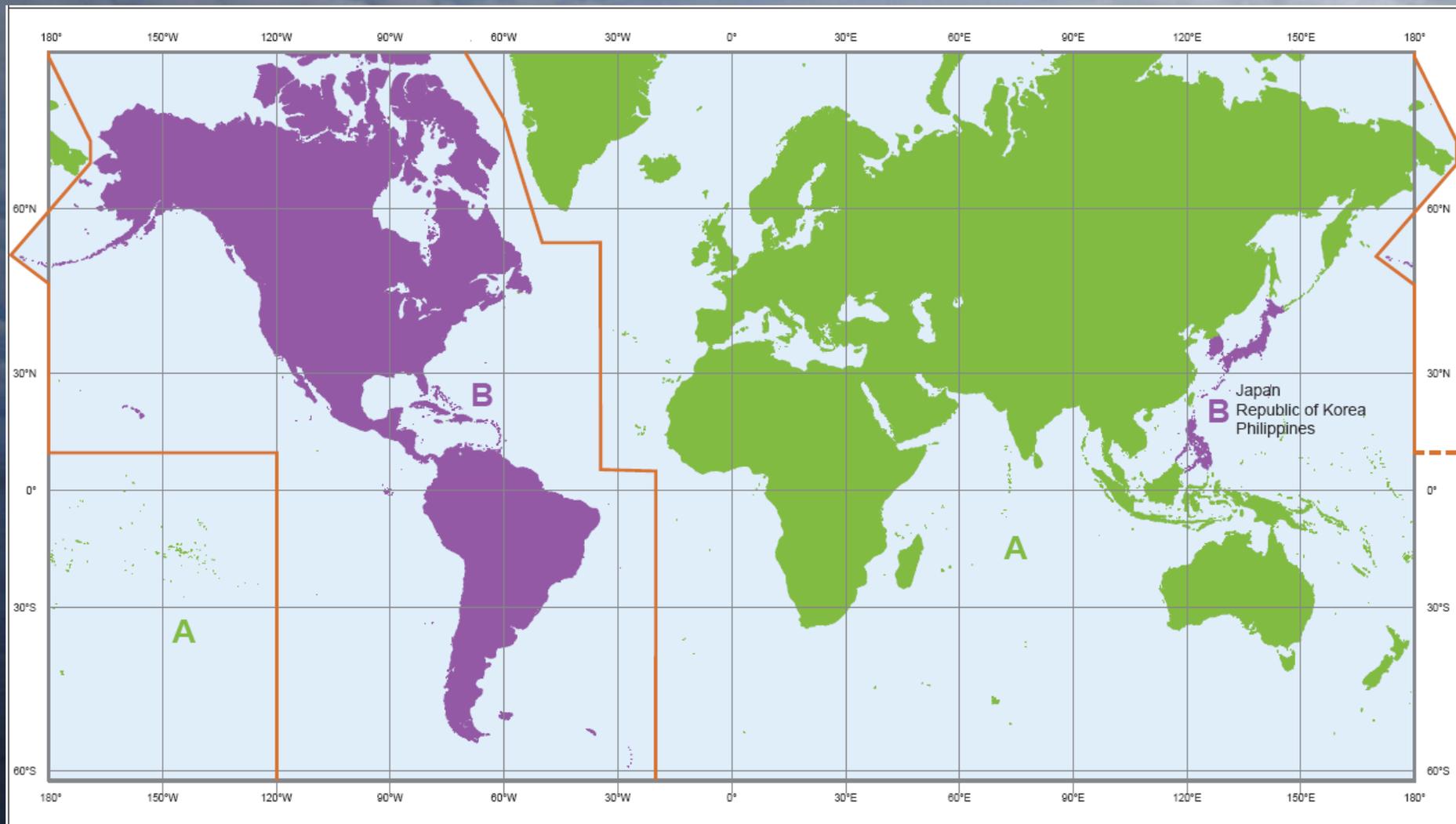


IALA Buoyage System and Visual Aids to Navigation

by Aleksandr D. Pipchenko

IALA buoyage regions chart



Which types of marks are provided by the system?

