**INTERNATIONAL HYDROGRAPHIC ORGANIZATION**

**ORGANISATION HYDROGRAPHIQUE INTERNATIONALE**

# CHART STANDARDIZATION & PAPER CHART WORKING GROUP (CSPCWG)

[A Working Group of the Hydrographic Services and Standards Committee (HSSC)]


Chairman: Peter JONES
Secretary: Andrew HEATH-COLEMAN

UK Hydrographic Office
Admiralty Way, Taunton, Somerset
TA1 2DN, United Kingdom

Telephone:
(Chairman) +44 (0) 1823 337900 ext 5035
(Secretary) +44 (0) 1823 337900 ext 3656
Facsimile: +44 (0) 1823 325823
E-mail: peter.jones@ukho.gov.uk
andrew.coleman@ukho.gov.uk


## CSPCWG Letter: 13/2010

UKHO ref: HA317/010/031-07

Date 12 August 2010

**To CSPCWG Members**

Dear Colleagues,

**Subject: CSPCWG6 Actions 21-31 (except 24): follow-up to Letter 05/2010**

Thank you to 21 members of the WG who responded to Letter 05/2010. A summary of responses is at Annex A, and you will see that there was good consensus on most of the proposals. Some attracted some thoughtful comments to which Peter and I have responded in red, as usual.

It does not seem necessary for a further round of WG discussions, as the proposed small changes are not controversial. We will prepare a draft CL for Member States' endorsement. The revised wording is at Annex B (with the changes from Letter 05/2010 shown in blue). There is no need to respond to this letter unless you have further comments; in such case, please let me know very quickly so that we may promptly progress this matter.

Yours sincerely,

Andrew Heath-Coleman,
Secretary

Annex A: Consolidated responses to Letter 05/2010, with Chairman's comments
Annex B: Revised wording to be submitted to Member States.

# CONSOLIDATED RESPONSES TO CSPCWG LETTER 05/2010

| CSPCWG6 Action | | Yes | No |
|---|---|---|---|
| 21 | Do you agree with the proposed revision of B-202.4? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, SE, UA, US, ZA | NZ |
| 22 | Do you agree with the proposed revision of B-475.7? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, SE, UA, US, ZA | NZ |
| 23 | Do you agree with the proposed revisions B-445.8 and B-445.9? | AU, BR, CA, ES, ESRI, GR, IN, IT, JP, LV, NL, NO, NZ, ZA | DE, FI, FR, UA, US |
| | Is a sloping version of the wind farm symbol required in INT1? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, NZ, UA, US, ZA | |
| 25 | Do you agree with the proposed new specification B-414.6? | BR, CA, ES, ESRI, GR, IN, IT, JP, LV, NL, NO, US, ZA | AU, DE, FI, FR, NZ, UA, UK |
| 26 | Do you agree with the proposed addition to B-393.6 (new 'k')? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, NZ, UA, US, ZA | |
| 27 | Do you agree with the proposed new specification B-125.1? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, NZ, UA, US, ZA | |
| | Do you agree to remove the option for a reduced size K30 symbol from B-422.7 iii? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, NZ, UA, US, ZA | |
| | Do you agree with the proposed new specification B-125.2? | AU, BR, CA, DE, ES, FI, FR, GR, IN, IT, JP, LV, NL, NO, NZ, UA, US, ZA | |
| 28 | Do you agree that the specification for 'Floating Waste bin should be at B-442.5? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, LV, NL, NO, NZ, UA, US, ZA | JP |
| | Do you agree with the proposed new specification B-442.5? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, LV, NL, NO, NZ, UA, US, ZA | JP |
| 31 | Do you agree to rename B-448 as 'Offshore instruments' and include specifications for ODAS here? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, NZ, UA, US, ZA | |
| | Do you agree with the proposed new specifications B-448.3? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, NZ, UA, US, ZA | |
| | Do you agree with the proposed new specifications B-448.4? | AU, BR, CA, DE, ES, ESRI, FI, FR, GR, IN, IT, JP, LV, NL, NO, NZ, UA, US, ZA | |

## COMMENTS

### AUSTRALIA

Action 23: The discussions at CSPCWG were based on the NO requirement that the symbols were to be depicted on scales small enough to preclude the depiction of an exclusion zone around the floating turbines. What about a situation where a floating turbine is to be depicted on a larger scale chart? Should ground tackle and mooring lines be shown, in addition to exclusion zones? Perhaps some wording needs to be included to this effect in B-445.8.

