

Annex 8

BUOYAGE AND MARKING OF WATERWAYS, LAKES AND BROAD WATERWAYS

I. GENERAL

1. Definitions

Right-hand side/left-hand side: the designations "right-hand side" and "left-hand side" of the waterway or channel are to be understood as for an observer facing downstream;

on canals, lakes and broad waterways, the terms "right" and "left" shall be defined by the authorities.

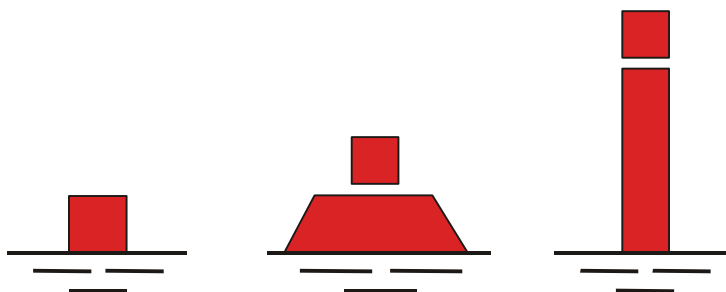
Light: a distinctive light used as a marking.

Fixed light: an uninterrupted light of constant intensity and colour.

Rhythmic light: a light of constant intensity and colour operating in a characteristic and regularly repeated succession of spells of illumination and extinction.

II. BUOYAGE OF CHANNEL LIMITS IN THE WATERWAY

1. Right-hand side of the channel



(fig. 1)

Colour: red

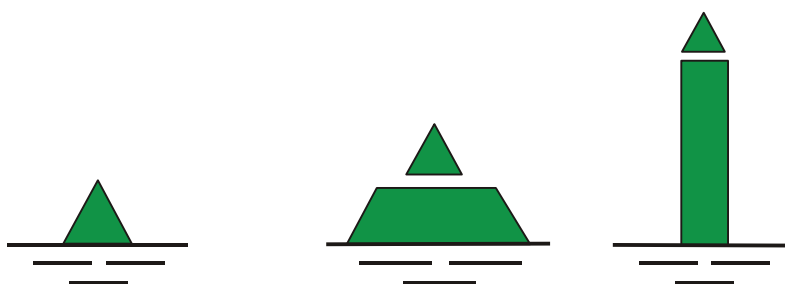
Form: cylindrical buoy or buoy with a topmark, or spar

Topmark (if any): red cylinder

Light (when fitted): rhythmic red light

Generally with radar reflector.

2. Left-hand side of the channel



(fig. 2)

Colour: green

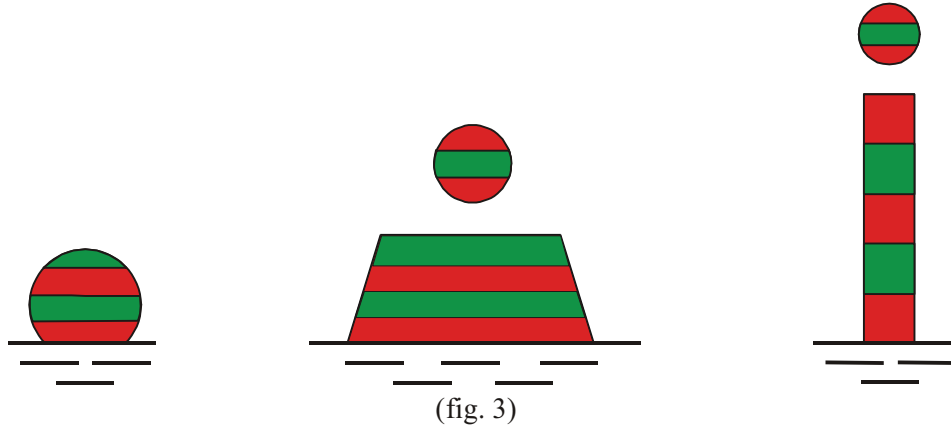
Form: conical buoy or buoy with a topmark, or spar

Topmark (if any): green cone, point upwards

Light (when fitted): rhythmic green light

Generally with radar reflector.

3. Bifurcation of the channel



Colour: horizontal red and green bands

Form: spherical buoy or buoy with a topmark, or spar

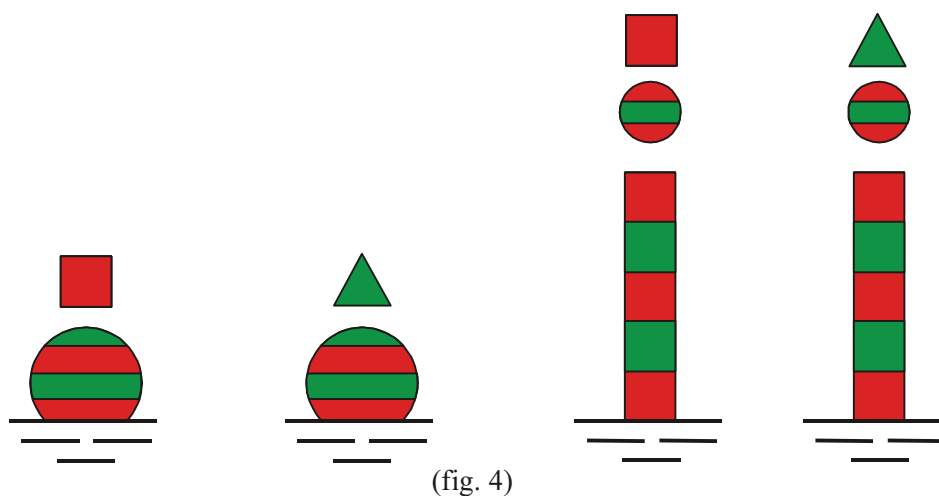
Topmark (if any): sphere with horizontal red and green bands