Six types of marks provided by the system:

- *Lateral Marks: indicate the edge of a channel*
- *Cardinal Marks: indicate the position of a hazard and the direction of safe water*
- *Isolated Danger Marks: indicate a hazard to shipping*
- *Safe Water Marks: indicate the end of a channel and deep, safe water is ahead*
- *Special Marks: indicate an area or feature such as speed restrictions or mooring area*
- *Emergency Wreck Marking : to indicate a wreck which is not fully surveyed*

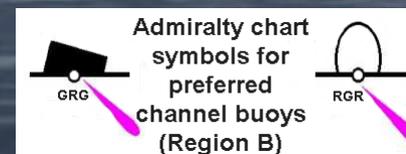
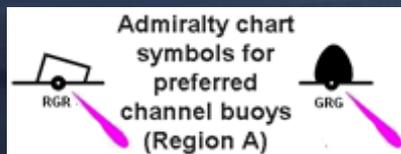
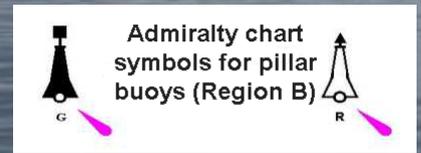
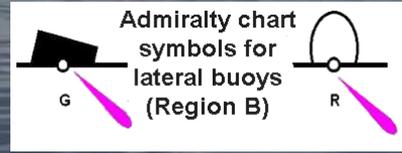
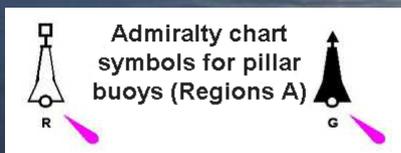
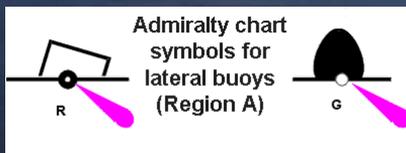
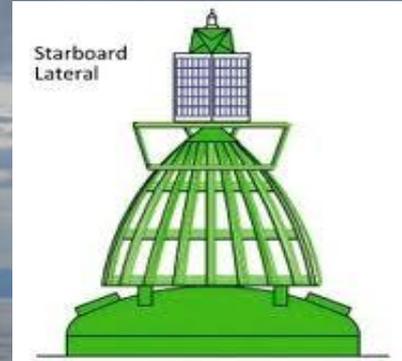
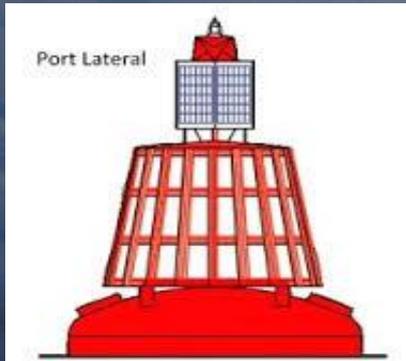
Lateral Marks are the only marks that differ by region, the other four marks are common to both Region A and Region B.

Lateral Marks

Use

Lateral marks are generally used for well-defined channels in conjunction with a **Conventional Direction of Buoyage**.

They indicate the port and starboard sides of the route to be followed.



Lateral Marks: Region A

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), which are used on modified Lateral marks to indicate a preferred channel. Examples are:

	RED LIGHT		GREEN LIGHT	
Q. R		Continuous quick light		Q. G
Fl. R		Single-flashing light		Fl. G
LFl. R		Long-flashing light		LFl. G
Fl(2)R		Group flashing light		Fl(2)G