A good point. We propose to add a cross reference to B-431.6 (using the wording at the end of B-445.4) and also to B-445.6.

Action 25: AU renews its objection to this specification as raised at CSPCWG6 in regard to the following:

- This specification, as currently worded, suggests charting a future situation at the expense of indicating to the mariner the current real-world state, or at least the likely (or most shoal-biased) current real-world state.
- AU has grave concerns if such depiction resulted in litigation, given that the draft specification is a "must".
- Current AU policy is to depict areas where dredging development is taking place using the dredging area symbol N63, and keeping the existing bathymetry within the area as at least the shoalest picture (given that the area is being dredged. Spoil from the dredging works is depicted using N62.1 (spoil ground). This fits into the definition of dredging area in S-57 (attribute CATREA = 21), which is "an area where dredging is taking place".
- At CSPCWG6, it was agreed that depicting areas being dredged as described in the draft B-414.6 would be only in exceptional circumstances – there is no mention of this in the draft wording.

It is clear that serious reservations about this proposal exist and therefore we propose not to pursue at this time. It may possibly be appropriate to reconsider the subject at WG7 if time permits.

Action 27: AU only concern over the draft B-125.2 is the interpretation of the word "slightly". Is there a better way to quantify this based on e.g. the size of symbols or the 0.3mm rule?

We propose to change 'slightly' to 'sufficiently … to enable both symbols to be charted'.

CANADA

B-202.4:

- should the note title be changed to 'CHART INACCURACY' to reflect the lack of accuracy?

As the note is advising the mariner not to place undue reliance on the accuracy of the chart, we consider 'Chart Accuracy' is the better title (and this has precedent).

B-125.2 should mention that the out of position arrow is to be used exceptionally to displace features.

This seems a useful additional option. We propose to add an additional bullet:

- Exceptionally, if the exact position of both features is important, they may displaced but with a short 'pointer' leading to the actual position, using the method for showing a sounding out of position (I11).

GERMANY

23) DE agrees with the comment of FI and US not to add "(above HAT)" .

See comment at France below.

For the cartographer using INT1 a different symbol number for the floating wind turbine/farm against the upright symbol is helpful. For internal use we perhaps can distinguish between a and b under 5.1./5.2. This should be discussed further during the INT1 SubWG meeting. The wind farm symbol 5.2 is divided in two symbols. Should we not consequently use 5.3 for wind farms with prohibited areas or should we understand them as several variations a, b, c (c will be the sloping version). Also to be discussed in the INT1 SubWG.

The INT1 subWG has agreed that wind turbines (fixed and floating) will be grouped under L5.1 and wind farms (fixed and floating) will be grouped under L5.2. Wind farms with prohibited areas are actually combination symbols and not required in INT1.

25) DE prefers to chart port development as "Works in progress" or "Under construction". When a certain progress has been made a block correction or a Limited New Edition containing the changes can be published. See also comments of AU.

See comment at Australia above.

31) B-448.2: Should we include "DG" in the list of the international abbreviations?

The INT1 subWG has agreed that DG should be included in the list of International abbreviations.

Should Q59 (buoy marking wave recorder or current meter) also be linked to B-448.3 and get "ODAS" as name or should it only be used for current meters as they are not specified under B-448.3?

There seems no good reason to separate current measuring from other oceanographic data collection instruments, so we propose to add current data to the examples in B448.3 and remove Q59 from INT1.

