

AIDS TO NAVIGATION



OBJECTIVES:

Make you aware of the Aids to Navigation
Protection Regulations

Help you identify the different types of aids to
navigation, including their shapes and light

Intro to Navigational Aids

On land you have roads that you drive on. These roads have painted lines, signs and traffic lights to assist or help you navigate to where you are going. The roads are built to safely get you to where you want to go.

On the other hand, on the water, there are no roads or even defined paths, but rather just markers or Navigation Aids that assist you in keeping out of harms way. Some are obvious to figure out, (there are rocks ahead of you and in the water in front of them is a buoy). Others, not so! There is a buoy in the middle of nowhere with water all around it? It's amazing what the sea can hide, especially the tide. The previous two examples are the same place, just 8 hours apart.

The difference between water and land is.....you can't see under water until it is too late! Therefore, knowing the navigation aids is critical, especially in a bigger boat with a lot of draft.

Navigational Aids

- Any device external to a vessel intended to assist in determining position and safe course, or to warn of dangers or obstructions.
- Navigation aids are designed for visual effect;
 - At night – some have lights with different colours,
 - For bright light – painted different colours,
 - For dim light – specific shapes and top markers

Direction of Travel

- When using some Navigation Aids, you need to know one very important thing; are you going upstream (into harbour, up a river)? or downstream? This is not always easy to know.
- When proceeding Upstream – you keep Port buoys (green) to port and Starboard buoys (red) to starboard. Reversed when going downstream.

Buoyage System

- Buoys
 - mark safe channels
 - warn of dangers
 - mark anchorages or keep-out areas



Buoyage System

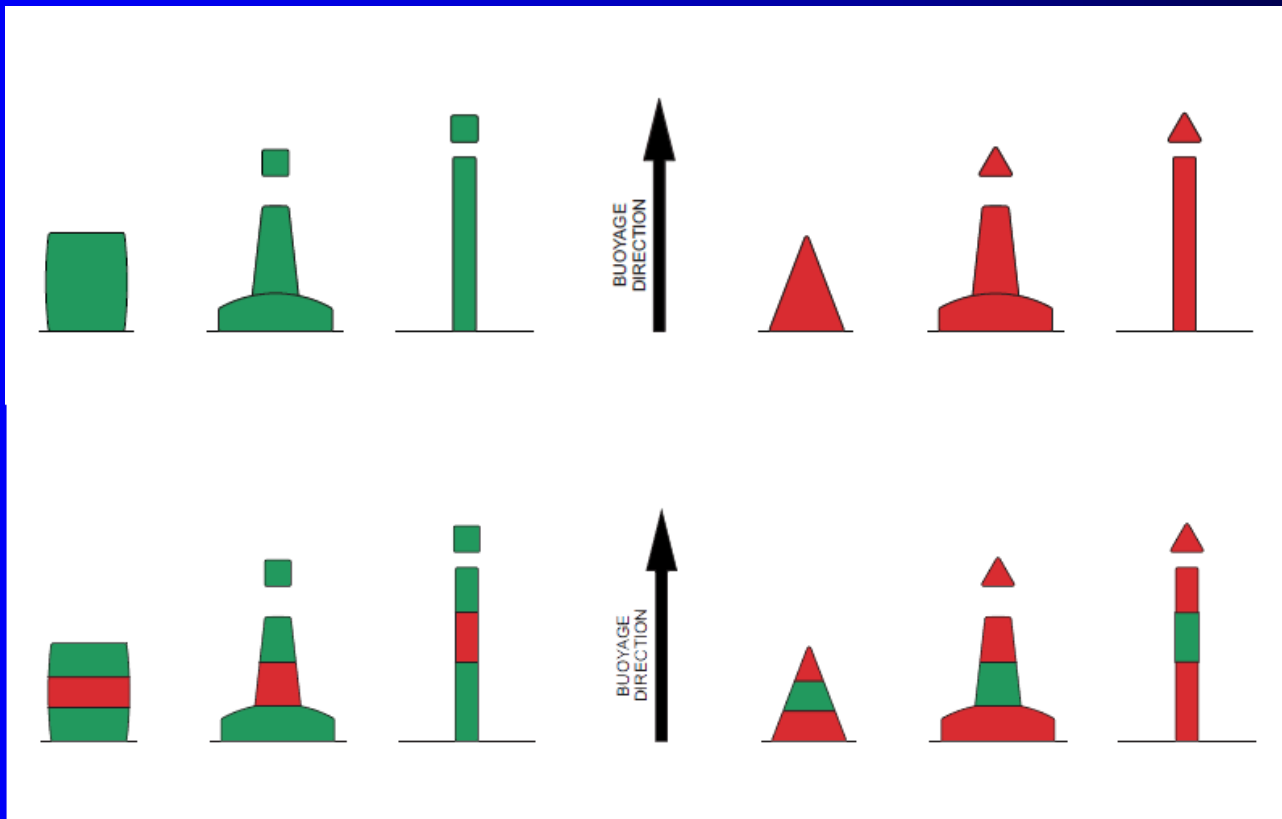
A word of Caution

Navigation buoys are not 100% accurate navigation points, as they are pushed in the direction of the tidal flow

The lower the tide the more the buoy itself can move away from the charted position.

A large storm or a vessel striking the buoy can also move its location as it is only anchored in position

Lateral Buoys

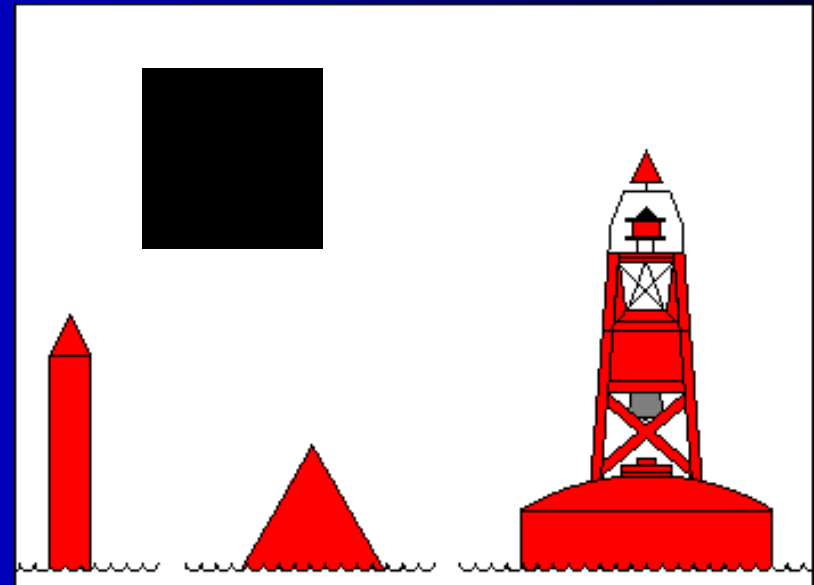


Starboard Hand Buoys



Starboard Hand Buoys

- **Red**
- Conical Top
- Spar, Can, Lighted Pillar
- Keep to starboard when traveling upstream or entering a harbour
- Red Light if equipped
- Even numbered