Light (when fitted): continuous scintillating white light, or isophase white light
(may be the group-flashing white light with a group of three flashes)

Generally with radar reflector.

Where necessary, a red cylindrical topmark or green conical topmark placed above the bifurcation mark indicates on which side it is preferable to pass (main channel).

The mark shall then bear a rhythmic red light or a rhythmic green light, as appropriate.



4. A letter "p" painted in white on the buoys described in paragraphs 1 and 2 indicates that the channel is adjacent to a berthing area. If the buoys showing the letter "P" carry a light, its rhythm shall be different from that of the lights of other buoys placed along the channel limit.

III. MARKS ON LAND INDICATING THE POSITION OF THE CHANNEL

A. *Marks on land indicating the position of the channel in relation to the banks*

These marks indicate the position of the channel in relation to the bank and, together with the buoyage of the waterway, mark the channel at points where it approaches a bank; they also serve as landmarks.

1. Channel near the right bank



(fig. 5)

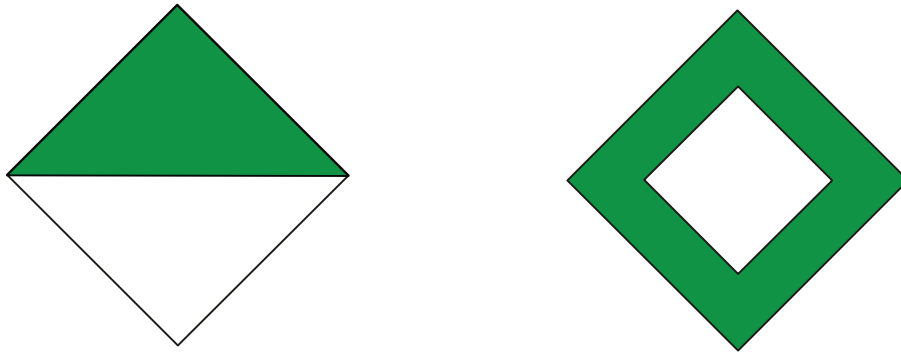
Colour: red/white

Form: post with topmark

Topmark: square boards (sides horizontal and vertical), red, with two horizontal white stripes;
or square frame (sides horizontal and vertical), painted red

Light (when fitted): rhythmic red light.

2. Channel near the left bank



(fig. 6)

