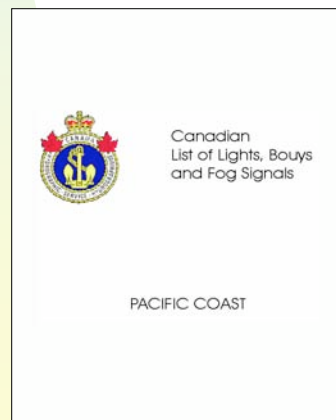
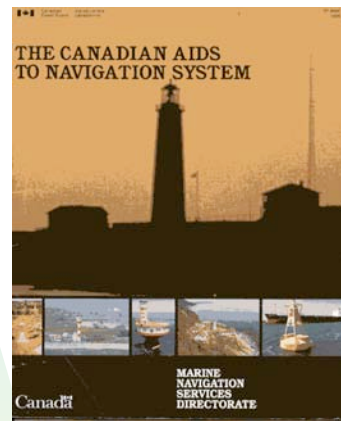
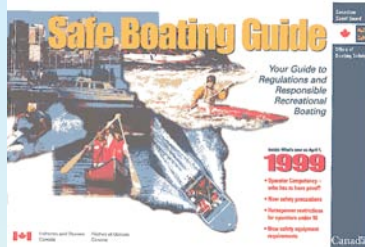


Section B-6 / AIDS TO NAVIGATION



CAPILANO POWER and SAIL SQUADRON

Where to Find Info



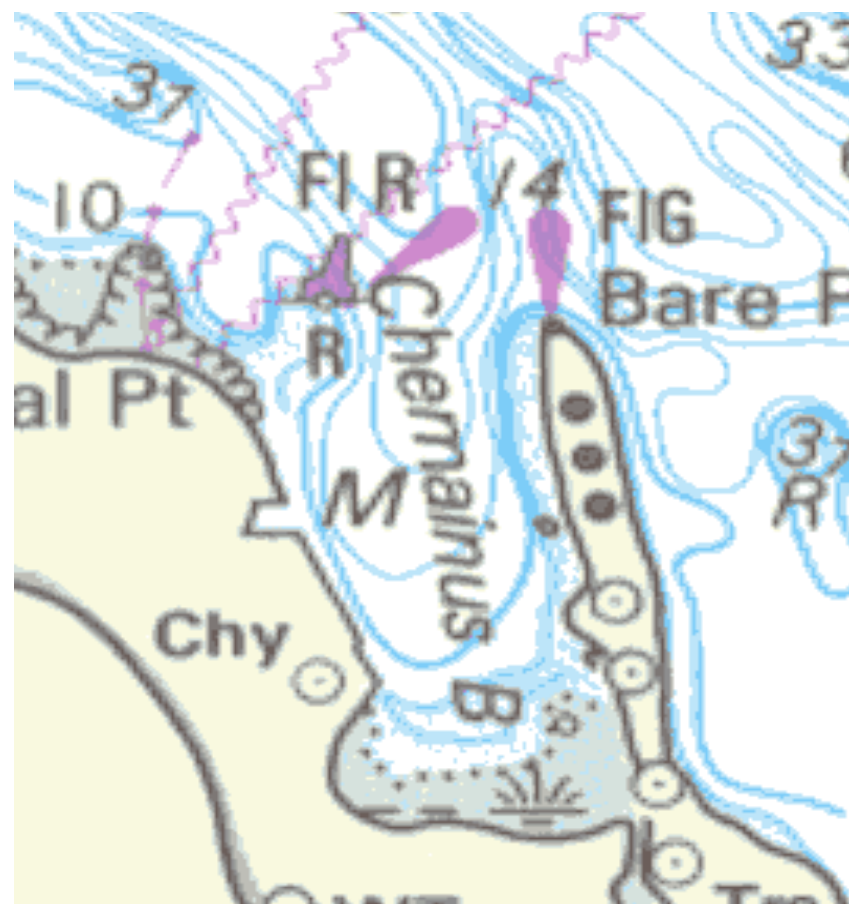
- Safe Boating Guide
- The Canadian Aids to Navigation System
- Symbols and Abbreviations Chart No. 1
- List of Lights, Buoys and Fog Signals

General

- Any object which can be seen from the water and identified on a chart can be used for navigation

- **Landmarks**
 - ◆ Hills
 - ◆ Islands
 - ◆ Towers

- **Aids to Navigation**
 - ◆ Man-made



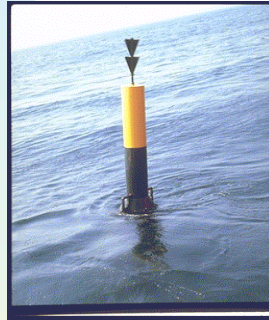
Floating Aids to Navigation



- **Buoyage System developed in 1983**

- **Three classes**

- ◆ Lateral
- ◆ Cardinal
- ◆ Special



- **Shapes**

- ◆ Pillar (structural)
- ◆ Spar
- ◆ Can
- ◆ Conical (Nun)



Light Sequences

- **FI Flashing**
 - One flash every 4 seconds
 - 15 flashes per minute
- **LFI Long Flashing**
 - One flash of 2 seconds duration every 10 seconds
 - 6 flashes per minute
- **Q Quick Flashing**
 - One flash every second
 - 60 flashes per minute
- **VQ Very Quick Flashing**
 - One flash every half-second
 - 120 flashes per minute
- **Mo(A) Morse "A"**
 - One flash followed by a long flash, every 6 seconds
 - Repeated 10 times per minute

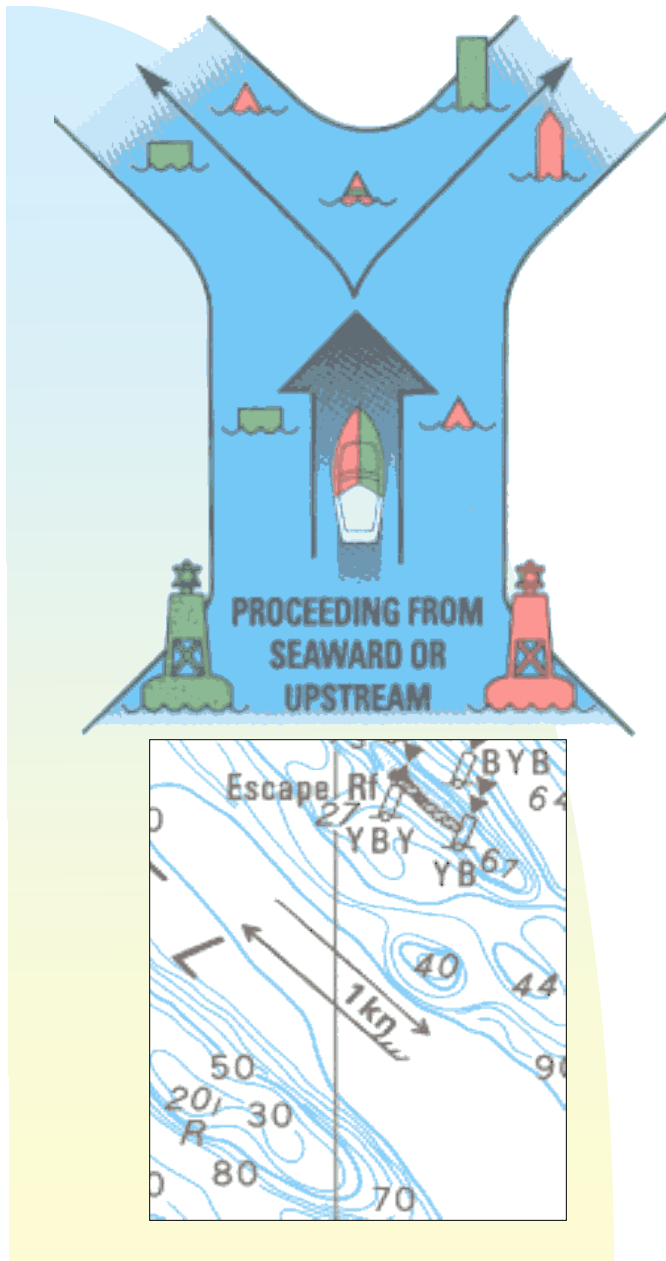


Lateral System

- Laid out in an Upstream direction

Red Right Returning Rule

1. From seaward towards the headwaters of a river or into a harbour.
2. With the flood tide (half feathered arrow)
3. Clock-wise direction around North America



Port Hand Buoys



Port-hand buoys are green in colour and mark a danger or the left-hand side of a channel (when facing upstream). When travelling upstream, a port-hand buoy should always be kept on the port side of the vessel. Port-hand buoys are flat on top.