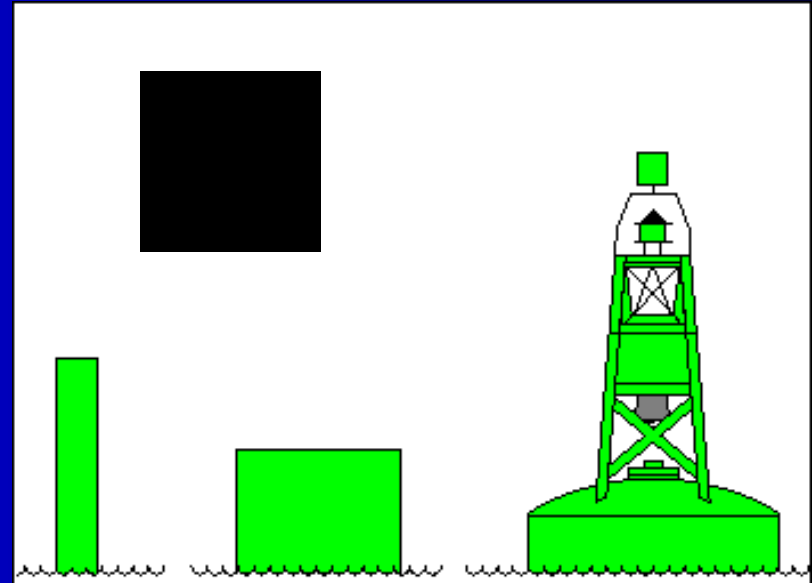


Port Hand Buoys

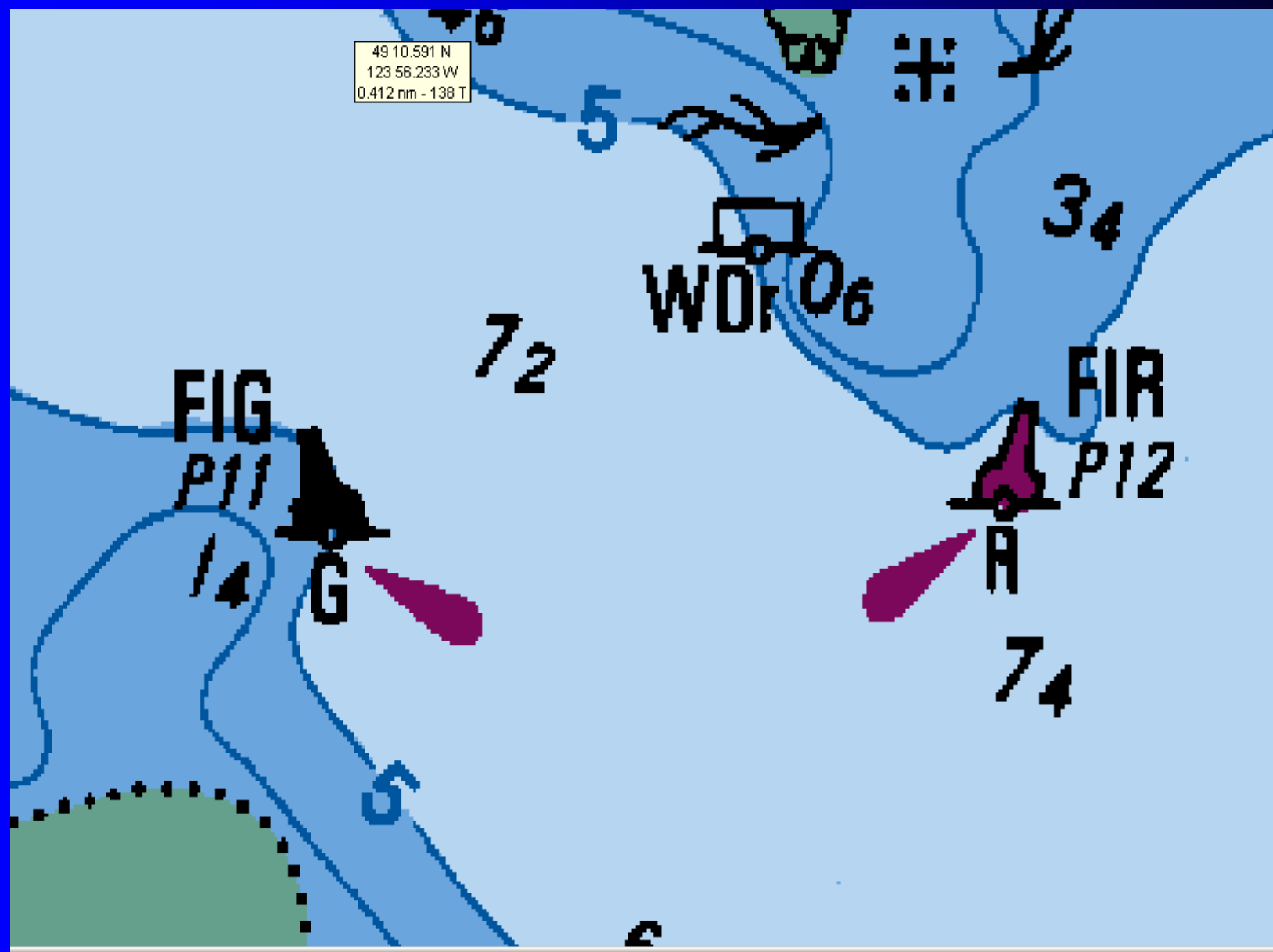


Port Hand Buoys

- Green
- Flat Top
- Spar, Can, Lighted Pillar
- Keep to port when traveling upstream or into harbour
- Green Light if Equipped
- Odd Numbered



49 10.591 N
123 56.233 W
0.412 nm - 138 T

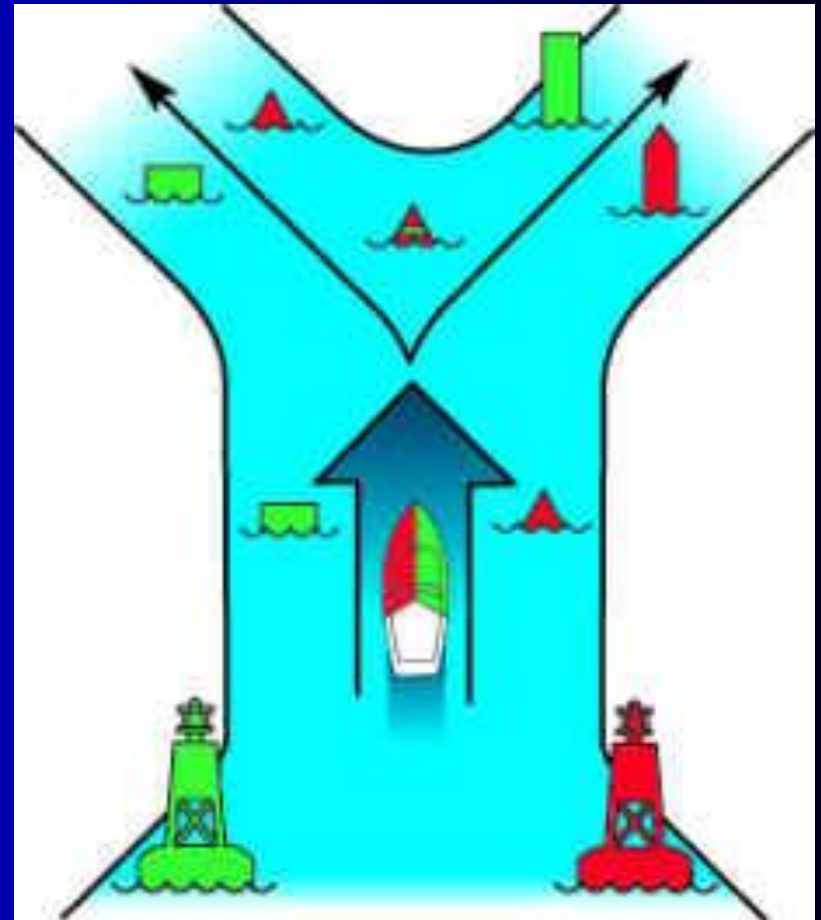


Bifurcation Buoys



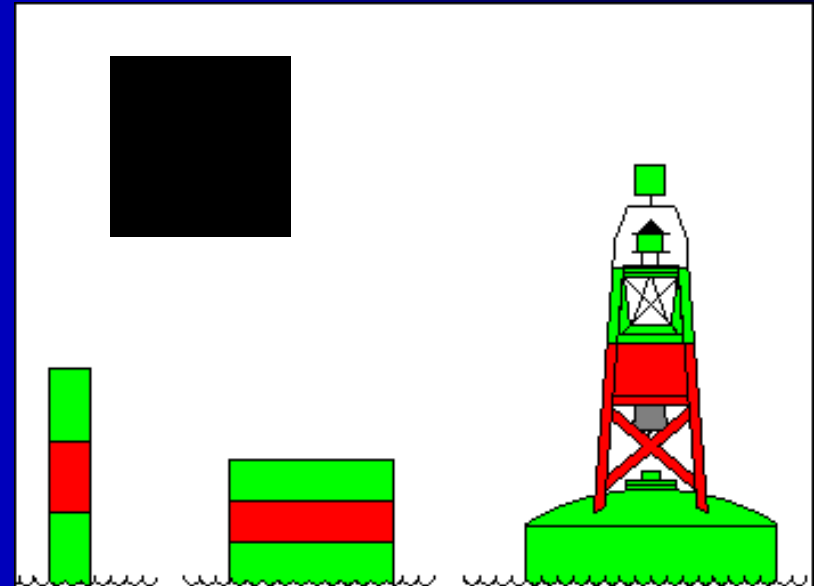
Bifurcation Buoys

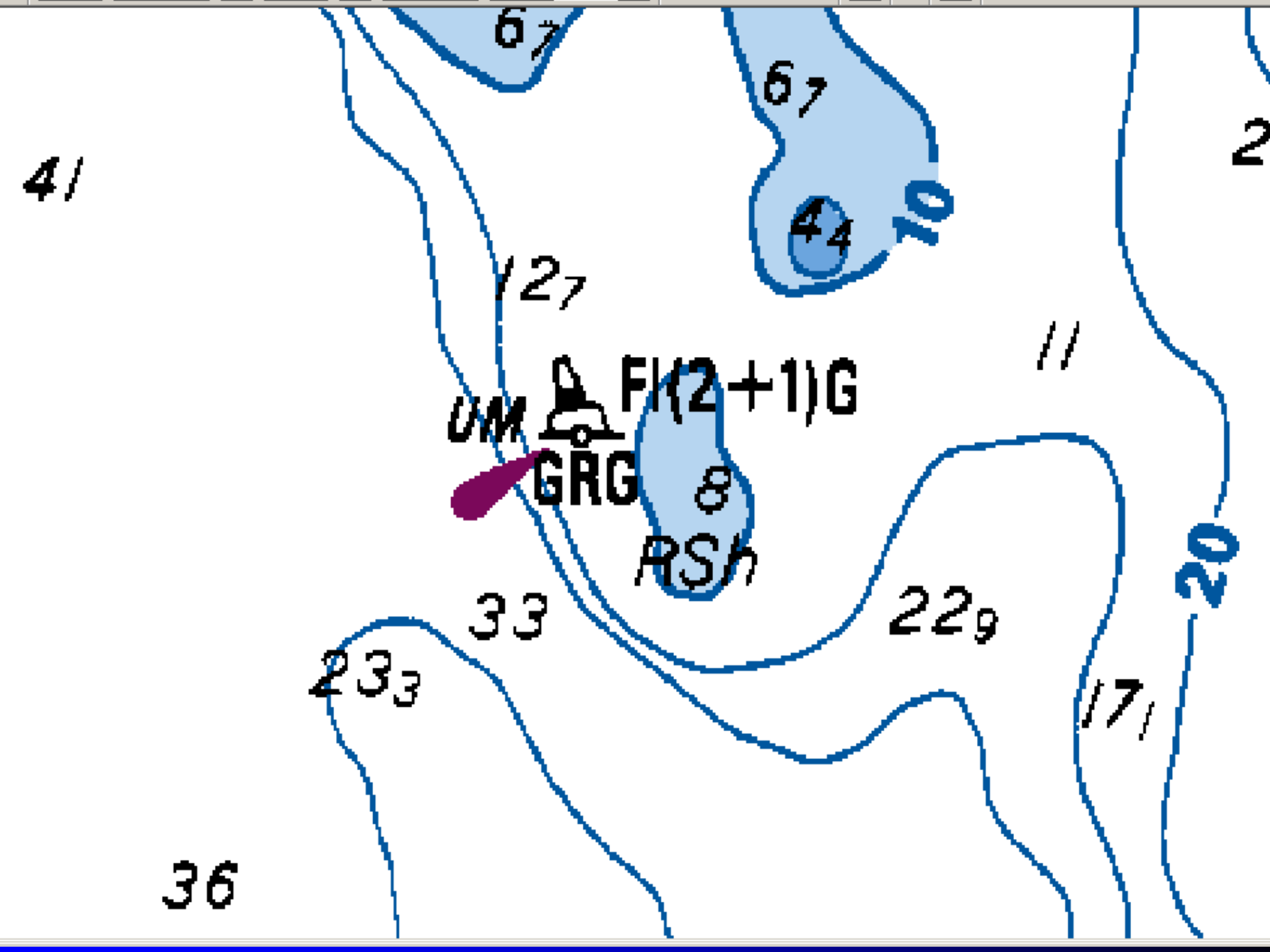
- Marks where a channel divides when traveling upstream
- Either side can be traveled
- Preferred side is indicated by top colour
- Can, Spar, Lighted Pillar Buoy