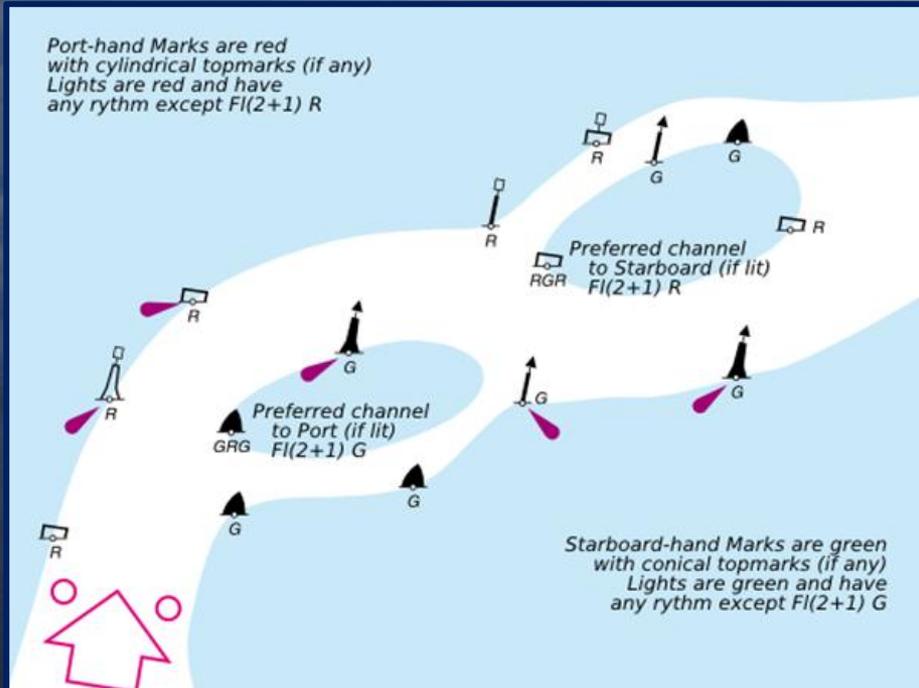
The lateral colours of red or green are frequently used for minor shore lights, such as those marking pierheads and the extremities of jetties.

Chart Symbols & Abbreviations

Lateral Marks

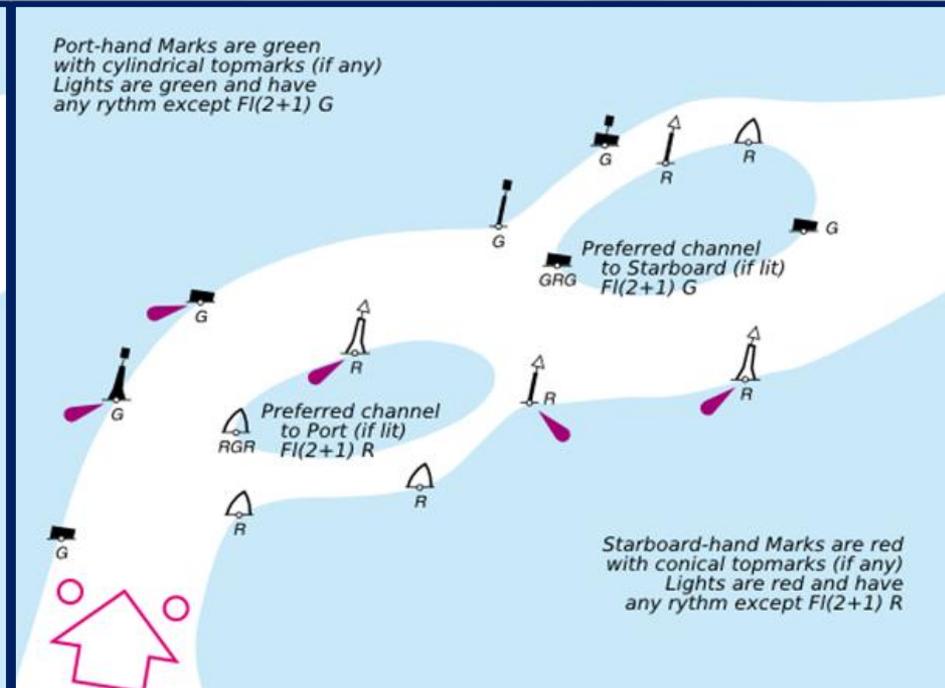
REGION A

Port-hand Marks are red with cylindrical topmarks (if any)
Lights are red and have any rythm except Fl(2+1) R



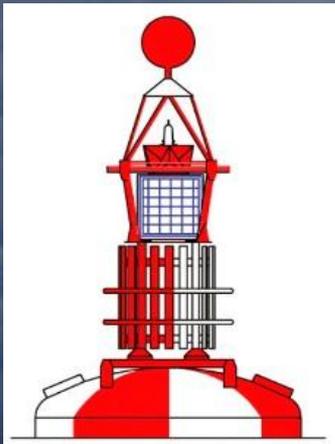
REGION B

Port-hand Marks are green with cylindrical topmarks (if any)
Lights are green and have any rythm except Fl(2+1) G



Safe Water Mark

Safe Water Marks may be used mid-channel, as a centreline or at the point where land is reached. These buoys (as the name suggests) indicate the presence of safe, navigable water all around the buoy. They may also indicate the best point of passage under a fixed bridge.