FINLAND

23) FI disagrees on adding "(above HAT)" in the second paragraph on B-445.8, because not all the vertical clearances refer to HAT. If the addition is really needed, something more generic should be considered. Otherwise the revisions B-445.8 and B-445.9 are ok.

See comment at France below.

FRANCE

Action 23: as "(above HAT)" is not appropriate because it depends of the adopted datum for the vertical clearances on the chart, it should be replaced by (in accordance with the Datum for vertical clearances) if necessary. FR agrees with DE to adopt new numbers for the floating wind turbine/farm (5.3 and 5.4 ?) and to discuss about it in the INT1 subWG.

Agree to change 'above LAT' to 'in accordance with the datum for vertical clearances – see B-380.1'.

Action 25: FR considers that the notion of preliminary information for port development can be applied to other items like lights, buoyage … rather than the dredged areas only. In this way, the described process should be explained in B-329. Moreover, the specification should also make reference to B-600 to explain the limit of the use of (P) NM and the necessity (e.g. starting of a new port without definitive validation of all the information) to promulgate in advance the planned situation with the corresponding Note by a new chart. FR suggests also to emphasize the area of development where the Note applies by a black dashed line.

See comment at Australia above.

A detail about the revised B-125.1 for action 27 : In the fifth line, in the sentence beginning by Exceptionally, should it be a hydrographic office (singular) or hydrographic offices (plural) ? I think singular is preferable from my "French view".

Agree, it should be singular.

INDIA

Depiction of INT1 symbols on different scales should be in compliance with cartographic standards

ITALY

Action 23: the proposed wording "(above HAT)" is not appropriate because it depends on the adopted vertical clearances datum for the chart.

See comment at France above.

LATVIA

Action 25: Yes, if it is not "must". In Latvia situation, not always project depths is the real situation after dredging, so we also, like AU, do chart the real situation below.

See comment at Australia above.

NORWAY

23) NO agrees with Swedish proposed new text.

See comment at France above.

NEW ZEALAND

21. The intent of B-202.4 seems to be covered by the Satellite Derived Positions note at B202.3

paragraph b. We use the Satellite Derived Positions note at B202.3 paragraph b and see no need for the new note. It the note at B-202.4 required? When is it used as opposed to using the Satellite Derived Positions note?

These are fundamentally different issues. The note at B-202.3b is dealing with the case when the horizontal datum of the chart is suspect in some way, or at least is unable to be related to WGS84. On the other hand, it is common to publish a chart where we can have confidence in the positioning of the main land mass in relation to WGS84, but really cannot be confident that off-lying dangers were fixed accurately when originally surveyed. The fact is that old survey positioning methods are simply not as accurate as GPS positioning. The mariner may be lulled into a false sense of security because he knows his position from his GPS is very accurate, but is oblivious to the fact that the rock he is passing close by may be significantly out of position on the chart, because it was fixed by old survey methods, even though the chart may appear to be modern, is referred to WGS84 and has had a recent new edition. While the remedy may be the same (ie give a wide berth to dangers) the root cause is very different.

22. The heading for B-475.7 a. 'Unlit sectors or unintensified light' does not seem to describe this paragraph well.

We agree that read in isolation, this sub-heading does not seem to make sense. However, when read with the preamble in S-4 '…The narrow sector [singular] may be flanked by:', we believe it does. This is the case where there is really only a single narrow sector of light forming the directional lead, but because the sector is moving from side to side, it gives the appearance of changing characteristic at the outer limits.

B-475.7 b. second paragraph states 'The sector limits and arcs may, if considered useful, be charted…'. We would chart these sectors on a large scale chart, and not on a small scale chart. So the reason for the decision is really scale, because they are useful, and able to be charted without clutter, on a large scale chart. Perhaps change this sentence to:

'The sector limits and arcs may be charted instead of, or in addition to, the centre line if scale allows, as is the case for a sectored light.'