Port Bifurcation Buoy

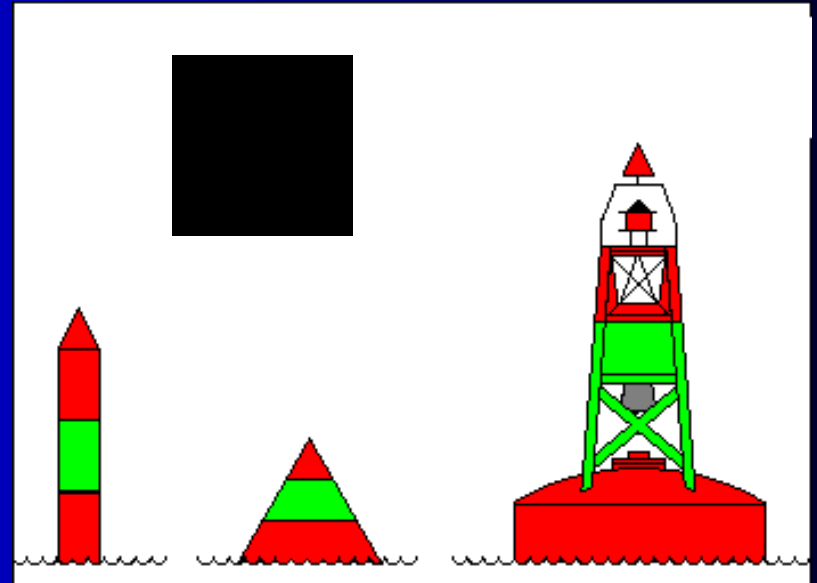
- Green Red Green
- Keep on port side is preferred
- Green Light if lighted
- Odd Numbered

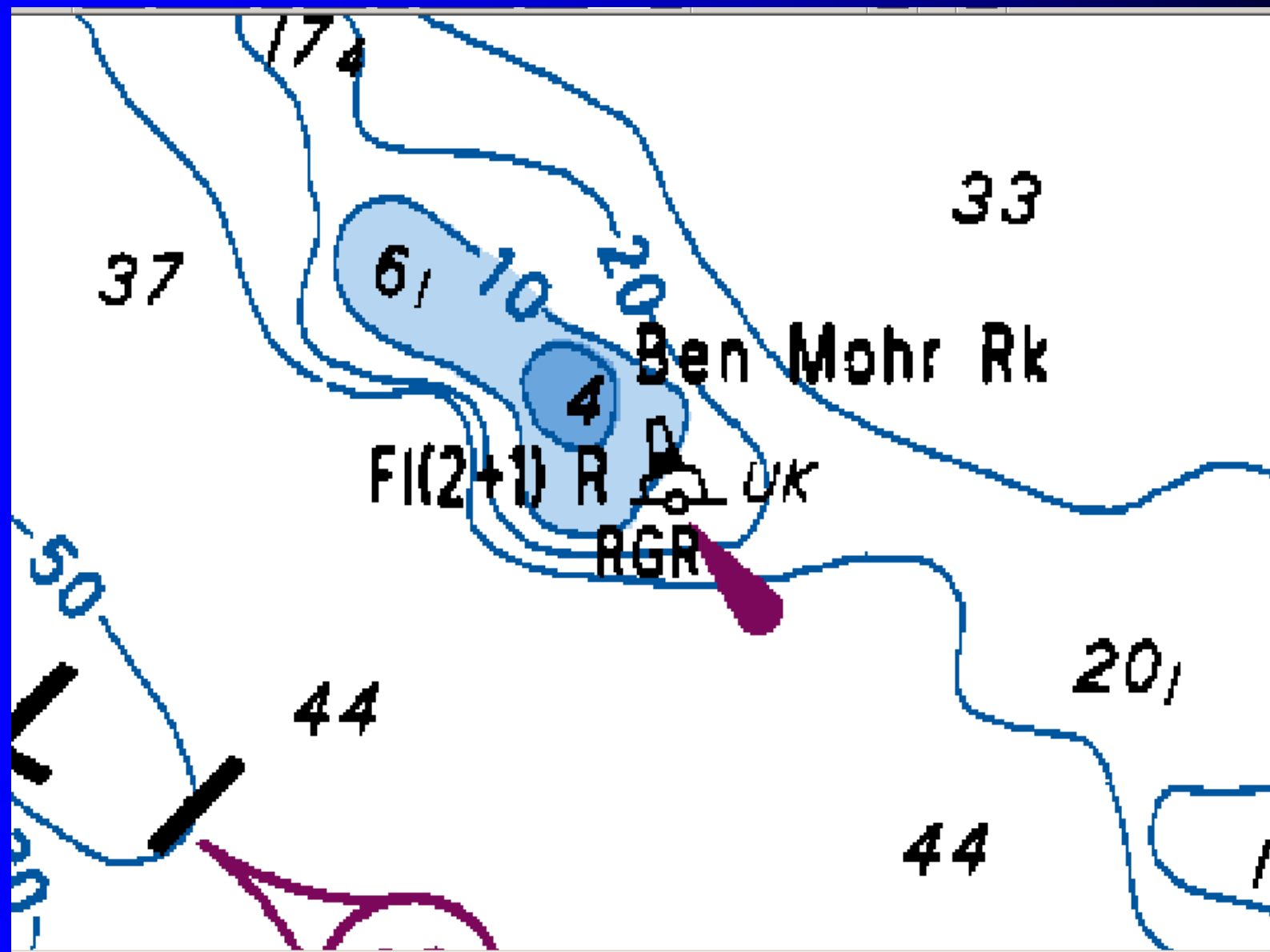




Starboard Bifurcation Buoy

- **Red Green Red**
- Keep on Starboard side is preferred
- Red Light if lighted
- Even Numbered





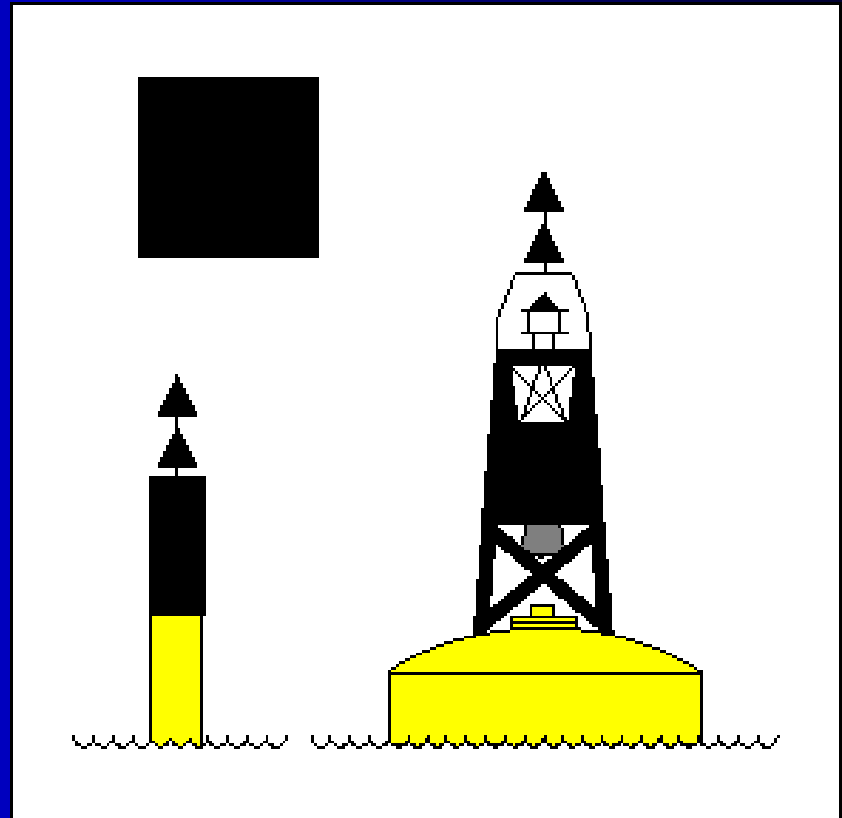
Cardinal System of Buoyage

- indicate the approximate true bearing of safe water from the danger it marks.
 - Mark offshore rocks, shoals, and islets.
 - Mark dangers in and near the open sea.



