4.

CHART SPECIFICATIONS OF THE IHO (S-4)

1. Source/ZOC Diagrams
2. Historic wrecks
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Response Form

(to be returned to the IHB by 25 April 2012)

E-mail: info@ihb.mc - Fax: +377 93 10 81 40)

Note: The boxes will expand as you type your answers.

Member State :

Contact :

E-mail :

Do you agree with the new or revised specifications and symbol? If you answer 'No', please explain in the comment section below the tables.

No	S-4 & INT1 references	Title	Yes	No
1	B-290.6	Source/Zoc diagrams.		
	B-299.4			
	B-297.4			
	B-620.3			
2	B-422i	Historic wrecks		
3	B-410.1	Berthside obstructions.		
4	B-457.3	Lighthouses		
	B-470.5			
5	B-424.7	Depiction of imprecise shoal depth areas		
6	414.6	Development dredging		
7	B-450.2	Yellow, amber and orange lights		
8	B-439.3/4	Symbol for diving prohibited		
	INT1 N21.2			

Comments :

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Signature :

Date :

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