



# *Navigation Rules*

LT Megan Ahr



# Purpose and Scope of the International and Inland Rules

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- Rules of the Road
  - Importance (prevent collision, prevent loss of life, etc..)
  - Difference between the COLREGS and Inland Rules as determined by boundaries described in *Navigation Rules*
  - General rules
    - Rules apply according to location - Inland vs Intl
    - Rules of the Road are mandatory, COLREGS contains no penalty for violations while the Inland Rules provide for a penalty for vessels navigated in violation of the rules
    - Obedience must be timely
    - Rules apply to all vessels



# Purpose and Scope of the International and Inland Rules

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- **General definitions – (Rule 3)**
  - Power-driven vessel
  - Sailing vessel
  - Vessel engaged in fishing
    - nets, lines, trawling (not trolling)
  - Vessel not under command
  - Vessel restricted in her ability to maneuver
    - laying, servicing, retrieving nav aid, cables, pipeline
    - dredging, surveying, underwater ops
    - unrep
    - air ops
    - mineclearance
    - towing which restricts ability to deviate from course
  - Vessel constrained by her draft (International only)



# Steering and Sailing Rules

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- **Rules which apply to all vessels**
  - **Rules apply in any condition of visibility (Rule 4)**
  - **Proper lookout (Rule 5)**
    - Every vessel shall at all times maintain a proper look out by sight and hearing as well as by all available means appropriate
  - **Safe speed (Rule 6)**
    - Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collision
    - Factors:
      - Visibility
      - Traffic Density
      - Maneuverability and draft
      - Background Lights
      - Wind, current, navigational hazards
      - Radar characteristics



# Steering and Sailing Rules

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## – Risk of Collision (Rule 7)

- Every vessel shall use all available means to determine if risk of collision exists. If there is any doubt, such risk shall be determined to exist
- Proper use shall be made of radar equipment
- Assumptions shall not be made on the basis of scanty information
- Risk of collision exists if the compass bearing of an approaching vessel does not appreciably change – CBDR!
- Risk of collision may also exist even if bearing changes if approaching a large vessel or tow or approaching a vessel at close range

## – Action to avoid collision (Rule 8)

- Any action taken to avoid collision shall be positive, made in ample time, and with due regard to the observance of good seamanship
- Any alteration of course/speed to avoid collision shall, if the circumstances of the case admit, be large enough to be readily apparent to another vessel observing visually or by radar. A succession of small alterations of course/speed should be avoided
- Action taken to avoid collision shall be such as to result in passing at a safe distance



# Steering and Sailing Rules

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## – Navigation in narrow channels (Rules 9)

- Keep as near the outer limit of the channel or fairway which lies to starboard
- Vessels which can safely navigate only within a narrow channel, or fairway have the right of way over:
  - vessels of less than 20m
  - sailing vessels
  - fishing vessels
  - crossing vessels
- If overtaking, use the appropriate signals from Rule 34
  - Inland – if agree, sound same signal
  - International – if agree, 1 prolonged, 1 short, 1 prolonged, 1 short
- Navigate with particular alertness and caution when nearing an area with obstructed view
  - Sound prolonged blast when nearing bends and obstructed view areas
  - Vessels that hear prolonged blast will respond with a prolonged blast



# Steering and Sailing Rules

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- **Navigation in traffic separation schemes (Rule 10)**
  - Vessels using a traffic separation scheme shall:
    - Proceed in the appropriate traffic lane
    - Keep clear of separation line or separation zone
    - Join/leave at the termination of the lane, otherwise at a small angle
  - Do not cross. If obliged to, cross at right angles
  - Vessels which may use inshore traffic schemes
    - vessels of <20m
    - sailing vessels
    - vessels engaged in fishing
    - vessels proceeding to port, structures, pilot station, or any other location within the inshore traffic zone
    - to avoid immediate danger



# Steering and Sailing Rules

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## – Rule 10 (cont'd)

- Vessels allowed in separation schemes
  - vessels crossing at right angles
  - vessels leaving/joining the separation scheme
  - to avoid immediate danger
- Avoid anchoring in a traffic separation scheme or near its termination
- Give the scheme wide margin as possible if not using
- Vessels <20m and sailboats shall not impede power-driven vessels in the traffic lanes
- Vessels exempt from this rule
  - vessel restricted in maneuverability while servicing nav aids
  - vessel restricted in maneuverability when engaged in laying, servicing, or picking up submarine cable



