



## CHART STANDARDIZATION & PAPER CHART WORKING GROUP (CSPCWG)

[A Working Group of the Committee on Hydrographic Requirements for Information Systems – CHRIS]

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To CSPCWG Members

Date 3 January 2008

Dear Colleagues,

### **Subject: Draft revision M-4 Section B-440 to B-449, round 4**

In CSPCWG Letter 11/2007, we provided a summary of the responses to round 2 of the revision of M-4 Section B-440 to B-449. We also presented our conclusions on reviewing these responses and a resultant further draft (round 3) for your inspection. As expected, only a few further comments were received and these were of a comparatively minor nature. We had prepared a final draft for Member States' approval when we attended the 4th CSPCWG meeting in November 2007.

However, at the 4<sup>th</sup> CSPCWG meeting, two further issues were raised which required further changes to the B-440 draft:

- the need to clarify the correct application of international boundary symbols where an International Maritime Boundary coincides with another boundary, such as an Exclusive Economic Zone (EEZ).
- the increasingly urgent need for a specification to cover offshore renewable energy installations, such as wave farms.

For background information, please see CSPCWG4 papers 9.3A and 9.6A papers (available on the CSPCWG section of the IHO website) and the CSPCWG4 record, paragraphs 9.3 and 9.6, with consequential Actions 12 and 15.

Additionally, US also provided some late comments on the Round 3 draft, which raised further issues, in particular with reference to the UNCLOS aspects. We therefore further consulted UK's Law of the Sea expert and also S-51 (IHO Manual on Technical Aspects of the UN Convention on the Law of the Sea).

Consequent to the three matters mentioned above, we have prepared a new (Round 4) draft, as Annex A to this letter. To simplify your review, we have eliminated all the previous track changes from this copy, so

that the latest changes are easy to see. We have also provided for your information, as Annex B, a copy of the US marked up Round 3 version, with some additional comments from UK's Law of the Sea expert. The relevant track changes are marked as Westington (US) and Carleton (UK) respectively.

In the new draft, we have used a consistent phrase '(if required and where not coincident with an international maritime boundary)', to remove apparent confusion between when something must be charted, or how it must be charted if it is charted. This also helps to clarify the statement at the end of B-440 that the international maritime boundary takes precedence over other maritime boundaries.

The new specification for wave farms is at B-445.12.

I would be grateful if you would now examine Annex A, paying particular attention to the track changes. If you are content with this version, there is no need to respond. However, if you wish to suggest further amendments, please respond by **31 January 2008**. We will then finalise the draft promptly for full Member State approval.

Yours sincerely,



Peter G.B. Jones,  
Chairman

Annex A: Draft revision of M-4 B-440 to B-449 (Round 4)

Annex B: Copy of US marked up version of draft revision of M-4 B-440 to B-449 (Round 3)

Note: both annexes sent separately

**B-440 INTERNATIONAL BOUNDARIES AND NATIONAL LIMITS**

The United Nations Convention on the Law of the Sea, 1982 (UNCLOS) came into force on 16 November 1994. UNCLOS contains navigational provisions as well as provisions for determining the limits of various maritime zones. These provisions are binding to all states that have ratified the Convention. For technical aspects of UNCLOS, see IHO publication S-51.

IHO Member States should show, on selected series of their charts, their own baseline and maritime limits in accordance with UNCLOS. (Former IHO Technical Resolution B2.35.) Many coastal states interpret this statement as permitting depiction on special charts, not on the standard navigational series.

**Commentaire [c1] :** Moved from B-440.4

In this section (B-440), the term ‘**boundary**’ is used for any delimitation between adjacent states or those which face each other across channels or seas (known as ‘opposite states’). The term ‘**limit**’ is used for the line marking the seaward extent of any other maritime zone.

The mariner may be interested in the exact location of international maritime boundaries for two principal reasons:

- When crossing a boundary he could be subject to different laws and regulations which may effect his navigation, eg buoyage systems, pilotage regulations, fishing rights, reporting procedures, pollution regulations.
- Where a boundary passes through groups of offshore islands he may wish to know upon which side of the boundary a particular island falls.

**Symbols: General points.** The provision of symbols does not imply that any particular boundary or limit should be charted (other than a land boundary, see B-440.1). Boundaries and limits of no significance to navigators or other chart users should be omitted from navigational charts.

Any statement to the effect that international boundaries shown are only approximate should be confined to **land** boundaries. Such a statement should be in an associated publication, rather than on individual charts. International maritime boundaries must only be charted using symbol N41 if precise positions have been agreed by the states concerned.

**Supprimé :** Maritime

Land boundary symbols must be in black. Maritime boundaries and limits should be in magenta, but may be in a different colour if required for clarity. Wherever the cross symbol, (eg N40. N41) is used, the ‘horizontal’ line (ie the one in line with the limit) should be twice as long as the ‘vertical’ line. Legends on limits must be placed on the inside of the area they define, if space allows.

Generally, because they are measured from common baselines, the various limits do not coincide. However, they may merge towards an international maritime boundary between two or more ‘opposite’ states. In such cases, the agreed international maritime boundary takes precedence. Other symbols (such as fish or EEZ legend or abbreviation) may be included at suitable intervals on the international maritime boundary, if appropriate and required.

**Supprimé :** Territorial Sea limit

**Supprimé :** , as it includes all the regulations applicable to the other areas

**Supprimé :** same limit

**B-440.1 International land boundaries** should be charted, at least in the vicinity of coasts. They should be shown by a line of black crosses. State names may be shown at appropriate intervals in black upright text, the form in accordance with B-552.4.



**N40**

**Commentaire [c2] :** DID amend state names to original form (as current 5011 N40)

**B-440.2 Customs limits**, where details are provided by a regulatory authority, must be charted, if required, in magenta, on land and sea, by the symbol



**N48**

**Commentaire [c3] :** DID: please add a vertical section, with circle rotated (as N2.2)

**B-440.3 International maritime boundaries** are those which have been established by agreement between adjacent or

opposite states. Boundaries are sometimes negotiated on the basis of the equidistance or 'median' line principle. For various reasons, however, agreed boundaries even when negotiated on this principle are seldom true median lines. The term 'median line' should not therefore be used on charts or in navigational publications.

Navigationally, international boundaries may vary in their significance over different parts of their lengths. Inshore, they may represent the delimitation of territorial seas of two states or 'internal waters', (eg within bay closing lines or straight baseline systems). Offshore, they may represent exclusive economic zone and/or continental shelf boundaries.

International maritime boundaries should be charted, where navigationally significant and agreed by the states concerned, by alternating crosses and dashes, in magenta. State names should be shown at appropriate intervals in sloping magenta text, the form in accordance with B-552.4.



N41

**Commentaire [c4] :** DID amend state names to original form (as current 5011 N41)

**Commentaire [c5] :** We agree with US that the additional phrase adds nothing useful.

**Supprimé :** , which are normally not charted

**Supprimé :** Internal waters form an integral part of the land territory of a state.

N41 must not be used for disputed [maritime](#) boundaries.

B-440.4

**Baselines.** The term 'Baseline' refers to the line from which the breadth of the Territorial Sea, the outer limits of the Contiguous Zone, the Exclusive Economic Zone and, in some cases, the Continental Shelf are measured. It is also the dividing line between **internal waters** and territorial seas. Internal waters comprise all areas of the sea on the landward side of the territorial sea baselines, as well as inland waters including rivers, lakes, etc.

The **normal baseline** is the low water line (which is not defined any more precisely by UNCLOS) of the mainland, islands, or low tide elevations, as depicted on large scale charts officially recognised by the coastal state; they therefore do not require any special symbol.

Features which [are naturally-formed and dry](#) at low water (eg rocks, reefs, [sand](#) banks) may be [considered low-tide elevations and included in](#) the baseline provided they lie wholly or partly within a distance [from the mainland or an island](#) not exceeding the breadth of the territorial sea. Artificial structures [cannot be used in the baseline to extend a coastal state's sovereignty; however, they](#) may have 500m safety zones, see B-445.6.

**Supprimé :** used to determine

**Supprimé :** carry no territorial rights (but

Baselines around **coral reefs**. Usually, areas of reef plateau are charted as generalised areas of drying coral since it is impossible to chart all the individual lumps and heads, and the area is for practical purposes not navigable. The symbol for drying coral is used to illustrate the extent of this feature on a chart, and it is the edge of this symbol that is taken as the "... seaward low-water line of the reef, as shown by the appropriate symbol ...".

A straight baseline may be used:

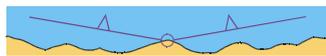
- [as a closing line across the mouth of a river;](#)
- [as a closing line across the mouth of a juridical bay or a historical bay;](#)
- [as part of a system of straight baselines, eg: to connect seaward points on a deeply indented coastline or a coastline that is fringed with islands; around unstable coastlines](#)
- [as an archipelagic straight baseline.](#)

**Supprimé : S**

**Supprimé : s**

**Supprimé :** (including bay and river closing lines, straight archipelagic baselines and baselines around unstable coasts) or the limits derived from them, should be shown on official charts of a scale or scales adequate for determining them. Many coastal states interpret this statement as permitting depiction on special charts, not on the standard navigational series. However, s

Straight baselines may be charted, if required, by an unbroken line supported at intervals of 50mm (or closer) by open arrowheads pointing towards the coast, in magenta. The base points used in the determination of these baselines may be shown, indicated by circles with a diameter of 2mm.



N42

**Commentaire [c6] :** DID Amend symbol (arrows point wrong way), as current 5011 N42.

**Commentaire [c7] :** Moved description of special kinds of straight baselines under the 'Straight baselines' paragraph, as suggested by US as a more logical position.

**Closing lines**, up to a maximum of 24 nautical miles in length, are used to enclose bays and estuaries, provided they satisfy the provisions of UNCLOS. **River closing lines** are used to enclose rivers that flow directly into the sea.

**Supprimé :** In certain circumstances, straight baselines may be used to connect seaward points on a deeply indented coastline or a coastline that is fringed with islands.

**Straight archipelagic baselines** may be drawn around archipelagic states, [provided they satisfy the provisions of UNCLOS.](#)

Baselines around **unstable coasts**. Where, because of the presence of a **delta** or other natural conditions, the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line to define straight baselines and, notwithstanding subsequent regression of the low-water line, these straight baselines remain effective until changed by the coastal state in accordance with UNCLOS.

**Commentaire [c8]** : We understand only applies to Bangladesh currently. We should not add to the wording used in UNCLOS, as it might create a precedent for which we have no authority.

**B-440.5** **The Territorial Sea** is a belt of water of a defined breadth, under UNCLOS not exceeding 12 nautical miles measured seaward from the territorial sea baseline. Within the territorial sea, a coastal state **exercises sovereignty subject to rules of international law, including the** right of innocent passage for foreign ships.

**Supprimé** : , glacier, volcanic activity

**Seaward limits of territorial seas** **must** be charted **(if required and where not coincident with an international maritime boundary)**, in magenta, by groups of two crosses, at intervals of approximately 50mm.

**Supprimé** : has full sovereignty limited only by a

**Commentaire [c9]** : This standardized wording should prevent any confusion and fulfils CSPCWG4 Action 12

**Supprimé** : may



**B-440.6** **The Contiguous Zone** is a zone adjacent to the territorial sea where the coastal state may exercise the control necessary to prevent or punish infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea. Under UNCLOS, the outer limits of this zone may not extend beyond 24 nautical miles measured from the territorial sea baselines.

**Seaward limits of contiguous zones** **must** be charted **(if required and where not coincident with an international maritime boundary)**, in magenta, by single crosses at intervals of approximately 50mm.

**Supprimé** : may



**B-440.7** **A fishery zone** is an area inside and beyond the territorial sea where a coastal state proclaims that it alone may regulate fishing. Within any such zone other countries which have traditionally fished the area are often allowed to do so under bilateral agreements. Where states have permitted others to fish in **parts** of the area, it may be desirable to chart the outer limits of both the full area and the area of special concessionary rights.

**Supprimé** : Exclusive fisheries zones. Areas beyond the territorial seas where coastal states proclaim that they alone may regulate fishing

In some instances, claims are described as ‘conservation zones’; for practical purposes these may be classed with **fishery zones** since their intended function is to institute fishery conservation measures.

**Supprimé** : exclusive

Most of the fishery zone claims are limited by fixed distance (200 nautical miles in some cases) from the territorial sea baselines.

**Limits of fishery zones** commonly coincide with other charted limits, such as **exclusive economic zone limits**. This may be indicated by adding a magenta fish symbol  at appropriate intervals to the other limit symbol.

**Supprimé** : continental shelf and

**Commentaire [c10]** : DID: please amend fish to magenta.

Limits of fishery zones which do not coincide with other charted limits may be charted, in magenta, by a line broken at intervals of approximately 50mm by a fish symbol.



If it is necessary to chart more than one limit, the line between the fish symbols may be dashed for the inner limit.



**B-440.8** **The Continental Shelf**. Under UNCLOS, ‘The continental shelf of a coastal state comprises the sea-bed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance’.

The delineation of the continental shelf beyond 200 nautical miles from the territorial sea baselines is complex. Details are given in UNCLOS Article 76 (see S-51). However:

'the fixed points comprising the line of the outer limits of the continental shelf on the sea-bed ... either shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured or shall not exceed 100 nautical miles from the 2,500 metre isobath'.

The coastal state exercises sovereign rights over the continental shelf for the purpose of exploring it and exploiting its natural resources.

**Limits of the continental shelf.** Complex procedures exist within UNCLOS for the establishment of the limits of the continental shelf. Where these procedures have been followed and the coastal state has received final recommendations from the Commission on the Limits of the Continental Shelf, the limits must be charted, (if required and where not coincident with an international maritime boundary) by a continuous magenta line with the state name and legend '*Continental Shelf*' or equivalent, along the line, inside the area, eg:

UK Continental Shelf N46

**Supprimé :** limits have received the approval of  
**Supprimé :** 'UN'  
**Supprimé :** , if required,  
**Commentaire [c11] :** DID: please create new symbol, legend sitting on a continuous fine magenta line, similar to N47.

**B-440.9 Exclusive Economic Zone (EEZ).** In the exclusive economic zone, the coastal state has sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the sea-bed and of the sea-bed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds. Under UNCLOS,

'the EEZ shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured'.

**Limits of exclusive economic zones (EEZs).** EEZ outer limits must be charted (if required and where not coincident with an international maritime boundary), by a continuous magenta line with the state name and a legend or abbreviation, eg EEZ or national equivalent, at intervals of approximately 50mm along the line, inside the area, eg:

EEZ N47

**Supprimé :** , if required,  
**Commentaire [c12] :** DID: add *FRANCE* before EEZ

**B-441 MILITARY PRACTICE AREAS; MINEFIELDS**

Military practice (or exercise) areas at sea are of various types and may be classified as follows with regard to their significance for the mariner:

- a. Firing danger areas, sometimes called firing practice areas, ie permanent or temporary ranges, including bombing, torpedo and missile ranges.
- b. Minelaying practice (and counter-measures) areas.
- c. Submarine exercise areas.
- d. Other exercise areas.

Permanent minefields may be wartime relics or modern defensive fields.

**B-441.1 Some degree of restriction** on navigation and other rights may be implied by the charting of military practice areas. There may be varying interpretations of the validity of the restrictions and possible infringement of the rights of innocent passage through territorial waters and elsewhere. Where it is thought desirable to chart such areas, even though clear range procedure may be observed, or the areas appear to be a derogation of the freedom of the seas, mariners should be informed (not necessarily on charts) that publication of the details of a law or regulation is solely for the safety and convenience of shipping and implies no recognition of the international validity of the law or regulation. By this means infringements are not condoned but the mariner receives a warning which may be necessary for his safety.

As an alternative to including military practice areas on standard navigational charts, unless of definite navigational significance, such areas may be charted on special small-scale non-navigational practice area charts, to avoid clutter.