Port Hand Buoys

Shape

- ◆ Pillar with Square Top Mark
- ◆ Spar with flat top
- ◆ Can

Colour

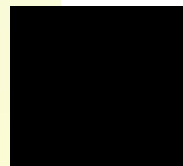
- Green all over
- Green reflective area

ID

- Letters and Odd Numbers

Light

- ◆ FI Green (every 4 seconds)
- ◆ QFI Green (every second)



Starboard Hand Buoys



Starboard-hand buoys are red in colour and mark a danger or the right-hand side of a channel (when facing upstream). When traveling upstream, a starboard - hand buoy should always be kept on the starboard side of the vessel.

Starboard Hand Buoys



Shape

- ◆ Pillar with Pointed Top Mark
- ◆ Spar with pointed top
- ◆ Conical (nun)

Colour

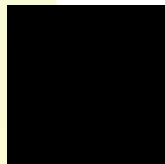
- Red all over
- Red reflective area

ID

- Letters and Even Numbers

Light

- ◆ Fl Red (every 4 seconds)
- ◆ QFl Red (every second)



Fairway Buoy

Shape

- ◆ Pillar with Spherical top
- ◆ Spar with Spherical top
- ◆ Sphere

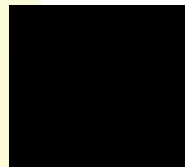
Colour

- ◆ Red and White vertically
- ◆ White reflective material

ID

- ◆ Lettered, no numbers

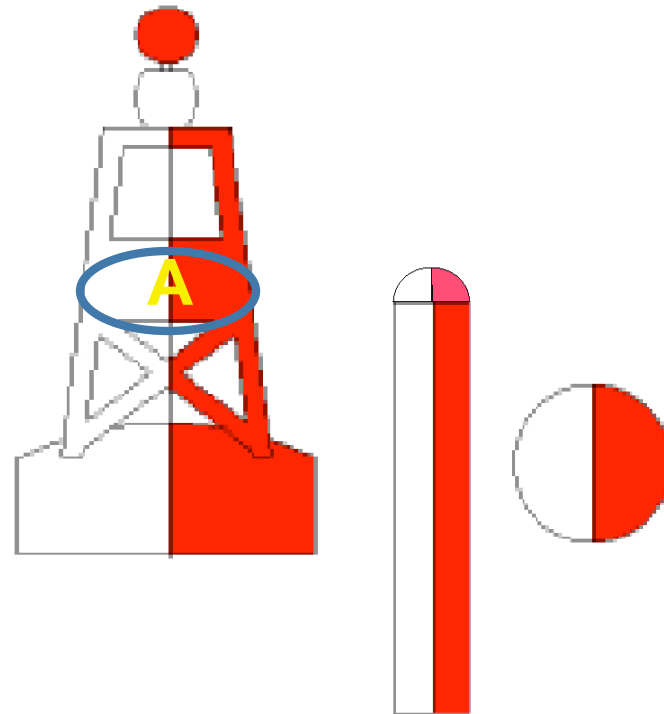
Light – if equipped



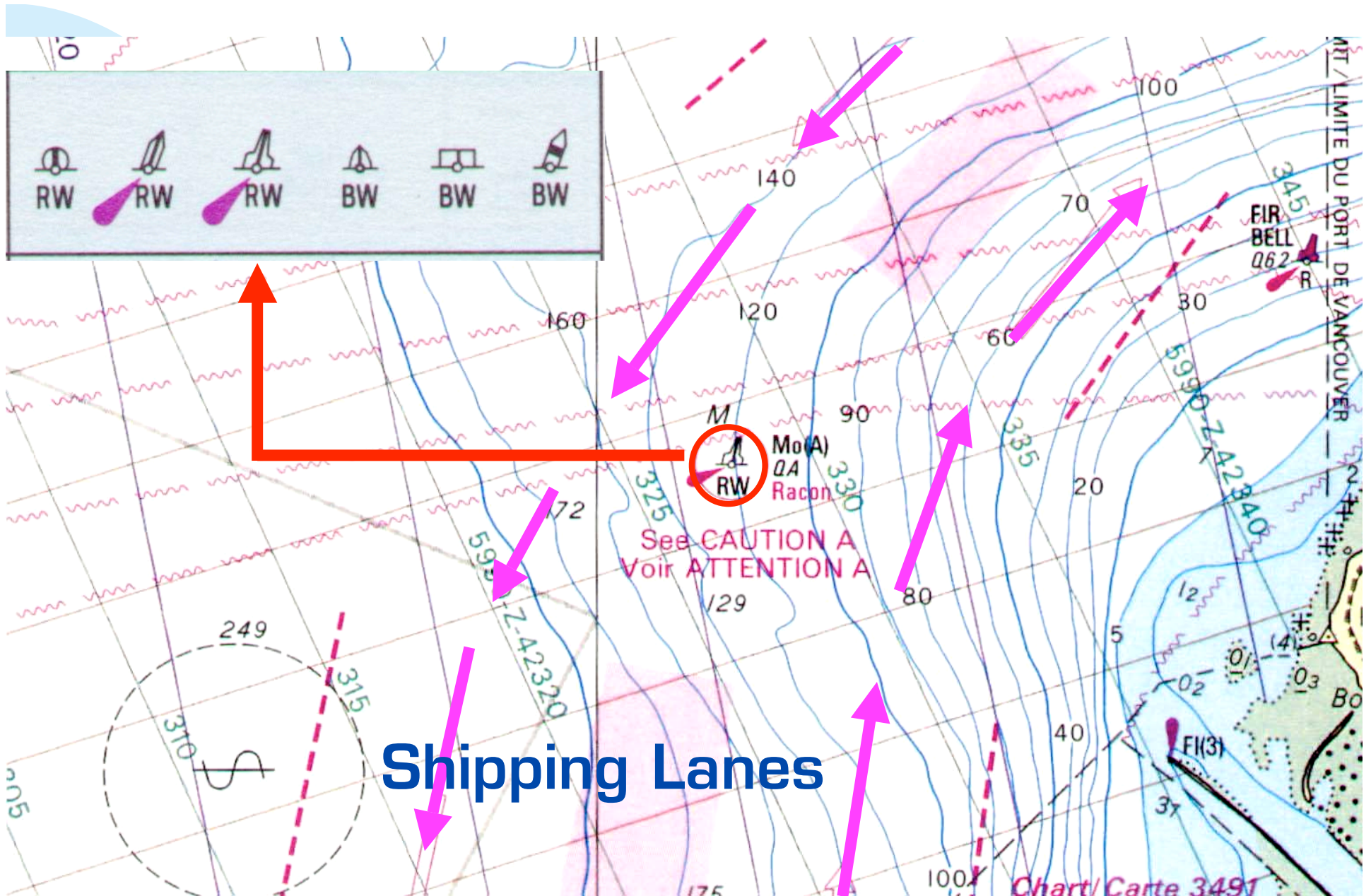
- ◆ Mo (A) 6s



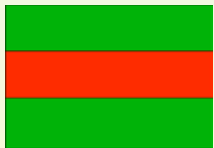
- ◆ (LFI) 10s



Fairway Buoy divides traffic



Port Bifurcation or Port Junction Buoy



Shape

- Pillar with Square Top Mark
- Spar with flat top
- Can

Colour

- Green with one Red horizontal band
- Green reflective area

ID

- Letters, no Numbers

Light – if equipped

- ✦ Green, composite group flashing



◆ FI(2+1) G 6s

◆ FI(2+1) G 10s



Starboard Bifurcation or Starboard Junction Buoy

Shape

- Pillar with Pointed Top Mark
- Spar with Pointed top
- Conical or Nun

Colour

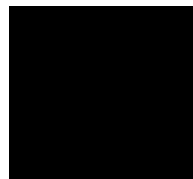
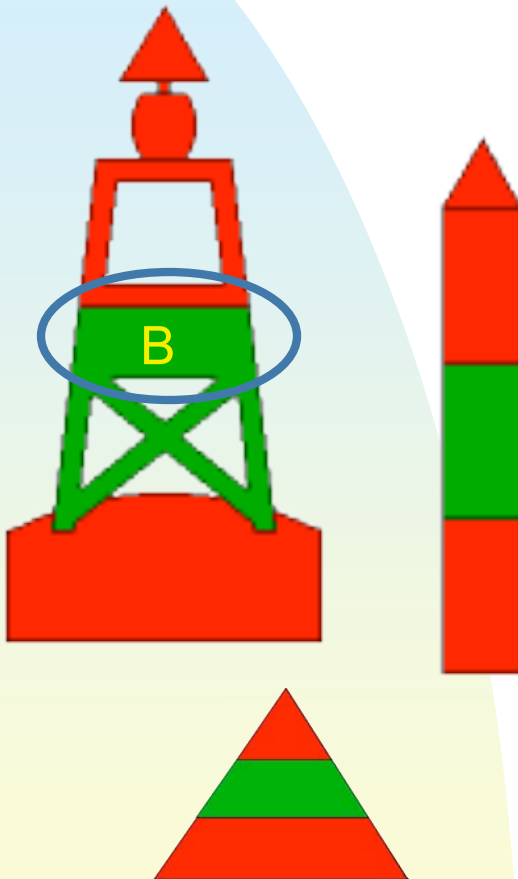
- Red with one Green horizontal band
- Red reflective area