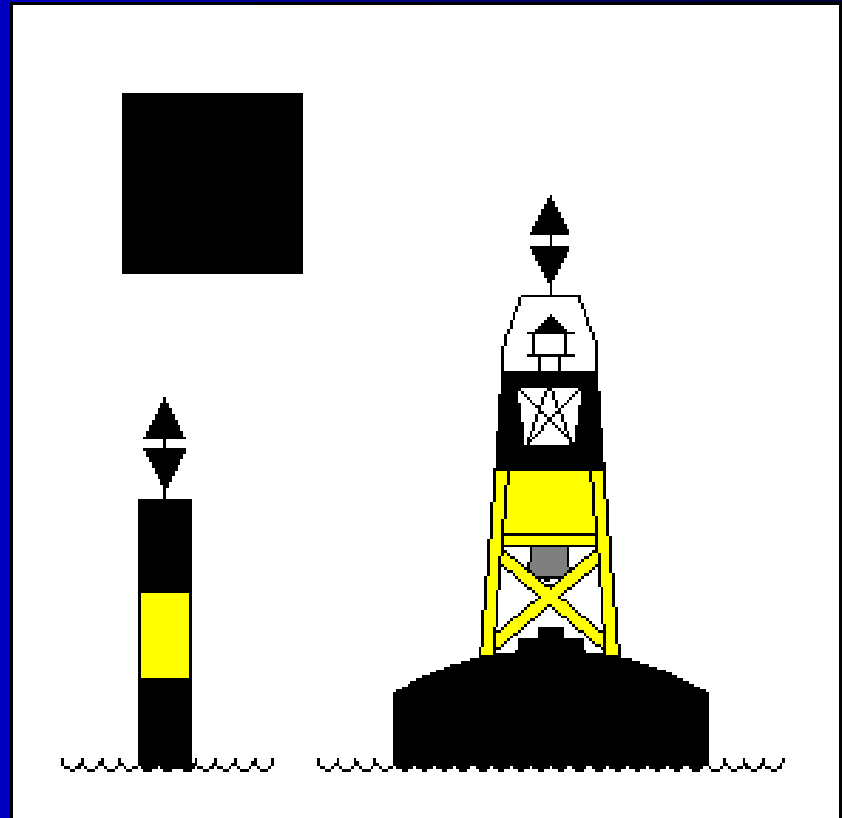
North Cardinal Buoy

- Both cones point up
- **Black** over **Yellow**
- Indicates safe water is to the north
- Buoy lies north of the danger



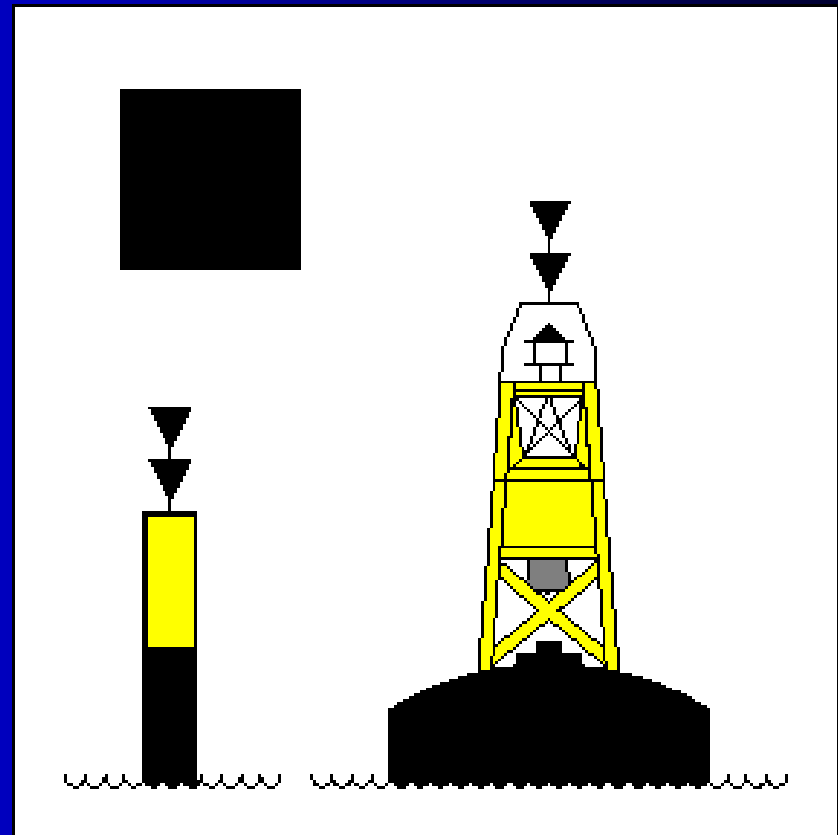
East Cardinal Buoy

- Both cones point away from each other
- **Black Yellow Black**
- Indicates safe water is to the east
- Buoy lies east of the danger



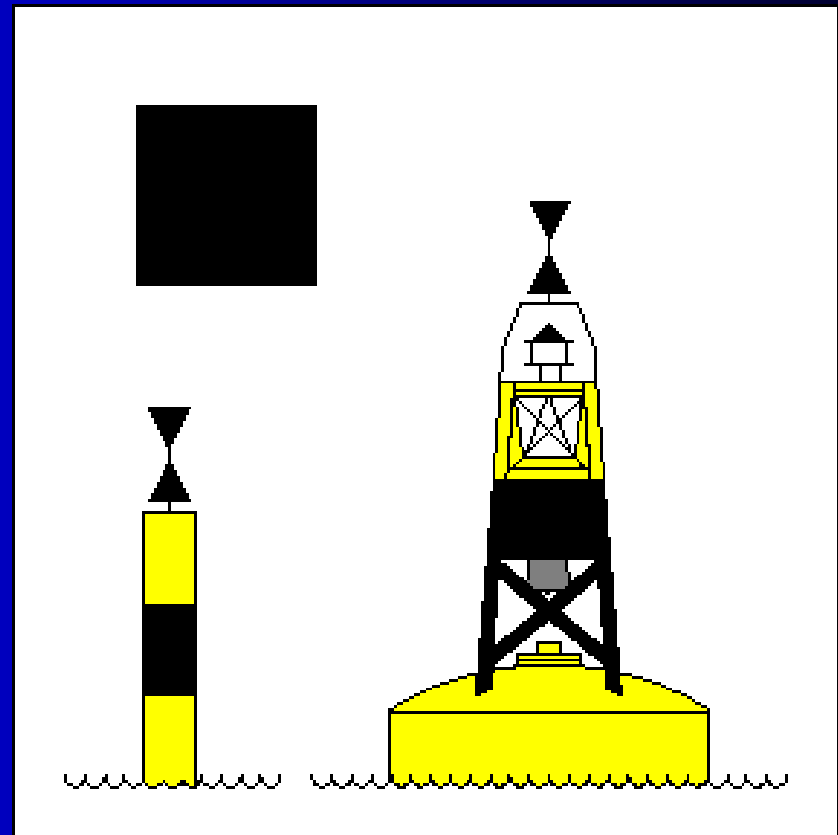
South Cardinal Buoy

- Both cones point down
- **Yellow** over Black
- Indicates safe water is to the south
- Buoy lies south of danger

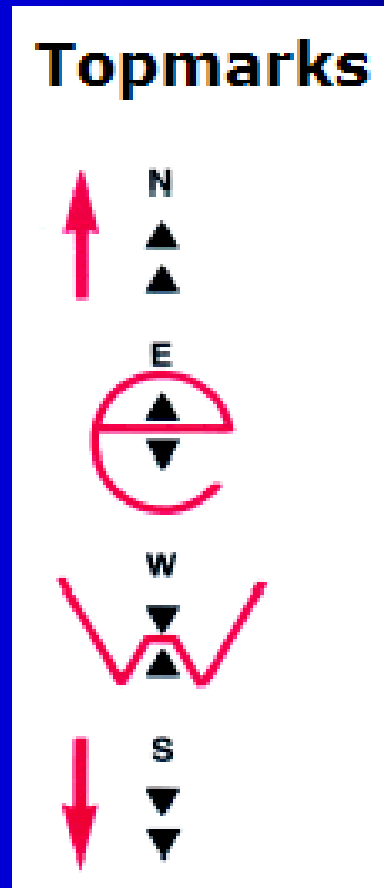


West Cardinal Buoy

- Both cones point towards each other
- **Yellow Black Yellow**
- Indicates safe water is to the west
- Buoy lies west of the danger



Simple way to remember

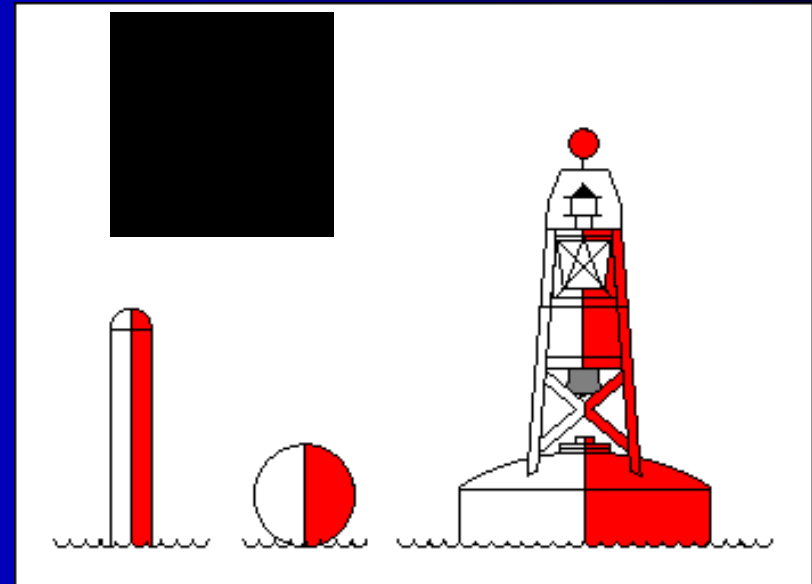


Fairway Buoys



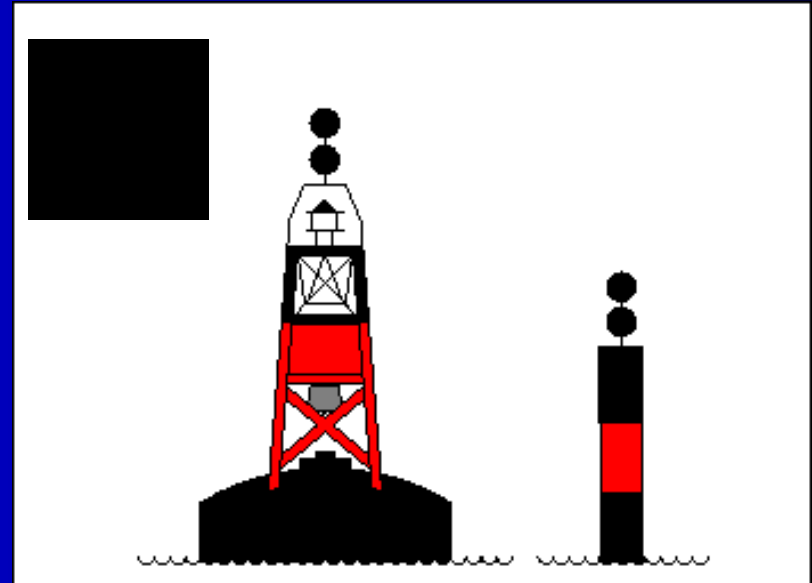
Fairway Buoy

- **Red** and **White** vertical stripes
- Spherical Top
- White light if equipped
- Used to mark channel entrance or channel centre