**B-441.2 Firing danger areas at sea** are frequently marked by IALA special buoys sometimes laid around the perimeter

of the area and/or by specially erected lights, beacons and targets. All such features which could assist the navigator in identifying his position, or could be a hazard, must be charted in the normal way, eg:



Q50

**B-441.3 The limits of firing danger areas.** If it is required to chart such areas, the symbol must be:



N30

The flame must point into the area, at approximately 50mm intervals (or closer). The designation, eg 'D1234', may be inserted in magenta along the line inside the area or elsewhere within the area. A note may be added to the chart in magenta where considered necessary, which could include information about signals, firing times and contact details. Firing danger areas established for a unique exercise should not be inserted on paper charts: such areas should be promulgated by Temporary Notices to Mariners.

**B-441.4 Mine laying (and counter-measures/clearance) practice areas.** The existence of these areas implies the possibility of unexploded mines or depth charges on the sea floor, and also the presence of harmless practice mines. If it is required to chart such areas, the symbol must be:



N32

The horns of the mine must point into the area, at approximately 50mm intervals (or closer).

**B-441.5 Submarine exercise areas and transit lanes** may be charted, if required, eg where they occur in or near major shipping lanes or port approaches. The symbol for the limits must be dashed magenta lines with a magenta submarine shape or appropriate legend within the area.



N33

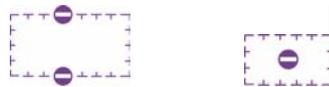
The submarine symbol may be repeated to clarify large areas. A cautionary note may be added in magenta if considered necessary, eg:

SUBMARINE EXERCISE AREA  
Submarines exercise frequently, both surfaced and dived, in this area. A  
good lookout is to be kept for them when passing through these waters.

Submarine exercise areas and transit lanes should not generally be charted because submarines exercise over wide areas which it would not be practicable to chart, and over which cautions (to keep a good lookout for them) are unlikely to be effective

**B-441.6 Other naval exercise areas** outside territorial waters should not be charted unless necessary for the safety of shipping, in which case a dashed magenta line with a cautionary note must be shown.

Within territorial waters, areas in which navigation is permanently prohibited except for military purposes must be delineated by the symbol:



N31

**B-441.7 Areas established for a unique exercise** should not be inserted on paper charts: such areas should be promulgated by Temporary Notices to Mariners.

**Commentaire [c13]** : DID, please put short vertical LH side on the 2<sup>nd</sup> graphic.

**Commentaire [c14]** : DID, insert latest N31 graphic.

**B-441.8** **Minefields** laid and maintained for defence purposes must be charted, if required, by the general symbol for the limits of restricted areas (N2.1) in magenta, with a cautionary note giving the precautions to be taken by mariners. A magenta tint band may be added inside the limit, for emphasis, see B-439.6d.



**Mine danger areas and former mined areas.** The method of charting old wartime minefields will depend on the assessment of the degree of danger remaining and must be symbolized in magenta according to the particular circumstances of each case. If danger to surface navigation still exists, they must be charted as minefields (N34); the legend '*Mine Danger Area*' may be used instead of '*Minefield*'. If danger to surface navigation is now no greater than the normal hazards of marine navigation, but there is a possible residual danger for submarine or seabed activities, the legend should be '*Former Mined Area (see Note)*', or equivalent and an associated explanatory note should be added.

For mine-laying practice areas, see B-441.4.  
For dumped individual mines or explosives, see B-442.3.

**B-442 DUMPING GROUPS: GENERAL; HARMFUL MATERIALS**

Materials deliberately dumped at sea in specified areas (other than those associated with reclamation works) may be classified, according to their significance to the mariner, as follows:

- a. Materials which are generally dispersed before reaching the seabed, eg sewage sludge, are of little navigational significance and no charting action is usually required.
- b. Spoil from dredging operations or other works which might reduce charted depths significantly in the designated spoil ground. See B-446.
- c. Concrete blocks, cars, or other objects dumped as havens for the breeding of fish. See B-447.
- d. Harmful materials, including explosives and chemicals, which are likely to remain concentrated on the seabed. See B-442.1-4.

**B-442.1** **The dumping of harmful materials** from land based sources has been the subject of several conventions.

For the purpose of these specifications, dumping grounds for any harmful materials (eg radio-active waste) should generally be treated as below for explosives (or munitions) or chemicals.

**B-442.2** **Dumping grounds for harmful materials** must be shown by the magenta general maritime limit for restricted areas (N2.1). The limits must be shown on all charts of scale 1:500 000 and larger, and on smaller scales in the case of deep water areas where no larger scale charts exist or where it appears desirable to draw attention to the areas. Legends such as '*Explosives Dumping Ground*', '*Dumping Ground for Chemicals*', or equivalent, must be inserted in magenta sloping lettering within or adjacent to the charted limits, eg:



Magenta is used because to the chart user the significance of these areas is similar to that for other hazards (eg cables) to such seabed operations as trawling, cable laying, anchoring or mineral exploitation (see B-142.2).

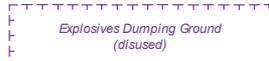
**B-442.3** **Dumped individual mines or explosives.** Drifting mines cannot be inserted on paper charts. All mines or explosives could still constitute a hazard for vessels anchoring, fishing or engaged in submarine or seabed operations. If it is required, exceptionally, to chart them, this should be by a small circle of magenta T-shaped dashes (N2.1 – see B439.2) with the appropriate legend, eg *Mine*, *Explos*, or equivalent, alongside, and/or a 'mine' symbol inside:

### N23.1

For minefields, see B-441.8

**Commentaire [c15]** : DID: please insert 'mine' symbol, in small N2.1 circle.

**B-442.4** **Disused dumping grounds for harmful materials** are considered dangerous for an indefinite period and must therefore remain charted. Magenta text '*(disused)*' or equivalent should be inserted under the legend. The date when the area ceased to be used should also be given on the chart, or in an associated publication, if known.



### N23.2

**Commentaire [c16]** : DID: add date in the brackets, ie *(disused - 2007)*

## B-443 SUBMARINE CABLES

Submarine cables are used to carry power or telecommunications. All power cables and most telecommunication cables carry dangerous voltages. Submarine cables are potential hazards to both vessels and life, particularly to fishing vessels engaged in trawling the seabed. Where possible, submarine cables are now buried beneath the sea floor in water depths of less than 1000 metres; however there remains a large percentage unburied. Submarine cables are vulnerable to damage from anchoring, trawling or other seabed operations; even small craft anchors can penetrate a soft seabed sufficiently to foul a cable. Damage to telecommunication cables can lead to extensive disruption of national and international communications, whilst damage to power cables can disrupt electricity supply.

Submarine cables, including disused cables, should be charted to indicate their presence to vessels engaged in anchoring, trawling or seabed activities in order to:

- Warn mariners of the potential hazard to their vessel, including electric shock to any vessel fouling or breaking the cable, possible capsizing of a small vessel if its fishing gear or anchor is trapped under the cable, or loss of gear (trawls or anchor cables).
- Prevent damage to the cable and avoid disrupting the service the cable may be providing.

Active cables should be charted to a depth of 2000 metres (which is the deepest depth of water to which vessels may be endangered by fouling the cable).

For disused cables, see B-443.7. For buried cables, see B-443.8. For cables related to degaussing areas see B-448.

**B-443.1** **The exact route of individual cables** must be charted where possible to give the chart user full information, using the symbol of a wavy magenta line (see B-142.2).



### L30.1

Where several cables land at the same point, the symbols may be terminated before they reach the coast or inshore water on smaller scale paper charts, to avoid obscuring more important detail. In oil and gasfields, where pipelines and cables are often laid on the same route, the cable may be omitted.

**B-443.2** **Power transmission cables** should be distinguished from telephone and telegraph cables, for the protection of the mariner. The magenta power 'flash' should break the cable symbol at intervals of about 50mm.



### L31.1

In the case of power cables across narrow channels, where it is considered that notice boards give adequate warning of the danger, the 'flash' symbol may be omitted.

In certain circumstances, high voltage power cables may cause a deviation in a ship's magnetic compass; in these cases, where reports have been received, they should be treated as local magnetic anomalies (see B-274) and the legend 'Magnetic Anomaly (see Note)' should be added in black at appropriate points along the cable.

**B-443.3** Cable areas should be charted where:

- cables (including disused cables) are so numerous in an area that it would be impossible to chart them individually without impairing the legibility of the chart, or
- a regulatory authority designates an area for the protection of a cable, or cables.

The area must be delimited by the general symbol for the limits of restricted areas (N2.1), interspersed at intervals of about 30mm with short sections of the cable symbol. The cable symbol must be repeated sufficiently to characterize the line (see B-439.3). Individual cables within a cable area should not be shown.



The outer limits of a cable area must enclose the area in which anchoring and certain forms of fishing are prohibited or inadvisable, ie, the limits must lie a safe distance beyond the actual lines of the outermost cables. See B-443.4 referring to regulations prohibiting anchoring and certain forms of fishing.

**B-443.4** Regulations prohibiting anchoring or certain forms of fishing near submarine cables differ in detail from country to country. Where such regulations exist, it may be indicated by use of the symbol and/or in magenta (N20, 21) within a cable area (see B-439.4), or by reference to a note.

**Supprimé** : within territorial waters

**B-443.5** Cable beacons, notice boards, or lights, marking cable landings must be shown in black on the largest scale charts, eg:



**B-443.6** Buoys marking cables. Cables are sometimes marked by buoys, which should be charted, eg:



**Commentaire [c17]** : DID: please add *Cable* next to the buoy (in black).

A legend, eg ‘*Cable*’, may be added if their purpose is not clearly apparent.

**B-443.7** Disused submarine cables. Where disused cables traverse possible anchorages or where there is known seabed activity, eg trawling grounds, they should be charted on the largest scale charts (including the largest scale INT chart – see B-402.3e), provided they do not obscure more important information. Disused cables must be shown by the same wavy line as active cables, but broken by omitting every fourth complete sinusoid.



Few disused cables are recovered and so to chart them all would lead to clutter on some charts. Also, accurate records of their positions are likely to be incomplete (some cables having been cut or dragged out of position), so there is a case for charting them very selectively.

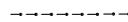
**B-443.8** Cables, buried so deep that they are not vulnerable to damage from anchoring, should not be charted (so that mariners are not unnecessarily inhibited from anchoring or fishing). In marginal cases they may be charted in magenta with a note stating the nominal depth to which they are buried, as L42, but with a cable symbol.

**B-444** SUBMARINE PIPELINES

Submarine pipelines can be divided into two main categories:

- a. Oil, chemical, gas and water supply pipelines are an important feature of many areas. The pipes are generally encased in concrete for protection and to give them negative buoyancy, which can significantly increase their external diameter. Pipelines are generally laid directly on the seabed, with sections over local dips or hollows being supported physically from beneath. In some cases (eg in shallow water or near the shore), where the external diameter of the pipeline would represent a significant reduction in the water depth above it, the pipelines may be laid in trenches and possibly buried.

In all cases it must be assumed that the pipes are vulnerable to damage from anchoring or trawling, although in a few cases concrete domes are used to protect particularly vulnerable junctions. Gas pipes present a severe hazard to ships damaging them (by fire, explosion, or possibly loss of buoyancy). Oil and chemical pipes are a danger to the environment if fractured. Damage to water pipes supplying residential areas, mainly islands, results in disruption or contamination of the water supply. In the above cases, submarine pipelines must be charted on all appropriate chart scales, using the symbol  L40.1 in magenta.

- b. Outfalls and intakes such as sewers, and cooling water intakes, are mainly a feature of inshore waters. For small craft, in particular, such pipes are a potential danger to navigation. The pipes are also vulnerable to damage. They should be charted on at least the largest scales, using the symbol  L41.1 in black.

The position of the dot in relation to the dash has no significance but, for consistency, the dot should be placed at the forward end of the direction of flow in a pipeline, if known.

For pipelines on land, see B-377 and for overhead pipes, see B-383.

**B-444.1 Oil, chemical, gas and water supply pipelines.** The exact route of individual pipelines must be charted where possible to give the chart user accurate information, using the pipeline symbol L40.1 in magenta. Where pipelines are very close together, only one need be charted (on paper charts).

**Oil Pipelines** should be labelled 'Oil', or equivalent in magenta.

**Chemical pipelines** should be labelled 'Chem', or equivalent in magenta.

**Gas pipelines** should be labelled 'Gas', or equivalent in magenta.

**Water pipelines** should be labelled 'Water', or equivalent in magenta.



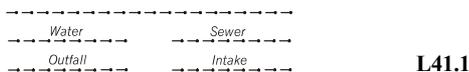
The origin and destination names and/or name of a major pipeline may be inserted adjacent to the pipeline, in sloping magenta text, where these are not obvious, eg: *Ekofisk to Emden (Norpipe)*.

Oil, chemical and gas pipelines present a greater danger to ships damaging them and a cautionary note may be charted in magenta, eg:

**GAS PIPELINES**  
**Mariners risk prosecution if they anchor or trawl near a pipeline and so damage it. Gas from a damaged pipeline could cause fire or loss of a vessel's buoyancy.**

Where several pipelines converge to land at the same point the symbols may be terminated before they reach the coast or inshore waters, on small scale paper charts, to avoid obscuring more important detail.

**B-444.2 Outfalls and intakes.** Pipes used for discharging sewage, water or chemicals into the sea (outfalls) or extracting seawater (intakes) must have their exact route across the sea floor represented by the pipeline symbol in black. They may be labelled 'Sewer' etc, or equivalent.



Buoys marking outfalls and intakes should be charted on appropriate scales. Various types of buoys are used for marking outfalls, eg:

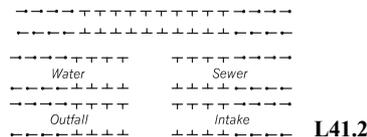
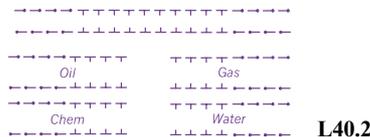


A pipe which does not constitute a danger to navigation but could be damaged by anchoring may be marked by a (yellow) Special mark (in the IALA System). Where there is a possible danger to navigation, a Lateral (or possibly Cardinal) mark will usually be used.

**B-444.3 Pipeline areas** should be charted where:

- pipelines are so numerous in an area that it would be impossible to chart them individually without impairing the legibility of the chart, or
- a regulatory authority designates an area for the protection of a pipeline, or pipelines.

The area must be delimited by the general symbol for the limits of restricted areas (N2.1), interspersed at intervals of about 30mm with sections of the pipelines symbol (see B-439.3). The symbol must be in magenta for supply pipelines, and in black for discharge and intake pipes. The outer limits of the pipeline area thus delineated must correspond to the area in which anchoring, trawling and dredging are prohibited or inadvisable, ie, the limits must lie at a safe distance beyond the actual lines of the outermost pipes.



**B-444.4 Regulations prohibiting anchoring** or certain forms of fishing near submarine pipelines, differ in detail from country to country. Where such regulations exist, it may be indicated by use of the symbol  and/or  in magenta (N20, 21) within a pipeline area (see B-439.4), or by reference to a note.

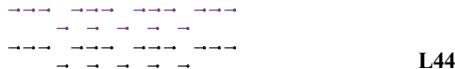
**Supprimé :** within territorial waters

**B-444.5 Pipes of all types, buried** so deep that they are not vulnerable to damage from anchoring, should not be charted (so that mariners are not unnecessarily inhibited from anchoring or fishing). In marginal cases they may be charted in magenta with a note stating the nominal depth to which they are buried.



**B-444.6 Beacons, notice boards or lights** marking pipeline landings must be shown in black on the largest scale chart.

**B-444.7 Disused (abandoned) pipelines** of all types (unless known to be buried) should be shown on the largest scale charts by the pipeline symbol with every fourth element omitted. In the case of very short lengths every second element may be omitted.



**B-444.8 Pipeline installations.** Diffusers and cribs at the end of pipes, and templates, manifolds (see B-445.1) and other underwater installations associated with pipelines should be charted in the same way as other obstructions, either with the abbreviation 'obstrn' or an appropriate legend, eg 'Diffuser', 'Manifold'. All specifications relating to obstructions apply; see B-411.6 and B-422.9.

