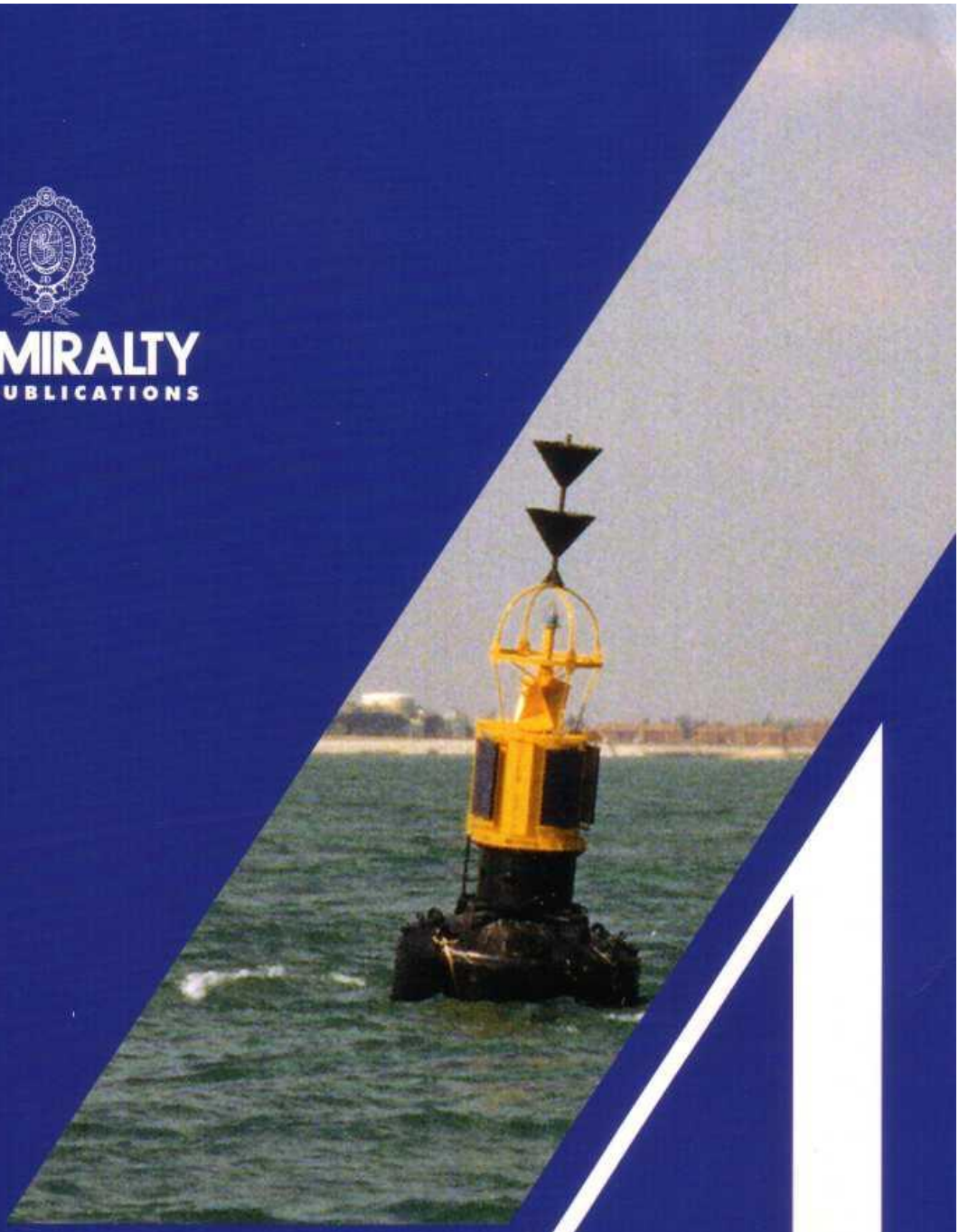
ADMIRALTY
CHARTS AND PUBLICATIONS



IALA MARITIME BUOYAGE SYSTEM

COMBINED CARDINAL AND LATERAL SYSTEM

NP 735
Edition 6 - 2006

IALA MARITIME BUOYAGE SYSTEM

Combined Cardinal and Lateral System
(Red to Port in Region A and Red to Starboard in Region B)

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DIAGRAMS

Published at Taunton, United Kingdom under the direction of Mr M S Robinson, Chief Executive of the United Kingdom Hydrographic Office

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IALA MARITIME BUOYAGE SYSTEM

INTRODUCTION AND DESCRIPTION

Introduction

General information
1.1

The severest test of a buoyage system occurs when the Mariner is confronted unexpectedly at night or in low visibility by the lights marking an uncharted danger, such as a recent wreck; immediately he must instinctively, positively and correctly decide what he must do.

In the Dover Strait in 1971 the *Brandenburg* struck the wreckage of the *Texaco Caribbean* and sank, though the wreckage was appropriately marked. A few weeks later the wreckage, despite being marked by a wreck-marking vessel and many buoys, was struck by the *Niki*, which also sank. A total of 51 lives was lost. It was this disaster which gave rise to the development and implementation of the IALA Maritime Buoyage System.

The wreck of the *Tricolor* in the Dover Strait in 2002 highlighted once again the need to mark new dangers quickly and resulted in the introduction, on a trial basis, of the Emergency Wreck Marking Buoy. For full details, see 7.1.

Development
1.2

The beginnings of a uniform system of buoyage emerged in 1889, when certain countries agreed to mark the port hand side of channels with black can buoys and the starboard hand with red conical buoys.

Unfortunately, when lights for buoys were introduced, some European countries placed red lights on the black port hand buoys to conform with the red lights marking the port hand side of harbour entrances, whilst throughout North America red lights were placed on the red starboard hand buoys.

Thereafter various conferences sought a single buoyage system, but without success until 1936, when a system was drawn up under the League of Nations at Geneva. It established a Cardinal system, and a Lateral system, with the principle that red buoys should be used on the port hand and black buoys on the starboard hand. However, several countries were not signatories to this Convention and continued to develop their original, and opposite systems.

After World War II (1939-45) buoyage systems were re-established in North-west Europe based on the system devised by the 1936 Geneva Convention, but wide differences in interpretation of that system resulted in nine different systems coming into use in those waters.

In 1973, observing the need for urgency, a further attempt to find a single world-wide system of buoyage was made by the Technical Committee of the International Association of Lighthouse Authorities (IALA). IALA is a non-governmental body which brings together representatives from the aids to navigation services in order to exchange information and recommend improvements to navigational aids based on the latest technology.

IALA decided that agreement could not be achieved immediately, but concluded that the use of only two alternative systems was practicable by dividing the world into two Regions. It proposed a system allowing the use of both Cardinal and Lateral systems in each Region but, whereas in Region A the colour red of the Lateral system is used to mark the port hand side of channels and the colour green the starboard hand side when proceeding in the conventional direction of buoyage, in Region B the colours are reversed.

Implementation
1.3

In 1980, at a conference convened with the assistance of the Inter-Governmental Maritime Consultative Organization (IMCO), now the International Maritime Organization (IMO), and the International Hydrographic Organization (IHO), the lighthouse authorities from fifty countries and the representatives of nine international organizations concerned with aids to navigation agreed to adopt the rules of the new combined system, and reached decisions on the buoyage Regions.

The IALA System has now been implemented throughout much of the world. In some parts, however, conversion to the new system is still incomplete.

In certain areas, such as North America and the inland waterways of Western Europe, the IALA System is used with modifications which are described in *Admiralty Sailing Directions.*

Alterations to charts
1.4

In the past, when replacement of an existing buoyage system by the IALA System involved extensive changes, careful preparations and announcements were made so that the charts affected, corrected up-to-date for both old and new systems, could be available during the period of change.

However, whilst most major alterations of buoyage to the IALA System have now been completed, there are still some places where the buoyage does not conform to that System. Some ports will convert their buoyage piecemeal and only when other buoyage changes make it convenient; others have yet to announce plans to conform to the IALA System.

Progress towards completion of the change to the IALA System is, therefore, likely to be gradual, and notice of change, if given, is likely to be short.

When a system of buoyage is changed, however, corrections enabling charts to be kept up-to-date will be promulgated, as before, by the most appropriate means, either by Notices to Mariners or by issuing New Editions of affected charts.

Description of the System

Scope

1.5

The System applies to all fixed and floating marks, other than lighthouses, sector lights, leading lights and marks, lanbys, certain large light-floats, and light-vessels. It serves to indicate:

Sides and centrelines of navigable channels;
Navigable channels under fixed bridges;
Natural dangers and other obstructions such as dangerous wrecks (which are described as 'New Dangers' when newly discovered and uncharted);
Areas in which navigation may be subject to regulation;
Other features of importance to the Mariner.