Isolated **Danger** Buoy

- Black **Red** Black
- Two black spherical topmarks
- White light if equipped
- Moored on or above an isolated danger such as shoal or wreck



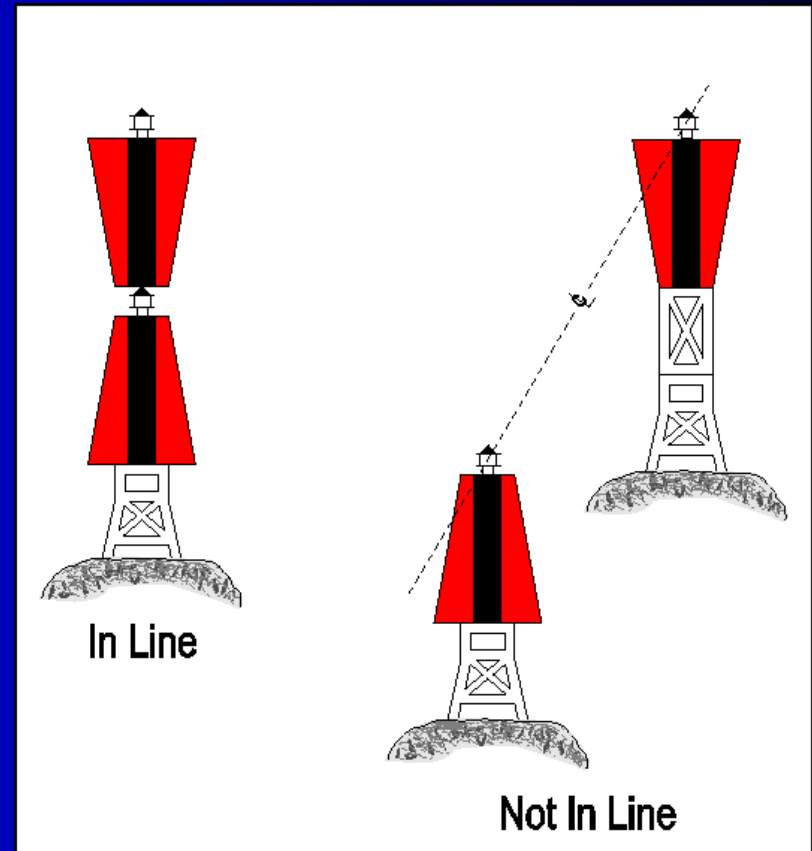
Fixed Aids to Navigation

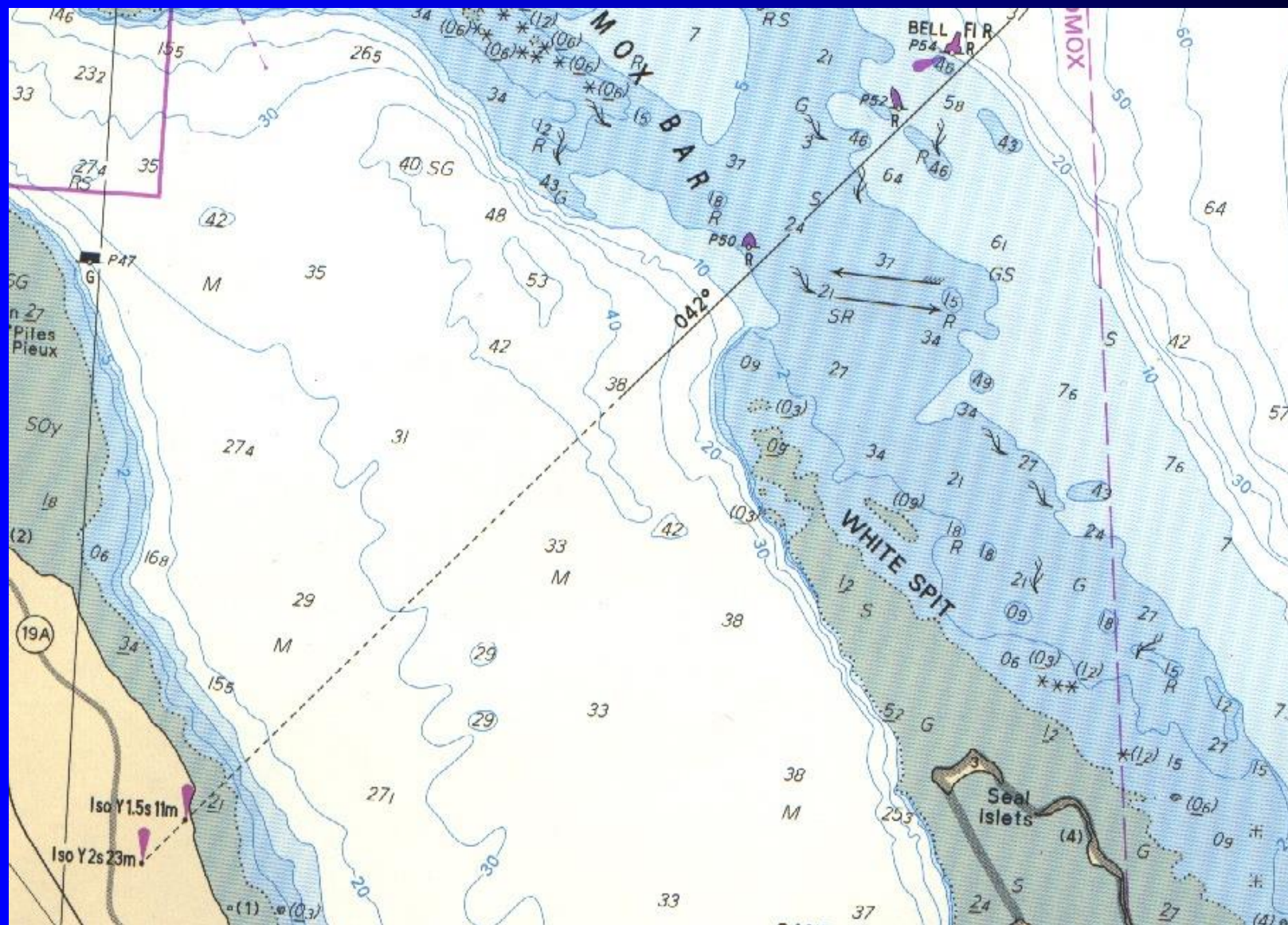
These are near shorelines or on built up, man made piers in or near waterways

Fixed Aids to Navigation

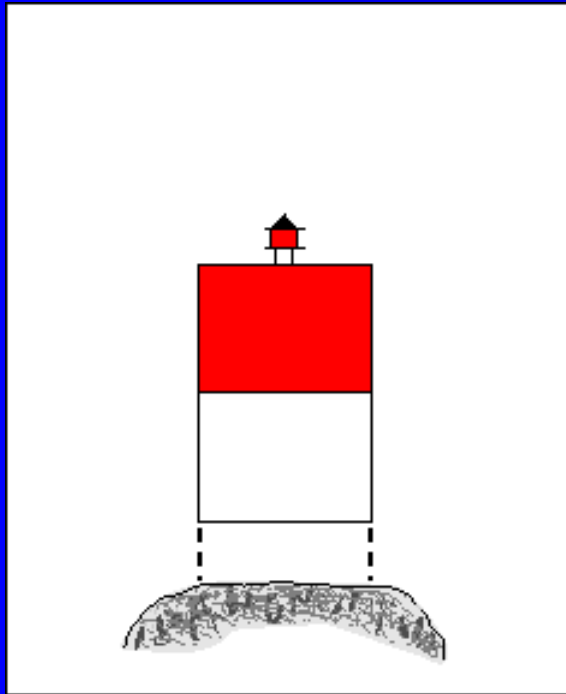
Range Markers

- Provides a leading line for navigators
- When both marks are in line you are on the recommended track
- Steer to the lowest marker if off track
- Can have lights