**B-445 OFFSHORE PRODUCTION**

**Oil and gas** fields are exploited in many parts of the world. Although the basic methods for extracting oil and gas are well established, details of the systems and structures may vary with the characteristics of the different fields and are continually being developed.

**Fixed production facilities.** In a typical field, oil or gas is obtained from wells drilled from fixed production platforms, usually standing on the seabed. From each production platform, the oil or gas is carried in pipes to a facilities platform where primary processing, compression and pumping are carried out. The oil or gas is then transported through pipelines to a nearby storage tank, tanker loading buoy or floating terminal, or direct to a tank farm on shore. One facilities platform may collect the oil or gas from several production platforms, and may supply a number of tanker loading buoys or storage units. Such facilities platforms are sometimes termed Field Terminal Platforms. Converted tankers or purpose-built vessels are often permanently moored and used as facilities platforms, floating terminals, and for storage.

**Drilling rigs.** It is important for charting purposes to distinguish between temporary structures used in the exploratory stages and permanent structures used in the production stage. Drilling rigs (also called ‘oil rigs’ and including semi-submersible rigs, ‘jack-up rigs’ and drillships) are mobile structures used for drilling wells to explore and develop a field. Drilling rigs are of temporary significance and should not be charted; their positions are usually promulgated in Radio Navigation Warnings and by Temporary Notices to Mariners, especially when the rigs are located in traffic lanes.

**Other offshore energy production facilities** include wind turbines (see B-445.8-9) and underwater current turbines (see B-445.10-11). Other methods of harnessing tidal and wave energy are also in use.

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

- a. **Abandoned wells.** In the course of developing an oil or gas field, numerous **wells** may be drilled. Some, which will not be required again, may be sealed at or below the sea floor and abandoned; such wells must not be charted, as they have no relevance to navigation.
- b. **‘Wellhead’** is a term used to describe 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. In certain instances, a wellhead may project above the sea surface.

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).



**L21.1**



**L21.2**

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).

- c. **Submerged production systems.** In relatively deep water a production wellhead may be a seabed installation only, eliminating the need for a permanent production platform. Due to the depth of water, such an installation is normally of no concern to surface navigation. Wells which are in use for producing oil or gas are termed ‘Production Wells’ (sometimes known in the oil industry as ‘subsea completions’). Production wells are often marked by light-buoys to assist recovery and to indicate a hazard to navigation or fishing. They generally have surrounding safety zones to protect the installation (see B-445.6). They should be charted in the same way as suspended wellheads; they will normally be distinguishable from the latter by the charted pipelines connected to them.
- d. **Single Well Oil Production Systems (SWOPS)** are production wells from which oil is recovered by a tanker dynamically positioned over the well, lighted as an offshore installation. However, at times the tanker may be off-station leaving the well unattended, at which time it is similar to a suspended well. These should be charted as wellheads; the abbreviation ‘*SWOPS*’ may be used in lieu of ‘*Well*’.
- e. **An Injection well** is drilled to inject fluids or gas into a geological trap to encourage the flow of oil from a production well. These should be charted as wellheads.

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 (PLEM)** 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, eg Single Buoy Mooring (see B-445.4). Flexible hoses, provided with buoyancy aids, rise vertically upwards from the PLEM 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 PLEM, it must be charted as a manifold. 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).

g. **Above-water wellheads.** In shallow water, wells may sometimes project above the sea surface at some or all states of the tide. The structure of valves and pipes (known as a ‘Christmas Tree’) may then be visible as a ‘dry tree’. When unlit, this feature must be charted by a small position circle and the legend ‘Pipe’ and, when lit, by a light star, light flare and light description. If it covers at some states of the tide, it should be enclosed in a danger line. A height, or drying height, should be added to the legend, in brackets, if known.



○ Pipe

L23

**Commentaire [c18]** : DID: Please add example with danger circle and drying height, sloping legend.

**B-445.2 Platforms (including production platforms).**

Several different types of platforms are in use. They are normally piled steel or concrete structures, the latter held in position on the sea floor by gravity. **Tension Leg Platforms (TLP)** consist of semi-submersible platforms secured to flooded caissons on the sea floor vertically below them by wires kept in tension by the buoyancy of the platform.

Platforms may serve a number of purposes. They may carry any of the following equipment: drilling and production equipment, oil and gas separation and treatment plants, pump-line stations and electricity generators. They may be fitted with cranes, a helicopter landing deck, and accommodation for up to 350 people. Platforms may stand singly or in groups connected by pipelines. Some stand close together in a complex, with bridges and underwater cables connecting them. Unwanted gas or oil is sometimes burnt from a flaring boom extending from the platform or from a nearby flare stack.

a. **Platforms** must be charted on all large and medium scale charts covering oil- and gas-fields. Where they lie close together, they may have to be generalised (on paper charts) so that a single symbol represents more than one platform.

The symbol for a platform must be:  **L10** and **P2**.

b. **Lights and fog signals.** As all platforms must carry lights, the small symbol is emphasized by the associated light flare. The lights and fog signals commonly used for platforms and associated structures consist of the following:

- A 360° white light (or lights operated in unison) flashing Morse code (U) (meaning ‘You are standing into danger’) every 15 seconds, visible 15 miles and exhibited at an elevation of between 12 and 30 metres.
- A secondary (emergency) light or lights with the same characteristics, but visible only 10 miles, automatically brought into operation on failure of the main light(s).
- Synchronized red lights, flashing Morse code (U) every 15 seconds, visible 2 miles, and exhibited from the horizontal extremities of the structure which are not already marked by the main light(s).
- A fog signal sounding Morse code (U) every 30 seconds, audible at a range of at least 2 miles.

On charts which include, or are likely to include, many platforms, a note should be inserted on the chart describing the lights and fog signals, instead of individual legends at each platform, eg:

OIL [and/or GAS] FIELDS  
 Platforms and associated structures exhibit white and red Mo(U) lights, red obstruction lights, and Mo(U) audible fog signals. Unauthorized navigation within 500 metres of all such structures is prohibited.

This note may be varied to take account of local circumstances, but where different (distinctive) lights are used, the light descriptions must be inserted individually against the platform symbols.

- c. **Flares.** As with refineries on land (see B-374.1), offshore terminals may burn off gas from production platforms or from ‘flare stacks’ set up as separate structures a short distance from the production platforms. In the latter case the stacks must be charted by:

□ Fla **L11**

with the international abbreviation ‘Fla’, but without a coloured light flare (or patch).

- d. **Floating Production Facilities.** Semi-submersible drilling rigs and tankers are sometimes converted to act as production platforms, and are then known as ‘Floating Production Facilities’ or ‘Floating Production Platforms’. If required, they must be charted in the same way as other platforms (L10). Floating Production Facilities are normally kept on station by a number of chains and anchors, usually extending well outside the designated safety-zone. Where scale permits, the positions of these chains and anchors should be charted by magenta lines and anchor symbols (L18). On smaller scale charts, a dashed magenta circle encompassing the anchors and other ground tackle with the magenta legend ‘*Anchors and Chains (see Note)*’, or equivalent, may be charted together with a suitable explanatory note.

- e. **Platform designations** are often displayed prominently on the structures (see B-445.3). Platforms are usually protected by designated **safety zones** (see B-445.6).

**B-445.3 Names of oil- and gas-fields and associated features.** Offshore production generates a large number of shipping movements concerned with supplies, construction, inspection, repair and maintenance, safety, and sometimes including tankers. Not all this traffic will be familiar with platform and field locations. The **field names** should be inserted on the chart, in black, as soon as a cluster of wells indicates that a field is being developed and the name is notified, eg:.

EKOFISK **L1**  
 OILFIELD

On smaller scale charts, this may be shortened to Ekofisk, ie omitting ‘Oilfield’. Where the limits of the fields have been designated, the symbol N1.1 (black maritime limit implying permanent physical obstructions) should be used.

Identification panels usually display the registered name or other designation of platforms and associated structures in black lettering on a yellow background. They are so arranged that at least one panel is visible from any direction, the panels being illuminated or the background being retro-reflective. These **platform designations** may be inserted on the larger-scale charts where space permits, eg:



L2

**B-445.4 Mooring systems.** Although the oil and gas from some fields are sent ashore by submarine pipeline (see B-444), a variety of mooring systems have been developed for use in deep water and in the vicinity of certain ports, to allow the loading of large vessels and the permanent mooring of floating storage vessels or units (see B-445.5). These offshore systems include large mooring buoys, designed for mooring vessels up to 500,000 tonnes, and platforms on structures fixed at their lower ends to the sea floor. They allow a vessel to moor forward or aft to them, and to swing to the wind or stream. Those which are fixed are termed **Single Point Moorings (SPM)**. Those which are a form of mooring buoy are termed **Single Buoy Moorings (SBM)**. Like production platforms, SPM and SBM normally have lights and fog signals.

**a. Fixed moorings.**

A **Mooring Tower** is secured to the sea floor and summounded by a turntable to which ships moor. At some mooring towers, a floating hose connects a fluid swivel-assembly in the turntable to the vessel; at others an underwater loading arm carries a pipe from the turntable to the vessel's midship manifold.

A **Single Anchor Leg Mooring (SALM)** consists of a rigid frame or tube with a buoyancy device at its upper end, secured at its lower end to a universal joint on a large steel or concrete base resting on the sea floor, and at its upper end to a mooring buoy by a chain or wire span. Oil flows into the frame through the universal joint at its lower end and out of the frame through a cargo hose connected to a fluid swivel-assembly at its upper end. When the pull of a vessel is taken by the mooring buoy, the frame inclines towards the vessel and the buoy may dip. When the vessel swings, to wind or stream, the frame swings with her on the articulated joint at its foot. This type of mooring is particularly suited to loading from deep water subsea wellheads.

An **Articulated Loading Column (ALC)** is a development of a SALM, with the anchor span and buoyant frame or tube replaced by a metal tower, buoyant at one end and attached at the other by a universal joint to a concrete-filled base on the sea floor. Some are surmounted by a platform which may carry a helicopter deck, a turntable with reels for lifting hawsers and hoses clear of the water, and emergency accommodation. These may be termed **Articulated Loading Platforms (ALP)**.

Mooring towers and all buoyant structures, such as SALMs or ALCs, which are connected to the sea floor by rigid, pivoted or articulated structures, carry lights and fog signals similar to platforms. Their positions are fixed, as true platforms, so must be charted by the platform symbol with legend 'SPM' (L12)



L12

**b. Floating moorings.**

A floating mooring, such as a SBM or a **Catenary Anchor Leg Mooring (CALM)**, generally incorporates a large buoy which remains on the surface at all times. In the case of a CALM, the buoy is moored by four or more anchors which may lie up to 400 metres from the buoy. A Pipeline End Manifold (PLEM) (see B-445.1f) is often found under the buoy, and mooring hawsers and cargo hoses lead from a turntable on the top of the buoy, so that the buoy does not turn as the ship swings to wind or stream.

An **Exposed Location Single Buoy Mooring (ELSBM)** is a development of CALM, designed for use in deep water where bad weather is common. The buoy is replaced by a large floating structure, summounded by a helicopter platform and emergency accommodation. Its anchors may lie up to half a mile from the structure. A **Spar** mooring is similar to an ELSBM but even larger and incorporates storage facilities and is permanently manned.

All these moorings must be charted, if required, by the symbol for a tanker mooring of superbuoy size.



L16

For ground tackle associated with any of these moorings, see B-431.6

**B-445.5 Moored Vessels.**

- a. **Floating Storage Unit (FSU).** A simple hulk providing storage for fully-processed oil awaiting export, usually through a SBM or similar. They will normally be un-manned.
- b. **Floating Storage and Offtake (FSO).** A vessel which stores fully-processed oil and provides facilities for loading export tankers. It will normally be moored in such a way as to allow it to swing to wind or stream. It is always manned.
- c. **Floating Production, Storage and Offtake (FPSO).** FPSO are used to produce oil and gas from fields which are located in water that is too deep for fixed production platforms. These are highly specialized vessels which are part ship, part oil and gas processing plant, and part storage unit. The finished product is exported to shore by pipeline or tanker. Older versions of FPSO (usually converted tankers) may be moored to SPM or SBM. Modern versions incorporate a turret, through which pipelines connect to the sub surface facilities. The turret is anchored to the sea floor and incorporates a swivel which allows the vessels to rotate through 360° under the influence of wind and tidal stream.

FSU, FSO and FPSO should be charted by the symbol for a moored storage tanker, L17:



L17

**Commentaire [c19] :** DID: insert L17 symbol, with legend FPSO alongside

An appropriate legend or abbreviation, eg 'Storage Tanker', 'FSU', 'FSO', 'FPSO' (or equivalent) may be added adjacent to the symbol.

If the vessel is moored to a SPM or SBM, and the paper chart scale does not permit charting the mooring and the vessel, the legend should be placed adjacent to the symbol L12 or L16, as appropriate, and the symbol L17 omitted.

For Single Well Oil Production Systems (SWOPS), at which tankers are intermittently moored, see B-445.1.

**B-445.6 Safety Zones.** Under UNCLOS, a coastal state may establish safety zones around artificial islands, installations and structures in their EEZ and on their continental shelf. These installations include drilling rigs, production platforms, wellheads, moorings and other associated structures. Safety zones normally extend 500m from the outermost points of the installations. Within these zones, appropriate measures can be taken to ensure the safety of navigation and of the installations.

On the largest scale charts (if space permits), these safety zones must be shown by magenta general maritime limit for restricted areas (N2.1).



L3

**Commentaire [c20] :** DID: please change symbol to smaller size Ts (N2.1)

A cautionary note explaining the meaning of the safety zone should be inserted, if installations which have safety zones are charted. If the safety zones are not charted, eg because of scale, the note should explain which installations have safety zones. See example at B-445.2b.

**B-445.7 Development Areas.** The development of an oil or gas field involves the frequent movement of large structures and buoys and the laying of many miles of pipeline, both of which are dependent on the weather. Where such operations occur it is often impossible to give adequate notice of movements and to keep

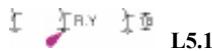
charts and publications completely up-to-date. Certain fields which are developing are designated Development Areas. Within these areas construction, maintenance and supply vessels (including submersibles), divers, obstructions (possibly marked by buoys), and manoeuvring tankers may be encountered. Mariners are strongly advised to keep outside Development Areas.

The limits of Development Areas should be charted. If shown, the limits must be charted by dashed magenta lines (N1.2, N2.1 or N2.2 as appropriate, depending on the degree of restriction). The magenta legend ‘*DEVELOPMENT AREA (see Note)*’ must be inserted within or adjacent to the area and, if possible, under the field name. A note, in magenta, should be inserted under the chart title, eg:

**DEVELOPMENT AREA**  
 Within oil/gas field Development Areas, surface vessels, submersibles and divers may be engaged in constructing and servicing installations. Other vessels are strongly advised to keep outside the charted limits.

Where Development Areas are not designated, it may be appropriate to insert a note drawing attention to drilling activity.

**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:



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 under the blade on large-scale charts, using symbol D20.

**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:



However, this should be replaced by N2.1 or N2.2 as appropriate, where restrictions on navigation apply, eg:



Note: Individual wind turbines which have navigational lights attached should be charted, even within a wind farm, if scale permits.

**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, 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), eg:

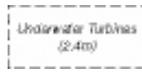


Where part of the structure is above water, and marked (eg, with a beacon or light), the appropriate symbols must be used. On small-scale charts, where it may not be practicable to show the danger circle, the legend

'Underwater Turbine' should be used, eg:



**B-445.11 Current Farm (or Turbine Field).** Where groups of underwater turbines exist they should preferably be charted individually. Where scale or available information does not permit this, then the symbol N1.1 (black maritime limit implying permanent physical obstructions) should normally be used for the limit of a current farm:



However, this should be replaced by N2.1 or N2.2 as appropriate, where restrictions on navigation apply. A legend should be inserted within the boundary, eg:



**B-445.12 Wave Farm (or wave generator field).** A wide variety of devices for harnessing wave energy are being developed; as yet, it is not possible to design a suitable generic symbol for individual devices. However, these devices need protection and are also potentially dangerous to navigation.