Chart symbols and abbreviations

1.6

To meet the needs of the IALA Buoyage System, new symbols and abbreviations, and altered ones, are being incorporated in Admiralty charts when they are corrected or reprinted for use with the System. They are given in *Chart 5011 - Symbols and Abbreviations used on Admiralty Charts* and illustrated in Diagrams 9, 10 and 11.

Marks

1.7

Five types of mark are provided by the System: Lateral, Cardinal, Isolated Danger, Safe Water, and Special marks. They may be used in any combination. The way in which Cardinal and Lateral marks can be combined is illustrated in Diagrams 10 and 11.

Most lighted and unlighted beacons, other than leading marks, are included in the System. In general, beacon topmarks have the same shapes and colours as those used on buoys. Because of the variety of beacon structures, the accompanying diagrams show mainly buoy shapes.

Until 2006, permanent and semi-permanent wrecks were marked in the same way as other dangers; no unique type of mark was reserved for them in the IALA System. In 2006 the Emergency Wreck Marking Buoy was introduced on a trial basis. For further details, see 7.1.

Colours

1.8

Red and green are reserved for Lateral marks, and yellow for Special marks. Black and yellow or black and red bands, or red and white stripes, are used for other types of marks as described later.

1.9

On Admiralty charts the shading of buoy symbols formerly used to indicate the colours of buoys is omitted. A black (ie filled-in) symbol is used for predominantly green marks and for all spar buoys and beacons; an open symbol is used for all buoys and beacon towers of other colours, but with a vertical line to indicate striped Safe Water buoys.

The abbreviated description of the colour, or colours, of a buoy is given under the symbol.

Where a buoy is coloured in horizontal bands the colours are indicated in sequence from the top, eg East buoy - Black with yellow band - BYB. If the sequence of the bands is not known, or if the buoy is striped vertically, the colours are indicated with the darker colour first eg Safe Water buoy - Red and white stripes - RW.

Shapes

1.10

Five basic shapes were defined when the System was devised: Can, Conical, Spherical, Pillar and Spar.

To these must be added light-floats, as well as buoyant beacons (which are charted as light-beacons).

Variations in the basic shapes may be common for a number of years after the introduction of the IALA System to a particular locality, since much existing equipment will continue in use.

Can, conical and spherical buoys indicate by their shape the correct side to pass.

Marks that do not rely on their shape for identification carry the appropriate topmark whenever practicable. However, in some parts of the world, including US waters, light-buoys have identical shapes on both port and starboard hand sides of Laterally-marked channels, and are not fitted with topmarks. Also in US waters, a buoy with a conical or truncated conical top, known as a nun buoy, is used to mark the starboard hand side of the channel.

1.11

On Admiralty charts the symbol for a spar buoy is also used to indicate a spindle buoy. The symbol will, as before, be sloped to distinguish it from a beacon symbol which is upright.

If the shape of a buoy of the IALA System is not known, a pillar buoy symbol is used. See *Chart 5011*.

Topmarks

1.12

Can, conical, spherical and X-shaped topmarks are the only topmarks used.

On pillar and spar buoys the use of topmarks is particularly important, though ice or severe weather may at times prevent it.

1.13

On Admiralty charts topmarks are shown boldly in solid black, except when the topmark is red, when it is in outline only. See *Chart 5011*.

Lights
1.14

Where marks are lighted, red and green lights of the IALA System are reserved for Lateral marks and yellow lights for Special marks.

White lights, distinguished one from another by their rhythm, are used for other types of mark.

It is possible that some shore lights, specifically excluded from the IALA System may, by coincidence, have similar characteristics to those of the buoyage system. Care is needed on sighting such lights that they are not misinterpreted.

Retroreflectors
1.15

Two codes, the Standard Code and the Comprehensive Code, are used for distinguishing unlighted marks at night by securing to them, in particular patterns, retroreflective material to reflect back light. In any specified area only one of the codes is used. The code in use will, if known, be mentioned in *Admiralty Sailing Directions.*

Standard Code uses the following markings:

Red lateral marks:	One red band or red shape similar to the topmark.
Green Lateral marks:	One green band or green shape similar to the topmark.
Preferred Channel marks:	As for red or green Lateral marks, depending on the dominant colour of the mark.
Special marks:	One yellow band, yellow X or yellow symbol.
Cardinal, Isolated Danger and Safe Water marks:	One or more white bands, letters, numerals or symbols.

Comprehensive Code uses the same markings for Lateral and Special marks, but separate markings for distinguishing Cardinal, Isolated Danger and Safe Water marks, which are given later in the descriptions of those marks.

Radar reflectors
1.16

On the introduction of the System it was decided not to chart radar reflectors. It can be assumed that most major buoys are fitted with radar reflectors.

New Dangers

Definition
1.17

A newly discovered hazard to navigation not yet shown on charts or included in Sailing Directions, nor sufficiently promulgated by Notices to Mariners, is termed a New Danger. The term covers naturally occurring obstructions such as sandbanks or rocks, and man-made dangers such as wrecks.

In 2006 the Emergency Wreck Marking Buoy was introduced on a trial basis. For further details, see 7.1.

Marking
1.18

Cardinal or Lateral marks, one or more, are used to mark New Dangers in accordance with the IALA System.

If the danger is especially grave at least one of the marks will be duplicated, as soon as practicable, by an identical mark, until the danger has been sufficiently promulgated.

A quick or very quick light will be exhibited from a New Danger mark if it is lighted. If it is a Cardinal mark, it will exhibit a white light, if a Lateral mark, a red or a green light.

A racon, Morse code D, showing a signal length of 1 nautical mile on a radar display, may be used to mark a New Danger.

See Diagrams 10 and 11.

LATERAL MARKS

Use
2.1

Lateral marks are generally used for well defined channels, in conjunction with a Conventional Direction of Buoyage. They indicate the port and starboard hand sides of the route to be followed.

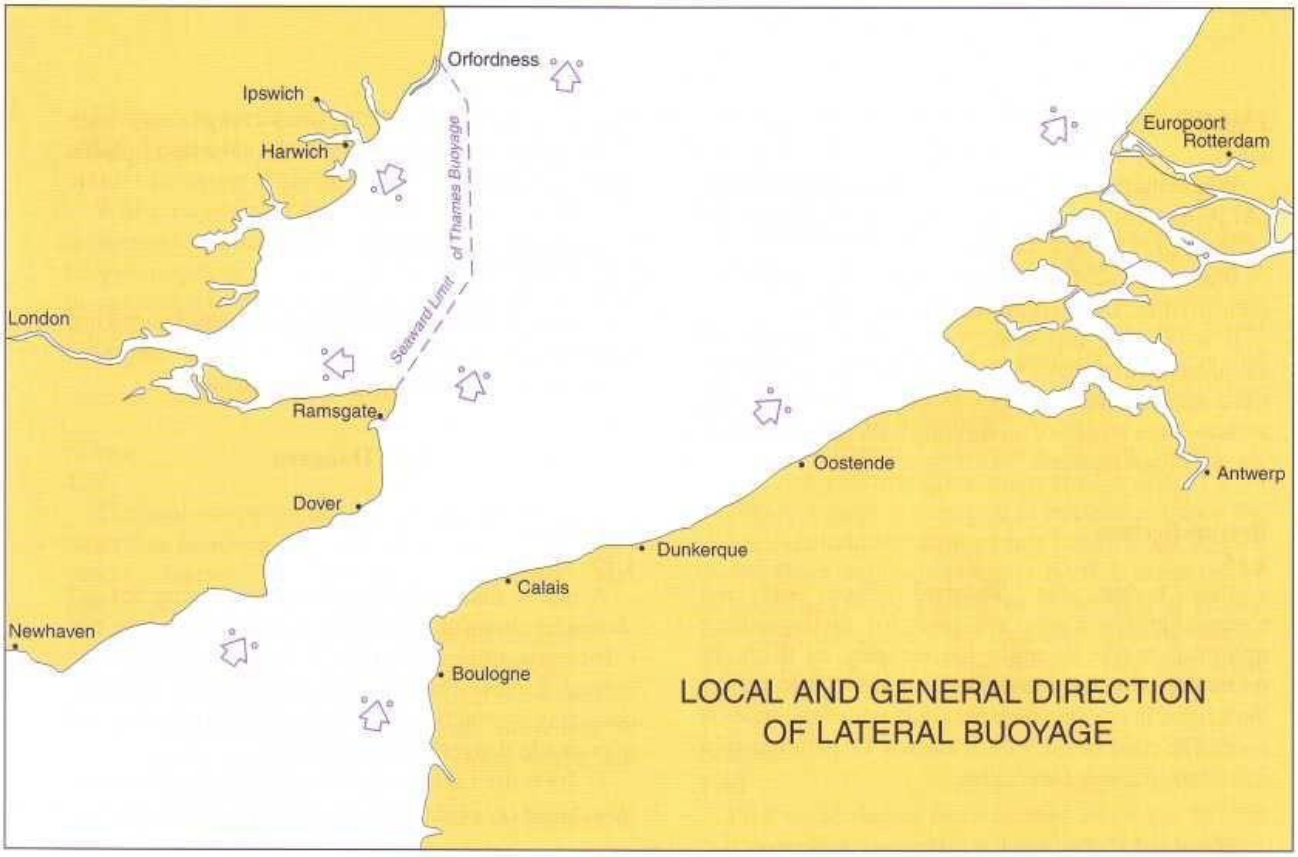
Conventional Direction of Buoyage
2.2

The Conventional Direction of Buoyage is defined in one of two ways:

Local Direction of Buoyage. The direction taken by the Mariner when approaching a harbour, river, estuary, or other waterway from seaward;

General Direction of Buoyage. The direction determined by the buoyage authorities is based, wherever possible, on the principle of following a clockwise direction around continents and is usually given in *Admiralty Sailing Directions* and, if necessary, indicated on charts by the appropriate symbol. Diagram 1 illustrates how the General Direction gives way to the Local Direction at the outer limit of the Thames Estuary.