We agree to add 'if scale allows', but do not wish to detract from the meeting's decision that in most cases, to avoid chart clutter, it is better to just chart the centre line.

25. We think that a date should be included, as in B-329. The date could be added to the chart face i.e. 'Being Dredged (2010)' or included in the Port Developments note.

This is a good suggestion, but see comment at Australia above.

SWEDEN

Action 23. SE agrees with the comment made by FI and US about specifying (HAT) in B-445.8. HAT is not applicable in the Baltic Sea. SE proposes the following amendments to B-445.8:

> If a navigational light is attached to the wind turbine, a flare should be added to the base, and the light description placed alongside. Where vessels may navigate close to the structure, it is appropriate to show the vertical clearance (see B-380.1) under the blade on large-scale charts, using symbol D20.

See comment at France above.

Action 25. SE agrees with the comments made by AU. It must be clear that depicting areas being dredged as described in the draft B-414.6 would be only in exceptional circumstances.

See comment at Australia above.

UKRAINE

25) UA agrees with the comment of DE - we consider more expediently and clearly for the user to use "Works in progress" or "Under construction".

See comment at Australia above.

UNITED KINGDOM (Senior policy adviser)

25) Prefer note to be limited to comments about the dredged areas, ie:

BEING DREDGED

(Lat. & Long.)

The Port of xxx is undergoing major developments. The charted dredged depths and limits of access channels are planned port developments and not confirmed. The Port Authority must be consulted for the latest information.

See comment at Australia above.

UNITED STATES (NOAA & NGA)

B-445.8 The United States agrees with the comment from Finland that HAT should not be specified in this section since HAT is not required in S-4 as the chart sounding datum plane of reference.

See comment at France above.

**REVISED WORDING TO BE SUBMITTED TO IHO MEMBER STATES**

## 1. Chart Accuracy note.

A change to the Chart Accuracy note is proposed, to make it easier for the chart user to understand. It is proposed to replace the last sentence of B-202.4 by:

> Therefore, in such circumstances, a cautionary note should be included, eg:
>
> CHART ACCURACY
>
> Owing to the age and quality of the source information, some detail on this chart may not be positioned accurately. Particular caution is advised when navigating in the vicinity of dangers, even when using an electronic positioning system such as GPS.

## 2. Oscillating lights.

The CSPCWG decided that a new abbreviation, eg 'Osc', proposed for oscillating lights is not necessary; it is more important to state that the light is a directional light. In many cases, a bearing line with legend, eg 'DirWRG 090°' against the line and no legend at the light star would suffice and avoid chart clutter.

More details may be given in Lists of Lights, other associated publications, or a chart note if required. A suitable statement in the publication for the Alternating sectors might be: 'R (or G) phase increases away from white sector'. For the outer sectors of a 7 sector light, a suitable statement might be: 'R (or G) phase decreases away from F.R (or F.G) sector'.

If it is considered appropriate to chart the sectors they should be labelled as:

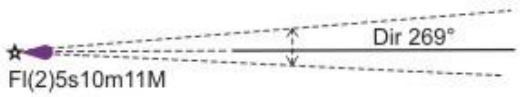
Oc.R / F.R / Al.WR / F.W \ Al.WG \ F.G \ Oc.G

for a typical 7 sector oscillating light, with the legend DirWRG at the light star.

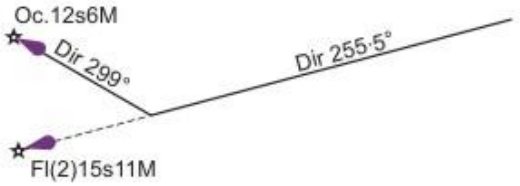
The abbreviation 'Al.' should only be used at multicoloured lights. In the case of a white only light, the outer sectors should be labelled 'Oc' (although they cover a range between Oc and Fl as the bearing from the fixed sector increases).