The outer limit of the wave farm (if known) should be charted, with a suitable legend and associated note. If no limit is designated, the legend should be centred in the area and spread to give an indication of the extent of the known area in which the devices are deployed.

At the present stage of the industry, wave farms should usually be treated as Development Areas (limit N1.2, N2.1 or N2.2 as appropriate, see B445.7); that is, charted in magenta, as the actual obstructions will come and go or be moved as experiments progress. Later, if such areas become 'Production Areas', the outer limit should be black, symbol N1.1 (as with oilfields, see B-445.3), unless there are navigation restrictions in which case N2.1 or N2.2 should be used, as appropriate.

A legend such as 'Renewable Energy Installations - Development Area (see Note)' should be inserted in the area. Small areas may be simply labelled 'Development Area (see Note)' or 'Wave Farm (see Note)'. All cables, buoys, lights and permanent structures should be charted as normal.

A magenta note should be inserted warning of the potentially hazardous nature of the area, for example:

**DEVELOPMENT AREA**  
Extensive testing of renewable energy installations, both above and below the surface, takes place in this area. Mariners should exercise extreme caution if navigating in this area. For further information, see [eg associated publication].

**Commentaire [c21]** : This fulfils CSPCWG4 action 15

#### **B-446 SPOIL GROUNDS; EXTRACTION (or DREDGING) AREAS**

- a. Spoil grounds are areas set aside, clear of shipping channels and in deep water where possible, for the disposal of material (spoil) generally obtained by dredging. Their significance to the mariner is that very large quantities of material may be dumped, decreasing the depth of water available. In contrast, dumping of harmful materials (see B-442.1-5) is unlikely to affect depths substantially and such dumping grounds are charted primarily as a warning against anchoring, trawling or other submarine operations.
- b. Extraction (or dredging) areas are those areas where a concentration of dredging vessels may be encountered, taking up sand or shingle to be brought ashore (eg for construction purposes). Their significance is primarily as a collision hazard, although they also indicate the likelihood of finding a greater depth of water than charted. Channels dredged to provide an adequate depth of water for navigation are 'dredged areas' (see B-414), not to be confused with 'dredging areas'.

**B-446.1 Spoil grounds.** The limits of spoil grounds must be charted by a black dashed line, normally on the largest scale charts of an area only. If the depths within the area are liable to be very much less than charted after the discharge of spoil, they may be treated as unsurveyed areas (see B-418.1); soundings and depth contours may

be omitted from the area, provided adequate warning is given by the use of blue tint, and/or a cautionary note accompanying the legend.



Commentaire [c22] : DID Please improve text

The legend 'Spoil ground', or equivalent, must be charted within, or adjacent to, the limits. In some cases, where no precise limits have been designated, the grounds can be represented only by a legend.

**B-446.2** **Disused spoil grounds** should be labelled '(disused)', or equivalent, until the area has been re-surveyed, after which the limit and legend should be removed from the chart.



Commentaire [c23] : DID Please improve text

**B-446.3** **Buoys marking spoil grounds** should be charted on all appropriate scales. (These will normally be Special Marks in the IALA System).



**B-446.4** **Extraction (or dredging) areas.** The limits of extraction areas, where in regular use over long periods, must be charted by a magenta dashed line, normally on the largest scale charts of the area only.



Commentaire [c24] : DID: please replace 'Dredging' by 'Extraction' in the graphic.

The legend 'Extraction area', or equivalent, must be charted within, or adjacent to, the limits, in magenta. If considered necessary, a cautionary note may be inserted in magenta, warning mariners that vessels engaged in dredging are frequently at work in the area shown.

#### **B-447 AQUACULTURE: FISH TRAPS, SHELLFISH BEDS, FISH HAVENS, MARINE FARMS**

Aquaculture is the term used to describe the cultivation of fish and marine vegetation. Differing methods are used; those of particular significance to the mariner are outlined below:

- a. **Fish traps**, stakes and nets are usually sited in shallow water. They can be very large and extend up to several miles offshore and form an obstruction to navigation.
- b. **Shellfish beds** are found in shallow water. Dependant on vessel draught and tidal range, it is usually possible to navigate over them, at high water, but they can be damaged by vessels anchoring or grounding on them.
- c. **Fish havens** are formed by dumping rocks, concrete blocks, old cars, etc in varying depths of water. Vessels may navigate over sea floor fish havens, if draught permits, but they are hazards to anchoring or seabed operations.
- d. **Marine farms** are collections of cages, nets, rafts and floats, or posts, where fish, including shellfish, are reared. They may obstruct navigation, and are likely to be marked by buoys and possibly lights. They are not always confined to inshore locations.
- e. **Fish aggregation devices (FAD)** are man-made objects designed to attract fish. They may be:
  - placed on the sea floor,
  - anchored or drifting and with the attracting structure on or near the sea surface or
  - anchored and with the attracting structure in the water column.

The structures vary in size, shape and water depth.

Some aquaculture structures are in place only for limited periods of the year. This may be indicated by the use of a chart legend, eg: (*Apr-Nov*), or be explained in an accompanying note or associated publication.

**B-447.1 Fishing stakes** should, where their position is known, be charted thus:



**K44.1**

**B-447.2 Fish traps (or weirs) and tunny nets** should, where their position is known, be charted thus:



**K44.2**

**B-447.3 Extensive areas** of fish traps or tunny nets may be charted by legends with limits (if known) charted by dashed lines (N1.1) in lieu of symbols. Legends are also preferable if the positions of the traps are liable to considerable change.



**K45**

**Commentaire [c25]** : DID: please improve text

Details may be given in a chart note, or in an associated publication, eg:

TUNNY NETS  
Tunny nets exist off the coast of *[name]* extending as much as seven miles from the shore. Mariners are warned to keep a good lookout for these nets which may be marked by day and night.

**B-447.4 Shellfish beds that do not contain physical obstructions** should be charted by a magenta legend, ‘*Shellfish Beds (see Note)*’, or equivalent, with limits (if known) charted by dashed magenta lines (N1.2). A note may be inserted warning against anchoring or grounding in the area, or giving details of any local regulations.



**K47**

**Commentaire [c26]** : DID: add (*see Note*) to graphic

If shellfish beds contain obstructions to surface navigation, eg trestles, the symbol for a marine farm must be used (see B-447.6).

**B-447.5 Fish havens (or fishery reefs)** are artificial shelters of stones, concrete, scrap vehicles, etc, intended to attract fish and crustaceans. A single haven must normally be charted by the symbol:



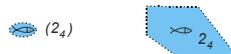
**K46.1**

A group of havens (or a single haven large enough to be shown true to scale) must be charted by an enclosing danger line with one or more fish symbols:



**K46.1**

The minimum depth or maximum authorized draught (see B-432.4), over any haven or group of havens, must be charted, if known:



**K46.2**

Maximum authorized draught must be indicated between arrowheads, eg:

<7,3m>

Blue shallow water tint must be applied to fish havens as appropriate to the depth and, where the minimum depth is not known, in accordance with the practice for obstructions (see B-411.6). However, exceptionally, for large areas of fish havens where no depth data is available, if the surrounding water area is coloured the tint may be omitted to draw attention to the areas (as for unsurveyed areas, see B-418.1).

If considered necessary, an explanatory legend, eg 'unsurveyed', or a note may be inserted on the chart.

Vessels deliberately sunk to form fish havens should be shown by the appropriate wreck symbol (see B-422).

**B-447.6 Marine farms**, including shellfish farms, must be shown by either of the symbols:



**K48.2**

The symbol used is not intended to represent a plan outline of the actual farm limits. The larger symbol (size 4 x 4mm) should normally be used, but in congested locations where it is too large, the smaller symbol (size 2 x 2mm) may be used. The nature of the obstructions may be explained in a note.

On large-scale charts or where there are extensive areas of marine farms, the actual limits within which obstructions may be found should be shown by dashed lines (N1.1). The larger symbol must be inserted in the area and may be repeated if required.



**K48.1**

Buoys or beacons marking a farm may be charted where chart scale permits. Lights on cages, rafts, etc, should be shown by a description against the symbol, in sloping lettering, eg (Q.Y Lts) for navigational lights, or the symbol P63 for floodlights, or they may be described in a note.

**Commentaire [c27]** : DID, please insert actual symbol before P63.

For ground tackle associated with fish farms, see B-431.6.

**B-447.7 Fish aggregating devices (FAD)** should be charted by the most appropriate symbol. Underwater FADs (whether on the sea floor or in the water column) should be charted as fish havens (see B-447.5), with the depth if known and no legend. Moored surface FADs should be charted by an appropriate buoy symbol or (for larger rafts, etc) by a small marine farm symbol (K48.2) with the abbreviation 'FAD', or equivalent, to distinguish it from a farm where fish are artificially cultivated. Free floating (unmoored) FADs cannot be charted.

**B-448 DEGAUSSING RANGES**

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-448.1 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').



Q54

**Commentaire [c28]** : DID: please add DG to buoy

**B-449** **VARIOUS MARITIME AREAS AND LIMITS**

**B-449.1** **Ice limits.** If required, the limits of sea ice (seasonal pack ice, drift ice) must be shown by the magenta symbol



N60.2

Ice limits at the junction of land and sea, including fast ice and the edges of glaciers intruding into the sea (see B-353.8), must be shown by the symbol, in black and with no colour tint behind it:



N60.1

**Commentaire [c29]** : DID: please insert black version of symbol.

As ice fronts move, a date when the limit was surveyed should be included if possible, in parentheses and upright text, in the same colour as the ice limit, eg:

**B-449.2** **Floating barriers.** The limits of log ponds (timber pounds, log booms), oil barriers, security barriers, ice booms, shark nets and any other floating barriers must be charted as a black dashed line (N1.1) with small black (solid) circles (F22) where there are posts, piles or other supports. A legend, eg 'Log pond', 'Floating Barrier', or equivalent, should be inserted in the area or along the inside of the limit as appropriate.



N61

F29.1

**Commentaire [c30]** : DID: insert symbol N60.1, with a date (2007), on the inside of the limit.

**Commentaire [c31]** : DID: please insert symbol as in 5011

**B-449.3** **Incineration areas.** Certain offshore areas were formerly designated as suitable for the burning of chemical waste by specially-equipped ships. Incineration of wastes at sea was permitted under the 1972 IMO Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, but was later prohibited under amendments adopted in 1993. It is specifically prohibited by Article 5 of the 1996 Protocol.

**B-449.4** **Cargo transhipment area.** Areas generally outside port limits may be specifically designated as suitable for the transhipment of oil or other materials from large ships to small vessels. The areas selected are relatively sheltered locations and lie off main shipping routes. As the purpose of transhipment is usually to reduce the draught of the larger vessel to allow her to proceed to port, the operation is often known as 'lightening' and the areas may be known as 'lightening areas' or 'cargo transfer areas'.

The limits of officially designated transhipment areas must be charted by dashed magenta lines (N1.2) with the accompanying legend 'Cargo Transhipment Area', or equivalent, and any known identifying letter or number.



N64

The depiction of the areas on charts should be adequate to warn other vessels of the likelihood of encountering ships restricted in their ability to manoeuvre, without the need for cautionary notes on charts. Regulations governing the use of such areas should be included in associated publications rather than on charts.

Cargo transhipment areas should not be confused with waiting (holding) areas (see B431.9).

**B-449.5** **Historic wrecks.** Many nations have designated areas around certain wrecks of historical or cultural (eg sea graves) importance to protect the wrecks from unauthorised interference (eg by diving, salvage or anchoring).

The limits of such areas may be shown on the largest scale charts by the symbol for a restricted area (N1.2) with a magenta legend 'Historic Wk', or equivalent. Any wreck detail and associated buoyage must be shown in black.



N26

**B-449.6 Seaplane operating area:** limits must be represented, in magenta, by the symbol:



N13

Seaplane operations may include landing, take-off, anchoring (or mooring) and drawing water for fire-fighting operations. On smaller scale charts where the limits cannot be charted, or where there are no specified limits, the point symbol may be used.



N13

If required, it may be placed alongside an anchorage symbol, to denote a seaplane anchorage (or mooring).



N14

**Revised specification B-431.6, to be approved at the same time as revised section B-440-449:**

**B-431.6 Mooring ground tackle.** Underwater chains, cables and anchors, if required, must be charted by the magenta symbol:

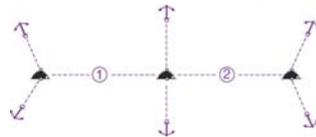


L18

The anchor size should be the same as used in anchorage limits (N12), the shaft with ring being not more than 3.0mm long.

Ground tackle may be used, eg, for stabilising or fixing in position mooring buoys; fish farms; floating energy installations; for holding floating structures, eg vessels, pontoons, away from quays. If the actual chains, cables and anchors cannot be charted, an area (N1.2) with magenta legend, eg: 'Chains and anchors' may be used.

**Mooring trots:** Exceptionally, and on very large scale charts only, mooring berths between buoys may be shown with their numbers or letters inserted in circles, in magenta.



Q 42

**B-440 INTERNATIONAL BOUNDARIES AND NATIONAL LIMITS**

The United Nations Convention on the Law of the Sea, 1982 (UNCLOS) came into force on 16 November 1994. UNCLOS contains navigational provisions as well as provisions for determining the limits of various maritime zones. These provisions are binding to all states that have ratified the Convention. For technical aspects of UNCLOS, see IHO publication S-51.

IHO Member States should show, on selected series of their charts, their own baseline and maritime limits in accordance with UNCLOS. (Former IHO Technical Resolution B2.35)

In this section (B-440), the term 'boundary' is used for any delimitation between adjacent states or those which face each other across channels or seas (known as 'opposite States'). The term 'limit' is used for the line marking the seaward extent of any other maritime zone.

The mariner may be interested in the exact location of international maritime boundaries for two principal reasons:

- o When crossing a boundary he could be subject to different laws and regulations which may effect his navigation, eg buoyage systems, pilotage regulations, fishing rights, reporting procedures, pollution regulations.
- o Where a boundary passes through groups of offshore islands he may wish to know upon which side of the boundary a particular island falls.

**Symbols: General points.** The provision of symbols does not imply that any particular boundary or limit should be charted (other than a land boundary). Boundaries and limits of no significance to navigators or other chart users should be omitted from navigational charts.

Any statement to the effect that international boundaries shown are only approximate should be confined to land boundaries. Such a statement should be in an associated publication, rather than on individual charts. International Maritime boundaries must only be charted if precise positions have been agreed by the states concerned.

Land boundary symbols must be in black. Maritime boundaries and limits should be in magenta, but may be in a different colour if required for clarity. Wherever the cross symbol, (eg N40, N41) is used, the 'horizontal' line (ie the one in line with the limit) should be twice as long as the 'vertical' line. Legends on limits must be placed on the inside of the area they define, if space allows.

Generally, because they are measured from common baselines, the various limits do not coincide. However, they may merge towards an international maritime boundary between two or more 'opposite' States. In such cases, the agreed International Maritime Boundary takes precedence.

**B-440.1** International land boundaries should be charted, at least in the vicinity of coasts. They should be shown by a line of black crosses. State names may be shown at appropriate intervals in black upright text, the form in accordance with B-552.4.



N40

**B-440.2** Customs limits, where details are provided by a regulatory authority, must be charted, if required, in magenta, on land and sea, by the symbol



N48

**B-440.3** International maritime boundaries are those which have been established by agreement between adjacent or opposite coastal States. Boundaries are sometimes negotiated on the basis of the equidistance or 'median' line principle. For various reasons, however, agreed boundaries even when negotiated on this principle are seldom true median lines. The term 'median line' should not therefore be used on charts or in navigational

**Commentaire [c32]** : This resolution can be withdrawn on publication.

**Commentaire [MW33]** : The term States, referring to nation States or countries, should be capitalized across this document.