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

UNLIT MARKS



LIGHTED MARKS



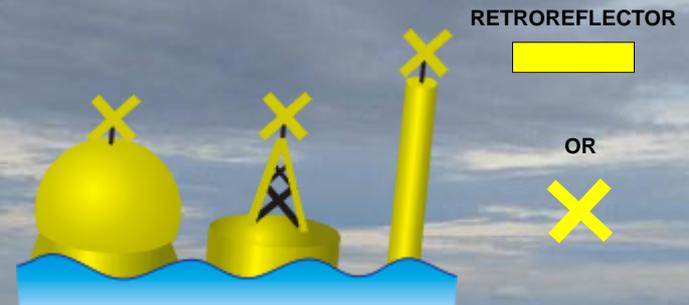
Light (when fitted): **White**, Isophase, or Occulting, or Long-Flashing every 10 seconds, or Morse Code (A)



USEFUL TIP. SAFE WATER BUOYS OFTEN INDICATE BEGINNING OF THE CHANNEL. SO-CALLED "SEA BUOY"

Special Marks

Colour: Yellow
 Shape: Optional
 Topmark: Yellow X optional
 Retroreflector: Yellow



Light (when fitted): **Yellow**, and may have *any* rhythm not used for white lights

UNLIT MARKS



LIGHTED MARKS



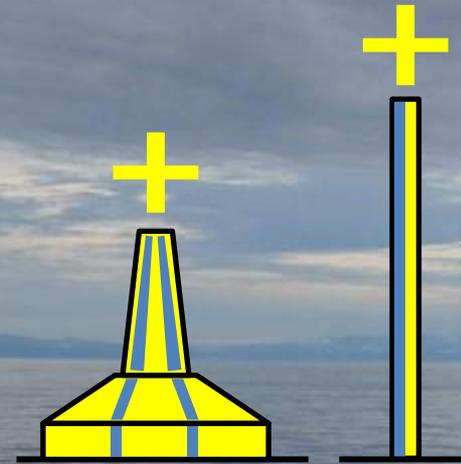
Emergency Wreck Buoy



Colour: Yellow and blue stripes
(minimum 4, maximum 8)

Shape: Pillar or spar

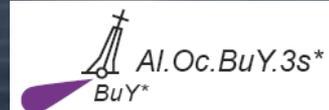
Topmark: +



 Bu1.0s+0.5s+Y1.0s+0.5s

Light: Blue and yellow alternate flashing

LIGHTED MARKS ONLY



Buoys and Beacons

There is some great difference between buoys and beacons.

Beacons are fixed structures, driven into the sea bed or standing on concrete footings in shallow water.

Buoys are floating chambers of various shapes, anchored to the seabed where it is too deep for a fixed structure.

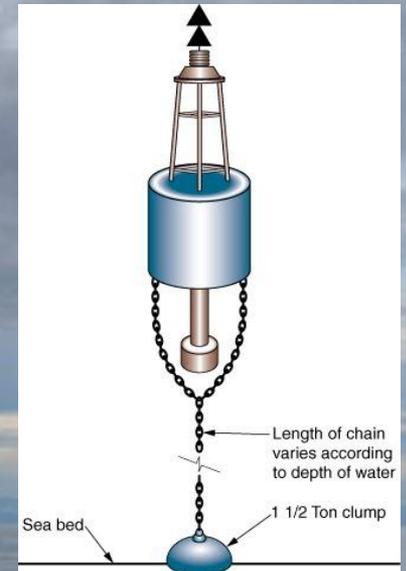
There are several methods of constructing and mooring navigation buoys. The one sketched from right is commonly found around the world. At low tide the anchor chain is lying at random around the dump.

It is possible for buoys to be dragged off location by a very significant distance. As well, the tide causes the buoy to swing in a large circle on the surface.

The radius of this circle is known as the “excursion radius” and even if the dump is located precisely, the position of the buoy varies according to the excursion radius, which in turn depends on the depth of water and length of chain and strength of tide. A very strong tide can even drag a buoy below the surface.