# Steering and Sailing Rules

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- **Rules for navigating vessels in sight of one another**
  - **Sailing vessels (Rule 12)**
    - Apply to vessels in sight of one another
    - Different tack : starboard tack has right of way
    - Same tack : leeward has right of way
    - If on port and can't determine other vessel's tack, assume it is starboard



# Steering and Sailing Rules

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## - Overtaking (Rule 13)

- Vessel overtaking any other shall keep out of the way of the vessel being overtaken
- Deemed to be overtaking if only within arc of stern light
- When in doubt, assume that you are overtaking
- Remains an overtaking situation until the overtaking vessel is past and clear



# Steering and Sailing Rules

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## **Head-on situation (Rule 14)**

- Alter course so as to pass port to port
- The situation shall be deemed to exist when the vessel has a narrow aspect and masthead lights are in or nearly in line or see both sidelights
- If in doubt, assume the situation exists



# Steering and Sailing Rules

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## **Crossing Situation (Rule 15)**

- The vessel which has the other on her own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel



# Steering and Sailing Rules

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## – Action of give-way vessel (Rule 16)

- Vessels directed to keep out of the way shall take early and substantial action

## – Action of stand-on vessel (Rule 17)

- Maintain course and speed
- Take action if other vessel is not taking appropriate action IAW these Rules
- If taking action to avoid collision in a crossing situation, avoid altering course to port if the other vessel is to your port side
- This rule does not relieve the give way vessel of her obligation to keep out of the way



# Steering and Sailing Rules

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## – Responsibilities between vessels (Rule 18)

- Vessel not under command
- Vessel restricted in her ability to maneuver
- Constrained by draft (International)
- Fishing vessel
- Sailing vessel
- Power driven vessel
- Seaplane



# Steering and Sailing Rules

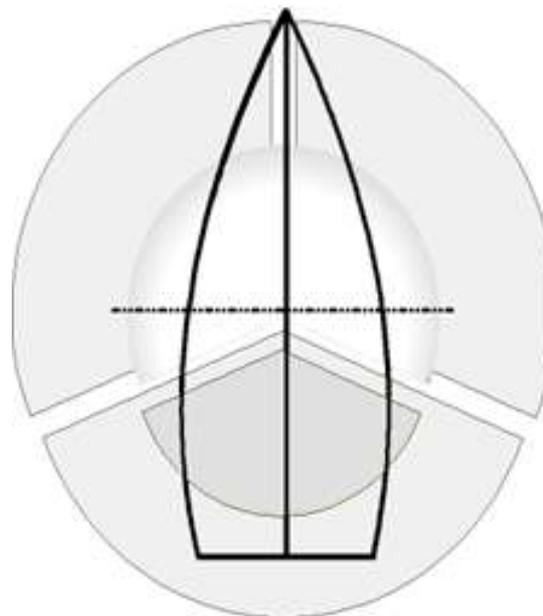
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- **Vessels in restricted visibility (Rule 19)**
  - Definition of restricted visibility
    - recall Rule 3 : any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, etc..
  - Conduct of vessels in restricted visibility
    - Applies to vessels not in sight of one another in or near restricted visibility
    - Every vessel shall proceed at a safe speed
    - Every vessel shall have due regard to the prevailing circumstances
    - A vessel which detects by radar alone the presence of another vessel shall determine if risk of collision exists and take avoiding action in ample time
      - Avoid : turning to port for a vessel forward of the beam and turning towards a vessel abeam or abaft the beam
    - Every vessel which hears apparently forward of her beam the fog signal of another vessel, or which cannot avoid a close quarters situation with another vessel forward of her beam, shall reduce her speed to the minimum at which she can be kept on her course. She shall if necessary take all her way off.