**Supprimé** : s

**Commentaire [c34]** : Suggested by FR.

**Supprimé** : any coastal zone where no other state is concerned.

**Commentaire [MW35]** : Should this be "international maritime boundary" to be consistent with future uses of the full term?

**Supprimé** : Maritime

**Commentaire [MW36]** : Should this be "international maritime boundary" to be consistent with future uses of the full term?

**Supprimé** : s

**Commentaire [c m37]** : Where no agreed international maritime boundary is in place no symbol should be charted indicating where a boundary might be in the future.

**Commentaire [c m38]** : a. The International Boundary always takes precedence. Where several different types of maritime zones merge towards a boundary they will do so progressively and the jurisdiction for each of the zones applies up to the boundary until in the ultimate you could reach a boundary that separates internal waters. The hierarchy of jurisdiction is progressive from EEZ - CZ - TS to Internal Waters. In other words Internal Waters jurisdiction will include all measures contained within the other outer zones as well as additional jurisdiction. ... [1]

**Supprimé** : Territorial Sea limit

**Supprimé** : as it includes all the regulations applicable to the other areas. Other symbols (such as fish or EE ... [2]

**Commentaire [c39]** : Subheading changed to be consistent with B-440.3.

**Commentaire [c40]** : DID amend state names to original form (as current 5011 N40)

**Supprimé** : at particular ports may

**Supprimé** : preferably

**Commentaire [c41]** : DID: please add a vertical section, with circle rotated (as N2.2)

**Supprimé** : ¶ or by a simple dashed line with suitable legend.¶

**Supprimé** : states.

publications.

Navigationally, international boundaries may vary in their significance over different parts of their lengths. Inshore, they may represent the delimitation of territorial seas of two states or 'internal waters', (eg within bay closing lines or straight baseline systems). Offshore, they may represent exclusive economic zone and/or continental shelf boundaries.

International maritime boundaries should be charted, where navigationally significant and agreed by the states concerned, by alternating crosses and dashes, in magenta. State names should be shown at appropriate intervals in sloping magenta text, the form in accordance with B-552.4.



N41 must not be used for disputed maritime boundaries.

#### B-440.4

**Baselines.** The term 'Baseline' refers to the line from which the breadth of the Territorial Sea, the outer limits of the Contiguous Zone, the Exclusive Economic Zone and, in some cases, the Continental Shelf are measured. It is also the dividing line between internal waters and territorial seas. Internal waters comprise all areas of the sea on the landward side of the territorial sea baselines, as well as inland waters including rivers, bays, etc. Internal waters form an integral part of the land territory of a State.

The normal baseline is the low water line (which is not defined any more precisely by UNCLOS) of the mainland, islands, or low tide elevations, as depicted on large scale charts officially recognised by the coastal state; they therefore do not require any special symbol.

Features which are naturally-formed and dry at low water (eg rocks, reefs, sand banks, banks) may be considered low-tide elevations and included in the baseline provided they lie wholly or partly within a distance not exceeding the breadth of the territorial sea from the mainland or an island. Artificial structures cannot be used in the baseline to extend a coastal State's sovereignty; however, they may have 500m safety zones. (see B-445.6)

Baselines around coral reefs. Usually, areas of reef plateau are charted as a single area of drying coral since it is impossible to chart all the individual lumps and heads, and the area is for practical purposes not navigable. The symbol for drying coral is used to illustrate the extent of this feature on a chart, and it is the edge of this symbol that is taken as the "... seaward low-water line of the reef, as shown by the appropriate symbol ...".

**Closing lines**, up to a maximum of 24 nautical miles in length, are used to enclose bays and estuaries, provided they satisfy the provisions of UNCLOS. **River closing lines** are used to enclose rivers that flow directly into the sea. Closing lines across bays or rivers that serve as a part of the baseline and the inner limit of the territorial sea (shall be symbolized in a manner consistent with the outer limit of the territorial sea).

**Straight baselines** (including bay and river closing lines, straight archipelagic baselines and baselines around unstable coasts) or the limits derived from them, should be shown on official charts of a scale or scales adequate for determining them. Many coastal States interpret this statement as permitting depiction on special charts, not on the standard navigational series. However, straight baselines may be charted, if required, by an unbroken line backed at intervals of 50mm (or closer) by open arrowheads pointing towards the coast, in magenta. The base points used in the determination of these baselines may be shown, indicated by circles with a diameter of 2mm.

Baselines around unstable coasts. Where, because of the presence of a delta, glacier or other natural conditions, the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line to define straight baselines and, notwithstanding subsequent regression of the low-water line, these straight baselines remain effective until changed by the coastal state in accordance with UNCLOS.

**Supprimé** : Disputed boundaries must not be charted.

**Commentaire [c42]** : DID amend state names to original form (as current 5011 N41)

**Commentaire [c43]** : Suggested by FR, to allow use of a different symbol, eg N1.2, with legend for disputed boundaries

**Supprimé** : which are normally not charted.

**Supprimé** : lakes

**Commentaire [MW44]** : I'm not sure if this sentence is accurate or necessary for this document. I would consider striking it because it might make people think that Article 8.2 doesn't apply. Innocent passage applies in internal waters if the establishment of a straight baseline has the effect of enclosing as internal waters areas which had not previously been considered as such.

**Supprimé** : state

**Commentaire [MW45]** : This is true; however, when closing lines are employed one should provide guidance for appropriate symbolization. I added a sentence to the Closing lines paragraph.

**Commentaire [c m46]** : Sand banks are a common low-tide elevation feature

**Commentaire [MW47]** : Are there any banks that are dry at low water? Wouldn't these be shoal areas??

**Supprimé** : used to determine

**Supprimé** : carry no territorial rights (but

**Supprimé** : ,

**Commentaire [MW48]** : I don't know how safety zones area created, but artificial structures can lie within a State's territorial sea and therefore it would be part of a State's ... [3]

**Supprimé** : Baselines around unstable coasts. Where, because of the presence of a delta, glacier or other natural ... [4]

**Commentaire [c m49]** : I do not understand the reasoning behind this part of the sentence.

**Supprimé** : In certain circumstances, straight baselines may be used to connect seaward points on a deeply indent( ... [5]

**Supprimé** : Straight archipelagic baselines may be drawn around archipelagic states.

**Supprimé** : s

**Commentaire [c m50]** : UNCLOS Article 7.2 deals with highly unstable coastlines. Bangladesh is the or ... [6]

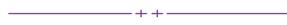
**Straight archipelagic baselines** may be drawn around archipelagic States. An archipelagic State may draw straight archipelagic baselines joining the outermost islands and drying reefs of the archipelago provided that within such baselines are included the main islands and an area in which the ratio of the area of the water to the area of the land, including atolls, is between 1:1 and 9:1.



N42

**B-440.5** The **Territorial Sea** is a belt of water of a defined breadth, under UNCLOS not exceeding 12 nautical miles measured seaward from the territorial sea baseline. Within the territorial sea, a coastal State exercises sovereignty over the airspace, water column, seabed, and subsoil subject to rules of international law including the right of innocent passage for foreign ships.

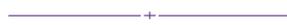
Seaward limits of territorial seas may be charted, in magenta, by groups of two crosses, at intervals of approximately 50mm.



N43

**B-440.6** The **Contiguous Zone** is a zone adjacent to the territorial sea where the coastal state may exercise the control necessary to prevent or punish infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea. Under UNCLOS, the outer limits of this zone may not extend beyond 24 nautical miles measured from the territorial sea baselines.

Seaward limits of contiguous zones may be charted, in magenta, by single crosses at intervals of approximately 50mm.



N44

**B-440.7** **Exclusive fisheries zones.** Areas beyond the territorial seas where coastal states proclaim that they alone may regulate fishing. an area of domestic jurisdiction, the term Fishery Zone may be used to describe areas where coastal States proclaim to regulate fishing. Within any such zone other countries which have traditionally fished the area are often allowed to do so under bilateral agreements. Where states have permitted others to fish in parts of the area, it may be desirable to chart the outer limits of both the full area and the area of special concessionary rights.

In some instances, claims are described as 'conservation zones'; for practical purposes these may be classed with exclusive fishery zones since their intended function is to institute fishery conservation measures.

Most of the fishery zone claims are limited by fixed distance (200 nautical miles in some cases) from the territorial sea baselines. Some coastal States have adopted the term EEZ to describe the area of fisheries jurisdiction.

**Limits of fishery zones** commonly coincide with other charted limits, such as continental shelf and exclusive economic zone limits. This may be indicated by adding a magenta fish symbol at appropriate intervals to the other limit symbol.

Limits of fishery zones which do not coincide with other charted limits may be charted, in magenta, by a line broken at intervals of approximately 50mm by a fish symbol.



N45

If it is necessary to chart more than one limit, the line between the fish symbols may be dashed for the inner limit.

**Commentaire [MW51]** : This paragraph directly relates to straight baselines, so I think it should be placed under the straight baseline section.

**Commentaire [c52]** : DID Amend symbol (arrows point wrong way), as current 5011 N42.

**Supprimé** : If agreed internationally that, in a highly unstable area, the furthest extent of the low water line may determine the baseline, notwithstanding subsequent regression, the same symbol may be used to depict the line where it differs from the charted low water line.

**Supprimé** : s

**Commentaire [MW53]** : I'm concerned about the limiting language in this draft that makes it sound like no other international rules, other than innocent passage, apply to a coastal State's territorial sea. I'm not sure if that's true.

**Supprimé** : has full sovereignty limited only by

**Supprimé** : a

**Supprimé** : (but closer if necessary)

**Supprimé** : (in the sense used in the description in B-440c)

**Supprimé** : cm (but closer, if necessary)

**Commentaire [MW54]** : Should this name be consistent with S-57, where the term Fishery Zone is used?

**Commentaire [MW55]** : In the U.S., we have Fishery Zones that extend inside the territorial sea and out to 200nm. This sentence does not address that coastal States have the right to regulate fishing activities anywhere out to 200nm from their baseline (the territorial sea and EEZ regimes give them this right).

**Commentaire [MW56]** : Should sanctuaries be included here as well? The symbology between conservation zones/sanctuaries and fishery zones would be different. Domestically, the sanctuary would be a blue line and the fishery zone would be grey or magenta with fish symbol interspersed.

**Commentaire [c m57]** : I do not think that this sentence is necessary.

**Commentaire [MW58]** : Are we talking about the traditional use of the term which applies to the water column? This statement could be misleading and might encourage folks to think that jurisdiction of ... [7]

**Commentaire [c59]** : DID: please amend fish to magenta.

**Supprimé** : (but closer if necessary)

B-440.8

**The Continental Shelf.** Under UNCLOS,

‘The continental shelf of a coastal state comprises the sea-bed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance’.

The delineation of the continental shelf beyond 200 nautical miles from the territorial sea baselines is complex. Details are given in UNCLOS Article 76 (see S-51). However:

‘the fixed points comprising the line of the outer limits of the continental shelf on the sea-bed ... either shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured or shall not exceed 100 nautical miles from the 2,500 metre isobath’.

The coastal state exercises sovereign rights over the continental shelf for the purpose of exploring it and exploiting its natural resources.

**Limits of the continental shelf.** Complex procedures exist within UNCLOS for the establishment of the limits of the continental shelf. Where these procedures have been followed and the coastal State has received final recommendations from the ‘UN Commission on the Limits of the Continental Shelf’, the limits shall be charted, if required, by a continuous magenta line with the state name and legend ‘Continental Shelf’ or equivalent, along the line, inside the area, eg:

UK Continental Shelf N46

B-440.9

**Exclusive Economic Zone (EEZ).** In the exclusive economic zone, the coastal State has sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the sea-bed and of the sea-bed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds. Under UNCLOS,

‘the EEZ shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured’.

**Limits of exclusive economic zones (EEZs).** In areas where there is no maritime boundary with an adjacent or opposite coastal State, EEZ outer limits must be charted, if required, by a continuous magenta line with the state name and a legend or abbreviation, eg EEZ or national equivalent, at intervals of approximately 50mm along the line, inside the area, eg:

EEZ N47

B-441

**MILITARY PRACTICE AREAS; MINEFIELDS**

Military practice (or exercise) areas at sea are of various types and may be classified as follows with regard to their significance for the mariner:

- a. Firing danger areas, sometimes called firing practice areas, ie permanent or temporary ranges, including bombing, torpedo and missile ranges.
- b. Minelaying practice (and counter-measures) areas.
- c. Submarine exercise areas.
- d. Other exercise areas.

Permanent minefields may be wartime relics or modern defensive fields.

B-441.1

**Some degree of restriction** on navigation and other rights may be implied by the charting of military practice areas. Article 21 of UNCLOS states that ‘The coastal State may adopt laws and regulations, in conformity with the provisions of this Convention and other rules of international law, relating to innocent passage through the

Supprimé : limits have

Supprimé : the approval

Commentaire [MW60] : I’m not sure why the continental shelf limits must be charted. Although there may be reasons to chart them, they are not navigationally significant since they are purely for exploitation and exploration of the seabed and subsoil beyond the EEZ. As another limit of national jurisdiction, there may be strong reasons to show them on charts; however, I’m not sure it should be mandatory.

Supprimé : of

Supprimé : must

Supprimé : on the landward side of the line,

Commentaire [c61] : DID: please create new symbol, legend sitting on a continuous fine magenta line, similar to N47.

Commentaire [c62] : Suggested new symbol and INT 1 reference

Supprimé : s

Supprimé : s of a defined width of 200 miles from territorial sea baselines are established by international agreement, it is recommended that their

Supprimé : should

Supprimé : suitable

Supprimé : appropriate

Supprimé : on the landward side of the line,

Commentaire [c63] : DID: add FRANCE before EEZ

Supprimé : as found in Swedish territorial waters

territorial sea... [including] the safety of navigation and the regulation of maritime traffic... There may be varying interpretations of the validity of the restrictions and possible infringement of the rights of innocent passage through territorial waters and elsewhere. Where it is thought desirable to chart such areas, even though clear range procedure may be observed, or the areas appear to be a derogation of the freedom of the seas, mariners should be informed (not necessarily on charts) that publication of the details of a law or regulation is solely for the safety and convenience of shipping and implies no recognition of the international validity of the law or regulation. By this means infringements are not condoned but the mariner receives a warning which may be necessary for his safety.

**Commentaire [MW64] :** This sentence seems a little political. I'm not sure who this sentence is directed at and I'm not a lawyer, but I think coastal States have the right to direct foreign vessels to other parts of their territorial sea for the purposes of safety, among several other reasons described in Article 21.

As an alternative to including military practice areas on standard navigational charts, unless of definite navigational significance, such areas may be charted on special small-scale non-navigational practice area charts, to avoid clutter.

**Supprimé :** it is recommended that

**B-441.2** Firing danger areas at sea are frequently marked by IALA special buoys, sometimes laid around the perimeter of the area and/or by specially erected lights, beacons and targets. All such features which could assist the navigator in identifying his position, or could be a hazard, must be charted in the normal way, eg:



**Commentaire [c m65] :** I think that this paragraph is needed simply to explain to the mariner that certain regulations may be in place that may restrict his right to innocent passage that may not be in accordance with international law.

**Supprimé :** (yellow Special Marks in the IALA System) and

**B-441.3** The limits of firing danger areas. If it is required to chart such areas, the symbol must be:



**Supprimé :** should delineate these areas by a

**Supprimé :** a magenta dashed magenta line broken at approximately 50mm intervals by sketches of a small magenta symbol for a bomb from which a flare is shown, preferably spurting into the area.

The flame must point into the area, at approximately 50mm intervals (or closer). The designation, eg 'D1234', may be inserted within the area. A note may be added to the chart in magenta where considered necessary, which could include information about signals, firing times and contact details. Firing danger areas established for a unique exercise should not be inserted on paper charts: such areas should be promulgated by Temporary Notices to Mariners.