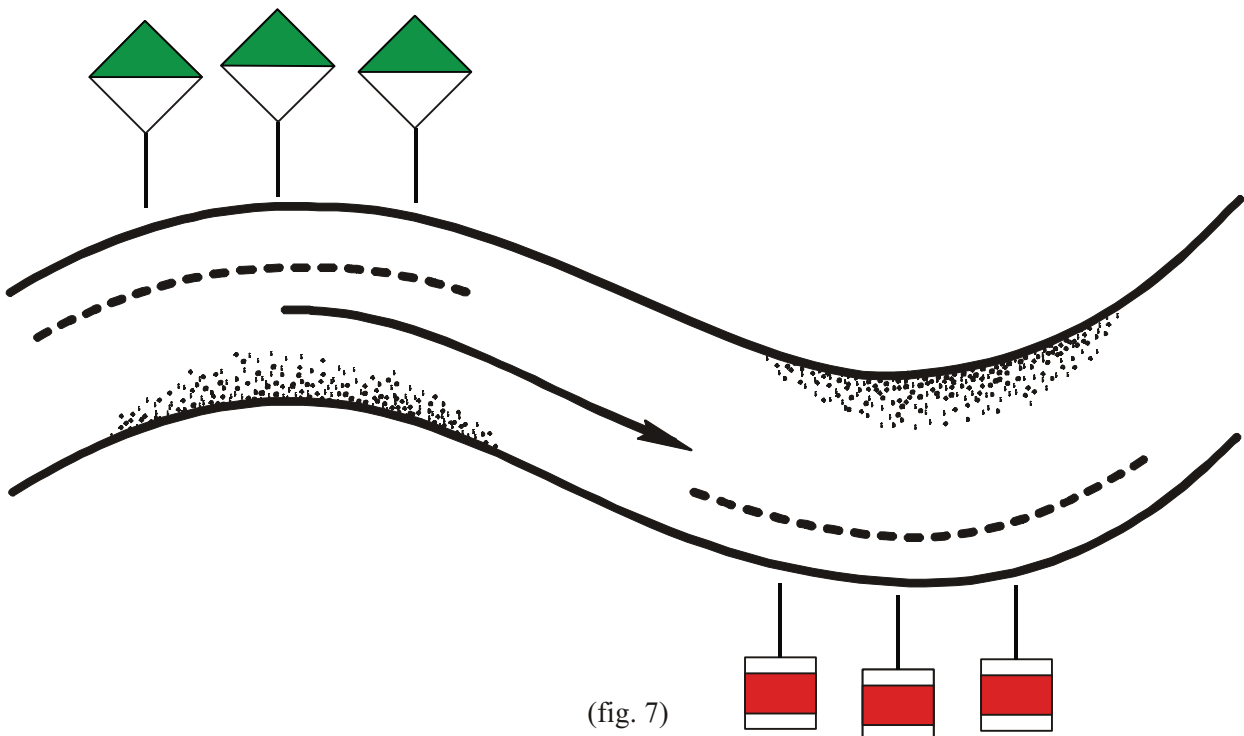
Colour: green/white

Form: post with topmark

Topmarks: square board (diagonals horizontal and vertical), upper half painted green and lower half white; or square frame (diagonals horizontal and vertical), painted green

Light (when fitted): rhythmic green light.

3. Use of marks



(fig. 7)

B. *Marking of cross-overs*

These marks indicate at what point the channel passes from one bank to another and also give the axis of this cross-over.

1. Right bank



(fig. 8)

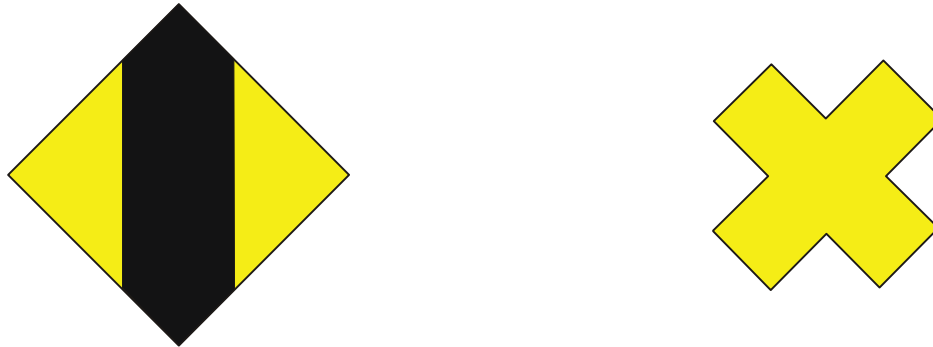
Colour: yellow/black

Form: post with topmark

Topmark: square yellow board (sides horizontal and vertical), with a central vertical black stripe;
or a lath-assembled St. George's Cross painted yellow

Light (when fitted): yellow light, flashing or occulting, with an even-number characteristic other than the group-flashing rhythm with a group of two flashes.

2. Left bank



(fig. 9)

Colour: yellow/black

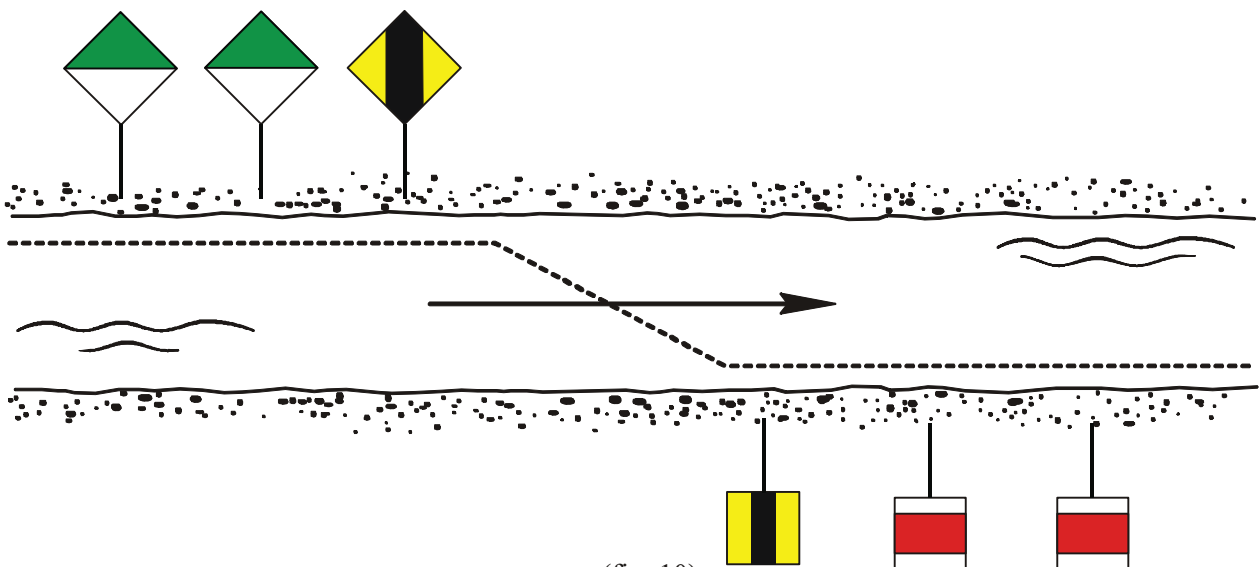
Form: post with topmark

Topmark: square yellow board (diagonals horizontal and vertical), with a central vertical black stripe; or a lath-assembled St. Andrew's Cross painted yellow