It is proposed to amend text for B-475.7 as in red below:

**a**. **Unlit sectors or unintensified light**. The centre line of the sector must be charted in a manner similar to a leading line (see B-433) but with the **international abbreviation** 'Dir', and the course to be followed, against the line, eg:




**P30.1**




**P30.2**

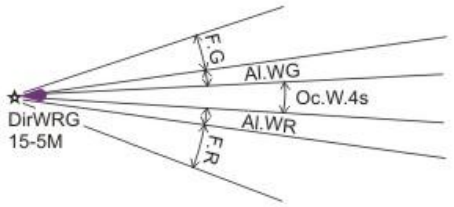
The abbreviation 'Dir' should only be used in the light description at the position of the light if the course line ~~cannot be~~ is not charted. The sector limits may be charted if considered to be useful.

If the light oscillates from side to side, there will be sectors either side of the fixed sector where the light phase decreases as the deviation from the central sector increases. If charted, such sectors should be labelled as 'Oc', although in practice they vary between occulting and flashing.

**b**. **Sectors of different colour and/or character**. Some direction lights are so precise that a complete colour change at a sector boundary occurs over an angle of less than 1 minute (0.02°). This corresponds to a lateral distance of just 1 metre at a viewing distance of 3.5 km. In addition the intensity may be maintained right to the edge of the beam, and does not reduce the further the observer is away from the axis. In the case of multicoloured directional lights, the mariner will expect to see coloured sectors either side of a central white sector so, to avoid chart clutter, it is usually sufficient to show just the centre line of the leading sector, with the light description and course to be followed along the line, eg

DirWRG 090°. If a fuller light description is required, this should be given at the light star to avoid chart clutter in navigation areas, eg WRG.11m15-10M, with Dir 090° against the line.

The sector limits and arcs ~~must be charted, if possible,~~ may, if considered useful and scale allows, be charted instead of, or in addition to, the centre line, in the same way as for a sectored light (see B-475.1). ~~However~~ If the centre line is not charted, 'Dir' ~~may be~~ should be inserted at the beginning of the light description, ~~where appropriate,~~ to inform the navigator that the fairway sector has a particularly precise 'cut-off' or very small angle of uncertainty (unlike the average fairway sector), eg:




**P30.3**

[symbol to be added] **P30.4**

In the examples shown, the light oscillates from side to side, so that between the fixed colour sectors, there is a narrow sector of alternating colour. Such lights may also have outer sectors where the colour phase decreases away from the fixed coloured sectors. If required to be charted, such sectors should be labelled as Oc.G or Oc.R .

~~In addition to the sectors, the centre line of the leading sector may be charted in a manner similar to a leading line (see B-433), but with the **international abbreviation** 'Dir', and the course to be followed, against the line.~~

### 3. Floating wind turbines.

The attention of CSPCWG has been drawn to examples of floating wind turbines. The CSPCWG has agreed that the standard wind turbine symbol, L5.1, and all associated legends should be sloping for floating turbines. To maintain the clarity of the symbol, the blades would also need to be tilted by the same amount, so that the right-hand blade would tilt down by 15° from the horizontal. A similar symbol would be required within the circle for a wind farm (L5.2) comprised only of floating turbines.

It is proposed to amend the text for B-445.8 as in red below. An example of a sloping wind turbine symbol will be added to L5.1 in INT1 and a wind farm comprising floating wind turbines will be added to L5.2.

**B-445.8** **Wind turbines** are generally tall, multi-bladed structures, usually with two or three blades, often visible over long distances. Their purpose is to generate electricity for large communities, or to feed a national grid. They are often in groups (known as wind farms) and may be sited on-shore (see B-374.6). Individual wind turbines must be shown by the symbol:

[symbol to be added] **L5.1**

If a navigational light is attached to the wind turbine, a flare should be added to the base, and the light description placed alongside. Where vessels may navigate close to the structure, it is appropriate to show the minimum clearance height (in accordance with the datum for vertical clearances – see B-380.1) under the blade on large-scale charts, using symbol D20.