**Commentaire [c66] :** Suggested by DK

**Supprimé :** cautionary

**Supprimé :** should be added on the chart

**B-441.4** Mine laying (and counter-measures/clearance) practice areas. The existence of these areas implies the possibility of unexploded mines or depth charges on the bottom, and also the presence of harmless practice mines. If it is required to chart such areas, the symbol must be:



**Supprimé :** the

**Supprimé :** Temporary

**Supprimé :** normally

The horns of the mine must point into the area, at approximately 50mm intervals (or closer).

**Supprimé :** to chart these areas must be depicted show the limits by means of a dashed magenta line, broken at intervals by a mine symbol, horns pointing into the area.

**B-441.5** Submarine exercise areas and transit lanes may be charted, if required, eg where they occur in or near major shipping lanes or port approaches. The symbol for the limits must be dashed magenta lines with a magenta submarine shape or appropriate legend within the area.



**Commentaire [c67] :** DID, please put short vertical side on the 2nd graphic.

The submarine symbol may be repeated to clarify large areas. A cautionary note may be added if considered necessary, eg:

**SUBMARINE EXERCISE AREA**  
Submarines exercise frequently, both surfaced and dived, in this area. A good lookout is to be kept for them when passing through these waters.

Submarine exercise areas and transit lanes should not generally be charted because submarines exercise over wide areas which it would not be practicable to chart, and over which cautions (to keep a good lookout for them) are unlikely to be effective

**Commentaire [c68] :** Additional advice suggested by FR

**B-441.6** Other naval exercise areas outside territorial waters **should** not be charted unless necessary for the safety of shipping, in which case a dashed magenta line with a cautionary note **must** be shown.

Within territorial waters, areas in which navigation is permanently **prohibited except** for military purposes **must** be delineated by the symbol:



**Supprimé :** for restricted areas, with appropriate legend, eg

**Commentaire [c69] :** DID, insert latest N31 graphic.

**Supprimé :** Entry Prohibited

**B-441.7** Areas established for a unique exercise should not be inserted on paper charts: such areas should be promulgated by Temporary Notices to Mariners.

**B-441.8** Minefields laid and maintained for defence purposes **must** be charted, **if required**, by the general symbol for the limits of restricted areas (N2.1) in magenta, with a cautionary note giving the precautions to be taken by mariners. A magenta tint band may be added inside the limit, for emphasis, see B-439.6d.



**Mine danger areas and former mined areas.** The method of charting old wartime minefields will depend on the assessment of the degree of danger remaining and must be symbolized according to the particular circumstances of each case. If danger to surface navigation still exists, they must be charted as minefields (N34); the legend 'Mine Danger Area' may be used instead of 'Minefield'. If danger to surface navigation is now no greater than the normal hazards of marine navigation, but there is a possible residual danger for submarine or seabed activities, the legend should be 'Former Mined Area (see Note)', or equivalent and an associated explanatory note should be added.

For mine-laying practice areas, see B-441.4.  
 For dumped individual mines or explosives, see B-442.3.

**B-442 DUMPING GROUPS: GENERAL; HARMFUL MATERIALS**

Materials deliberately dumped at sea in specified areas (other than those associated with reclamation works) may be classified, according to their significance to the mariner, as follows:

- a. Materials which are generally dispersed before reaching the seabed, eg sewage sludge, are of little navigational significance and no charting action is usually required.
- b. Spoil from dredging operations or other works which might reduce charted depths significantly in the designated spoil ground. See B-446.
- c. Concrete blocks, cars, or other objects dumped as havens for the breeding of fish. See B-447.
- d. Harmful materials, including explosives and chemicals, which are likely to remain concentrated on the seabed. See B-442.1-4.

**B-442.1** The dumping of harmful materials from land based sources has been the subject of several conventions.

For the purpose of these specifications, dumping grounds for any harmful materials (eg radio-active waste) should generally be treated as below for explosives (or munitions) or chemicals.

**Supprimé :** e. Areas where vessels burn off dangerous chemicals. See B-449.3.†

**Supprimé :** it is recommended that

**B-442.2** Dumping grounds for harmful materials **must** be shown by the magenta general maritime limit for restricted areas (N2.1). The limits **must** be shown on all charts of scale 1:500 000 and larger, and on smaller scales in the case of deep water areas where no larger scale charts exist or where it appears desirable to draw attention to the areas. Legends such as 'Explosives Dumping Ground', 'Dumping Ground for Chemicals', or equivalent, **must**

**Supprimé :** The limits of d

be inserted in magenta sloping lettering within or adjacent to the charted limits, eg:



Magenta is used because to the chart user the significance of these areas is similar to that for other hazards (eg cables) to such seabed operations as trawling, cable laying, anchoring or mineral exploitation (see B-142.2).

**B-442.3** **Dumped individual mines or explosives.** Drifting mines cannot be inserted on paper charts. All mines or explosives could still constitute a hazard for vessels anchoring, fishing or engaged in submarine or seabed operations. If it is required, exceptionally, to chart them, this should be by a small circle of magenta T-shaped dashes (N2.1 – see B439.2) with the appropriate legend, eg *Mine, Explos*, or equivalent, alongside, and/or a ‘mine’ symbol inside:

N23.1

For minefields, see B-441.8

**B-442.4** **Disused dumping grounds for harmful materials** are considered dangerous for an indefinite period and must therefore remain charted. Magenta text ‘*disused*’ or equivalent should be inserted under the legend. The date when the area ceased to be used should also be given on the chart, or in an associated publication, if known.



**B-443** **SUBMARINE CABLES**

Submarine cables are used to carry power or telecommunications. All power cables and most telecommunication cables carry dangerous voltages. Submarine cables are potential hazards to both vessels and life, particularly to fishing vessels engaged in trawling the seabed. Where possible, submarine cables are now buried beneath the sea floor to a depth of 40-90 cms in water depths of less than 1000 metres; however there remains a large percentage unburied. Submarine cables are vulnerable to damage from anchoring, trawling or other seabed operations; even small craft anchors can penetrate a soft seabed sufficiently to foul a cable. Damage to telecommunication cables can lead to extensive disruption of national and international communications, whilst damage to power cables can disrupt electricity supply.

Submarine cables, including disused cables, should be charted to indicate their presence to vessels engaged in anchoring, trawling or seabed activities in order to:

- Warn mariners of the potential hazard to their vessel, including electric shock to any vessel fouling or breaking the cable, possible capsize of a small vessel if its fishing gear or anchor is trapped under the cable, or loss of gear (trawls or anchor cables).
- Prevent damage to the cable and avoid disrupting the service the cable may be providing.

Active cables should be charted to a depth of 2000 metres (which is the deepest depth of water to which vessels may be endangered by fouling the cable).

For disused cables, see B-443.7. For buried cables, see B-443.8. For cables related to degaussing areas see B-448.

**B-443.1** **The exact route of individual cables** must be charted where possible to give the chart user full information, using the symbol of a wavy magenta line (see B-142.2).



Where several cables land at the same point, the symbols may be terminated before they reach the coast or inshore water on smaller scale paper charts, to avoid obscuring more important detail. In oil and gasfields,

**Supprimé :** Legends such as ‘Explosives Dumping Ground’, ‘Dumping Ground for Chemicals’, or equivalent, must be inserted in magenta sloping lettering on the magenta plate within or adjacent to the charted limits, eg:

**Commentaire [c70] :** DID: please insert ‘mine’ symbol, in small N2.1 circle.

**Supprimé :** the

**Commentaire [c71] :** DID, add date in the brackets, ie (*disused* – 2007)

**Supprimé :** Where several cables land at the same point the symbols may be terminated before they reach the coast, or inshore water, on smaller scale charts in order not to obscure other important detail.

where pipelines and cables are often laid on the same route, the cable may be omitted.

**B-443.2** Power transmission cables should be distinguished from telephone and telegraph cables, for the protection of the mariner. The magenta power ‘flash’ should break the cable symbol at intervals of about 50mm.

**Supprimé** : carrying high voltage electric currents



L31.1

In the case of power cables across narrow channels, where it is considered that notice boards give adequate warning of the danger, the chart symbol may be omitted.

In certain circumstances, high voltage power cables may cause a deviation in a ship’s magnetic compass; in these cases, where reports have been received, they should be treated as local magnetic anomalies (see B-274) and the legend ‘Magnetic Anomaly (see Note)’ should be added in black at appropriate points along the cable.

**B-443.3** Cable areas should be charted where:

- cables (including disused cables) are so numerous in an area that it would be impossible to chart them individually without impairing the legibility of the chart, or
- a regulatory authority designates an area for the protection of a cable, or cables.

The area must be delimited by the general symbol for the limits of restricted areas (N2.1), interspersed at intervals of about 30mm with short sections of the cable symbol. The cable symbol must be repeated sufficiently to characterize the line (see B-439.3). Individual cables within a cable area should not be shown.



L30.2



L31.2

The outer limits of a cable area must enclose the area in which anchoring and certain forms of fishing are prohibited or inadvisable, ie, the limits must lie a safe distance beyond the actual lines of the outermost cables. See B-443.4 referring to regulations prohibiting anchoring and certain forms of fishing.

**Commentaire [c72]** : Order changed (INT 1 refs will need to be changed)

**Supprimé** : cables (including disused cables) are

**Commentaire [c73]** : Addition suggested by DK

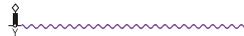
**Supprimé** : intermittently with

**B-443.4** Regulations prohibiting anchoring or certain forms of fishing near submarine cables within territorial waters differ in detail from country to country. Where such regulations exist, it may be indicated by use of the symbol and/or in magenta (N20, 21) within a cable area (see B-439.4), or by reference to a note.

**Commentaire [MW74]** : We can lay cables and regulate fishing out to the EEZ, not just within territorial waters. Do these symbols only apply to certain forms of fishing near cables in territorial waters?

**B-443.5** Cable beacons, notice boards, or lights, marking cable landings must be shown in black on the largest scale charts, eg:

**Supprimé** : probably



Q123

**B-443.6** Buoys marking cables. Cables are sometimes marked by buoys, which should be charted, eg:



Q55

**Commentaire [c75]** : DID: please add Cable next to the buoy (in black).

A legend, eg ‘Cable’, may be added if their purpose is not clearly apparent.

**B-443.7** Disused submarine cables. Where disused cables traverse possible anchorages or where there is known seabed activity, eg trawling grounds, they should be charted on the largest scale charts (including the largest scale INT chart – see B-402.3e), provided they do not obscure more important information. Disused cables must be shown by the same wavy line as active cables, but broken by omitting every fourth complete sinusoid.

**Supprimé** : preferably,



L32

Few disused cables are recovered and so to chart them all would lead to clutter on some charts. Also, accurate records of their positions are likely to be incomplete (some cables having been cut or dragged out of position), so there is a case for charting them very selectively.

**B-443.8** Cables, buried so deep that they are not vulnerable to damage from anchoring, should not be charted (so that mariners are not unnecessarily inhibited from anchoring or fishing). In marginal cases they may be charted in

magenta with a note stating the nominal depth to which they are buried, as L42, but with a cable symbol.

**Commentaire [c76] :** New specification suggested by DK. As it is an existing symbol + legend, it is not thought necessary to introduce a new INT1 number.

**B-444 SUBMARINE PIPELINES**

Submarine pipelines can be divided into two main categories:

- a. Oil, chemical, gas and water supply pipelines are an important feature of many areas. The pipes are generally encased in concrete for protection and to give them negative buoyancy, which can significantly increase their external diameter. Pipelines are generally laid directly on the seabed, with sections over local dips or hollows being supported physically from beneath. In some cases (eg in shallow water or near the shore), where the external diameter of the pipeline would represent a significant reduction in the water depth above it, the pipelines may be laid in trenches and possibly buried.

**Supprimé :** now  
**Supprimé :** this coating

In all cases it must be assumed that the pipes are vulnerable to damage from anchoring or trawling, although in a few cases concrete domes are used to protect particularly vulnerable junctions. Gas pipes present a severe hazard to ships damaging them (from fire, explosion, or possibly loss of buoyancy). Oil and chemical pipes are a danger to the environment if fractured. Damage to water pipes supplying residential areas, mainly islands, results in disruption of water supply. In the above cases, submarine pipelines must be charted on all appropriate chart scales, using the symbol ----- L40.1 in magenta.

**Supprimé :** large

- b. Outfalls and intakes such as sewers, and cooling water intakes, are mainly a feature of inshore waters. For small craft, in particular, such pipes are a potential danger to navigation. The pipes are also vulnerable to damage. They should be charted on at least the largest scales, using the symbol ----- L41.1 in black.

**Supprimé :** Discharge pipes

The position of the dot in relation to the dash has no significance but, for consistency, the dot should be placed at the forward end of the direction of flow in a pipeline, if known.

**Supprimé :** Oil, chemical, gas and water supply pipe should be labelled 'Oil', 'Chem', 'Gas', 'Water', or equivalent. Water intakes and pipes discharging water, sewage should generally not be labelled (to minimise the need for translation).

For pipelines on land, see B-377 and for overhead pipes, see B-383.

**B-444.1 Oil, chemical, gas and water supply pipelines.** The exact route of individual pipelines must be charted where possible to give the chart user full information, using the pipeline symbol L40.1 in magenta. Where pipelines are very close together, only one need be charted (on paper charts).

**Supprimé :** The position of the dot in relation to the dash has no significance but, for consistent treatment of adjacent pipes, it is suggested that the dot be placed at the seaward end of the dashes.

**Oil Pipelines** should be labelled 'Oil', or equivalent in magenta.

**Chemical pipelines** should be labelled 'Chem', or equivalent in magenta.

**Gas pipelines** should be labelled 'Gas', or equivalent in magenta.

**Water pipelines** should be labelled 'Water', or equivalent in magenta.



**L40.1**

The origin and destination names and/or name of a major pipeline may be inserted adjacent to the pipeline, in sloping magenta text, where these are not obvious, eg: *Ekofisk to Emden (Norpipe)*.

Oil, chemical and gas pipelines present a greater danger to ships damaging them and a cautionary note may be charted, eg:

**Supprimé :** it is recommended that  
**Supprimé :** similar to the following (modified as necessary depending on the types of pipelines charted):

**GAS PIPELINES**  
Mariners risk prosecution if they anchor or trawl near a pipeline and so damage it. Gas from a damaged pipeline could cause fire or loss of a vessel's buoyancy.

Where several pipelines converge to land at the same point the symbols may be terminated before they reach the coast or inshore waters, on small scale paper charts, to avoid obscuring more important detail.



**OFFSHORE PRODUCTION**

Supprimé : ENERGY  
Supprimé : FACILITIES

**Oil and gas** fields are exploited in many parts of the world. Although the basic methods for extracting oil and gas are well established, details of the systems and structures may vary with the characteristics of the different fields and are continually being developed.

**Fixed production facilities.** In a typical field, oil or gas is obtained from wells drilled from fixed production platforms, usually standing on the seabed. From each production platform, the oil or gas is carried in pipes to a facilities platform where primary processing, compression and pumping are carried out. The oil or gas is then transported through pipelines to a nearby storage tank, tanker loading buoy or floating terminal, or direct to a tank farm on shore. One facilities platform may collect the oil or gas from several production platforms, and may supply a number of tanker loading buoys or storage units. Such facilities platforms are sometimes termed Field Terminal Platforms. Converted tankers or purpose-built vessels are often permanently moored and used as facilities platforms, floating terminals, and for storage.

**Drilling rigs.** It is important for charting purposes to distinguish between temporary structures used in the exploratory stages and permanent structures used in the production stage. Drilling rigs (also called ‘oil rigs’ and including semi-submersible rigs, ‘jack-up rigs’ and drillships) are mobile structures used for drilling wells to explore and develop a field. Drilling rigs are of temporary significance and should not be charted; their positions are usually promulgated in Radio Navigation Warnings and by Temporary Notices to Mariners, especially when the rigs are located in traffic lanes.

**Other offshore energy production facilities** include wind turbines (see B-445.8-9) and underwater current turbines (see B-445.10-11). Other methods of harnessing tidal and wave energy are also in use.