Around the British Isles the General Direction of Buoyage runs N along the W coast and through the Irish Sea; E through the English Channel and N through the North Sea.



Local and General Direction of Buoyage (2.2)
Diagram 1

2.3

On Admiralty charts the Conventional Direction of Buoyage may be indicated by magenta arrow symbols.

In some straits (eg Menai Strait and The Solent) and in the open sea (eg off the Irish coast at Malin Head), where direction changes, attention is drawn to its reversal by magenta arrow symbols confronting each other.

On many coasts and in some straits, world-wide, buoyage authorities have not yet established or promulgated General Direction of Buoyage. It is, therefore, not possible to chart the magenta symbol in such areas. This could be hazardous if a New Danger were to be marked by Lateral buoys.

Buoyage Regions

2.4

The boundaries of the two Buoyage Regions, A and B, in which the colours of Lateral marks and their lights are reversed, are shown in Diagram 2.

Preferred Channels

2.5

When proceeding in the Conventional Direction of Buoyage, at the point where a channel divides to form two alternative channels to the same destination, the Preferred Channel is indicated by a modified Lateral mark. The System does not provide for a Preferred Channel mark where the two channels re-join.

Colours

2.6

Red and green are the colours reserved for Lateral marks.

Topmarks

2.7

Port-hand marks carry can-shaped topmarks, and starboard-hand marks carry conical topmarks, when fitted.

Lights

2.8

When exhibited, red and green lights are used for Lateral marks.

Lighted Lateral marks used for certain purposes have lights with specified rhythms:

Composite Group Flashing (2 + 1) for Preferred Channel marks;

Quick or Very Quick for New Danger marks.

Other Lateral marks may have lights of any rhythm.

Sequence

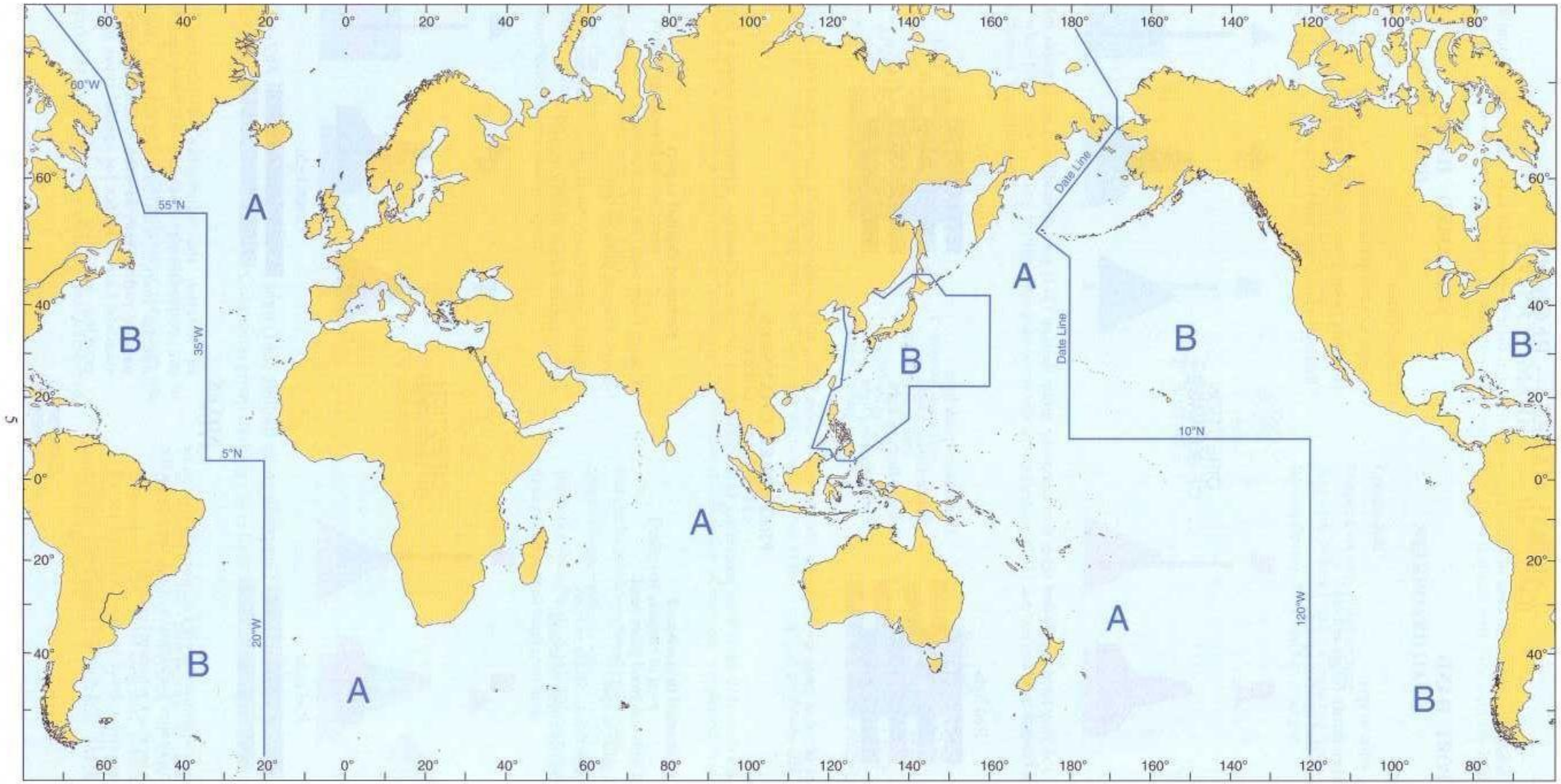
2.9

If marks at the side of a channel are numbered or lettered, the sequence follows the Conventional Direction of Buoyage.

Special marks

2.10

Can and cone shapes coloured yellow may be used as Special marks in conjunction with the Lateral marks for special types of channel marking. See 6.1.



Buoyage Regions A and B

Diagram 2

LATERAL MARKS — REGION A

This diagram is schematic and in the case of pillar buoys in particular, their features will vary with the individual design of the buoys in use.

PORT HAND

Colour: Red.

Shape: Can, pillar or spar.

Topmark (when fitted): Single red can.

Retroreflector: Red band or square.

STARBOARD HAND

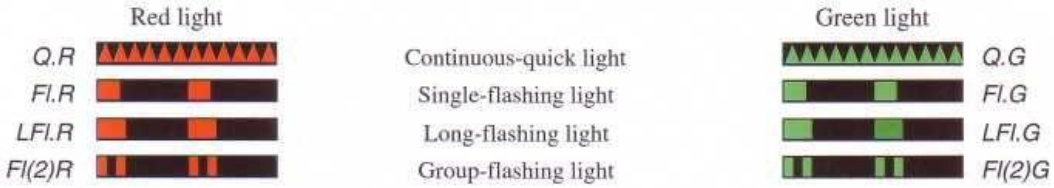
Colour: Green.

Shape: Conical, pillar or spar.

Topmark (when fitted): Single green cone point upward.

Retroreflector: Green band or triangle.

LIGHTS, when fitted, may have any rhythm other than composite group flashing (2+1) used on modified Lateral marks indicating a preferred channel. Examples are:



The lateral colours of red or green are frequently used for minor shore lights, such as those marking pierheads and the extremities of jetties.

PREFERRED CHANNELS

At the point where a channel divides, when proceeding in the conventional direction of buoyage, a preferred channel is indicated by

Preferred channel to starboard

Colour: Red with one broad green band.

Shape: Can, pillar or spar.

Topmark (when fitted): Single red can.

Retroreflector: Red band or square.