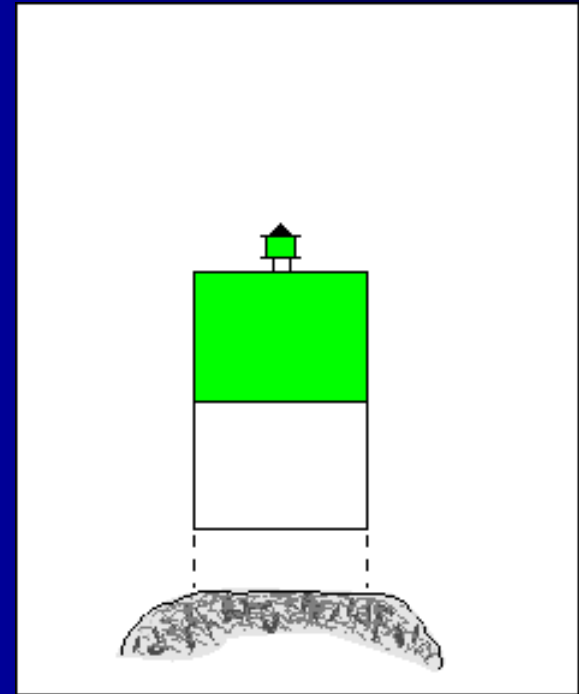




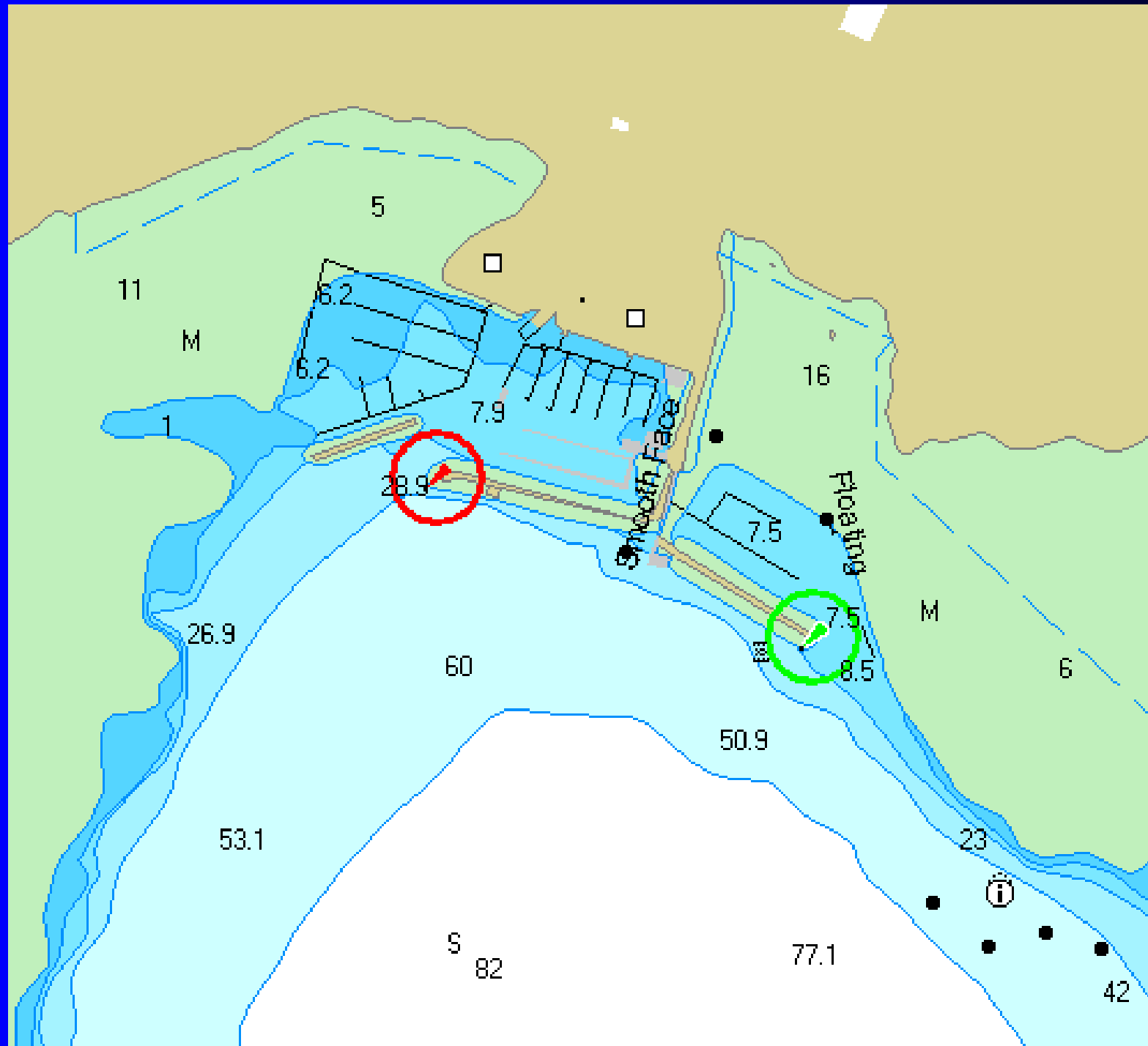
Fixed Aids To Navigation



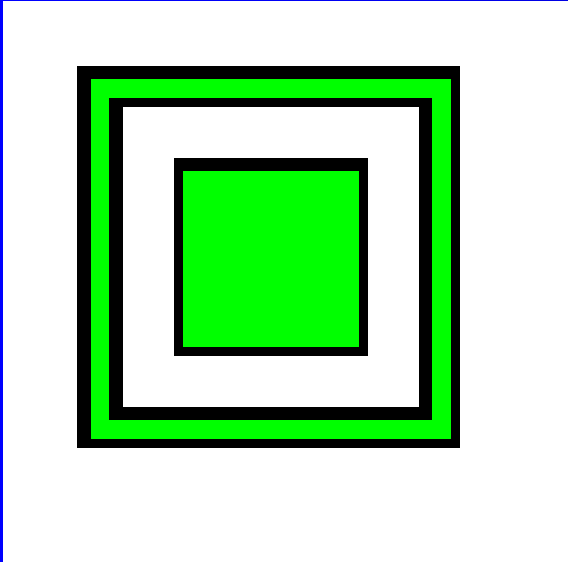
Starboard Hand Lighted Aid



Port Hand Lighted Aid

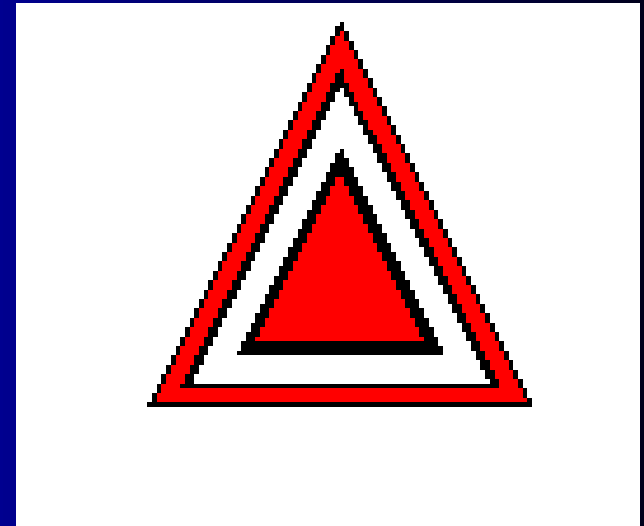


Fixed Aids To Navigation



Port Hand Day Beacon

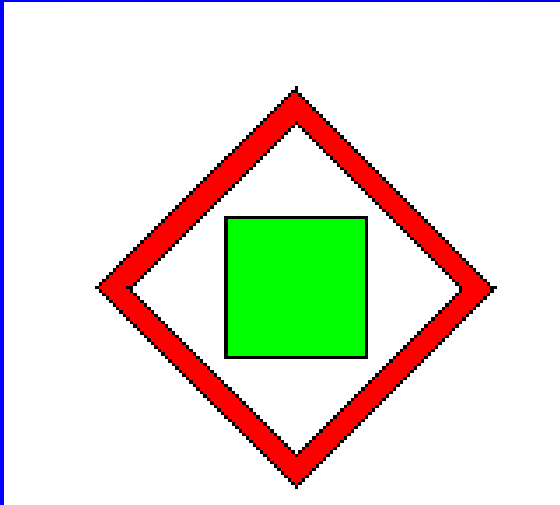
- **Black** or **Green** square centred on White background with Green reflective border



Starboard Hand Day Beacon

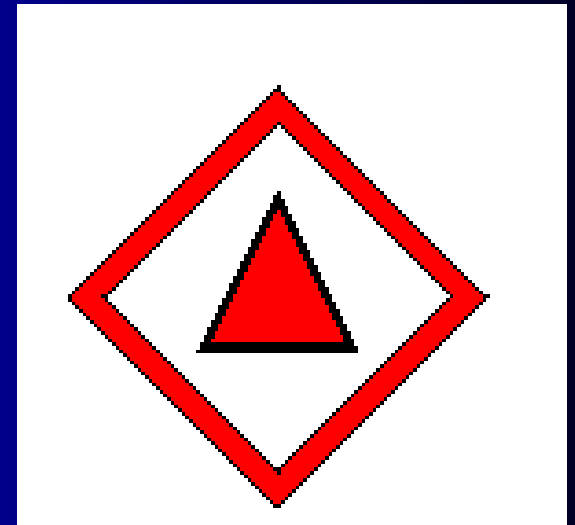
- **Red** triangle centred on **White** background with red reflective border