ID

- Letters, no Numbers

Light – if equipped

- Red, composite group flashing

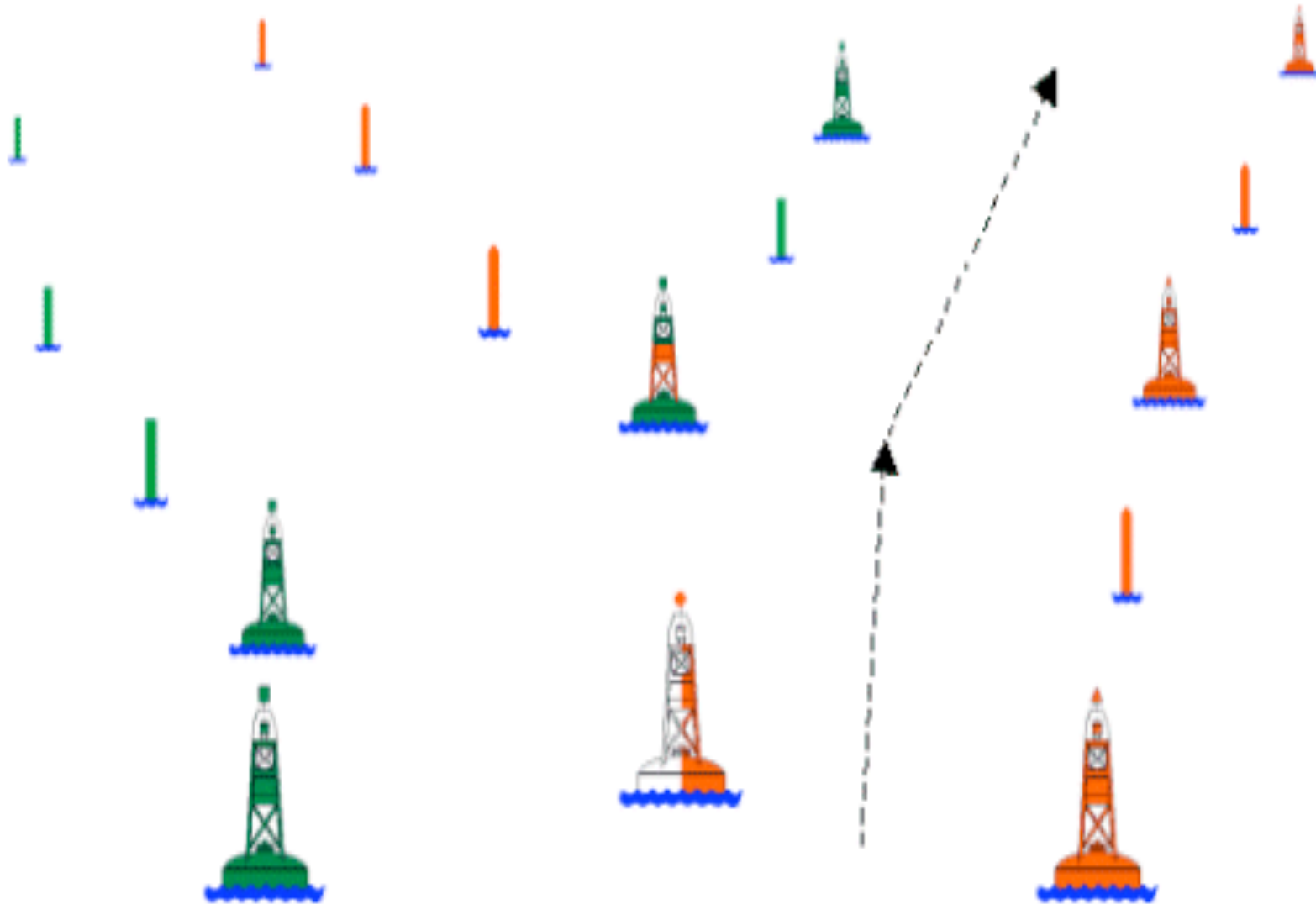


◆ Fl(2+1) R 6s

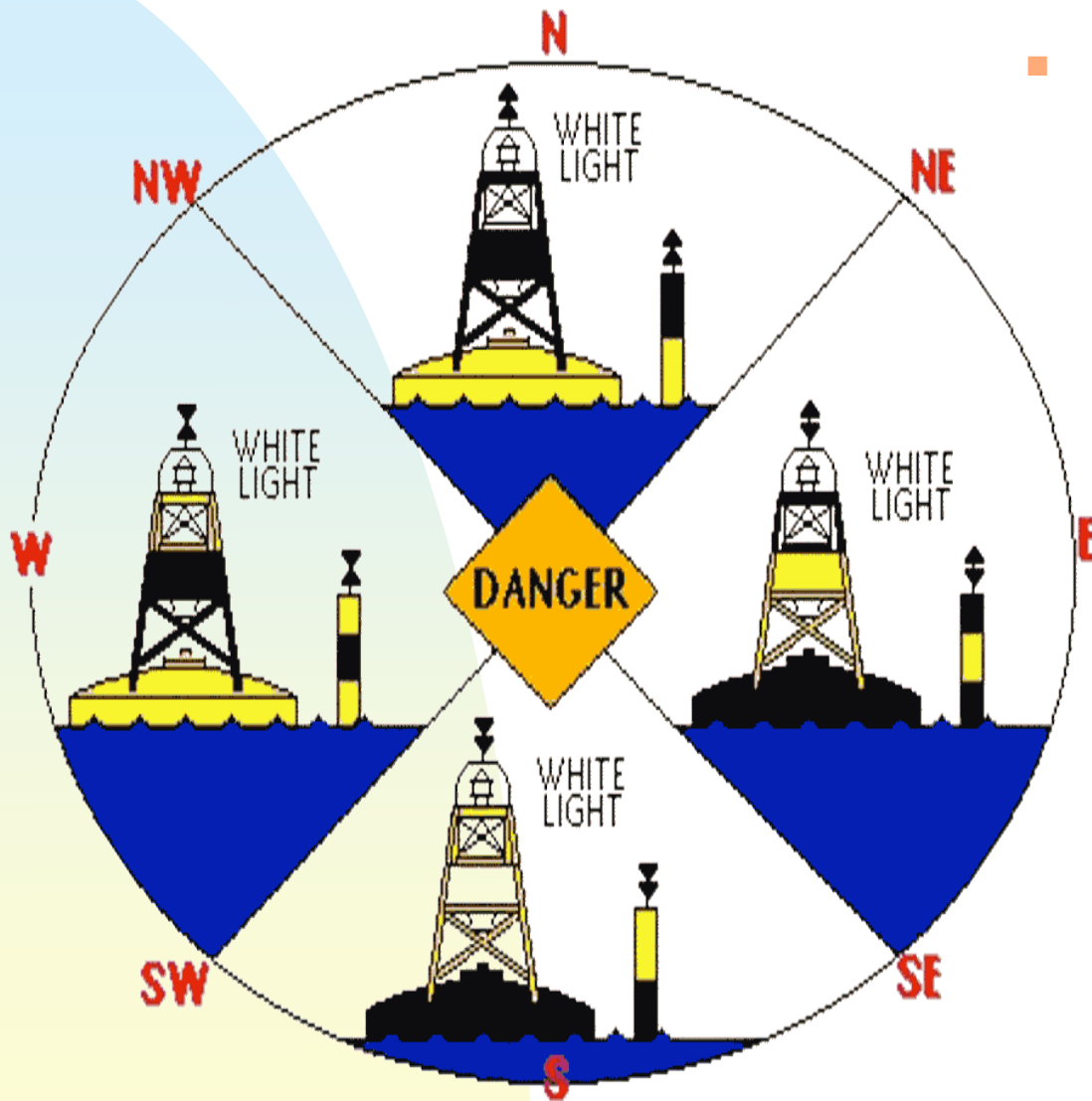
◆ Fl(2+1) R 10s



How the Lateral Buoy System works

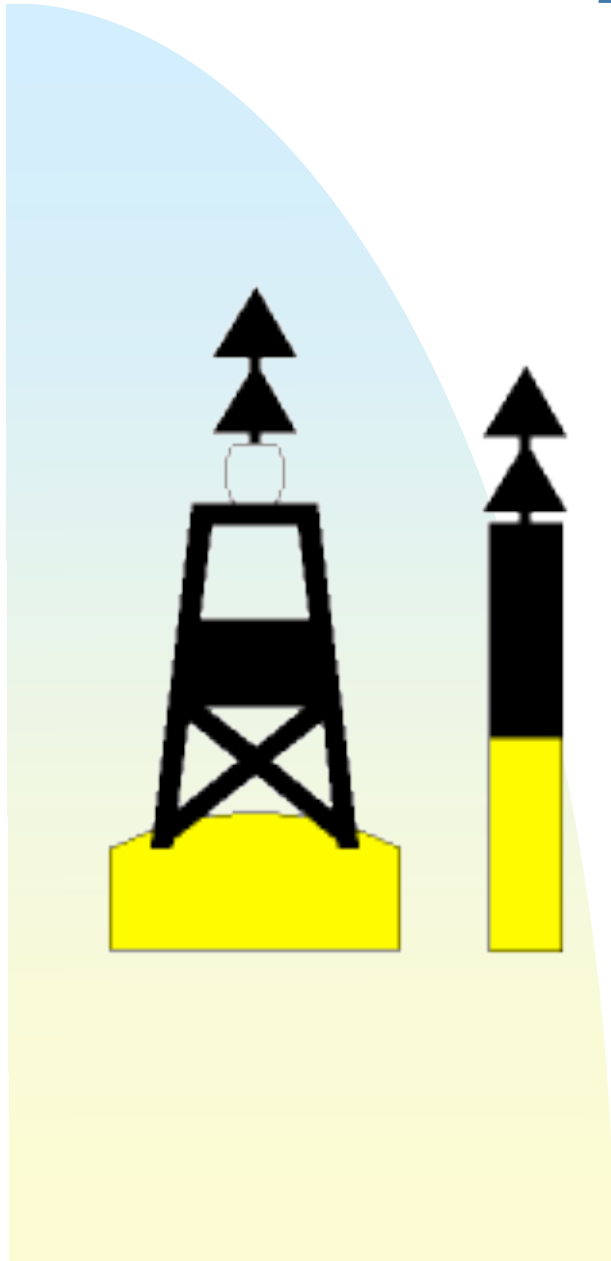


Cardinal Buoys



- Indicate the location of the safest or deepest water by reference to the cardinal points of the compass.

North Cardinal



- **Shape**

- Pillar with 2 Conical Top Marks pointing upwards