# International and Inland Lights and Day Shapes

- Application (Rule 20)
  - Same for Intl and Inland
  - Lights apply from sunset to sunrise and periods of reduced visibility
- Definitions (Rule 21)
  - Masthead light : 225, white

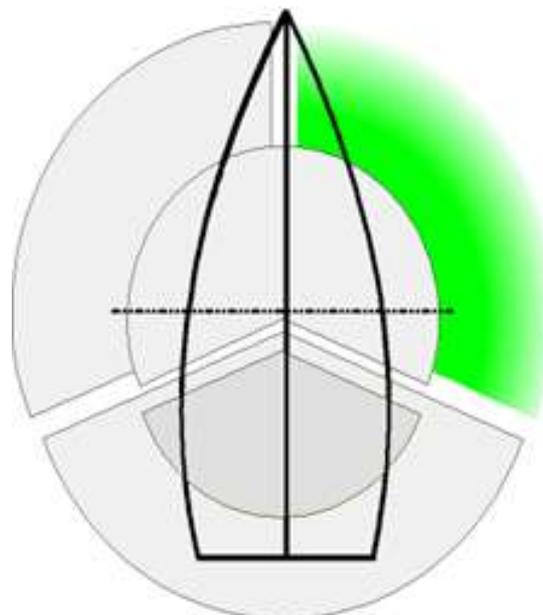




# International and Inland Lights and Day Shapes

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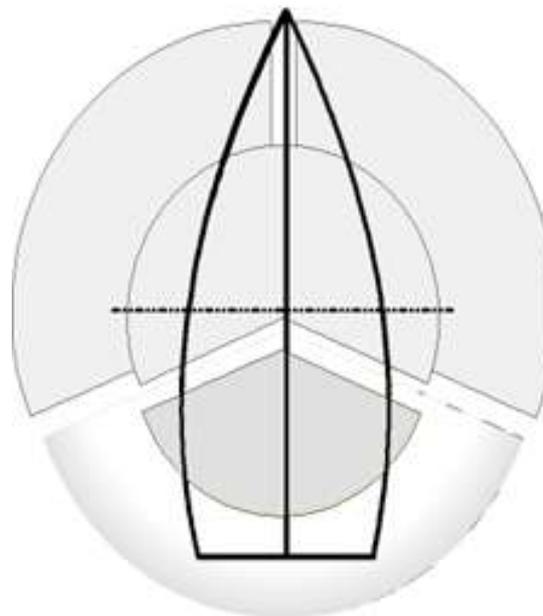
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# International and Inland Lights and Day Shapes

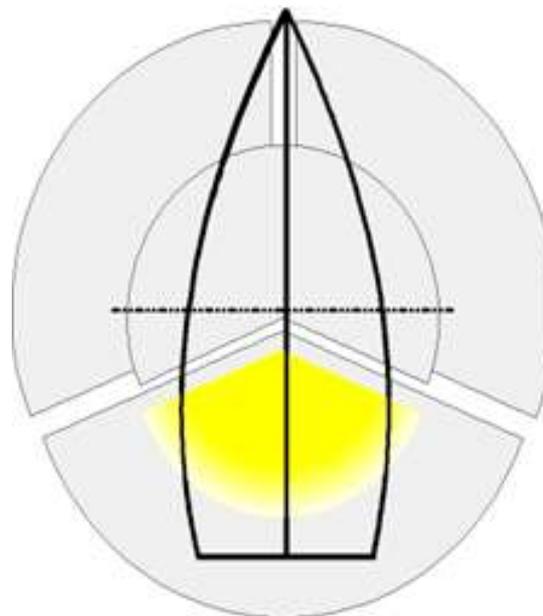
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  - Stern light : 135, white





# International and Inland Lights and Day Shapes

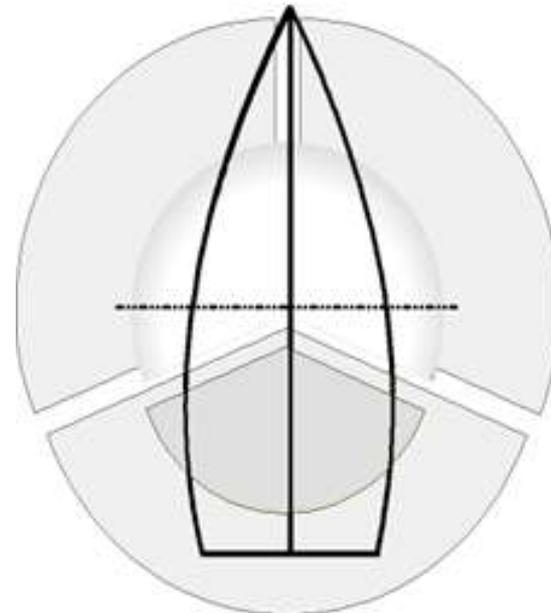
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  - Stern light : 135, white
  - Towing light : 135, yellow