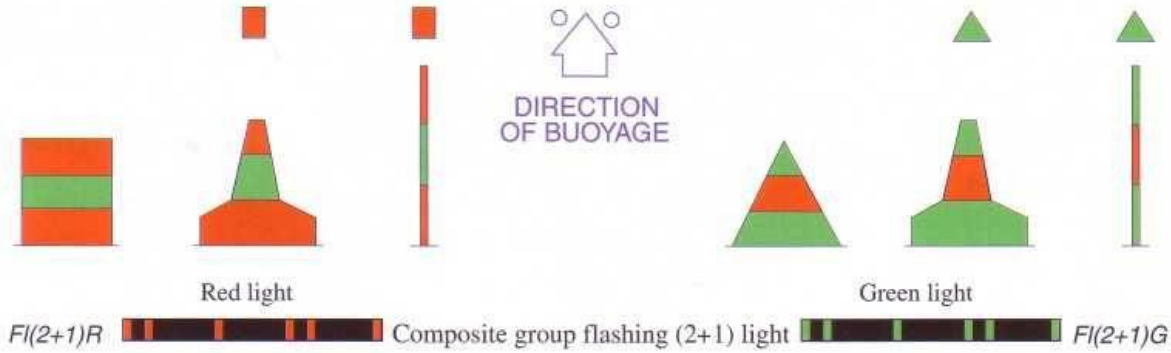
Preferred channel to port

Colour: Green with one broad red band.

Shape: Conical, pillar or spar.

Topmark (when fitted): Single green cone point upward.

Retroreflector: Green band or triangle.



NOTES

Where port or starboard marks do not rely on can or conical buoy shapes for identification, they carry the appropriate topmark where practicable.

If marks at the sides of a channel are numbered or lettered, the numbering or lettering follows the conventional direction of buoyage.

Special marks, with can and conical shapes but painted yellow, may be used in conjunction with the standard Lateral marks for special types of channel marking; see 2.10.

Diagram 3

LATERAL MARKS — REGION B

This diagram is schematic and in the case of pillar buoys in particular, their features will vary with the individual design of the buoys in use.

PORT HAND

Colour: Green.

Shape: Can, pillar or spar.

Topmark (when fitted): Single green can.

Retroreflector: Green band or square.

STARBOARD HAND

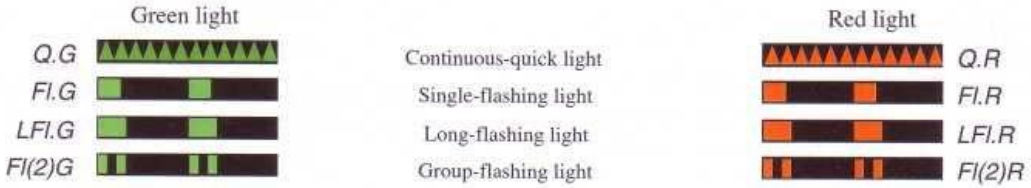
Colour: Red.

Shape: Conical, pillar or spar.

Topmark (when fitted): Single red cone, point upward.

Retroreflector: Red band or triangle.

LIGHTS, when fitted, may have any rhythm other than composite group flashing (2+1) used on modified Lateral marks indicating a preferred channel. Examples are:



The lateral colours of red or green are frequently used for minor shore lights, such as those marking pierheads and the extremities of jetties.

PREFERRED CHANNELS

At the point where a channel divides, when proceeding in the conventional direction of buoyage, a preferred channel is indicated by

Preferred channel to starboard

Colour: Green with one broad red band.

Shape: Can, pillar or spar.

Topmark (when fitted): Single green can.

Retroreflector: Green band or square.

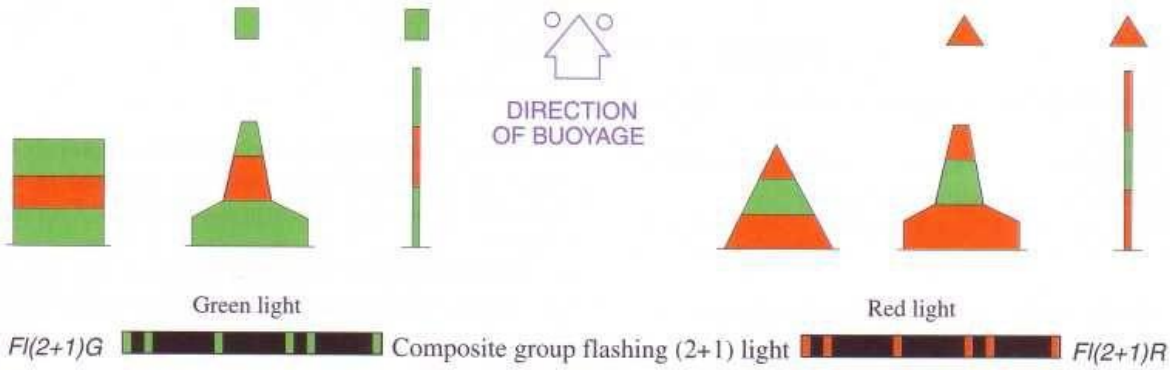
Preferred channel to port

Colour: Red with one broad green band.

Shape: Conical, pillar or spar.

Topmark (when fitted): Single red cone point upward.

Retroreflector: Red band or triangle.



NOTES

Where port or starboard marks do not rely on can or conical buoy shapes for identification, they carry the appropriate topmark where practicable.

If marks at the sides of a channel are numbered or lettered, the numbering or lettering follows the conventional direction of buoyage.

Special marks, with can and conical shapes but painted yellow, may be used in conjunction with the standard Lateral marks for special types of channel marking; see 2.10.

Diagram 4

CARDINAL MARKS

Names
3.1

Cardinal marks are used in conjunction with the compass to indicate where the Mariner may find the best navigable water. They are placed in one of the four quadrants (North, South, East and West) bounded by inter-cardinal bearings, from the point marked. Cardinal marks take their name from the quadrant in which they are placed.

The Mariner is safe if he passes N of a North mark, E of an East mark, S of a South mark and W of a West mark.

Uses
3.2

Cardinal marks may be used to:

Indicate that the deepest water in an area is on the named side of the mark;
Indicate the safe side on which to pass a danger;
Draw attention to a feature in a channel such as a bend, junction, bifurcation, or end of a shoal.

Topmarks
3.3

Black double-cone topmarks are a very important feature of Cardinal marks; they are carried whenever practicable, with cones as large as possible and clearly separated.

The arrangement of the cones must be memorised. More difficult to remember than North ▲ and South ▼ are East ◆ and West ⧗ topmarks; 'W for Wineglass' may help.

Colours
3.4

Black and yellow bands are used to colour Cardinal marks.

The position of the black band, or bands, is related to the points of the black topmark, thus:

North	Points up	Black band above yellow band;
South	Points down	Black band below yellow band;
West	Points inward	Black band with yellow bands above and below;
East	Points outward	Black bands above and below yellow band.

Shape
3.5

The shape of Cardinal marks is not significant, but, in the case of a buoy it is a pillar or spar.

Lights
3.6

White lights are exhibited from Cardinal marks which are lighted. Their characteristics are based on a group of quick or very quick flashes which distinguish them as Cardinal marks and indicate their quadrant.

The distinguishing quick or very quick rhythms are:

North	Uninterrupted;
East	3 flashes in a group;
South	6 flashes in a group followed by a long flash;
West	9 flashes in a group.

To aid the memory, the number of flashes in each group can be associated with a clock face, thus:

3 o'clock	East;
6 o'clock	South;
9 o'clock	West.

The long flash (of not less than 2 seconds duration) immediately following the group of flashes of a South Cardinal mark, is to ensure that its 6 flashes cannot be mistaken for 3 or 9.

The periods of the East, South and West lights are, respectively, 10, 15, and 15 seconds if a quick light, and 5, 10, and 10 seconds if a very quick light.

Quick lights flash at a rate between 50 and 79 flashes per minute, usually either 50 or 60. Very quick lights flash at a rate between 80 and 159 flashes per minute, usually either 100 or 120.