**Floating wind turbines** are held in position by cables and consequently may be subject to significant lateral and some vertical movement. To distinguish them from fixed turbines, the symbol must be sloping by 15° from vertical.

[symbol to be added] **L5.1**

Associated legends must also be in sloping text. However, vertical clearances must not be charted as they may vary significantly according to sea state. For charting ground tackle associated with floating wind turbines, see B-431.6.

For charting safety zones around fixed or floating wind turbines, see B-445.6.

**B-445.9** **Wind farms** may be shown by groups of wind turbines in their actual positions (if scale and available information permits), or by a maritime limit with the centred symbol: The symbol N1.1 (black maritime limit

implying permanent physical obstructions) should normally be used for the limit of a wind farm:

[symbol to be added] **L5.2**

However, if navigation is prohibited, N2.2 must be used:

[symbol to be added] **L5.2**

If there are other restrictions, N2.1 may be used, noting the principles for portraying coincident limits at B-439.6. Note: Individual wind turbines which have navigational lights attached should be charted, even within a wind farm, if scale permits.

If all the turbines in a wind farm are floating, the symbol in the centre of the circle must be sloping 15°:

## 4. Interval between symbols in area limits

To deal with inconsistencies in the specifications for maritime limits, it is proposed to add guidance to the 'Cartographic principles for portraying maritime limits', B-439.6, by drafting a new principle 'k' (and changing existing 'k' to 'l'):

k. Where point symbols are inserted within line symbols, they should be at intervals of approximately 40mm or closer and not exceeding 50mm.

The following specifications will be amended as a result of this generic advice, as an editorial correction to S-4 at the next opportunity:

| | |
|---|---|
| B-431.3 | Anchorage areas |
| B-435.2 | Precautionary area |
| B-437.2e | ESSAs |
| B-439.3 | Restricted areas |
| B-440.4 | Base line |
| B-440.5-9 | Boundaries |
| B-441.3 | Firing danger areas |
| B-441.4 | Mine practice areas |
| B-449.6 | Seaplane operations |
| B-487.2 | Radar reference (Ra) |
| B-488.2 | Radio reporting line |
| B-491.1 | Pilotage areas |

## 5. Size and displacement of symbols

It is proposed to add an additional paragraph under B-125 Depiction of symbols:

**B-125.1** **Symbol sizes**. Ideally, symbol sizes should be standardized. This is achievable for new symbols for which the dimensions will normally be specified (see B-110). Hydrographic offices should choose a suitable size for each symbol and should not reduce it because of complexity of detail; it is better to generalize detail to maintain clarity, if necessary charting at a larger scale. Sounding point sizes should not be varied. Exceptionally, a hydrographic office may make available two or more sizes of a symbol from which the cartographer may select the one appropriate to circumstances; however, sizes must never be so small to make the meaning of the symbol difficult to discern under the subdued lighting often required on the bridges of vessels. There are a few cases where more than one symbol size is specified (eg B-447.6) or size is permitted to be varied for centred symbols in large areas (eg B-431.3); these are given in the relevant specifications.

Note: The final sentence of B-422.7, second bullet, (iii) is at variance with this new guidance. It is proposed that this option is removed from S-4.

It is further proposed that some generic advice on displacement of symbols is useful:

**B-125.2** **Displacement of symbols**. In some circumstances, two (or more) features may occupy the same space (position) at the scale of the chart, eg a buoy moored on top of an obstruction. How to deal with this is a matter

for cartographic judgement. Based on the relative significance of the features to the chart user, options are:

- Omit the less important feature
- Displace both features sufficiently from their true position to enable both symbols to be charted (where the exact position of neither feature is important)
- Displace one of the features slightly from its true position (where the exact position of one feature is important). In the above example, the obstruction should be correctly positioned, the buoy being displaced slightly, see B-461.3c.
- Exceptionally, if the exact position of both features is important, they may displaced but with a short 'pointer' leading to the actual position, using the method for showing a sounding out of position (**I11**).