Light (when fitted): yellow light, flashing or occulting, with an odd-number characteristic other than the group-flashing rhythm with a group of three flashes.

3. Use of marks

3.1 Mere indication of cross-over

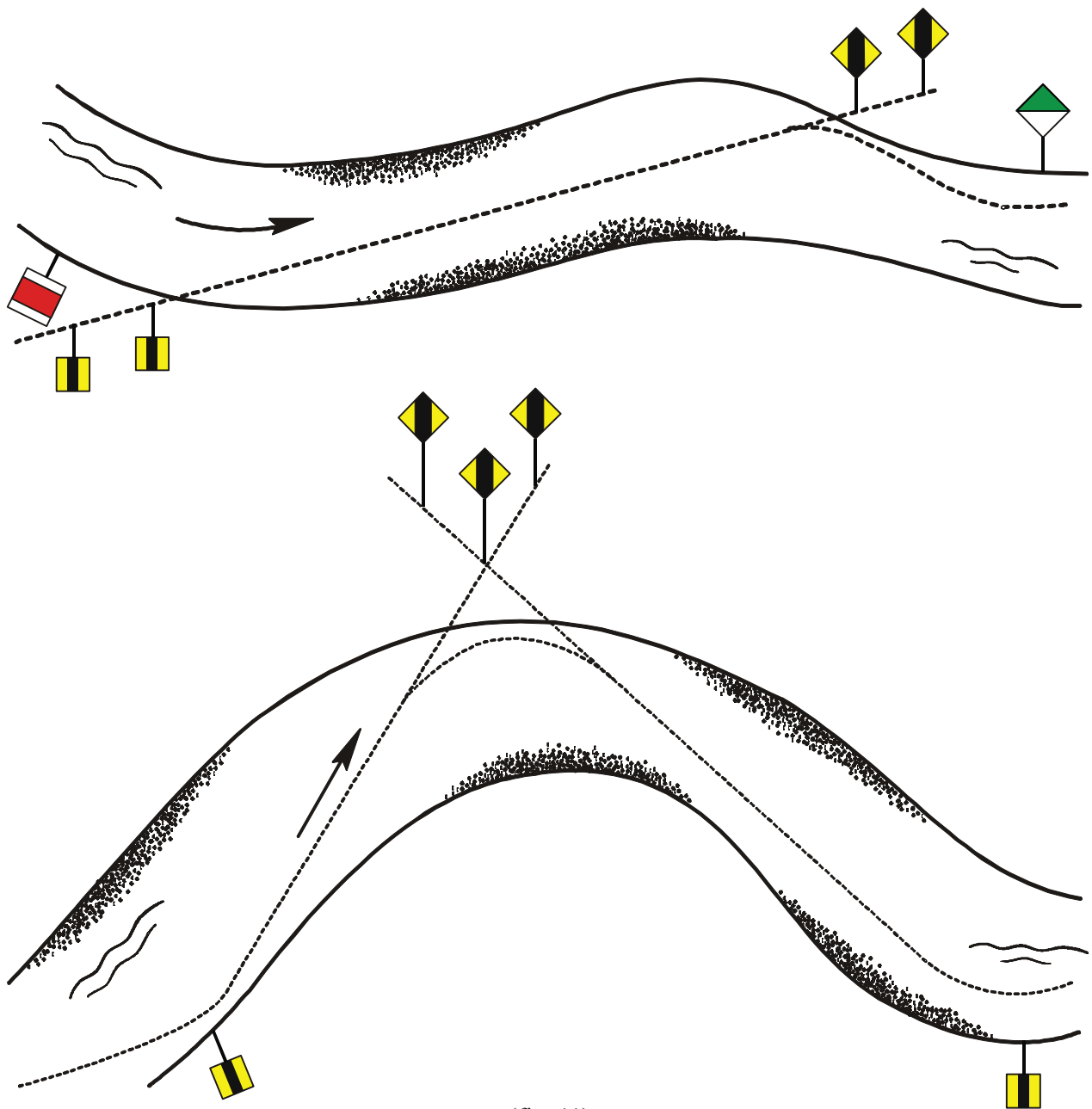


(fig. 10)

3.2 Indication of the axis of a long cross-over

Two identical signs placed one behind the other on the same bank, forming an alignment marking the axis of a long cross-over.

Lights (if any): yellow (the forward light and rearward light generally having the same rhythm; however, the rearward light may be a fixed light).