Fixed Aids To Navigation



Port Bifurcation Daybeacon

- Marks where channel divide
- Keep marker on port side is the preferred channel



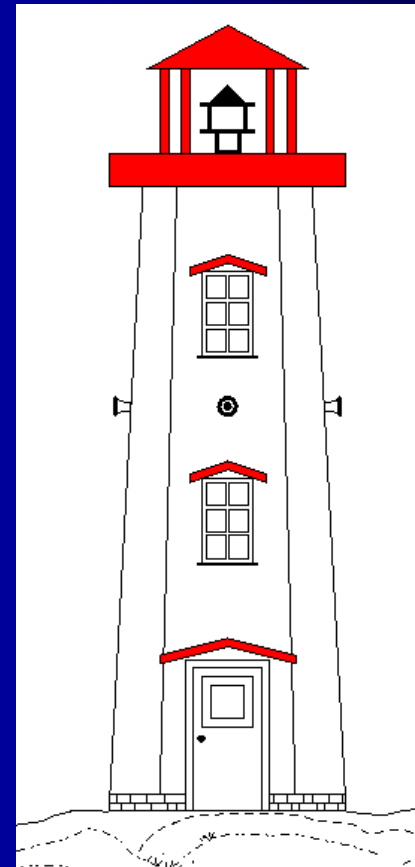
Starboard Bifurcation Daybeacon

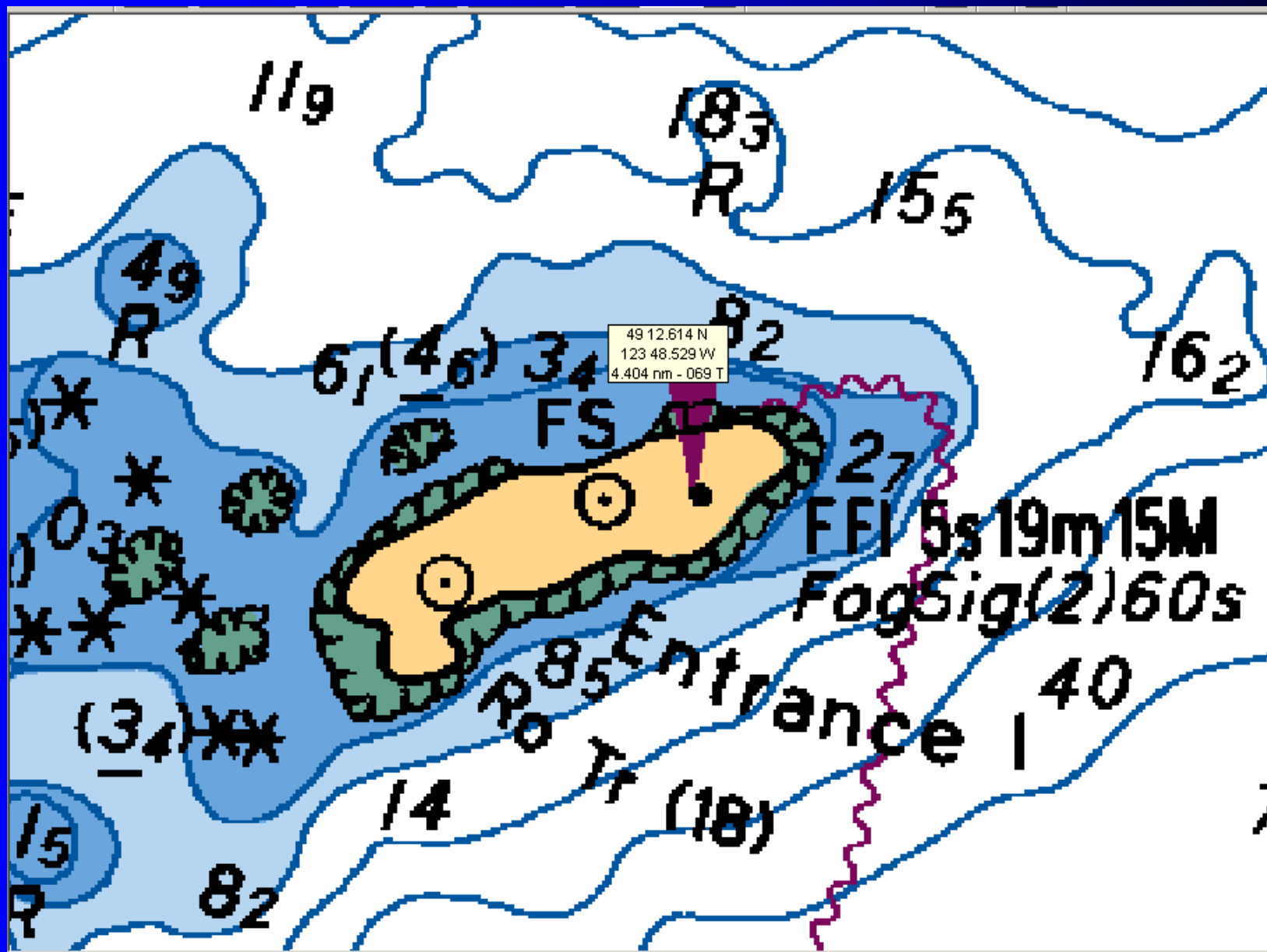
- Marks where channel divides
- Keep marker on starboard side is the preferred channel

Fixed Aids To Navigation

Lightstation

- List of light characteristics are displayed on chart
- May have light, fog signal, Radio Beacons

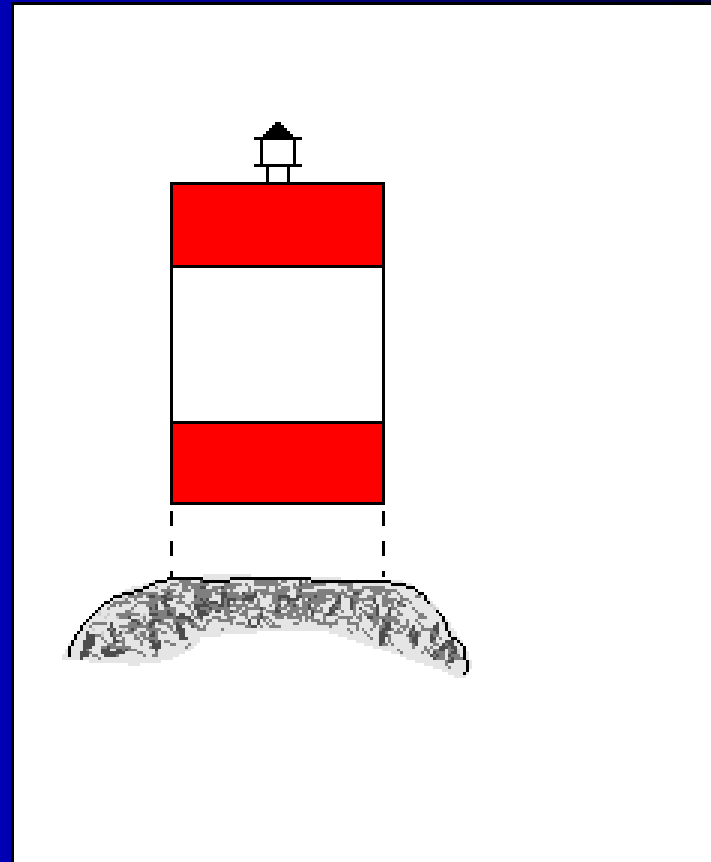


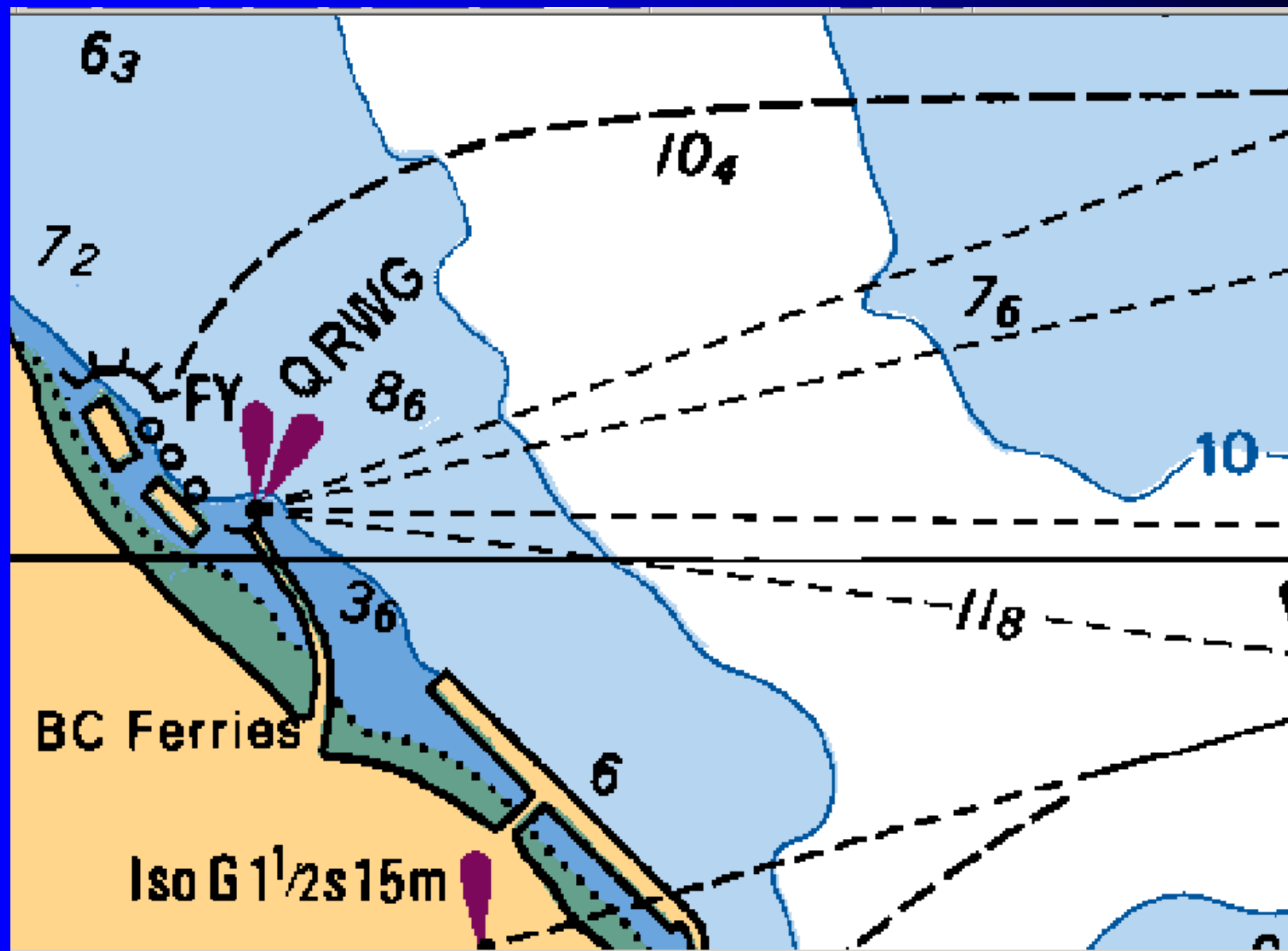


Fixed Aids To Navigation

Sector Light

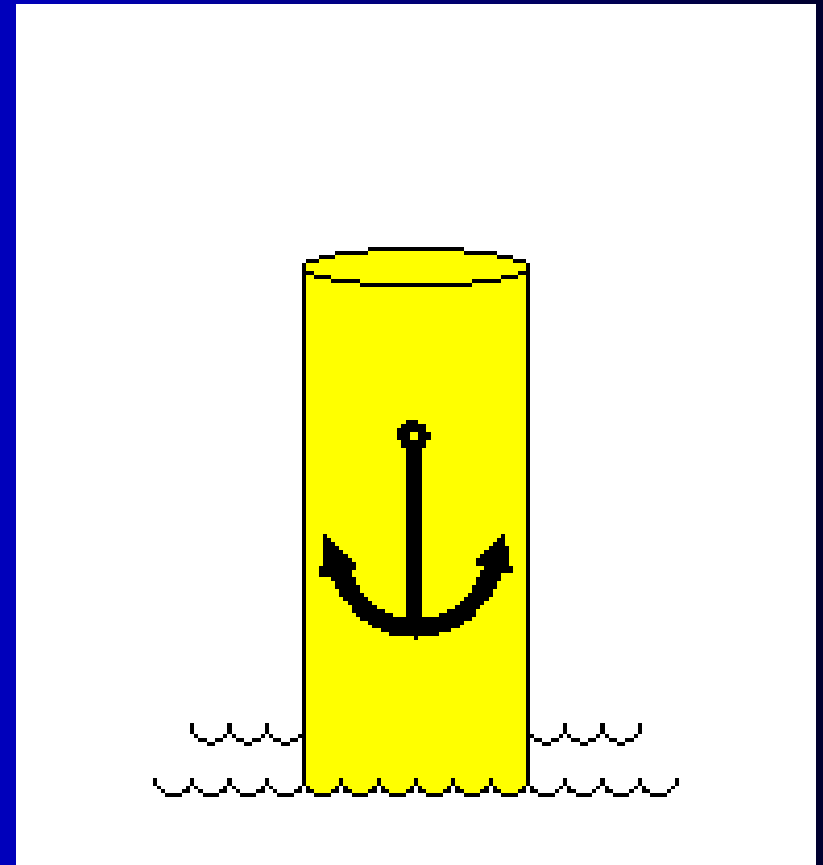
- Lights are divided into different sectors RWG
- As you cross a sector light the different colour sectors provide a warning or leading line for mariners