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  - Towing light : 135, yellow
  - All-around light : 360

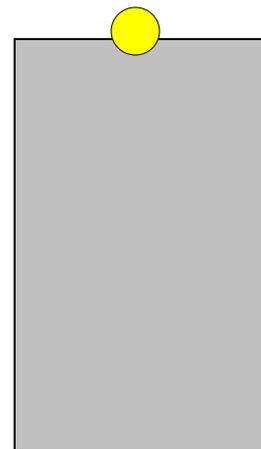




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  - Stern light : 135, white
  - Towing light : 135, yellow
  - All-around light : 360
  - Flashing light : 120/min
  - **Special flashing light** : 50-70/min, yellow, forward on the tow, 180-225





# International and Inland Lights and Day Shapes

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- Visibility of Lights (Rule 22)
  - > 50 m
    - Masthead : 6 nm
    - Sidelights/sternlight/towing light/all-around : 3 nm
    - Special flashing (Inland) : 2 nm
  - 12-49 m
    - Masthead : 5 nm
    - Sidelights/sternlight/towing light/all-around : 2 nm
    - Special flash (Inland) : 2 nm
  - <12m
    - Masthead: 2nm
    - Sidelights: 1 nm
    - Sternlight/towing light/all-around : 2nm
    - Special flashing (inland): 2nm
  - Partially submerged vessel or object being towed
    - White all-around light: 3nm



# International and Inland Lights and Day Shapes

– Lights required by the following vessels.

- **Power-Driven Vessels Underway (Rule 23)**

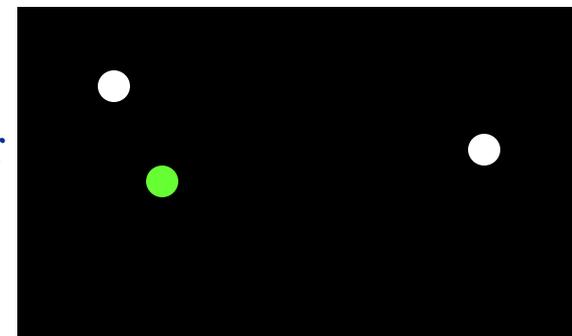
- masthead

- » < 20 m Inland : single, fwd as practical

- » Second light if > 50 m, abaft and higher

- sidelights

- Sternlight



- **< 12m : single all-around white & sidelight**

- **Air-cushion vessel:**

- Non-displacement mode – single all-around flashing yellow light above stern light

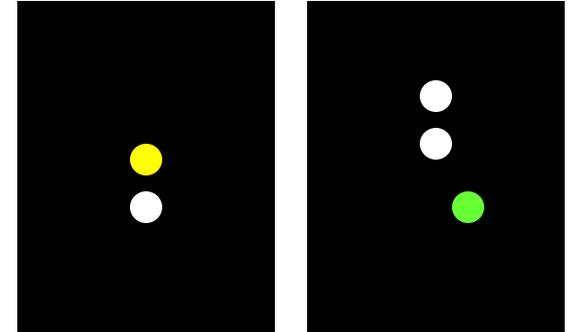
- Displacement mode – same as power-driven vessel

# International and Inland Lights and Day Shapes

## – Towing and Pushing (Rule 24)

- Astern

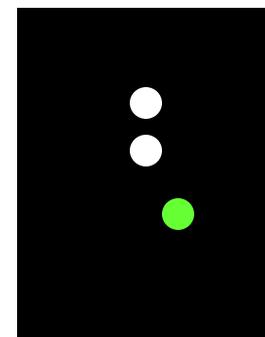
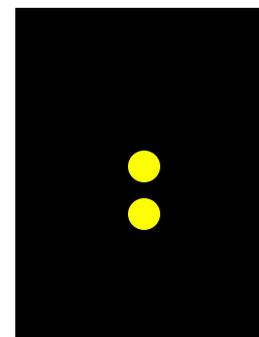
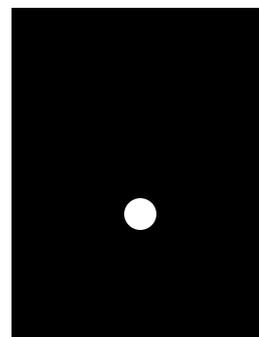
- tow < 200 m : 2 masthead fwd
- tow > 200 m : 3 masthead fwd
- sidelights
- sternlight
- towing light above sternlight
- Day shape : diamond if tow > 200 m