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

a. **Abandoned wells.** In the course of developing an oil or gas field, numerous wells may be drilled. Some, which will not be required again, may be sealed at or below the sea floor and abandoned; such wells must not be charted, as they have no relevance to navigation.

b. **‘Wellhead’** is a term used to describe 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. In certain instances, a wellhead may project above the sea surface.

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.

Supprimé : Wells which are in use for producing oil or gas are termed ‘Production Wells’.  
Supprimé : a.  
Supprimé : bottom  
Supprimé : (or equivalent if any nation cannot accept Well as an international term) against it  
Supprimé : at chart datum,

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).



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).

Some countries have national laws prescribing 500 metres radius ‘safety zones’ around suspended wells (see B-445.6).

Supprimé : Whatever the legality and nature of such safety zones, it is considered impracticable to show their limits on charts. (For safety zones around platforms,  
Supprimé : Their wellheads are often surmounted by a complex of valves and pipes, similar to those on suspended wells, known as a ‘Christmas Tree’.

c. **Submerged production systems.** In relatively deep water a production wellhead may be a seabed installation only, eliminating the need for a permanent production platform. Due to the depth of water, such an installation is normally of no concern to surface navigation. Wells which are in use for producing oil or gas are termed ‘Production Wells’ (sometimes known in the oil industry as ‘subsea completions’). Production wells

are often marked by light-buoys to assist recovery and to indicate a hazard to navigation or fishing. They generally have surrounding safety zones to protect the installation (see B-445.6). They should be charted in the same way as suspended wellheads; they will normally be distinguishable from the latter by the charted pipelines connected to them.

**d. Single Well Oil Production Systems (SWOPS)** are production wells from which oil is recovered by a tanker dynamically positioned over the well, lighted as an offshore installation. However, at times the tanker may be off-station leaving the well unattended, at which time it is similar to a suspended well. These should be charted as wellheads; the abbreviation 'SWOPS' may be used in lieu of 'Well'.

**Commentaire [c79]** : L20 no longer required. Symbol and abbreviation should now be obsolescent in INT1.

**Supprimé** : ,

**Supprimé** : with

**e. An Injection well** is drilled to inject fluids or gas into a geological trap to encourage the flow of oil from a production well. These should be charted as wellheads.

**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 (PLEM)** 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, eg Single Buoy Mooring (see B-445.4). Flexible hoses, provided with buoyancy aids, rise vertically upwards from the PLEM 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 PLEM, it must be charted as a manifold. 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).

**g. Above-water wellheads.** In shallow water, wells may sometimes project above the sea surface at some or all states of the tide. The structure of valves and pipes (known as a 'Christmas Tree') may then be visible as a 'dry tree'. When unlit, this feature must be charted by a small position circle and the legend 'Pipe' and, when lit, by a light star, light flare and light description. If it covers at some states of the tide, it should be enclosed in a danger line. A height, or drying height, should be added to the legend, in brackets, if known.



○ Pipe

L23

**Commentaire [c80]** : DID: Please add example with danger circle and drying height, sloping legend.

B-445.2

### Platforms (including production platforms).

Several different types of platforms are in use. They are normally piled steel or concrete structures, the latter held in position on the sea floor by gravity. **Tension Leg Platforms (TLP)** consist of semi-submersible platforms secured to flooded caissons on the sea floor vertically below them by wires kept in tension by the buoyancy of the platform.

Platforms may serve a number of purposes. They may carry any of the following equipment: drilling and production equipment, oil and gas separation and treatment plants, pump-line stations and electricity generators. They may be fitted with cranes, a helicopter landing deck, and accommodation for up to 350 people. Platforms may stand singly or in groups connected by pipelines. Some stand close together in a complex, with bridges and underwater cables

connecting them. Unwanted gas or oil is sometimes burnt from a flaring boom extending from the platform or from a nearby flare stack.

**a. Platforms must** be charted on all large and medium scale charts covering oil- and gas-fields. Where they lie close together, they may have to be generalised ([on paper charts](#)) so that a single symbol represents more than one platform.

The symbol for a platform must be:  **L10** and **P2**.

**b. Lights and fog signals.** As all platforms must carry lights, the small symbol is emphasized by the associated light flare. The lights and fog signals commonly used for platforms and associated structures consist of the following:

- A 360° white light (or lights operated in unison) flashing Morse code (U) (meaning 'You are standing into danger') every 15 seconds, visible 15 miles and exhibited at an elevation of between 12 and 30 metres.
- A secondary (emergency) light or lights with the same characteristics, but visible only 10 miles, automatically brought into operation on failure of the main light(s).
- Synchronized red lights, flashing Morse code (U) every 15 seconds, visible 2 miles, and exhibited from the horizontal extremities of the structure which are not already marked by the main light(s).
- A fog signal sounding Morse code (U) every 30 seconds, audible at a range of at least 2 miles.

On charts which include, or are likely to include, many platforms, a note should be inserted on the chart describing the lights and fog signals, instead of individual legends at each platform, eg:

OIL [and/or GAS] FIELDS  
Platforms and associated structures exhibit white and red Mo(U) lights, red obstruction lights, and Mo(U) audible fog signals. Unauthorized navigation within 500 metres of all such structures is prohibited.

This note may be varied to take account of local circumstances, but where different (distinctive) lights are used, the light descriptions must be inserted individually against the platform symbols.

**c. Flares.** As with refineries on land (see B-374.1), offshore terminals may burn off gas from production platforms or from 'flare stacks' set up as separate structures a short distance from the production platforms. In the latter case the stacks must be charted by:

 Fla **L11**

with the international abbreviation 'Fla', but without a coloured light flare (or patch).

**d. Floating Production Facilities.** Semi-submersible drilling rigs and tankers are sometimes converted to act as production platforms, and are then known as 'Floating Production Facilities' or 'Floating Production Platforms'. If required, they must be charted in the same way as other platforms (L10). Floating Production Facilities are normally kept on station by a number of chains and anchors, usually extending well outside the designated safety-zone. Where scale permits, the positions of these chains and anchors should be charted by magenta lines and anchor symbols (L18). On smaller scale charts, a dashed magenta circle encompassing the anchors and other ground tackle with the legend 'Anchors and Chains (see Note)', or equivalent, may be charted together with a suitable explanatory note.

Supprimé : T

Supprimé : are

Supprimé : Q42)

e. **Platform designations** are often displayed prominently on the structures (see B-445.3). Platforms are usually protected by designated **safety zones** (see B-445.6).

**B-445.3** **Names of oil- and gas-fields and associated features.** Offshore production generates a large number of shipping movements concerned with supplies, construction, inspection, repair and maintenance, safety, and sometimes including tankers. Not all this traffic will be familiar with platform and field locations. The **field names** should be inserted on the chart, in black, as soon as a cluster of wells indicates that a field is being developed and the name is notified, eg:

EKOFISK  
OILFIELD L1

On smaller scale charts, this may be shortened to Ekofisk, ie omitting 'Oilfield'. Where the limits of the fields have been designated, the symbol N1.1 (black maritime limit implying permanent physical obstructions) should be used.

Identification panels usually display the registered name or other designation of platforms and associated structures in black lettering on a yellow background. They are so arranged that at least one panel is visible from any direction, the panels being illuminated or the background being retro-reflective. These **platform designations** may be charted on the larger-scale charts where space permits, eg:

 Z-44 L2

**B-445.4** **Mooring systems.** Although the oil and gas from some fields are sent ashore by submarine pipeline (see B-444), a variety of mooring systems have been developed for use in deep water and in the vicinity of certain ports, to allow the loading of large vessels and the permanent mooring of floating storage vessels or units (see B-445.5). These offshore systems include large mooring buoys, designed for mooring vessels up to 500,000 tonnes, and platforms on structures fixed at their lower ends to the sea floor. They allow a vessel to moor forward or aft to them, and to swing to the wind or stream. Those which are fixed are termed **Single Point Moorings (SPM)**. Those which are a form of mooring buoy are termed **Single Buoy Moorings (SBM)**. Like production platforms, SPM and SBM normally have lights and fog signals.

**a. Fixed moorings (SPM).**

A **Mooring Tower** is secured to the sea floor and surmounted by a turntable to which ships moor. At some mooring towers, a floating hose connects a fluid swivel-assembly in the turntable to the vessel; at others an underwater loading arm carries a pipe from the turntable to the vessel's midship manifold.

A **Single Anchor Leg Mooring (SALM)** consists of a rigid frame or tube with a buoyancy device at its upper end, secured at its lower end to a universal joint on a large steel or concrete base resting on the sea floor, and at its upper end to a mooring buoy by a chain or wire span. Oil flows into the frame through the universal joint at its lower end and out of the frame through a cargo hose connected to a fluid swivel-assembly at its upper end. When the pull of a vessel is taken by the mooring buoy, the frame inclines towards the vessel and the buoy may dip. When the vessel swings, to wind or stream, the frame swings with her on the articulated joint at its foot. This type of mooring is particularly suited to loading from deep water subsea wellheads.

An **Articulated Loading Column (ALC)** is a development of a SALM, with the anchor span and buoyant frame or tube replaced by a metal tower, buoyant at one end and attached at the other by a universal joint to a concrete-filled base on the seabed. Some are surmounted by a platform which may carry a helicopter deck, a turntable with reels for lifting hawsers and hoses clear of the water, and emergency accommodation. These may be termed **Articulated Loading Platforms (ALP)**.

Mooring towers and all buoyant structures, such as SALMs or ALCs, which are connected to the seabed by rigid, pivoted or articulated structures, carry lights and fog signals similar to platforms. Their positions are fixed, as true platforms, so must be charted by the platform symbol with legend 'SPM' (L12)

 SPM L12

**Commentaire [c81] :** Noting there are no INT symbols, it is not considered necessary to develop specifications for L13, L14 & L15. The entries in INT 1 are candidates for removal in due course.

**Supprimé :**

In the North Sea, the lighting of platforms is governed by schedules specifying white and red lights of certain minimum ranges which flash the Morse letter "U" ("You are standing into danger") and fog signals of the same character. On charts which include, or are likely to include, many platforms it is recommended that a cautionary note be given on the chart describing the lights and fog signal instead of individual legends at each platform. Where different (distinctive) lights are used, the light descriptions must be inserted individually against the platform symbols.

By international law, platforms may be surrounded by safety zones, extending 500 metres from the outermost points of the installations, in which navigation is restricted to certain classes of vessels, or vessels in particular circumstances. On the largest scales 'if space permits), these safety zones shall be shown delimited by T-shaped dashed lines in magenta. On all scales on which the platforms are charted a cautionary note shall be given explaining the meaning of the safety zone.



Buoyant structures, such as articulated towers pivoted on the sea bed, and buoyant oil terminals, eg Brent SPAR, too large to be classed as buoys, shall be charted by the platform symbol because they carry lights and fog signals similar to platforms and, to the mariner, are virtually as "fixed" as true fixed platforms. See also B-445.4.

 SPM L12

It is recommended that a single cautionary note relating to production platforms is used in a form similar to the following:

**"PRODUCTION PLATFORMS"**

Platforms exhibit white lights Mo(U) (range), red lights Mo(U) and red obstruction lights, and sound for horns Mo(U). Unauthorised navigation with 500 metres of any platform is prohibited.

**b. Floating moorings (SBM).**

A floating mooring, such as a SBM or a **Catenary Anchor Leg Mooring (CALM)**, generally incorporates a large buoy which remains on the surface at all times. In the case of a CALM, the buoy is moored by four or more anchors which may lie up to 400 metres from the buoy. A Pipeline End Manifold (PLEM) (see B-445.1f) is often found under the buoy, and mooring hawsers and cargo hoses lead from a turntable on the top of the buoy, so that the buoy does not turn as the ship swings to wind or stream.

An **Exposed Location Single Buoy Mooring (ELSBM)** is a development of CALM, designed for use in deep water where bad weather is common. The buoy is replaced by a large floating structure, summounted by a helicopter platform and emergency accommodation. Its anchors may lie up to half a mile from the structure. A **Spar** mooring is similar to an ELSBM but even larger and incorporates storage facilities and is permanently manned.

All these moorings must be charted by the symbol for a tanker mooring of superbuoy size.



**L16**

For ground tackle associated with any of these moorings, see [B-431.6](#)

**B-445.5 Moored Vessels.**

**a. Floating Storage Unit (FSU).** A simple hulk providing storage for fully-processed oil awaiting export, usually through a SBM or similar. They will normally be un-manned.

**b. Floating Storage and Offtake (FSO).** A vessel which stores fully-processed oil and provides facilities for loading export tankers. It will normally be moored in such a way as to allow it to swing to wind or stream. It is always manned.

**c. Floating Production, Storage and Offtake (FPSO).** FPSO are used to produce oil and gas from fields which are located in water that is too deep for fixed production platforms. These are highly specialized vessels which are part ship, part oil and gas processing plant, and part storage unit. The finished product is exported to shore by pipeline or tanker. Older versions of FPSO (usually converted tankers) may be moored to SPM or SBM. Modern versions incorporate a turret, through which pipelines connect to the sub surface facilities. The turret is anchored to the sea floor and incorporates a swivel which allows the vessels to rotate through 360° under the influence of wind and tidal stream.

FSU, FSO and FPSO should be charted by the symbol for a moored storage tanker, L17:



**L17**

An appropriate legend or abbreviation, eg 'Storage Tanker', 'FSU', 'FSO', 'FPSO' (or equivalent) may be added adjacent to the symbol.

If the vessel is moored to a SPM or SBM, and the paper chart scale does not permit charting the mooring and the vessel, the legend should be placed adjacent to the symbol L12 or L16, as appropriate, and the symbol L17 omitted.

For Single Well Oil Production Systems (SWOPS), at which tankers are intermittently moored, see B-445.1.

**B-445.6 Safety Zones.** Under UNCLOS, a coastal state may establish safety zones around artificial islands, installations and structures in their EEZ and on their continental shelf. These installations include drilling rigs, production platforms, wellheads, moorings and other associated structures. Taking into account applicable international standards, safety zones normally extend no more than 500m from the outermost points of the installations. Within these zones, appropriate measures can be taken to ensure the safety of navigation and of the installations.

**Commentaire [c82] :** DID: insert L17 symbol, with legend FPSO alongside

**Supprimé :** s

On the largest scale, charts (if space permits), these safety zones must be shown by magenta general maritime limit for restricted areas (N2.1).

Supprimé : s



L3

Commentaire [c83] : DID: please change symbol to smaller size Ts (N2.1)

A cautionary note explaining the meaning of the safety zone should be inserted, if installations which have safety zones are charted. If the safety zones are not charted, eg because of scale, the note should explain which installations have safety zones. See example at B-445.2b.

**B-445.7 Development Areas.** The development of an oil or gas field involves the frequent movement of large structures and buoys and the laying of many miles of pipeline, both of which are dependent on the weather. Where such operations occur it is often impossible to give adequate notice of movements and to keep charts and publications completely up-to-date. Certain fields which are developing are designated Development Areas. Within these areas construction, maintenance and supply vessels (including submersibles), divers, obstructions (possibly marked by buoys), and manoeuvring tankers may be encountered. Mariners are strongly advised to keep outside Development Areas.

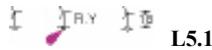
The limits of Development Areas should be charted. If shown, the limits must be charted by dashed magenta lines (N1.2, N2.1 or N2.2 as appropriate, depending on the degree of restriction). The magenta legend 'DEVELOPMENT AREA (see Note)' must be inserted within or adjacent to the area and, if possible, under the field name. A note, in magenta, should be inserted under the chart title, eg:

**DEVELOPMENT AREA**

Within oil/gas field Development Areas, surface vessels, submersibles and divers may be engaged in constructing and servicing installations. Other vessels are strongly advised to keep outside the charted limits.

Where Development Areas are not designated, it may be appropriate to insert a note drawing attention to drilling activity.

**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:



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 under the blade, using symbol D20.

**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:



L5.2

However, this should be replaced by N2.1 or N2.2 as appropriate, where restrictions on navigation apply, eg:



L5.2

Note: Individual wind turbines which have navigational lights attached should be charted, even within a wind farm, if scale permits.