(fig. 11)

IV. BUOYAGE AND MARKING OF DANGER POINTS AND OBSTACLES

A. Fixed marks

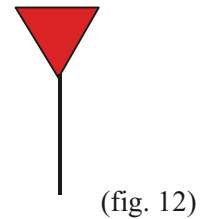
1. Right-hand side

Colour: red

Form: post with topmark

Topmark: red cone, point downwards

Light (when fitted): rhythmic red light.



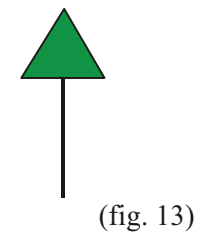
2. Left-hand side

Colour: green

Form: post with topmark

Topmark: green cone, point upwards

Light (when fitted): rhythmic green light.



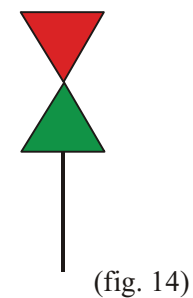
3. Bifurcation

Colour: red/green

Form: post with topmark

Topmark: red cone, point downwards, above a green cone, point upwards

Light (when fitted): continuous scintillating white light
or isophase white light
(may be the group-flashing white light
with a group of three flashes)



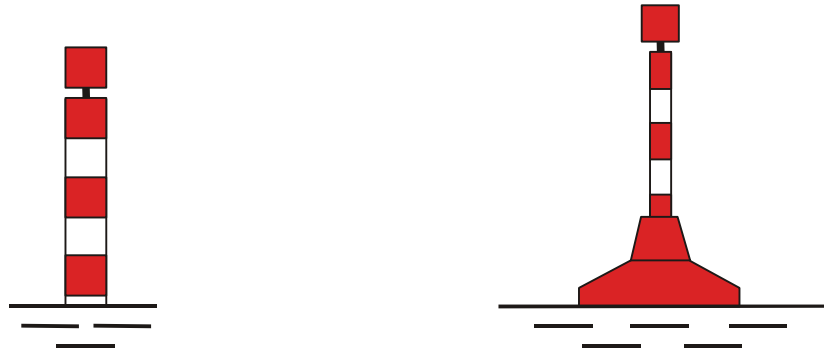
The above cones may be replaced by triangular panels with a white background and a red or green border.

4. Secondary arms of the waterway, mouths of waterways and entrances to harbours

On the approach to secondary arms of the waterway, to mouths of waterways and to harbour entrances, the bank walls on both sides of the waterway may be marked as far as the head of the dividing mole by the fixed marks described in 1 and 2 above, figures 12 and 13. Vessels entering the harbour are regarded as upstream traffic.

B. *Buoys*

1. Right-hand side



(fig. 15)

Colour: horizontal red and white bands

Form: spar-buoy or spar

Topmark: red cylinder

Light (when fitted): rhythmic red light
Generally with radar reflector.

2. Left-hand side



(fig. 16)

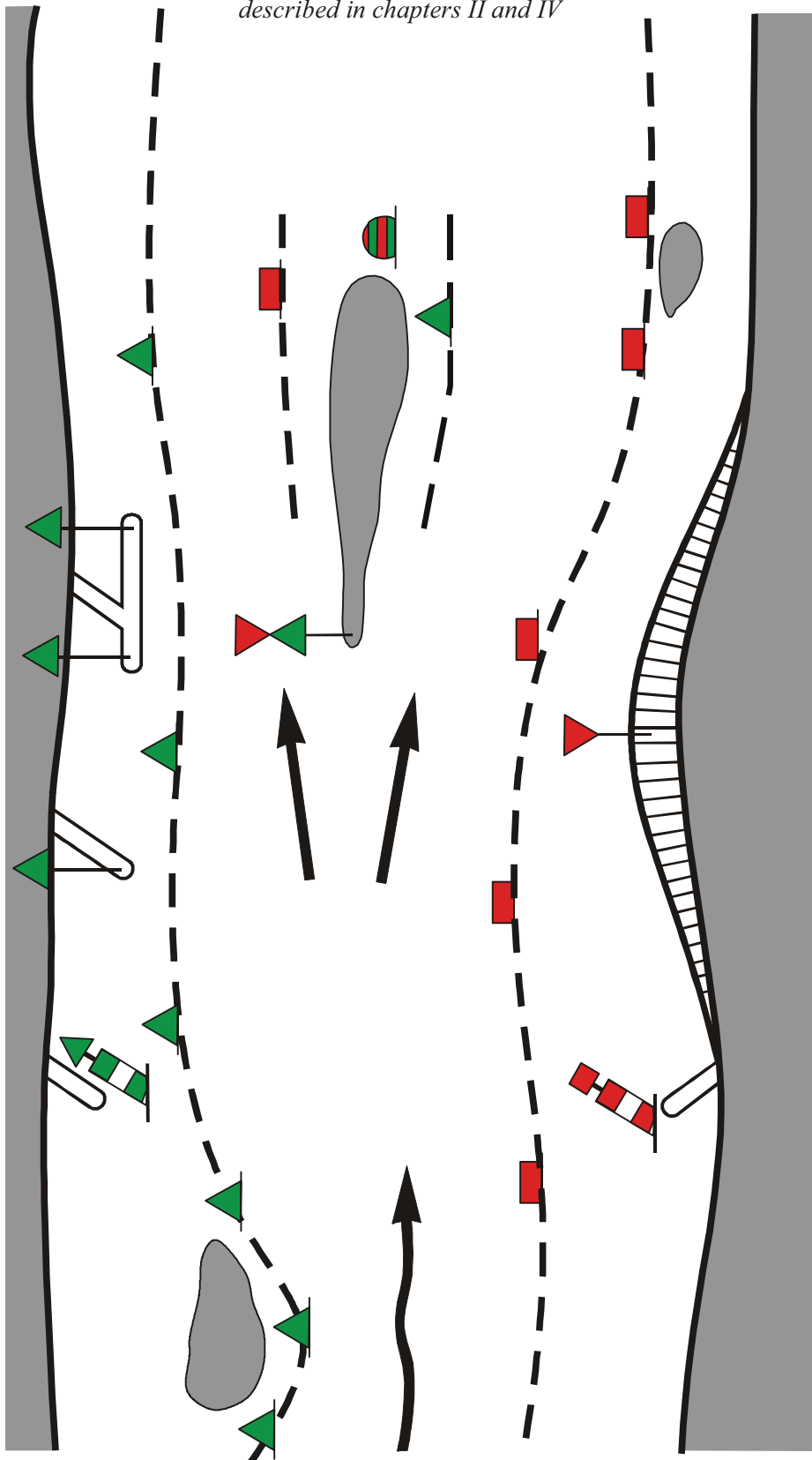
Colour: horizontal green and white bands