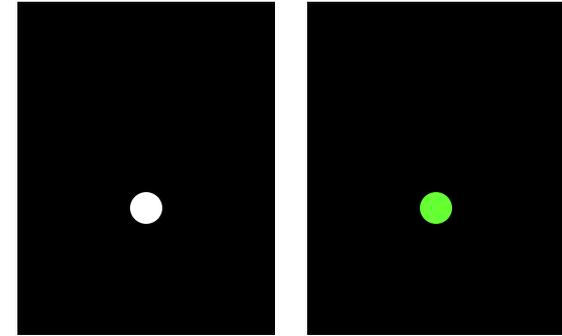
# International and Inland Lights and Day Shapes

- Towing and Pushing (Rule 24)
  - Astern
    - tow < 200 m : 2 masthead fwd
    - tow > 200 m : 3 masthead fwd
    - sidelights
    - sternlight
    - towing light above sternlight
    - diamond shape if tow > 200 m
  - Ahead or alongside
    - 2 masthead fwd
    - sidelights
    - sternlight (Intl)
    - 2 towing lights (Inland)



# International and Inland Lights and Day Shapes

- Vessels or objects being towed
  - sidelights
  - sternlight
  - Day Shape: tow > 200m : diamond

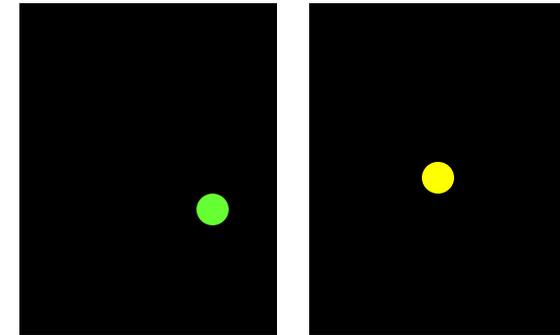




# International and Inland Lights and Day Shapes

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- Vessels or objects being towed
  - sidelights
  - sternlight
  - tow > 200m : diamond shape
- Vessel being pushed
  - sidelights fwd
  - special flashing yellow (Inland)

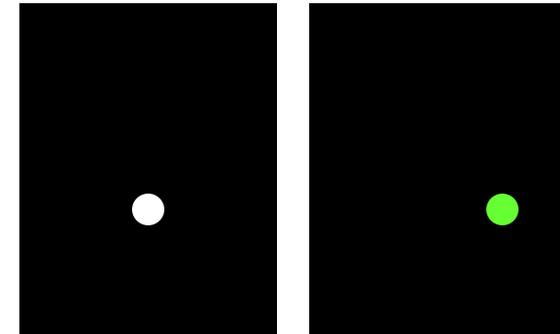




# International and Inland Lights and Day Shapes

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- Vessels or objects being towed
  - sidelights
  - sternlight
  - tow > 200m : diamond shape
- Vessel being pushed
  - sidelights fwd
  - special flashing yellow (Inland)
- Vessel being towed alongside
  - sidelights fwd
  - sternlight



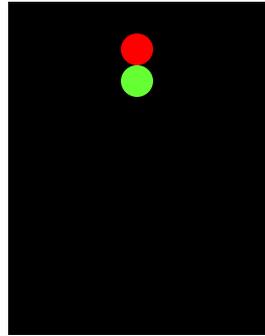


# International and Inland Lights and Day Shapes

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## – Sailing Vessels Underway (Rule 25)

- sidelights
- sternlight
- < 20m : use tricolor on top of mast
- red over green in lieu of tricolor
- Day shape: sailboat using engine : display cone apex down fwd, optional for < 12m





# International and Inland Lights and Day Shapes

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## – Fishing & Trawling Vessels (Rule 26)

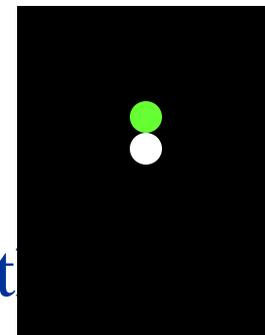
- Trawling (dredge net)