Supprimé : normally

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



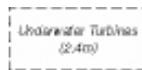
Where the depth of water over the turbine is known, it may be inserted within the danger circle. The rules for blue tint, swept and safe clearance depths must be applied as for wrecks and other obstructions (see B-411.6, B-415, B-422.5 and B-422.9), eg:



Where part of the structure is above water, and marked (eg, 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, eg:



**B-445.11 Current Farm (or Turbine Field)**. Where groups of underwater turbines exist they should preferably be charted individually. Where scale or available information does not permit this, then the symbol N1.1 (black maritime limit implying permanent physical obstructions) should normally be used for the limit of a current farm:



However, this should be replaced by N2.1 or N2.2 as appropriate, where restrictions on navigation apply. A legend should be inserted within the boundary, eg:



**B-446 SPOIL GROUNDS; EXTRACTION (or DREDGING) AREAS**

- Spoil grounds are areas set aside, clear of shipping channels and in deep water where possible, for the disposal of material (spoil) generally obtained by dredging. Their significance to the mariner is that very large quantities of material may be dumped, decreasing the depth of water available. In contrast, dumping of harmful materials (see B-442.1-5) is unlikely to affect depths substantially and such dumping grounds are charted primarily as a warning against anchoring, trawling or other submarine operations.
- Extraction (or dredging) areas are those areas where a concentration of dredging vessels may be encountered, taking up sand or shingle to be brought ashore (eg for construction purposes). Their significance is primarily as a collision hazard, although they also indicate the likelihood of finding a greater depth of water than charted. Channels dredged to provide an adequate depth of water for navigation are 'dredged areas' (see B-414), not to be confused with 'dredging areas'.

**B-446.1 Spoil grounds**. The limits of spoil grounds must be charted by a black dashed line, normally on the largest scale charts of an area only. If the depths within the area are liable to be very much less than charted after the discharge of spoil, they may be treated as unsurveyed areas (see B-418.1); soundings and depth contours may be omitted from the area, provided adequate warning is given by the use of blue tint, and/or a cautionary note accompanying the legend.



Commentaire [c84] : DID Please improve text

The legend 'Spoil ground', or equivalent, must be charted within, or adjacent to, the limits. In some cases, where

no precise limits have been designated, the grounds can be represented only by a legend.

**B-446.2** **Disused spoil grounds** should be labelled '(disused)', or equivalent, until the area has been re-surveyed, after which the limit and legend should be removed from the chart.



**Commentaire [c85]** : DID Please improve text

**B-446.3** **Buoys marking spoil grounds** should be charted on all appropriate scales. (These will normally be Special Marks in the IALA System).

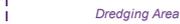


**B-446.4** **Extraction (or dredging) areas.** The limits of dredging areas, where in regular use over long periods, must be charted by a magenta dashed line, normally on the largest scale charts of the area only.



**Commentaire [c86]** : DID: please replace 'Dredging' by 'Extraction' in the graphic.

The legend 'Extraction area', or equivalent, must be charted within, or adjacent to, the limits, in magenta. If considered necessary, a cautionary note may be inserted in magenta, warning mariners that vessels engaged in dredging are frequently at work in the area shown.

**Supprimé :** 

**Supprimé :** B-446.5

**Supprimé :** Dredging

**Supprimé :** near the title

**Supprimé :** ¶



**Supprimé :** AND

**B-447** **AQUACULTURE: FISH TRAPS, SHELLFISH BEDS, FISH HAVENS, MARINE FARMS**

Aquaculture is the term used to describe the cultivation of fish and marine vegetation. Differing methods are used; those of particular significance to the mariner are outlined below:

- a. **Fish traps**, stakes and nets are usually sited in shallow water. They can be very large and extend up to several miles offshore and form an obstruction to navigation.
- b. **Shellfish beds** are found in shallow water. Dependant on vessel draught and tidal range, it is usually possible to navigate over them, at high water, but they can be damaged by vessels anchoring or grounding on them.
- c. **Fish havens** are formed by dumping rocks, concrete blocks, old cars, etc in varying depths of water. Vessels may navigate over seabed fish havens, if draught permits, but they are hazards to anchoring or seabed operations.
- d. **Marine farms** are collections of cages, nets, rafts and floats, or posts, where fish, including shellfish, are reared. They obstruct navigation, and are likely to be marked by buoys and possibly lights. They are not always confined to inshore locations.
- e. **Fish aggregation devices (FAD)** are man-made objects designed to attract fish. They may be:
  - placed on the sea floor
  - anchored or drifting and with the attracting structure on or near the sea surface
  - anchored and with the attracting structure in the water column.
 The structures vary in size, shape and water depth.

**Supprimé :** fairly

Some aquaculture structures are in place only for limited periods of the year. This may be charted by the use of a chart legend, eg: (Apr-Nov), or be explained in an accompanying note or associated publication.

**B-447.1** **Fishing stakes** should, where their position is known, be charted thus:



**B-447.2** Fish traps (or weirs) and tunny nets should, where their position is known, be charted thus:



**K44.2**

**B-447.3** Extensive areas of fish traps or tunny nets may be charted by legends and dashed limits (or lines) in lieu of symbols. Legends are also preferable if the positions of the traps are liable to considerable change.



**K45**

**Commentaire [c87]** : DID: please improve text

Details may be given in a chart note, or in an associated publication, eg:

**TUNNY NETS**

Tunny nets exist off the coast of [name] extending as much as seven miles from the shore. Mariners are warned to keep a good lookout for these nets which may be marked by day and night.

**B-447.4** Shellfish beds that do not contain physical obstructions should be charted by a legend, in magenta, 'Shellfish Beds (see Note)', or equivalent, with limits (if known) charted by dashed magenta lines (N1.2). A note may be inserted warning against anchoring or grounding in the area, or giving details of any local regulations.



**K47**

**Supprimé** : cautionary note

**Supprimé** : For shellfish farms, see B-447.6.

**Commentaire [c88]** : DID: add (see Note) to graphic

If shellfish beds contain obstructions to surface navigation, eg trestles, the symbol for a marine farm must be used (see B-447.6).

**B-447.5** Fish havens (or fishery reefs) are artificial shelters of stones, concrete, scrap vehicles, etc, intended to attract fish and crustaceans. A single haven must normally be charted by the symbol:



**K46.1**

**Supprimé** : small

**Supprimé** : must

**Supprimé** : , in black,

**Supprimé** : an enclosing danger line with a fish symbol

**Supprimé** : within it

A group of havens (or a single haven large enough to be shown true to scale) must be shown by an enclosing danger line with one or more fish symbols:



**K46.1**

The minimum depth or maximum authorized draught (see B-432.4), over any haven or group of havens, must be charted, if known:



**K46.2**

Maximum authorized draught must be indicated between arrowheads, eg:

<7,3m>

Blue shallow water tint must be applied to fish havens as appropriate to the depth and, where the minimum depth is not known, in accordance with the practice for obstructions (see B-411.6). However, exceptionally, for large areas of fish havens where no depth data is available, if the surrounding water area is coloured the tint may be omitted to draw attention to the areas (as for unsurveyed areas, see B-418.1).

If considered necessary, an explanatory legend, eg 'unsurveyed', or a note may be inserted on the chart.

**Supprimé** : s

Vessels deliberately sunk to form fish havens should be shown by the appropriate wreck symbol.

**B-447.6** Marine farms, including shellfish farms, must be shown by either of the symbols:



The symbol used is not intended to represent a plan outline of the actual farm limits. The larger symbol (size 4 x 4mm) should normally be used, but in congested locations where it is too large, the smaller symbol (size 2 x 2mm) may be used. The nature of the obstructions may be explained in a cautionary note.

**Supprimé :** in black (size 4 X 4 mm) horizontally.  
**Supprimé :** to be used

On large-scale charts, the actual limits within which obstructions may be found should be shown by dashed lines (N1.1). The larger symbol must be inserted in the area and may be repeated if required.



**K48.1**

**Supprimé :** (black)  
**Supprimé :** The nature of the obstructions may be explained in a cautionary note.

Buoys or beacons marking a farm may be charted where chart scale permits. Lights on cages, rafts, etc, should be shown by a description against the symbol, in sloping lettering, eg (Q.Y.Lts) or may be described in a note.

**Supprimé :** only

For ground tackle associated with fish farms, see B-431.6.

**B-447.7** Fish aggregating devices (FAD) should be charted by the most appropriate symbol. Underwater FADs (whether on the sea floor or in the water column) should be charted as fish havens (see B-447.5), with the depth if known and no legend. Moored surface FADs should be charted by an appropriate buoy symbol or (for larger rafts, etc) by a small marine farm symbol (K48.2) with the abbreviation 'FAD', or equivalent, to distinguish it from a farm where fish are artificially cultivated. Free floating (unmoored) FADs cannot be charted.

**B-448** DEGAUSSING RANGES

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 bed 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.

**Supprimé :** charted  
**Supprimé :** in general  
**Supprimé :** , first,  
**Supprimé :** , second,  
**Supprimé :** seen to be

**B-448.1** 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').



**Q54**

**Commentaire [c89] :** DID: please add DG to buoy

**B-449** VARIOUS MARITIME AREAS AND LIMITS

**B-449.1** Ice limits. If required, the limits of sea ice (seasonal pack ice, drift ice) must be shown by the magenta symbol

**Commentaire [MW90] :** I'm surprised that this limit of a natural feature is supposed to be magenta.

N60.2

Supprimé : in magenta

Ice limits at the junction of land and sea, including fast ice and the edges of glaciers intruding into the sea (see B-353.8), must be shown by the symbol, in black and with no colour tint behind it:

Supprimé : same

N60.1

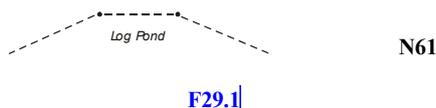
Commentaire [c91] : DID: please insert black version of symbol.

As ice fronts move, a date when the limit was surveyed should be included if possible, in parentheses and in the same colour as the ice limit, eg:

Commentaire [c92] : DID: insert symbol N60.1, with a date (2007), on the inside of the limit.

**B-449.2 Floating barriers.** The limits of log ponds (timber pounds, log booms), oil barriers, security barriers, ice booms, shark nets and any other floating barriers must be charted as a black dashed line (N1.1) with small black (solid) circles (F22) where there are posts, piles or other supports. A legend, eg 'Log pond', 'Floating Barrier', or equivalent, should be inserted in the area or along the inside of the limit as appropriate.

Supprimé : fine



Commentaire [c93] : DID: please insert symbol as in 5011

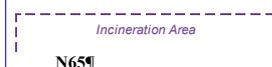
**B-449.3 Incineration areas.** Certain offshore areas were formerly designated as suitable for the burning of chemical waste by specially-equipped ships. Incineration of wastes at sea was permitted under the 1972 IMO Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, but was later prohibited under amendments adopted in 1993. It is specifically prohibited by Article 5 of the 1996 Protocol.

Supprimé : officially

**B-449.4 Cargo transhipment area.** Areas generally outside port limits may be specifically designated as suitable for the transhipment of oil or other materials from large ships to small vessels. The areas selected are relatively sheltered locations and lie off main shipping routes. As the purpose of transhipment is usually to reduce the draught of the larger vessel to allow her to proceed to port, the operation is often known as 'lightening' and the areas may be known as 'lightening areas' or 'cargo transfer areas'.

Supprimé : ¶  
The limits of incineration areas must be charted by dashed magenta lines, with the accompanying legend 'Incineration Area', or equivalent. Explanatory or cautionary notes relating to the areas should normally appear in Sailing Directions but not on charts. ¶

The limits of officially designated transhipment areas must be charted by dashed magenta lines (N1.2) with the accompanying legend 'Cargo Transhipment Area', or equivalent, and any known identifying letter or number.



Incineration Area

N65 ¶

The depiction of the areas on charts should be adequate to warn other vessels of the likelihood of encountering ships restricted in their ability to manoeuvre, without the need for cautionary notes on charts. Regulations governing the use of such areas should be included in associated publications rather than on charts.

Supprimé : Sailing Directions

Cargo transhipment areas should not be confused with waiting (holding) areas (see B431.9).

**B-449.5 Historic wrecks.** Many nations have designated areas around certain wrecks of historical or cultural (eg sea graves) importance to protect the wrecks from unauthorised interference (eg: by diving, salvage or anchoring). The limits of such areas may be shown on the largest scale charts by the symbol for a restricted area (N1.2) with a magenta legend 'Historic Wk', or equivalent. Any wreck detail and associated buoyage must be shown in black.

Supprimé : deposition (including



N26

**B-449.6 Seaplane operating area:** limits must be represented, in magenta, by the symbol:

Seaplane operations may include landing, take-off, anchoring (or mooring) and drawing water for fire-fighting operations. On smaller scales where the limits cannot be charted, or where there are no specified limits, the point symbol may be used.



**N13**

**Commentaire [c94]** : Revised symbol and point version. See CSPCWG 3 record (paragraph 8.10). Draw to attention CSMWG



**N13**

If required, it may be placed alongside an anchorage symbol, to denote a seaplane anchorage (or mooring).



**N14**

**Commentaire [c95]** : The existing N14 would be obsolescent

**Revised specification B-431.6, to be approved at the same time as revised section B-440-449:**

**B-431.6** Mooring ground tackle. Underwater chains, cables and anchors, if required, must be charted by the magenta symbol:

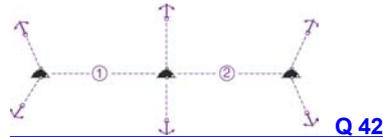


**L18**

The anchor size should be the same as used in anchorage limits (N12), the shaft with ring being not more than 3.0mm long.

Ground tackle may be used, eg. for stabilising or fixing in position mooring buoys; fish farms; floating energy installations; for holding floating structures, eg vessels, pontoons, away from quays. If the actual chains, cables and anchors cannot be charted, an area (N1.2) with magenta legend, eg: 'Chains and anchors' may be used.

**Mooring trots:** Exceptionally, and on very large scales only, mooring berths between buoys may be shown with their numbers or letters inserted in circles, in magenta.



**Q 42**

**Page 25: [1] Commentaire [c m38] carleton 04/01/2008 17:43:00**

a. The International Boundary always takes precedence.

Where several different types of maritime zones merge towards a boundary they will do so progressively and the jurisdiction for each of the zones applies up to the boundary until in the ultimate you could reach a boundary that separates internal waters. The hierarchy of jurisdiction is progressive from EEZ - CZ - TS to Internal Waters. In other words Internal Waters jurisdiction will include all measures contained within the other outer zones as well as additional jurisdiction.

**Page 25: [2] Supprimé carleton 04/12/2007 10:45:00**

as it includes all the regulations applicable to the other areas. Other symbols (such as fish or EEZ legend or abbreviation) may be included at suitable intervals on the same limit, if required.

**Page 26: [3] Commentaire [MW48] Westington 04/01/2008 17:43:00**

I don't know how safety zones area created, but artificial structures can lie within a State's territorial sea and therefore it would be part of a State's sovereignty. You just can't project 12nm from an artificial structure.

**Page 26: [4] Supprimé Westington 27/11/2007 13:53:00**

Baselines around **unstable coasts**. Where, because of the presence of a **delta, glacier** or other natural conditions, the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line to define straight baselines and, notwithstanding subsequent regression of the low-water line, these straight baselines remain effective until changed by the coastal state in accordance with UNCLOS.

**Page 26: [5] Supprimé Westington 26/11/2007 16:18:00**

In certain circumstances, straight baselines may be used to connect seaward points on a deeply indented coastline **or a coastline that is fringed with islands**.

**Page 26: [6] Commentaire [c m50] carleton 04/01/2008 17:43:00**

UNCLOS Article 7.2 deals with highly unstable coastlines. Bangladesh is the only known coastlines where this paragraph applies.

**Page 27: [7] Commentaire [MW58] Westington 04/01/2008 17:43:00**

Are we talking about the traditional use of the term which applies to the water column? This statement could be misleading and might encourage folks to think that jurisdiction over the water column can extend beyond 200nm, which is not true.