Retroreflectors
3.7

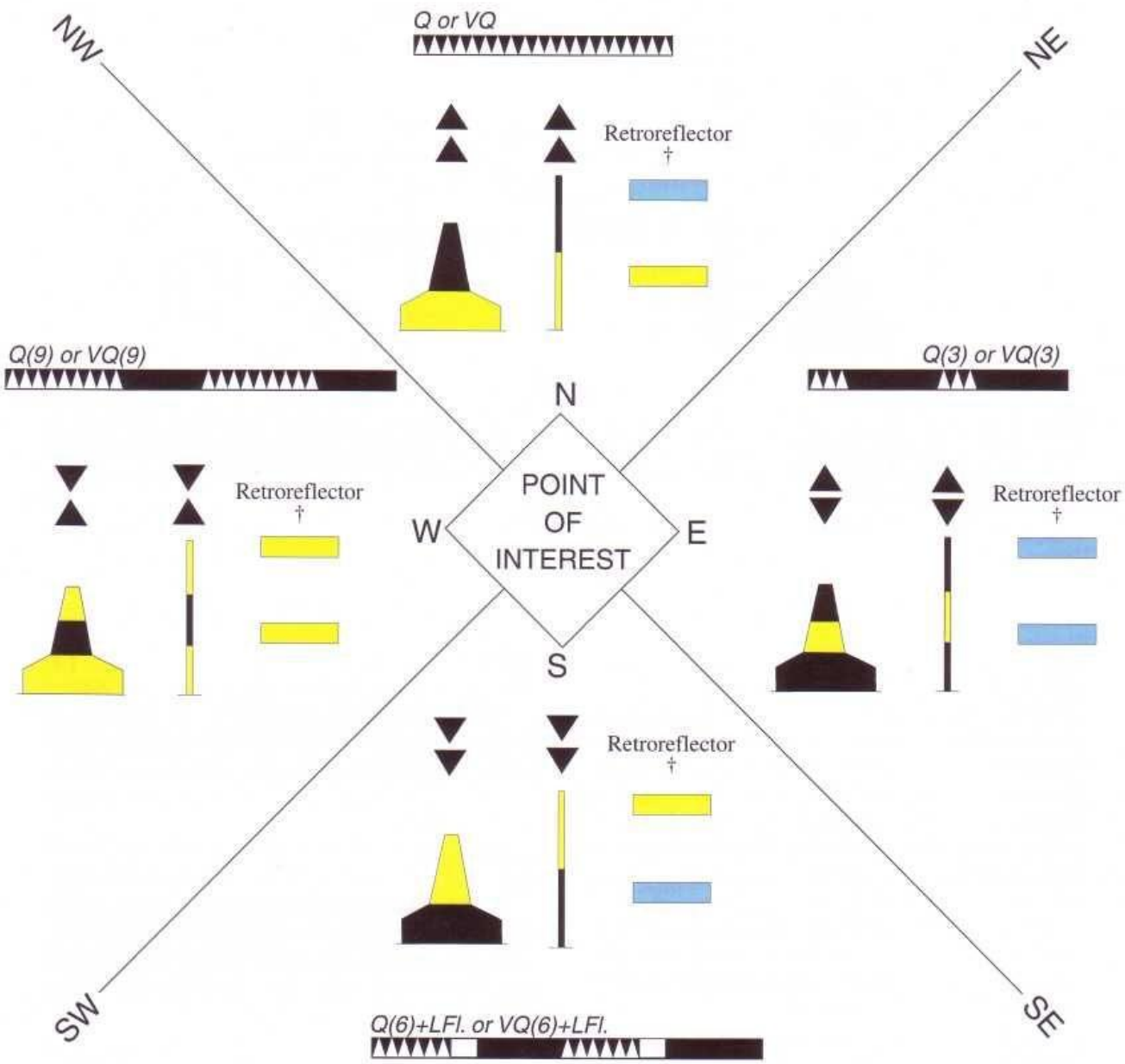
One or more white bands, letters, numerals or symbols of retroreflective material are used in the Standard Code to distinguish unlighted Cardinal marks.

Blue and yellow bands on the black and yellow parts of the mark are used in the Comprehensive Code, thus:

North	Blue on the black part and yellow on the yellow part;
East	2 blue on the upper black part;
South	Yellow on the yellow part and blue on the black part;
West	2 yellow on the upper yellow part.

CARDINAL MARKS

Colour	Black and Yellow
Shape	Pillar or spar (if a buoy)
Topmark	Two black cones
Retroreflector	Blue and/or Yellow



NOTES

†Retroreflectors illustrated are those of the Comprehensive Code. In the Standard Code these marks are distinguished by one or more white bands, letters, numerals or symbols.

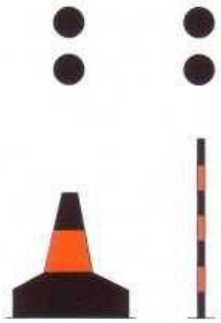
This diagram is schematic and in the case of pillar buoys in particular, their features will vary with the individual design of the buoys in use.

LIGHTS, when fitted, are **white** Very Quick Lights or Quick Lights; a South mark also has a Long Flash immediately following the quick flashes.

Diagram 5

ISOLATED DANGER MARKS

Colour	Black and Red
Shape	Pillar or spar (if a buoy)
Topmark	Two black spheres
Retroreflector	Blue and Red



Retroreflector †

Light (when fitted): **White,** Group-flashing (2).

NOTES

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This diagram is schematic and in the case of pillar buoys in particular, their features will vary with the individual design of the buoys in use.

Diagram 6

Use

4.1

Isolated Danger marks are erected on, or moored on or above, isolated dangers of limited extent which have navigable water all around them. The extent of the surrounding navigable water is immaterial: such a mark can, for example, indicate either a shoal which is well offshore, or an islet separated from the coast by a narrow channel.

4.2

On Admiralty charts the position of a danger is the centre of the symbol or sounding indicating the danger. The symbol indicating the Isolated Danger buoy will inevitably be slightly displaced.

Topmark

4.3

Black double-sphere topmarks, disposed vertically, are a very important feature of Isolated Danger marks and are carried whenever practicable.

Colours

4.4

Black with one or more red bands are the colours used for Isolated Danger marks.

Shape

4.5

No significance is attached to the shape of an Isolated Danger mark but, in the case of a buoy, either a pillar or spar buoy is used.

Light

4.6

A white flashing light showing a group of two flashes is used to denote an Isolated Danger mark. The association of two flashes and the two spheres in the topmark may help in remembering these characteristics.

Retroreflectors

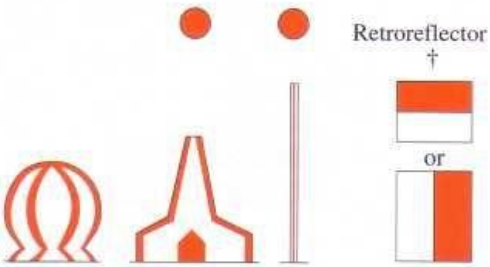
4.7

One or more white bands, letters, numerals or symbols of retroreflective material are used in the Standard Code to distinguish unlighted Isolated Danger marks.

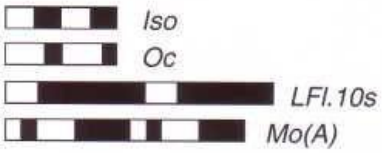
One or more pairs of blue above red bands are used in the Comprehensive Code.

SAFE WATER MARKS

Colour	Red and White
Shape	Pillar or spar
Topmark	Red sphere
Retroreflector	Red and White



Light (when fitted): **White**, Isophase, or Occulting, or Long-Flashing every 10 seconds, or Morse Code (A)



NOTES

†Retroreflectors illustrated are those of the Comprehensive Code. In the Standard Code these marks are distinguished by one or more white bands, letters, numerals or symbols.

This diagram is schematic and in the case of pillar buoys in particular, their features will vary with the individual design of the buoys in use.

Diagram 7

Use
5.1

Safe Water marks are used to indicate that there is navigable water all round a mark. Such a mark may be used as a centreline, mid-channel or landfall buoy, or to indicate the best point of passage under a fixed bridge.

Topmark
5.2

A red spherical topmark is a very important feature if the buoy is not spherical, and is fitted whenever practicable.

Colours
5.3

Red and white stripes are used for Safe Water marks, and distinguish them from the black-banded danger marks.

Shape
5.4

Spherical, pillar or spar buoys are used as Safe Water marks.

Light
5.5

A white light, occulting, or isophase, or showing a single long flash or Morse Code A is used for Safe Water marks, when lighted.

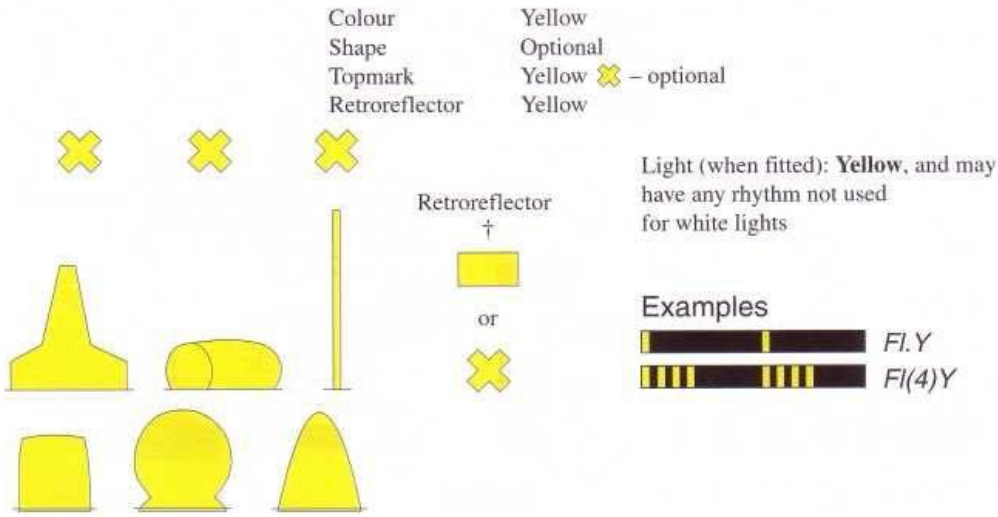
If a long flash (ie a flash of not less than 2 seconds) is used, the period of the light is 10 seconds.