Marks which may be used to fix position must not be displaced.

Where a sounding coincides with another feature, it is usually possible to select a different sounding, or displace the sounding slightly from its true position. Where both the depth and position of the sounding is critical, the methods of showing a sounding out of position should be considered; see B-412.2.

## 6. Floating waste bins.

The attention of CSPCWG has been drawn to examples of floating waste bins. The following new specification is proposed:

**B-442.5** **Floating waste bins** of various designs may exist, particularly in harbour areas used by small craft. Some are specifically designed as waste bins, such as the French 'OBELL', which looks like an inverted champagne cork. Another example may be a waste skip placed on a pontoon. There is no specific symbol for such features; if required to be charted, the cartographer should select the most appropriate symbol, such as a pillar buoy (Q23: because the shape carries no navigational significance) or a pontoon (F16). The legend '*Waste*', or equivalent, should be inserted in sloping text adjacent to the selected symbol. Ancillary detail should be added in the usual way, eg colour, light description, flare, if a buoy symbol is selected.

## 7. Fish Aggregating Devices (FAD)

It is proposed to include FAD as an international abbreviation, to be added in the next editions of S-4 and INT1.

## 8. Sub-surface ODAS instruments

It is proposed to bring surface and sub-surface ODAS instruments together in a new section (replacing existing B-448), headed 'Offshore Instruments'. Cross references to B-448.3 will be added to B-460.4, B-462.9. A cross reference to B-448.4 will be added at B-422.9. The location in INT1 will be L25. The entry in INT1 at Q59 will be deleted.

**B-448** ~~**DEGAUSSING RANGES**~~ **OFFSHORE INSTRUMENTS**

**B-448.1** **A degaussing (or demagnetising) range** is an area, usually of about 0.2M diameter, within which ships' magnetic fields may be measured. Sensing instruments and cables are installed on the sea floor in the range and there are cables leading from the range to a control position ashore. The range is usually marked by distinctive buoys.

The significance of a degaussing range to mariners is that anchoring and trawling are prohibited and that the range may have to be avoided when vessels are using it.

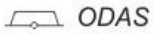
**B-448.2** **The limits of degaussing ranges** and any associated submarine cable areas should be represented by the symbol used for the limits of cable areas (L30.2, see B-443.2). If the size of the area does not permit use of this symbol, the T-shaped dashes alone should be used. The legend '*Degaussing range*', '*DG range*' or equivalent, should be inserted within the area in magenta.


**N25**

~~**B-448.2**~~ Buoys marking degaussing ranges should be charted on all appropriate scales. (These will be Special Marks in the IALA System and may be marked *'DG'*).

DG **Q54**

**B-448.3** **Ocean (or Oceanographic) Data Acquisition System (ODAS)**. An ODAS buoy is used to collect a variety of data, eg wave height, current data, meteorology, seismic events for tsunami prediction. Where they are collecting ocean data and are therefore situated well off shore, they are usually very large buoys which should be charted by the superbuoy symbol, with the legend *'ODAS'* adjacent; see also B-460.4, B-462.9 and, for navigational light, see B-466.2e and B-466.4.



**Q58**

ODAS buoys are not always in deep water and not always superbuoy size. The legend *'ODAS'* may be inserted against any appropriate buoy symbol.

**B-448.4** **A subsurface Ocean Data Acquisition System (ODAS)** consists of a subsurface float attached to the sea floor, supporting a cable along which sensors may be placed at intervals to collect data, such as temperature, through the water column. Where required it must be charted as a submerged obstruction with the international abbreviation *'ODAS'* in place of *'Obstn'*. If known, the depth at chart datum over the float should be inserted within the danger circle and the appropriate blue tint added. If the depth is unknown, solid blue tint must be added, even if the water depth is greater than 100m.

**L25**