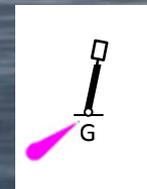
Therefore, beacons – are good aids to make a position fix, buoys are not!

Typical buoy arrangement:

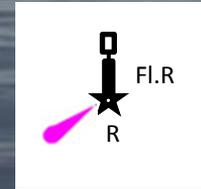


ON CHART:

BUOY

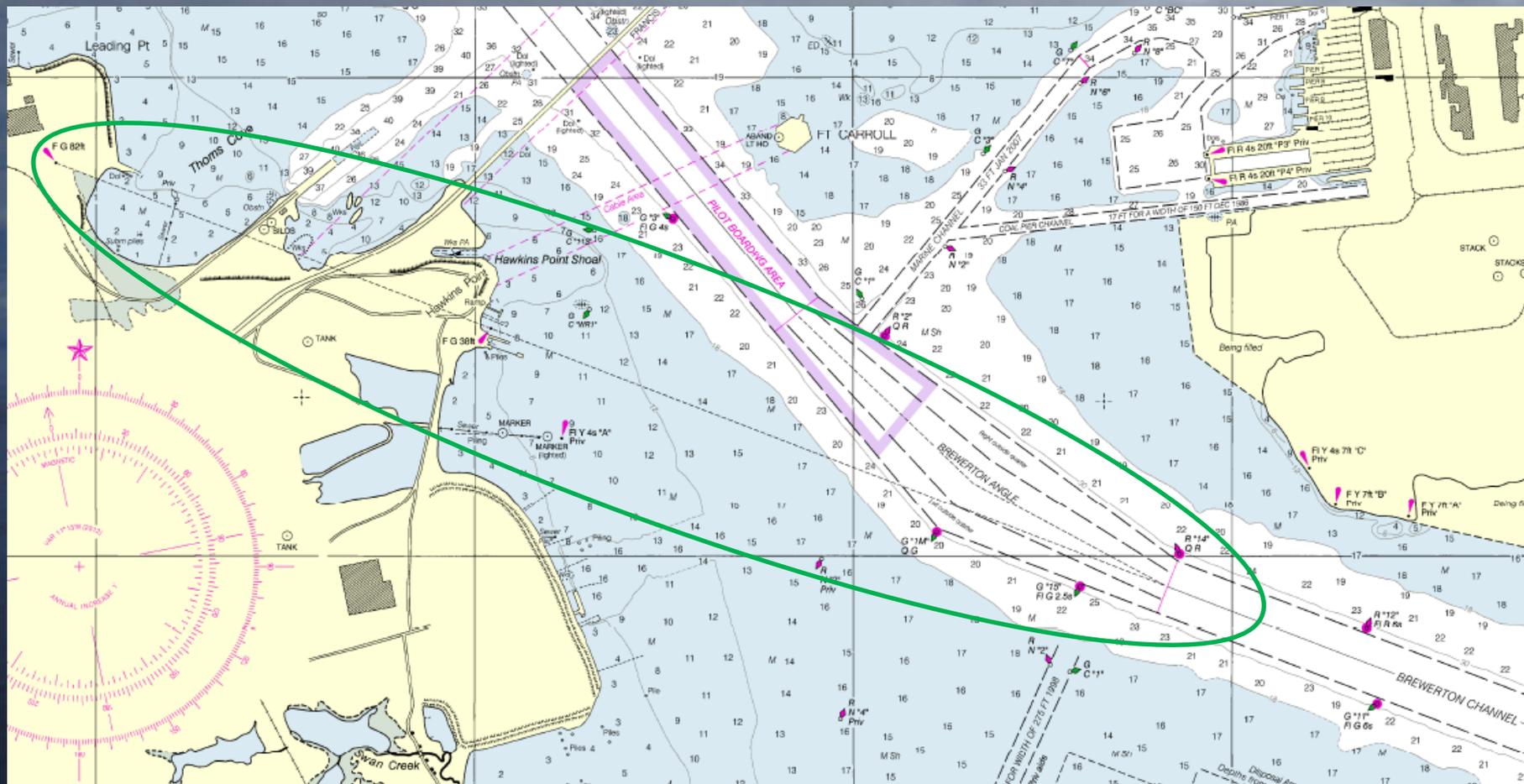