Form: spar-buoy or spar

Topmark: green cone, point upwards

Light (when fitted): rhythmic green light
Generally with radar reflector.

Example of use of the buoyage and marking described in chapters II and IV

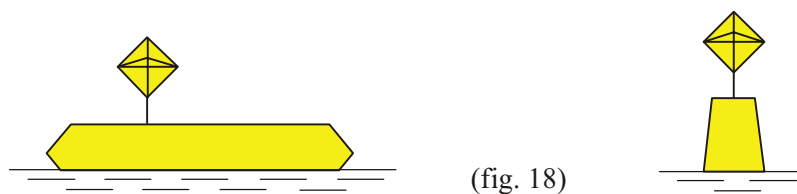


(fig. 17)

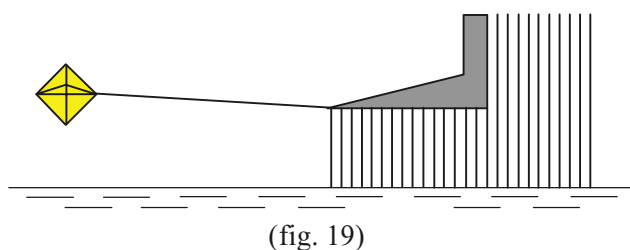
V. ADDITIONAL MARKING FOR NAVIGATION BY RADAR

A. Marking of bridge piers (if necessary)

1. Yellow floats with radar reflector (placed upstream and downstream from piers)

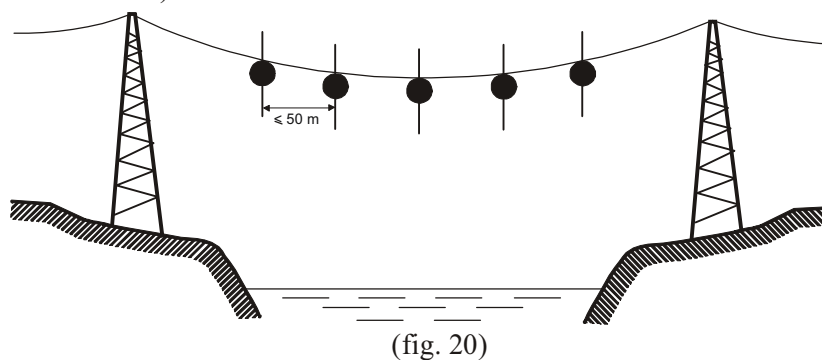


2. Pole with radar reflector placed upstream and downstream from bridge piers

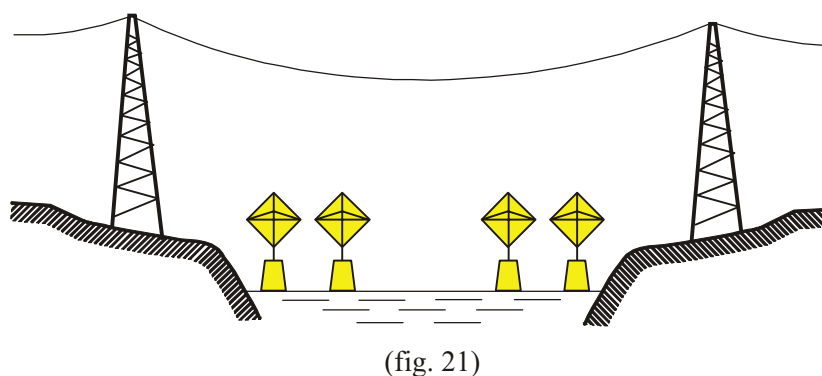


B. Marking of overhead cables (if necessary)

1. Radar reflectors secured to the overhead cable (giving a radar image of a series of points to identify the overhead cable)