- Spar with with 2 Conical Top Marks pointing upwards

- **Colour**

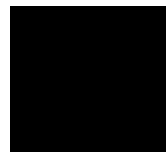
- Black over Yellow
- White reflective area

- **ID**

- Letters, no Numbers

- **Light - if equipped**

- White, flashing

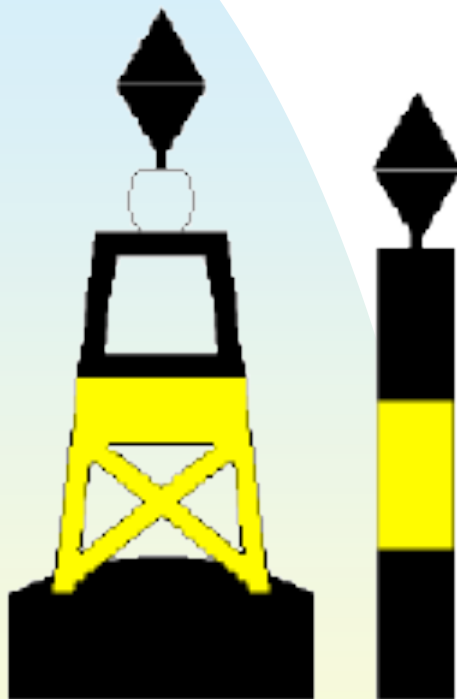


◆ Q 1s

◆ VQ .5s



East Cardinal



■ Shape

- Pillar with 2 Conical Top Marks pointing apart
- Spar with with 2 Conical Top Marks pointing apart

■ Colour

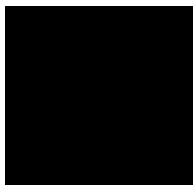
- Black, Yellow, Black horizontally
- White reflective area