Retroreflectors
5.6

One or more white bands, letters, numerals or symbols of retroreflective material are used in the Standard Code to distinguish unlighted Safe Water marks.

Red and white stripes or bands are used in the Comprehensive Code.

SPECIAL MARKS



NOTES

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This diagram is schematic and in the case of pillar buoys in particular, their features will vary with the individual design of the buoys in use.

Diagram 8

Use
6.1

Special marks may be used to indicate to the Mariner a special area or feature, the nature of which is apparent from reference to a chart, Sailing Directions or Notices to Mariners. Special marks may be lettered to indicate their purpose.

Uses include the marking of:

- Ocean Data Acquisition System (ODAS) buoys;
- Traffic Separation Schemes where use of the conventional channel marking might cause confusion, though many schemes are marked by Lateral and Safe Water marks;
- Spoil grounds;
- Military exercise zones;
- Cables or pipelines, including outfall pipes;
- Recreation zones.

Another function of Special marks is to define a channel within a channel. For example a channel for deep-draught vessels in a wide estuary, where the limits of the channel for normal navigation are marked by red and green Lateral buoys, may have the boundaries of the deep channel indicated by yellow buoys of the appropriate Lateral shapes, or its centreline marked by yellow spherical buoys.

Topmark
6.2

A single yellow X is the form of topmark used for a Special mark, when one is carried.

Colour
6.3

Yellow is the colour used for Special marks.

Shape
6.4

The shape of Special buoys is optional but they must not conflict with those used for a Lateral or Safe Water mark. For example, an outfall buoy on the port hand side of a channel could be can-shaped but not conical.

Lights
6.5

A yellow light is used, when one is exhibited. The rhythm may be any, other than those used for Cardinal, Isolated Danger and Safe Water marks. The following are permitted examples:

- Group occulting;
- Flashing;
- Group flashing with a group of 4, 5 or (exceptionally) 6 flashes;
- Composite group flashing;
- Morse Code letters, other than Morse Code A, D or U.

In the case of ODAS buoys, the rhythm is group flashing with a group of 5 flashes every 20 seconds.

Retroreflectors
6.6

One yellow band, an X, or a symbol are used as retroreflectors to distinguish unlighted Special marks.

CHART SYMBOLS AND ABBREVIATIONS

IALA Maritime Buoyage System — *IALA International Association of Lighthouse Authorities*

Where in force, the IALA System applies to all fixed and floating marks except landfall lights, leading lights and marks, sectored lights and major floating lights
The standard buoy shapes are cylindrical (can), conical, spherical, pillar, and spar, but variations may occur, for example minor light floats
In the illustrations below, only the standard buoy shapes are used In the case of fixed beacons (lit or unlit) only the shape of the topmark is of navigational significance

130.1 Lateral marks *are generally for well-defined channels There are two international Buoyage Regions - A and B - where Lateral marks differ*

A preferred channel buoy may also be a pillar or a spar All preferred channel marks have three horizontal bands of colour
Where for exceptional reasons an Authority considers that a green colour for buoys is not satisfactory, black may be used

130.2

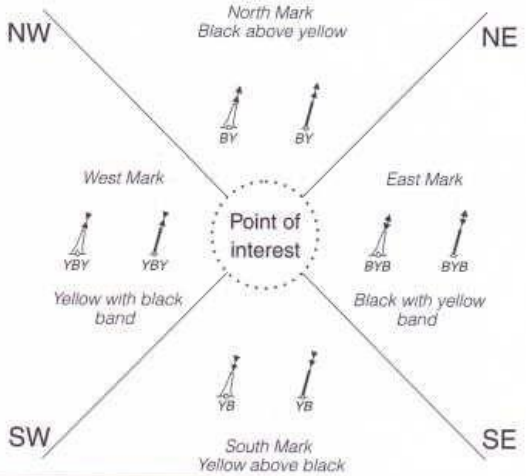
Symbol showing direction of buoyage where not obvious

Symbol showing direction of buoyage where not obvious, on multicoloured charts (red and green circles coloured as appropriate)

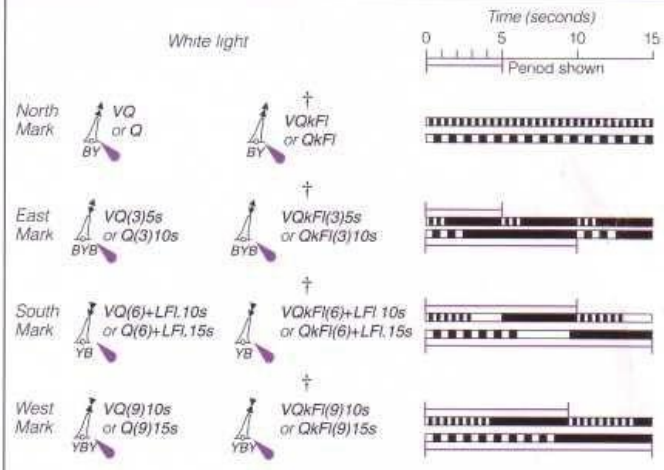
130.3 Cardinal Marks *indicating navigable water to the named side of the marks Cardinal marks have the same meaning in Regions A and B*

UNLIT MARKS

Topmark 2 black cones



LIGHTED MARKS



The same abbreviations are used for lights on spar buoys and beacons
The periods, 5s, 10s and 15s, may not always be charted

130.4 Isolated Danger Marks, stationed over dangers with navigable water around them

Body black with red horizontal band(s)
Topmark 2 black spheres

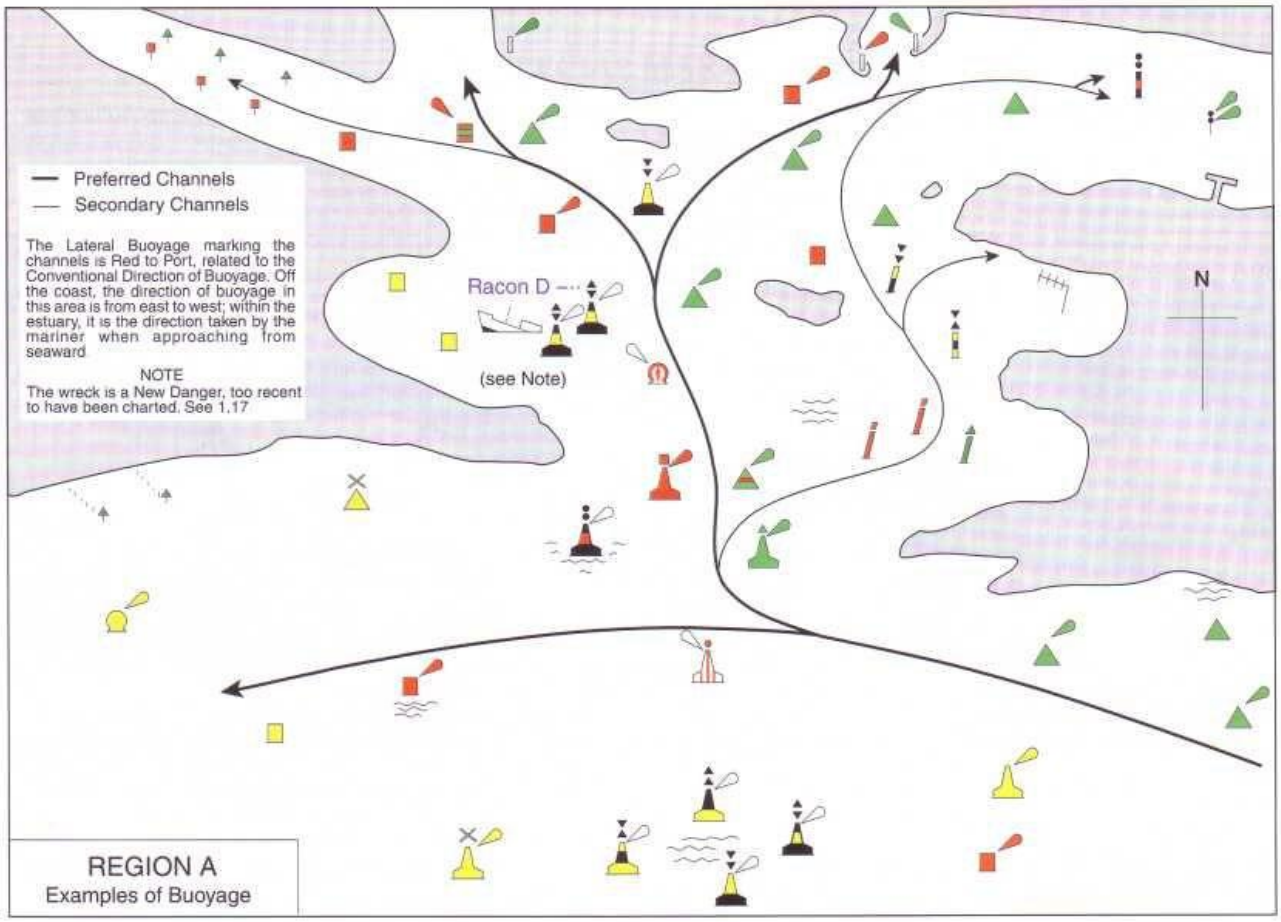
130.5 Safe Water Marks, such as mid-channel and landfall marks