2. Radar reflectors placed on yellow floats arranged in pairs near each bank (each pair giving a radar image of two points side by side to identify the overhead cable)



VI. ADDITIONAL BUOYAGE AND MARKING OF LAKES AND BROAD WATERWAYS

A. *Marking of danger points, obstacles and special features*

1. Cardinal marks

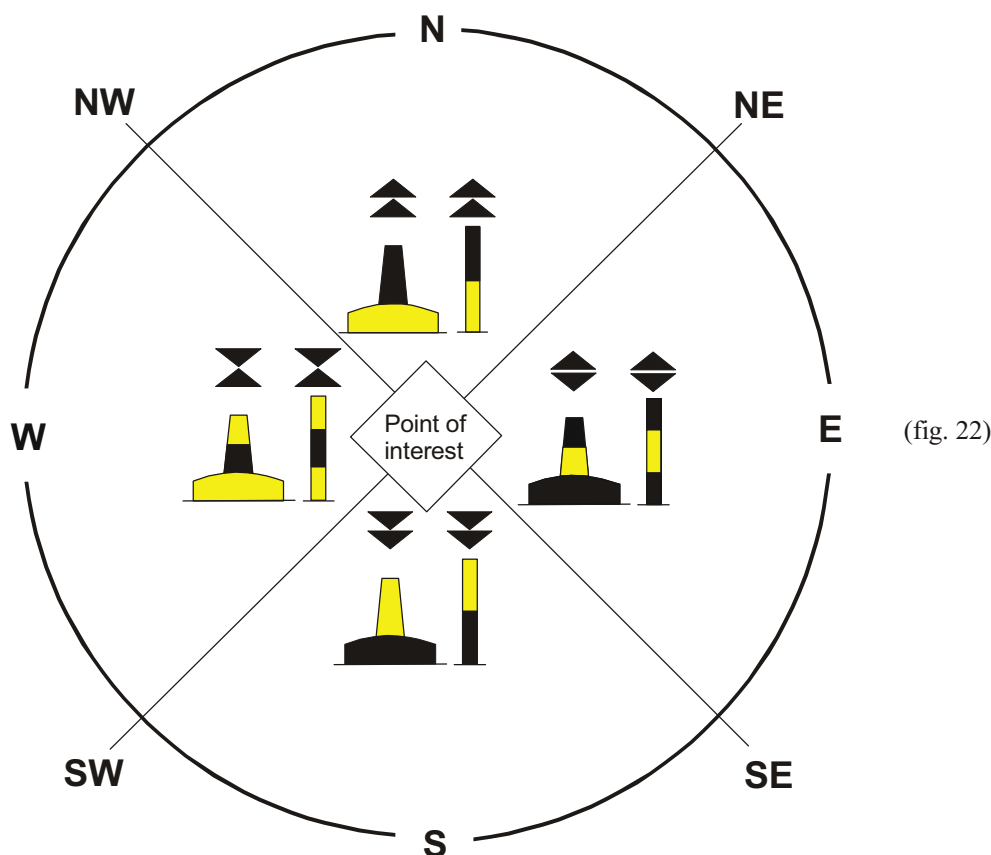
Definition of cardinal quadrants and marks

The four quadrants (North, East, South and West) are bounded by the true bearings NW NE, NE-SE, SE-SW, SW-NW taken from the point of interest.

A cardinal mark is named after the quadrant in which it is placed.

The name of a cardinal mark indicates that the mark should be passed on the side of the quadrant named.

Description of cardinal marks



(fig. 22)

North cardinal mark

- Colour : black above yellow
- Form : pillar or spar, with topmark
- Topmark : two black cones, one above the other, points upward
- Light (when fitted) :
 - Colour : white
 - Rhythm : continuous quick scintillating or continuous scintillating

East cardinal mark

- Colour : black with a single broad horizontal yellow band
- Form : pillar or spar, with topmark
- Topmark : two black cones, one above the other, base to base
- Light (when fitted):
 - Colour : white
 - Rhythm : group quick scintillating or group scintillating, with a group of three flashes

South cardinal mark

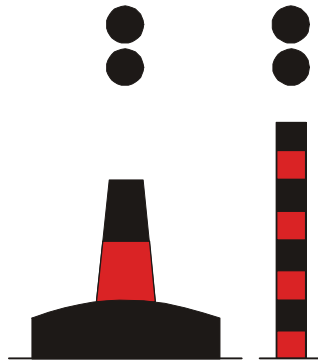
- Colour : yellow above black
- Form : pillar or spar, with topmark
- Topmark : two black cones, one above the other, points downward
- Light (when fitted) :
 - Colour : white
 - Rhythm : group quick scintillating or group scintillating, with a group of six flashes followed by a long flash of not less than two seconds duration

West cardinal mark

- Colour : yellow with a single broad horizontal black band
- Form : pillar or spar, with topmark
- Topmark : two black cones, one above the other, point to point
- Light (when fitted) :
 - Colour : white
 - Rhythm : group quick scintillating or group scintillating, with a group of nine flashes

2. Isolated danger marks

An isolated danger mark is a mark erected on, or moored above an isolated danger which has safe water all around it.