■ ID

- Letters, no Numbers

■ Light - if equipped

- White, flashing

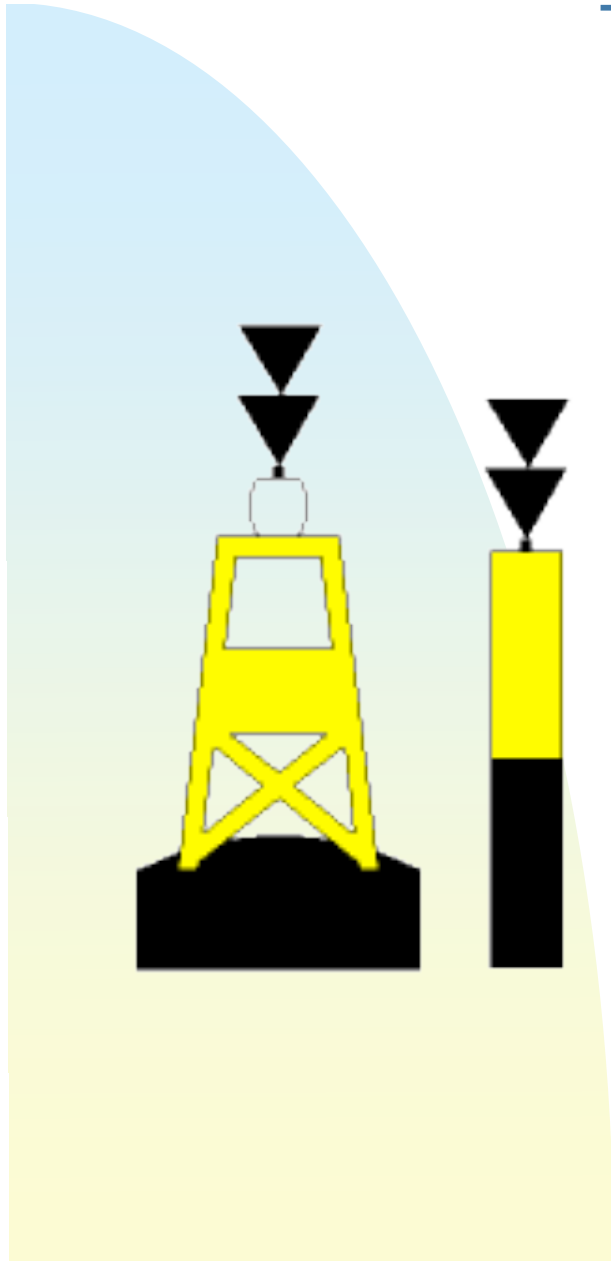


◆ Q (3) 10s

◆ VQ (3) 5s



South Cardinal



- **Shape**

- Pillar with 2 Conical Top Marks pointing downwards
- Spar with with 2 Conical Top Marks pointing downwards

- **Colour**

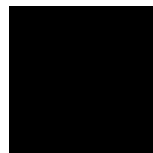
- Yellow over Black
- White reflective area

- **ID**

- Letters, no Numbers

- **Light – if equipped**

- White, flashing



- ◆ Q (6) + LFI 15s
- ◆ VQ (6) + LFI 10s



West Cardinal



- **Shape**

- Pillar with 2 Conical Top Marks pointing together
- Spar with with 2 Conical Top Marks pointing together

- **Colour**

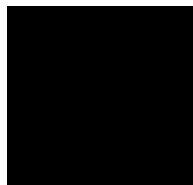
- Yellow, Black, Yellow horizontally
- White reflective area

- **ID**

- Letters, no Numbers

- **Light – if equipped**

- White, flashing

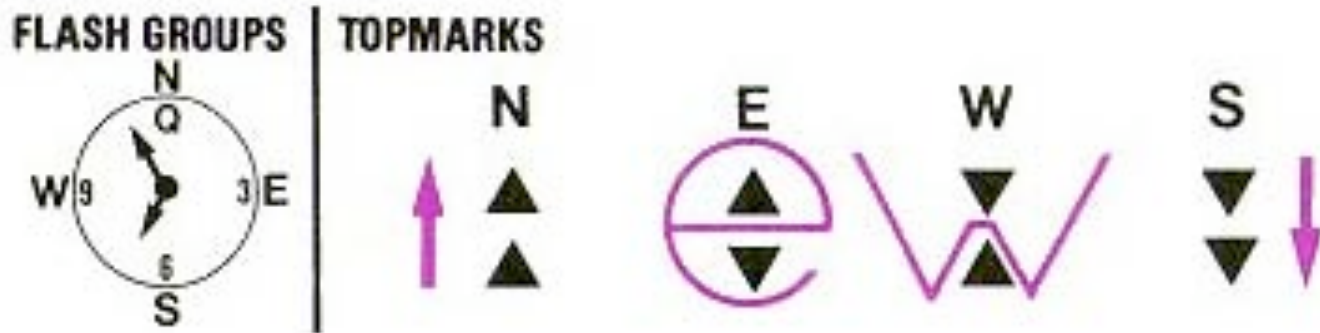


◆ Q (9) 15s

◆ VQ (9) 10s



Cardinal Buoys



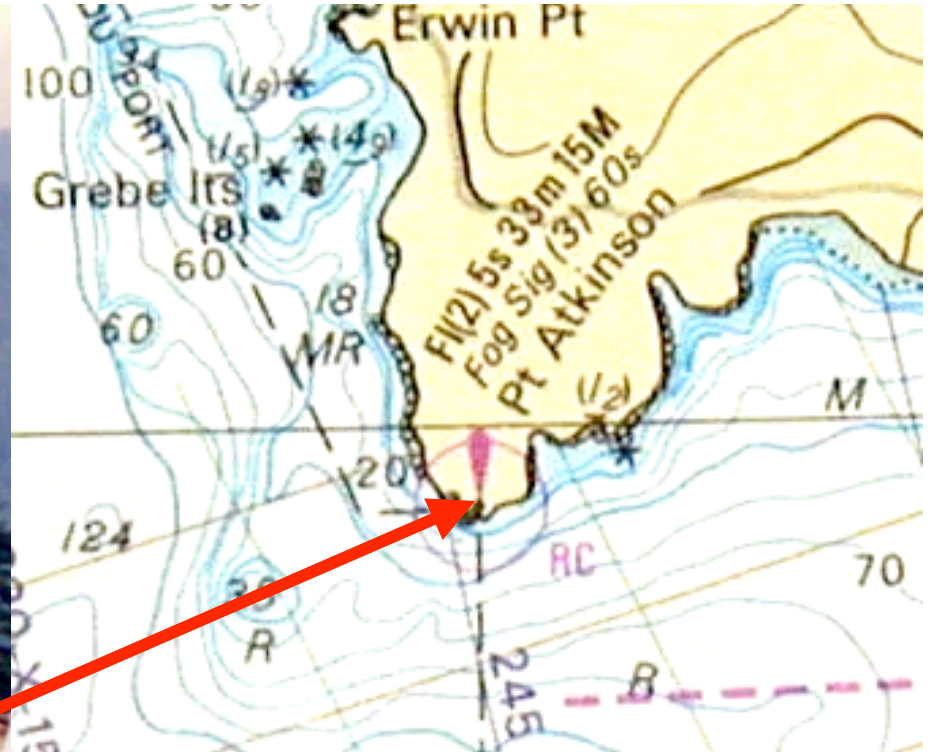
To remember the top marks for a west cardinal buoy, simply note how they draw a “w” through the top marks. Similarly, note how on the east cardinal buoy seem to draw an “e” through them.

REMEMBER

With cardinal buoys, safest water lies in the direction indicated by the buoy. Water in the opposite direction should be considered unsafe and avoided.