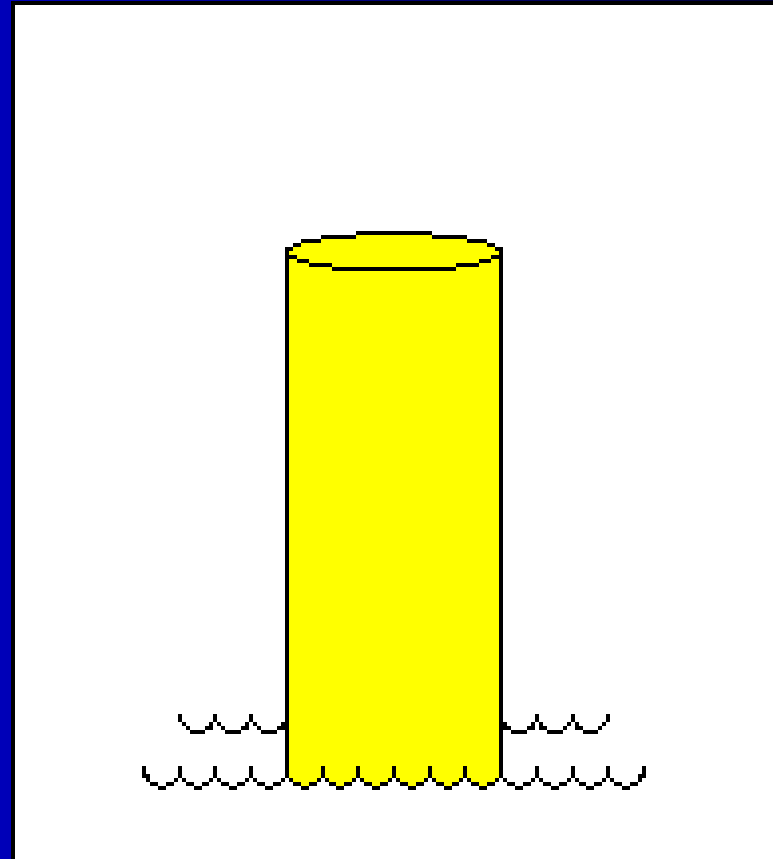
Special Buoys (Anchorage)

- **Yellow**
- Marks the perimeter of a designated anchorage area
- Yellow light if lighted



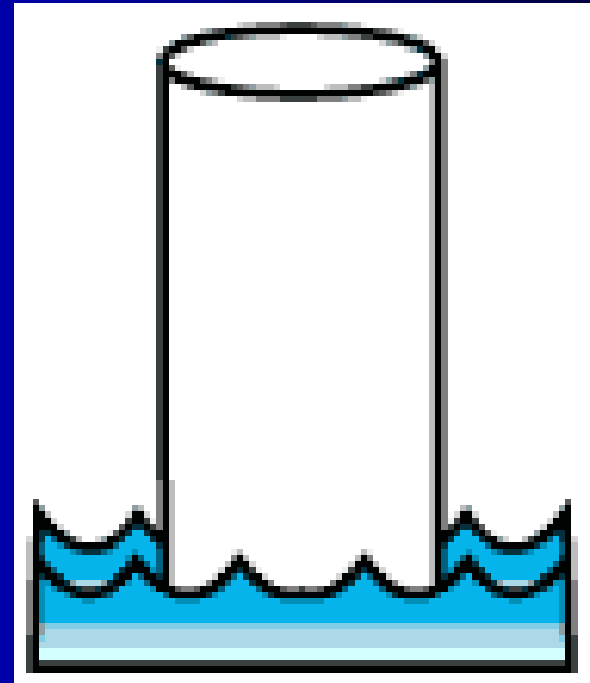
Special Buoys (Cautionary)

- **Yellow**
- Marks dangers such as race course, seaplane base, and areas where no through channel exists
- Yellow light if lighted

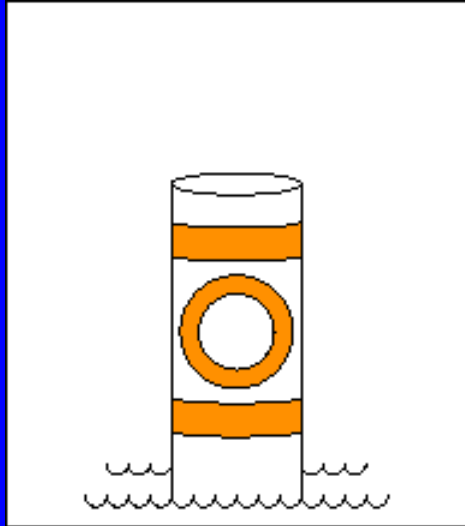


Special Buoys (Swimming)

- **White**
- Marks perimeter of a swimming area

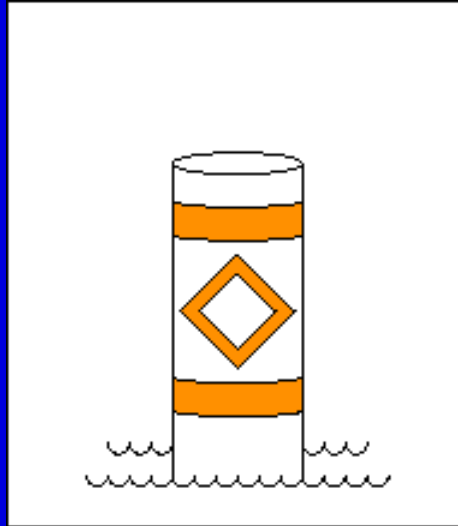


Special Buoys (Other)



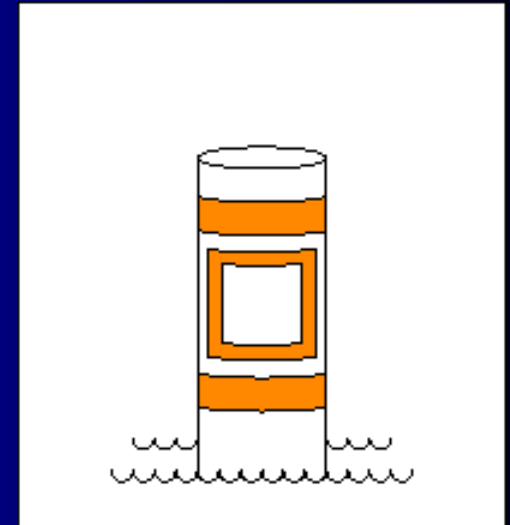
Control Buoy

- Speed limits
- Wash restrictions



Hazard Buoy

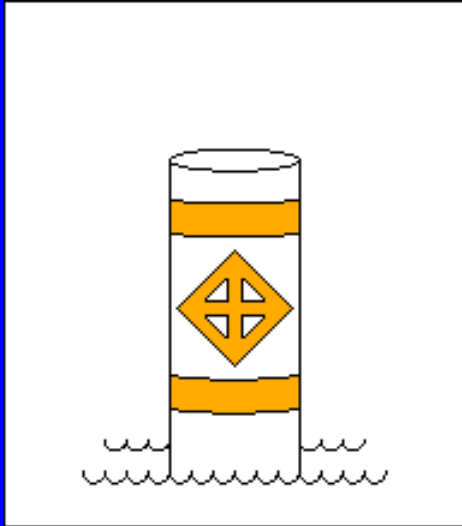
- Marks random hazards such as shoals and rocks



Information Buoy

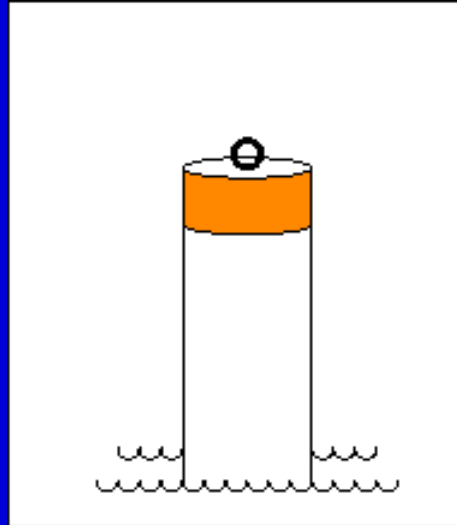
- Displays information, marina, campsite etc.

Special Buoys (Other)



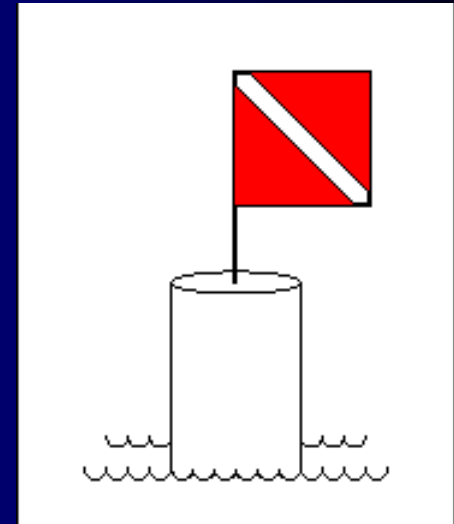
Keep Out Buoy

- Marks area where boats are prohibited



Mooring Buoy

- Used for mooring or securing a vessel to.



Diving Buoy

Marks area where SCUBA or other diving is in progress

Special Marker Buoy