Body red and white vertical stripes
Topmark (if any) red sphere

130.6 Special Marks, not primarily to assist navigation but to indicate special features

Body (shape optional) yellow
Topmark (if any) yellow X

Diagram 9


Preferred Channels
Secondary Channels
The Lateral Buoyage marking the channels is Red to Port, related to the Conventional Direction of Buoyage. Off the coast, the direction of buoyage in this area is from east to west; within the estuary, it is the direction taken by the mariner when approaching from seaward.
NOTE
The wreck is a New Danger, too recent to have been charted. See 1.17
Racon D
(see Note)
N
REGION A
Examples of Buoyage

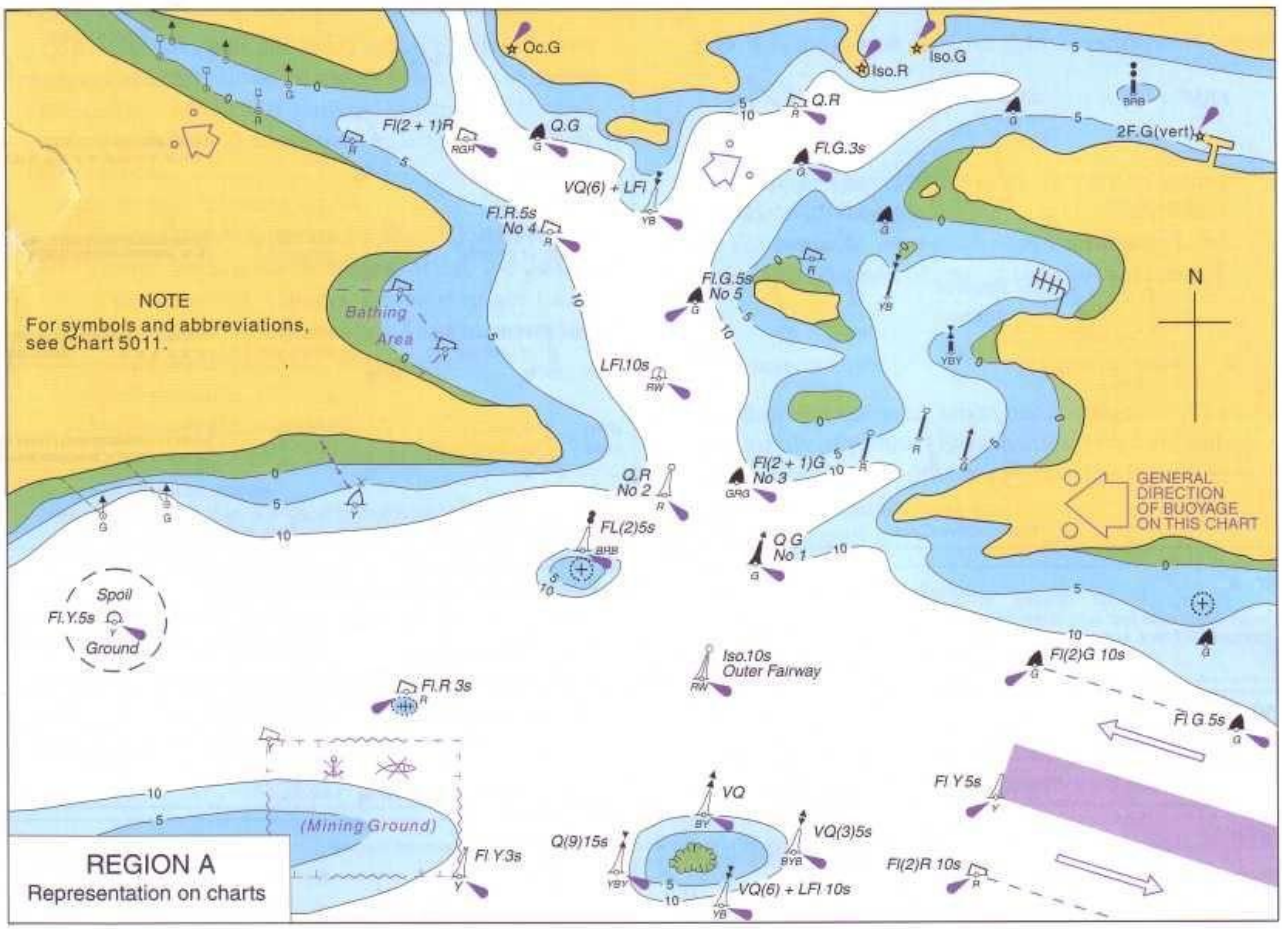
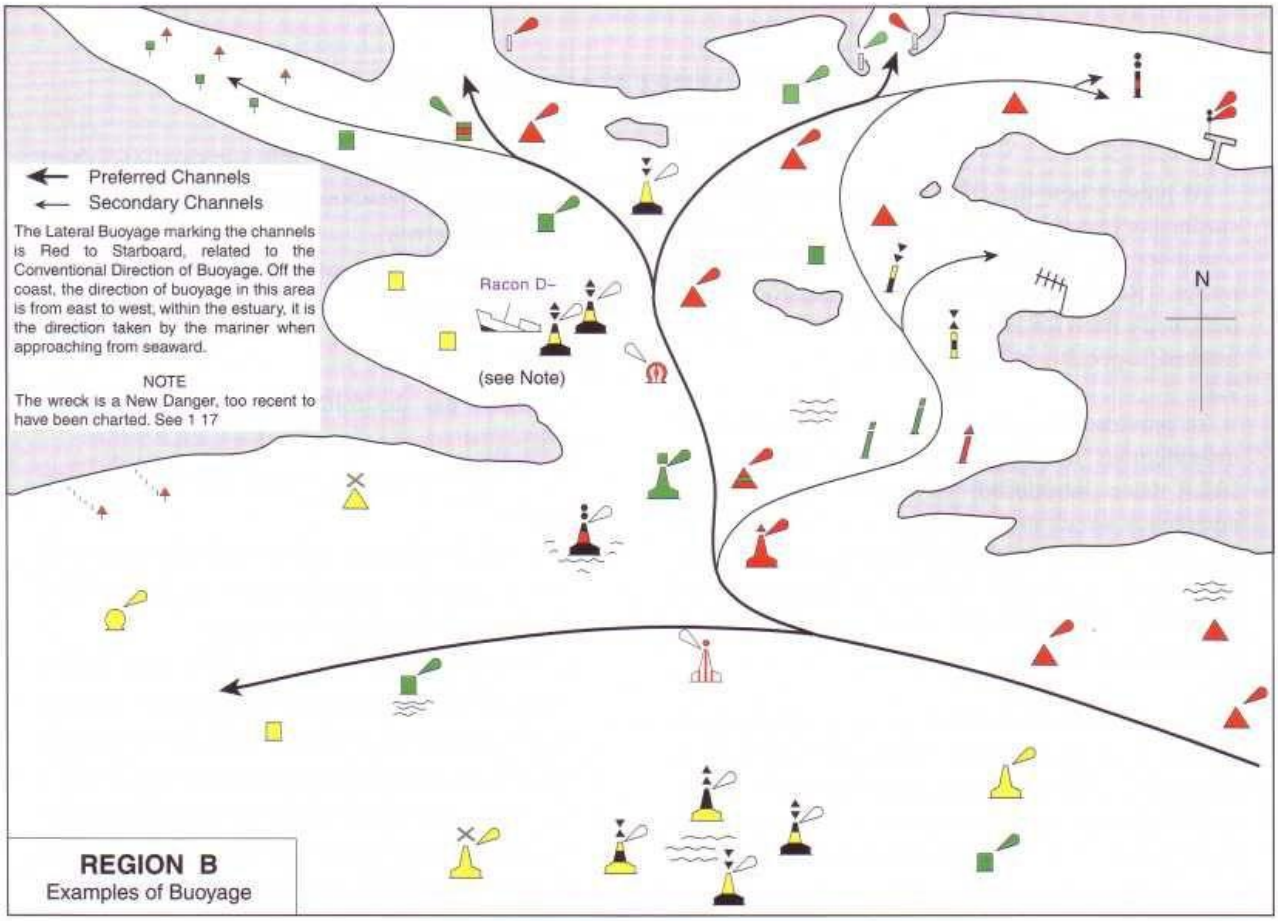