Fixed Structures

Pt. Atkinson Lighthouse



Fl(2) 5s 33m 15M Fog Sig(3) 60s

**Flash 0.25 S; Eclipse 0.75 s; Flash 0.25 s;
eclipse 3.75 s: 32.9 m: visible 15Miles Fog
Signal 3 blasts repeated every 60 sec**

Isolated **Danger** Buoy



- **Shape**

- Pillar with 2 Spherical Top Marks
- Spar with 2 Spherical Top Marks

- **Colour**

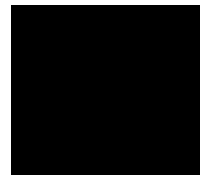
- Black with one Red horizontal band
- White reflective area

- **ID**

- Letters, no Numbers

- **Light – if equipped**

- White, group flashing



- ◆ FI(2) 5s

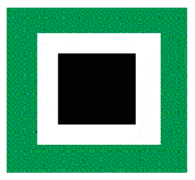
- ◆ FI(2) 10s



STANDARD DAY BEACONS

Standard day beacons are usually fixed aids, erected either on land or on a pole or structure permanently in water. Day beacons are so named because they are unlighted and are visible only during daylight hours. Standard day beacons serve exactly the same purpose as lateral buoys; thus there are four standard day beacons:

Port-hand Day Beacon



A fixed aid that marks the port (left) side of a channel or the location of a danger and must be kept on the vessel's port side when proceeding upstream or into a harbour. It is marked with a black or green-coloured square centred on a white background surrounded by a square-shaped green reflecting border. This beacon may display an odd-digit identifier number made of white reflecting material.

Starboard-hand Day Beacon



A fixed aid that marks the starboard (right) side of a channel or the location of a danger and must be kept on the vessel's starboard side when proceeding upstream or into a harbour. It is marked with a red-coloured triangle centred on a white background surrounded by a triangle-shaped red reflecting border. This beacon may display an even-digit identifier number made of white reflecting material.

STANDARD DAY BEACONS

Ignore them at your peril !!



STANDARD DAY BEACONS

Port Junction Day Beacon



A port junction (bifurcation) day beacon marks a point where a channel divides. This beacon may be safely passed on either side. If the preferred or main channel is desired, then this day beacon should be kept on the port (left) side of the boat.

Starboard Junction Day Beacon



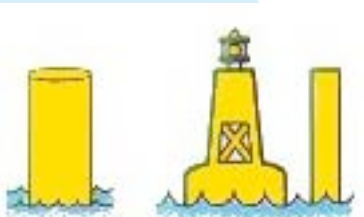
A starboard junction (bifurcation) day beacon marks a point where a channel divides. This beacon may be safely passed on either side. If the preferred or main channel is desired, then this day beacon should be kept on the starboard (right) side of the boat.

Special Buoys

- **Purpose** - To convey important information that is not primarily intended to assist in Navigation

Special Purpose Buoys

The shapes of the following special purpose buoys have no special significance. They may be lettered but they are never numbered. Cautionary, scientific, and anchorage buoys may display a yellow “X” topmark. If a special purpose buoy has been equipped with a light, it will be yellow in colour.



A cautionary buoy is a yellow-coloured buoy that marks traffic separations as well as dangers such as firing ranges, underwater pipelines, race courses, seaplane bases, underwater structures, and areas where no through channel exists.



An anchorage buoy marks the perimeter of designated anchorage areas.



A **mooring** buoy is used for mooring or securing vessels. Be aware that another vessel may be secured to the same buoy. Do not tie up if another boat is already using the buoy. The mooring buoy is not a navigation buoy; and it is **the only type of buoy to which you may be moored. Tying up to any navigation buoy (i.e. any other buoy in this module) is an infraction under the Criminal Code of Canada.**



An information buoy displays by means of words or symbols information such as locality, a marina, or campsite. This type of buoy is white in colour and displays information within a hollow orange square with two horizontal orange bands, one above the square and one below.

Special Buoys



Special Buoys



A hazard buoy marks random hazards such as rocks and shoals - is white in colour & marked with an orange diamond, 2 horizontal orange bands, Information on the hazard is indicated by a black symbol inside the orange diamond. If it carries a light, it is yellow in colour, (F1) 4s, (i.e. flashing once every 4 seconds).



A control buoy is used to mark an area where a restriction has been placed on boating. The restriction may be a speed limit or a no-wake restriction - white in colour and has a hollow orange circle with two horizontal orange bands, A black symbol displayed inside the orange circle indicates the type of restriction that is in effect. If it carries a light, it is yellow in colour, (F1) 4s,



A keep-out buoy marks an area in which boats are prohibited. It is white in colour and is marked with an orange diamond the interior points of which are joined by an orange cross. It also has two orange, horizontal bands,. If it carries a light, it is yellow in colour and operates on a flash cycle, (F1) 4s,



A scientific buoy, called an ODAS buoy (for Ocean Data Acquisition System), collects meteorological and other scientific data. The hazard represented is the buoy itself.

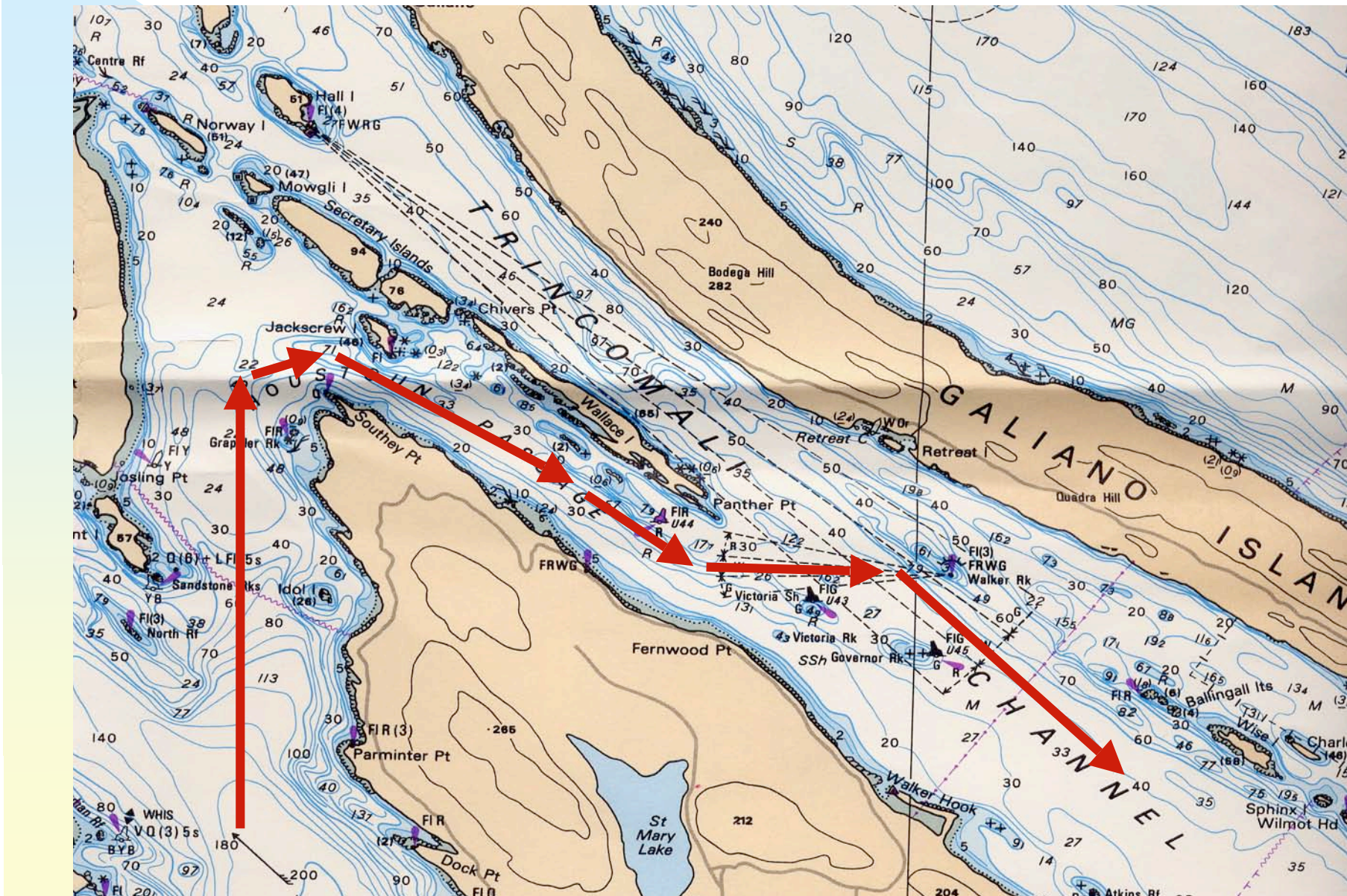


A diving buoy is used to mark areas where scuba or other diving is in progress -white in colour. It carries a red flag not less than 50 cm square with a white diagonal stripe.