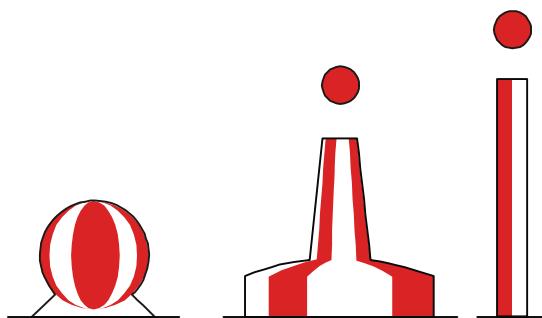


(fig. 23)

- Colour : black with one or more broad horizontal
- Form : any (generally pillar or spar) with topmark
- Topmark : two black spheres, one above the other
- Light (when fitted):
 Colour : white
 Rhythm : group flashing (group of two flashes)

B. *Marking of the axis of a channel, the middle of a channel or a landfall*

Safe-water marks



(fig. 24)

- Colour : red and white vertical stripes
- Form : spherical buoy or pillar or spar with topmark
- Topmark (if any) : single red sphere
- Light (when fitted):
 Colour : white
 Rhythm : isophase, single-occulting, one long flash every 10 seconds or Morse code "A"

C. *Weather signs and signals on lakes*

"Caution" warning

A yellow light producing about 40 flashes per minute constitutes a "caution" warning.

The "caution" warning indicates the probable onset of a dangerous phenomenon without specifying the time thereof.

"Danger" warning

A yellow light producing about 90 flashes per minute constitutes a "danger" warning.

The danger warning indicates the imminent arrival of a dangerous phenomenon.

VII. MARKING OF PROHIBITED OR RESTRICTED AREAS

1. Special marks

Colour:	yellow
Form:	any, but different from navigational marks
Topmark (if any):	single yellow "X" shape
Light (when fitted):	
Colour:	yellow
Rhythm:	any, other than those described in chapter VI.

2. The nature of the prohibition or restriction shall, insofar as possible, be made clear in writing (for instance, in charts) and by local information.

Local information may be carried on yellow buoys. It may also be given by means of topmarks placed on such buoys in lieu of a topmark as prescribed above. For example, buoys at the edge of a zone where navigation is totally prohibited may carry a staff with a rigid, triangular red pennon.

Information may be given on boards placed on the bank and representing any of the prohibitory or informative signs prescribed in annex 7, sections I.A and I.E. Such boards may, if necessary, be supplemented by an arrow indicating the direction of the area to which the sign applies (see annex 7, section II.3).

3. If a shore zone in which one or more types of vessel or activity are prohibited or restricted is crossed by a channel in which one such type of vessel or activity is not prohibited or restricted (except as regards an entrance to a harbour to which section II applies), the sides of that channel may, again, be marked by yellow buoys. The upper parts of the two buoys at the entrance may, if necessary, be painted red

on the right-hand side and green on the left-hand side for a boatmaster leaving the channel.

On the bank, boards as prescribed in annex 7, E.15 to E.20, may indicate the type of craft or activity permitted (e.g. the "water skiing" permission sign to indicate a water-skiing channel across an area where all navigation, or only water skiing, is prohibited); the markings may be supplemented by the arrow prescribed in annex 7, section II.3.

Where a zone open for more than one activity is crossed by a channel in which only one activity is permitted, the sides of that channel may be marked as in the above case. A board on the bank may indicate the activity permitted.

VIII. BUOYS FOR MISCELLANEOUS PURPOSES

If buoys are required for purposes other than those referred to above, they shall be predominantly white. They may carry pictograms.

IX. ENTRANCES TO HARBOURS

1. Marking of the entrance

By day:

To port of a vessel entering: red device, generally cylindrical; or a post with a cylindrical red topmark; or a red rectangle painted in the jetty;

To starboard of a vessel entering: green device, generally conical; or a post with a conical green topmark; or a green triangle, point upward, painted on the jetty.

At night:

The day markings described above may be illuminated.

If lights are used:

To port of a vessel entering: a red light, generally rhythmic;

To starboard of a vessel entering: a green light, generally rhythmic.

In certain cases, only one of these lights may be used.

2. This marking may be also used for entrances to tributary waterways, entrances to secondary arms of waterways and entrances to docks.

The following sketch illustrates the provisions of chapters VI, VII and IX.