Oc.G
Iso.G
Iso.R
Q.R
2F.G(vert)
Fl(2 + 1)R
Q.G
Fl.G.3s
VQ(6) + LFl
Fl.R.5s
No 4
Fl.G.5s
No 5
NOTE
For symbols and abbreviations, see Chart 5011.
Bathing Area
LFl.10s
N
Q.R
No 2
Fl(2 + 1)G
No 3
GENERAL DIRECTION OF BUOYAGE ON THIS CHART
FL(2)5s
Q G
No 1
Spoil Ground
Fl.Y.5s
Iso.10s
Outer Fairway
Fl(2)G 10s
Fl.R 3s
Fl G.5s
Fl Y5s
VQ
(Mining Ground)
Fl Y3s
Q(9)15s
VQ(3)5s
Fl(2)R 10s
VQ(6) + LFl 10s
REGION A
Representation on charts

Diagram 10


Preferred Channels
Secondary Channels
The Lateral Buoyage marking the channels is Red to Starboard, related to the Conventional Direction of Buoyage. Off the coast, the direction of buoyage in this area is from east to west, within the estuary, it is the direction taken by the mariner when approaching from seaward.
NOTE
The wreck is a New Danger, too recent to have been charted. See 1 17
Racon D–
(see Note)
N
REGION B
Examples of Buoyage

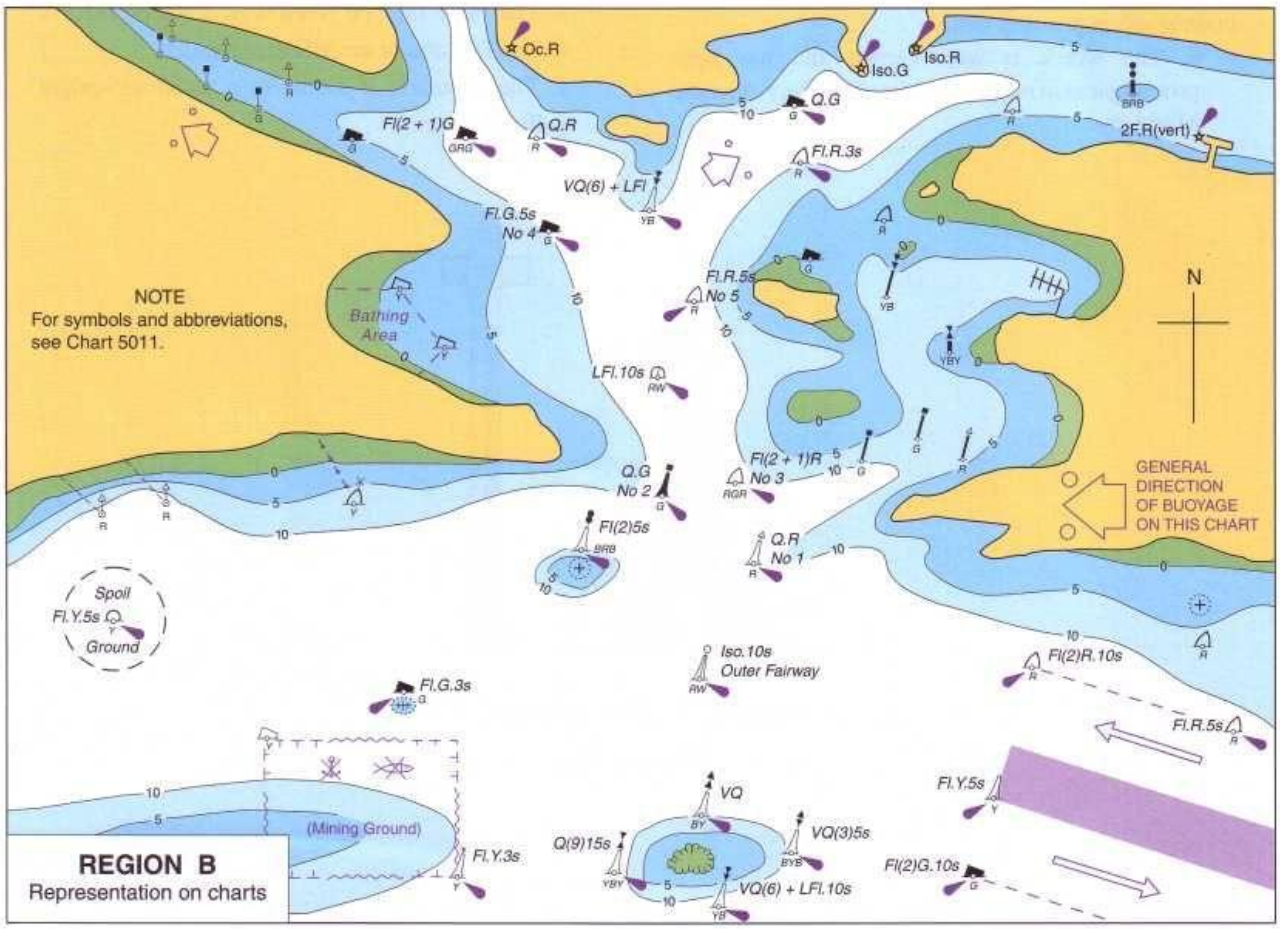

Oc.R
Iso.G
Iso.R
Q.G
Fl(2 + 1)G
Q.R
Fl.R.3s
2F.R(vert)
VQ(6) + LFl
Fl.G.5s
No 4
Fl.R.5s
No 5
NOTE
For symbols and abbreviations, see Chart 5011.
Bathing Area
N
LFl.10s
Fl(2 + 1)R
No 3
Q.G
No 2
Fl(2)5s
Q.R
No 1
GENERAL DIRECTION OF BUOYAGE ON THIS CHART
Spoil Ground
Fl.Y.5s
Iso.10s
Outer Fairway
Fl(2)R.10s
Fl.G.3s
Fl.R.5s
Fl.Y.5s
VQ
VQ(3)5s
Q(9)15s
VQ(6) + LFl.10s
Fl(2)G.10s
(Mining Ground)
Fl.Y.3s
REGION B
Representation on charts

Diagram 11

EMERGENCY WRECK MARKING BUOY

7.1

At present new dangers are generally marked by cardinal or lateral buoys, although it is recognised that a number of authorities also deploy isolated danger marks. Recent groundings and collisions have indicated a need for a revision of how new dangers are marked, especially in an emergency.

7.2

To provide a possible means of ensuring clear and unambiguous marking of dangerous new wrecks, IALA have introduced, on a trial basis, a new emergency wreck marking buoy. It is envisaged that any such buoy will be a temporary response, typically to be used for the first 24–72 hours. Its deployment will be promulgated through usual maritime safety information systems.

7.3

The emergency wreck marking buoy is designed to provide a prominent (both visual and radio) aid to navigation. It will be placed as close to the wreck as possible, or in a pattern around the wreck, and within any other marks that may be subsequently deployed.

7.4

The emergency wreck marking buoy will be maintained in position until:

a. The wreck is well known and has been promulgated in nautical publications i.e. Notices to Mariners.

b. The wreck has been fully surveyed and exact details such as position and least depth above the wreck are known.

c. A permanent form of marking of the wreck has been carried out.

7.5

The buoy has the following characteristics (see Diagram 12):

a. A pillar or spar buoy, with size dependent on location.

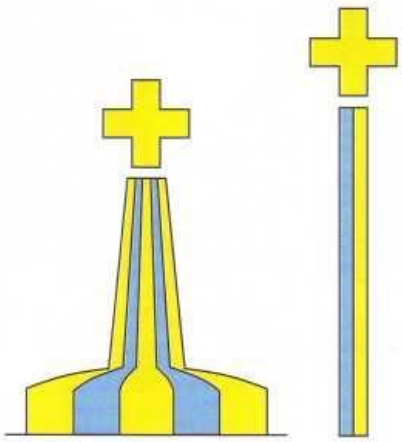
b. Coloured in equal number and dimensions of blue and yellow vertical stripes (minimum of 4 stripes and maximum of 8 stripes)

c. Fitted with an alternating Blue and Yellow flashing light with a nominal range of 4 nautical miles (authorities may alter the range depending upon local conditions) where the blue and yellow 1 second flashes are alternated with an interval of 0·5 seconds i.e. Bu 1·0s + 0·5s + Y 1·0s + 0·5s = 3·0s

d. If multiple buoys are deployed then the lights will be synchronised.

e. The buoy may be fitted with a Racon (Morse Code "D") and/or an AIS transponder.

f. The topmark, if fitted, is a standing/upright yellow cross.



Emergency Wreck Marking Buoy

Diagram 12