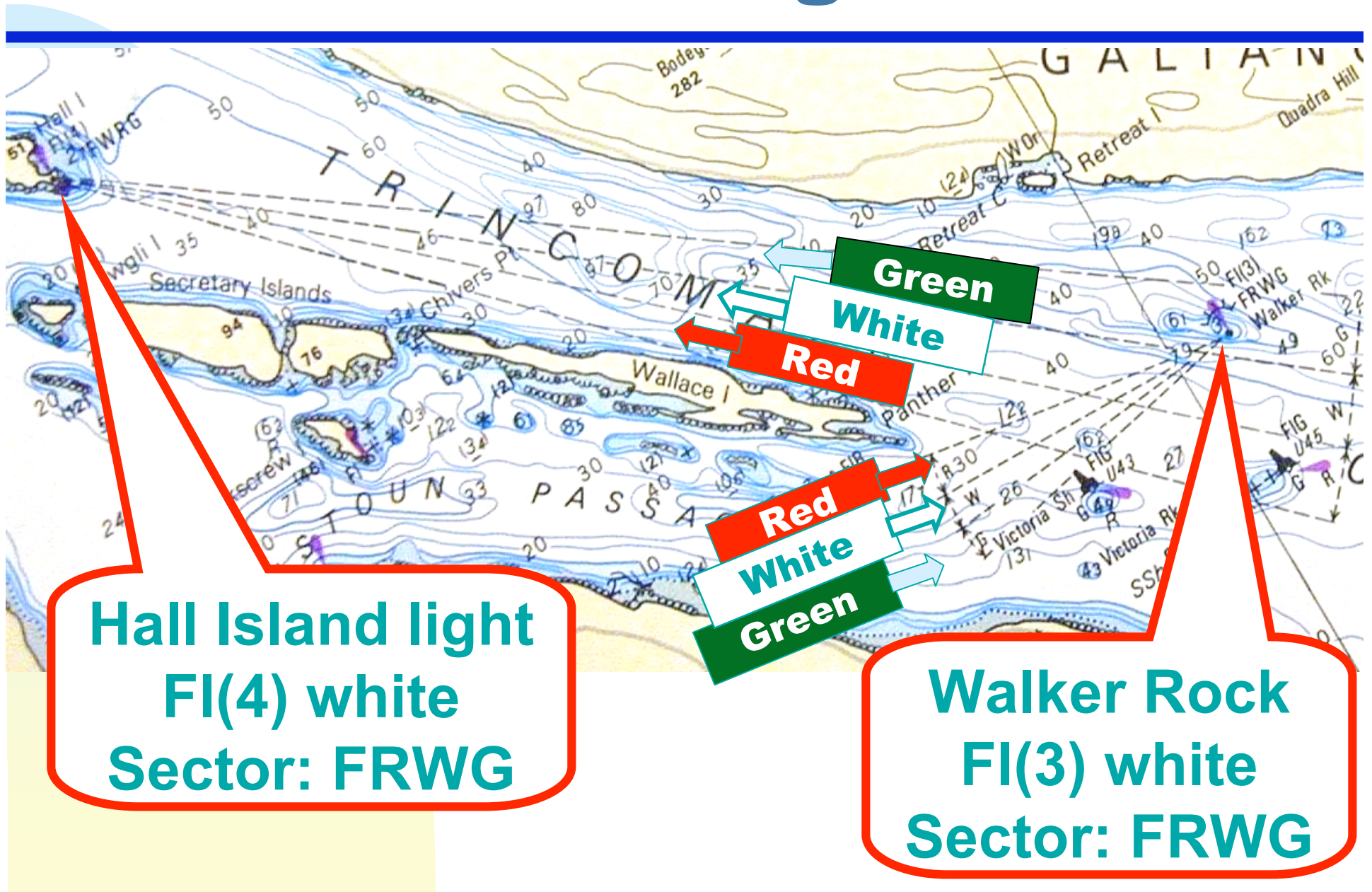


Swimming buoys are used to mark the perimeter of a swimming area - is white in colour. If it carries a light, the light is yellow in colour and operates on a flash cycle, Swimming buoys are used to mark the perimeter of a swimming area. A swimming buoy is white in colour and carries no markings.

Sector Lights



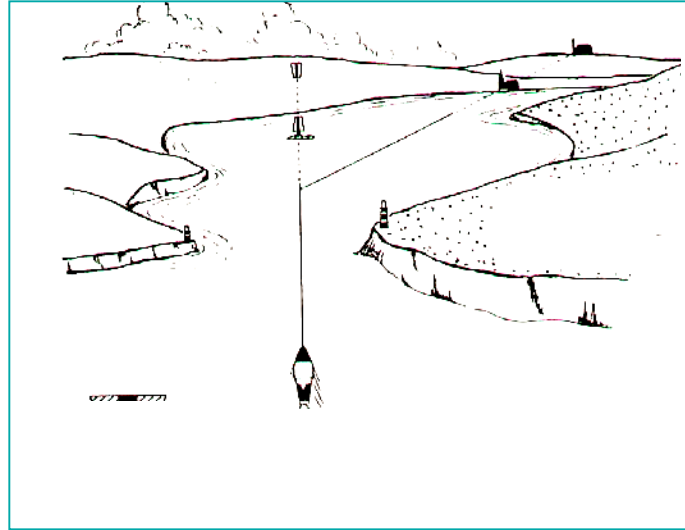
Sector Lights



Hall Island light
FI(4) white
Sector: FRWG

Walker Rock
FI(3) white
Sector: FRWG

RANGES



Steer to stbd.