BEACON



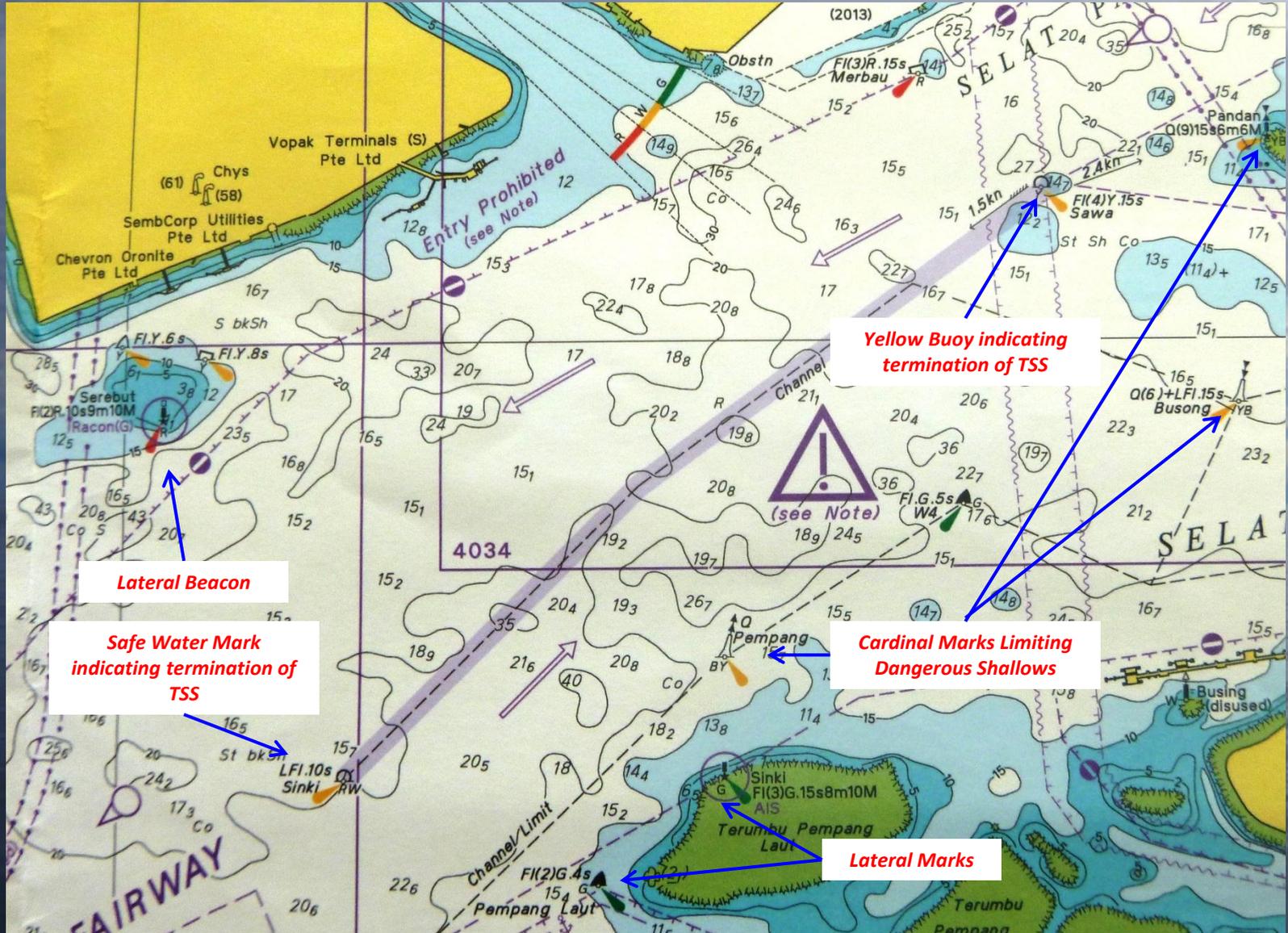
The difference is ★ sign

Leading Light on the chart indicating the middle of the channel



Live Charted Examples

BUOYAGE IN TSS (Traffic Separation Scheme)



THANK YOU FOR ATTENTION!

Bon Voyage!