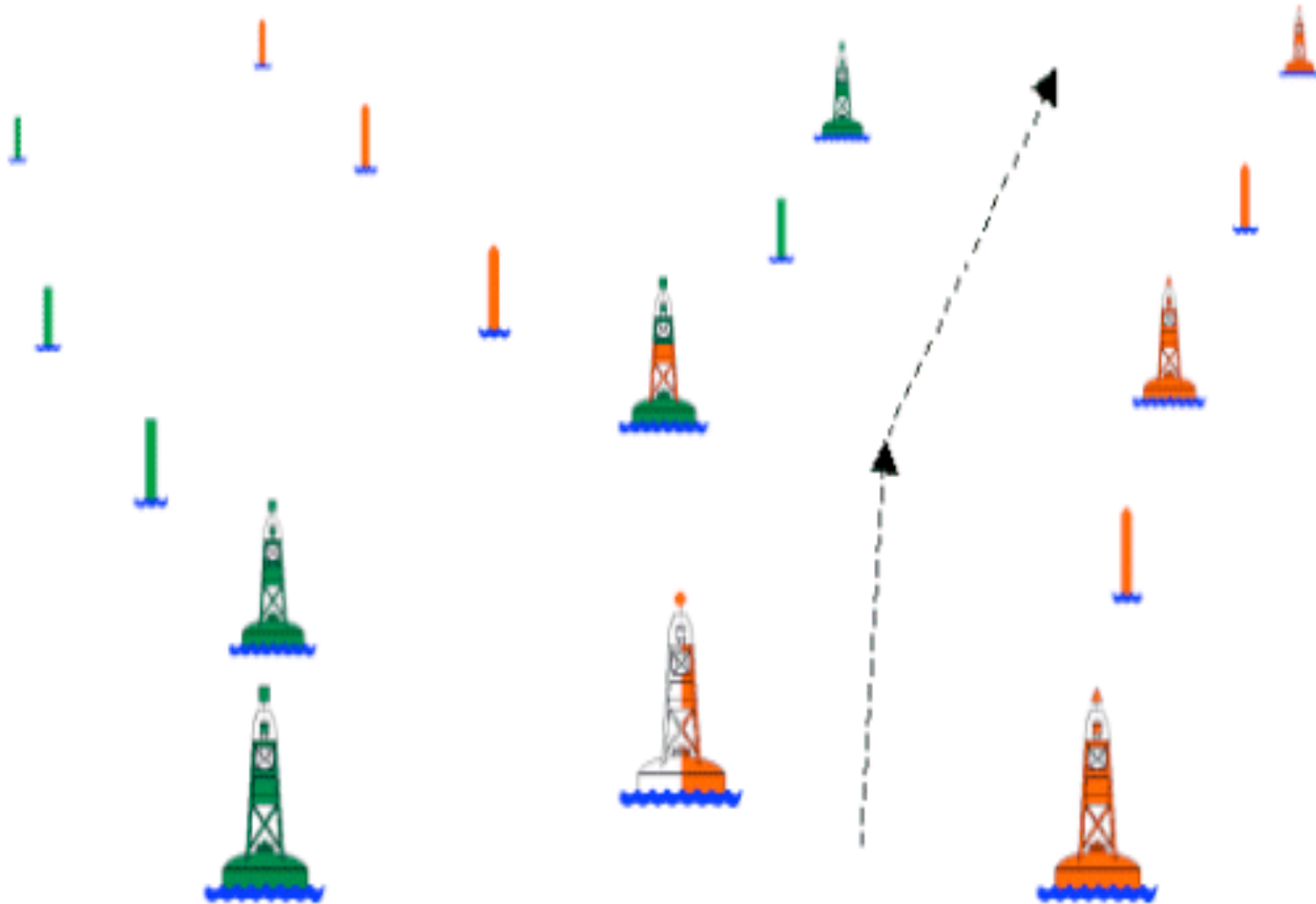
On range.



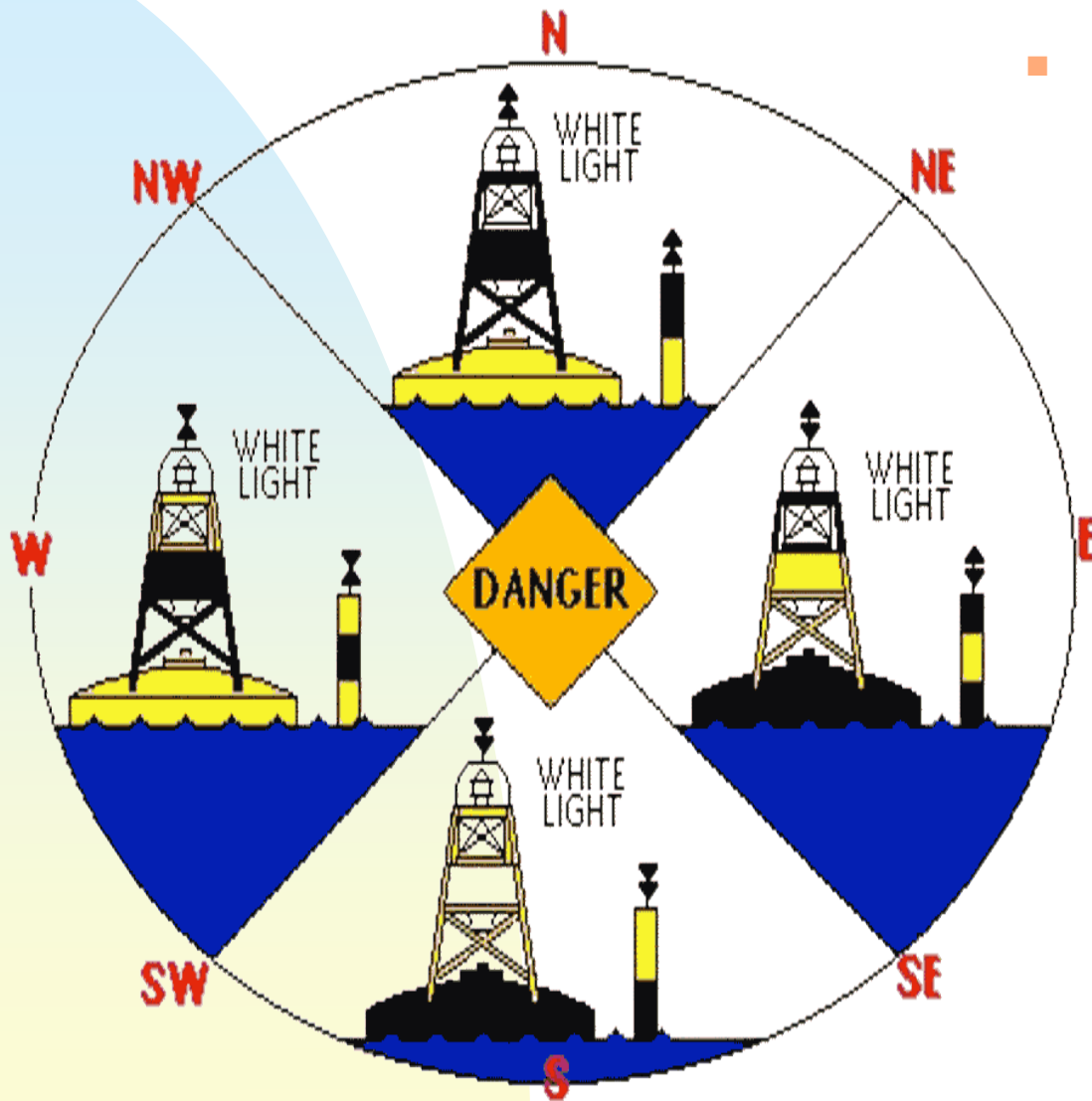
Steer left towards lower marker.

Steer to port.

How the Lateral Buoy System works



Cardinal Buoys



- Indicate the location of the safest or deepest water by reference to the cardinal points of the compass.

Question ???

- You are on a course of 180° and you see this come out of the fog !! What do you do ????



Q - What is it ??

A - A Cardinal Buoy

Q - Which one ??

A - WEST Cardinal Buoy

Course 180° - Due South



Turn to Starboard [Right]

Special Buoys



www.capilanosquadron.com

Click here to go to the Download this presentation as a .PDF for revision - it is approx 3.5mb

	(West Vancouver BC) Capilano Squadron	
	Click on the image below to go to the National CPS-ECP site. 	
<u>FOR INFORMATION OR TO REGISTER ON A TRAINING COURSE - CLICK</u>		
Student Cruise - 21st Oct 07 Click picture for details. 		Cruise info and updates Click here for the latest updates on the Squadron Cruises. 
Capilano Squadron Topics	What's New ???	Boating / Marine Links
About Capilano Squadron	New US Regs For Boaters	Georgia Strait Tides for the next 3 days
Boating Courses / Training	Contravention's Act - Read !!	What Happens if you don't !!! Click Here
REGISTER FOR A TRAINING COURSE	New Pump-out Regulations	Marine weather forecast for Georgia Strait
Newsletter - "Cap Current"		Pacific Mainland District
Bridge Members		"Green" Boating - its your responsibility
Photo Galleries / Boats / Cruising / Socials	Please Tells us what you think on Boating Issues	Going to the US - latest on Border Crossing
Buy & Sell Page	.	Our Sister Squadron in Bellingham WA
Gift Certificates	.	Yacht Clubs in BC
Downloads	New e-mail address ?? >>>	Let us know - click here