- green over white (all-around) fwd

- > 50m : 2nd masthead aft (a separate masthead light is not required for a vessel <50m)

- making way : sidelights and sternlight

- Day shape: two cones, apexes together

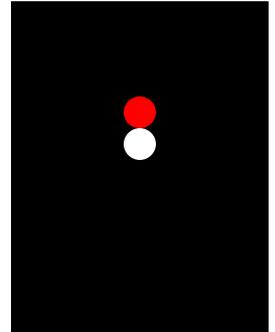




# International and Inland Lights and Day Shapes

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- **Fishing other than trawling**
  - red over white (all-around) fwd
  - gear > 150m to side : all-around white & cone apex up to that side
  - making way : sidelights and sternlight
  - **Day shape: two cones, apexes together**

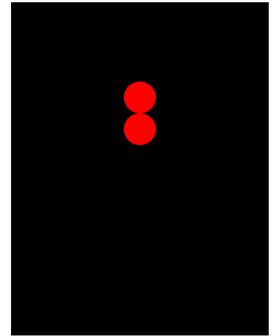




# International and Inland Lights and Day Shapes

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- Vessels Not Under Command or Restricted in Ability to Maneuver (Rule 27)
  - Not under command
    - red over red all-around
    - making way : sidelights & sternlight
    - Day shape: two black balls vertical

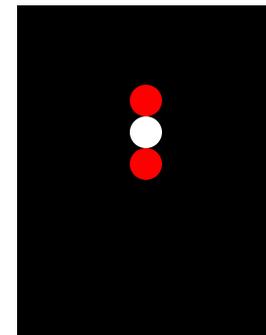




# International and Inland Lights and Day Shapes

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- Vessels Not Under Command or Restricted in Ability to Maneuver (Rule 27)
  - Not under command
    - red over red all-around
    - making way : sidelights & sternlight
    - Day shape: two black balls vertical
  
  - Restricted in Ability to Maneuver
    - red over white over red
    - making way : masthead light, sidelights, & sternlight
    - anchor : follow Rule 30 as well
    - towing : follow Rule 24 as well
    - Obstruction by gear- 2 all-around red lights (2 balls) on side of gear, 2 all-around green lights (2 diamonds) on side clear to pass
    - Day shape: ball diamond ball

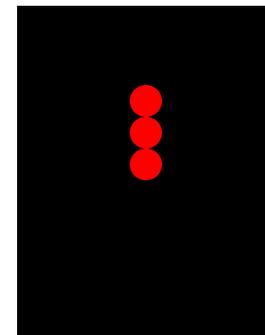




# International and Inland Lights and Day Shapes

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- Vessels constrained by draft (Rule 28)
  - power driven vessel lights
  - red over red over red
  - Day shape: black cylinder



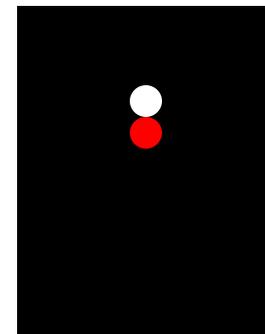


# International and Inland Lights and Day Shapes

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## – Pilot vessels (Rule 29)

- white over red, when on duty
- making way : sidelights & sternlight
  - No extra masthead light required





# International and Inland Lights and Day Shapes

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## – Anchored (Rule 30)

- $< 50\text{m}$  : all-around white fwd
- $> 50\text{m}$  : 2nd all-around white lower aft
- $> 100\text{m}$  : may use lights to illuminate deck
- Day shape: 1 black ball



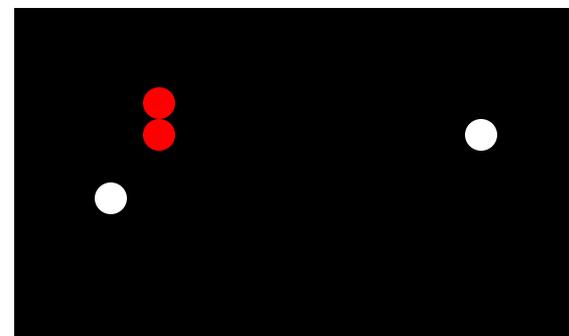


# International and Inland Lights and Day Shapes

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## – Aground (Rule 30)

- red over red
- same as anchored for rest
- Day shape: three black balls



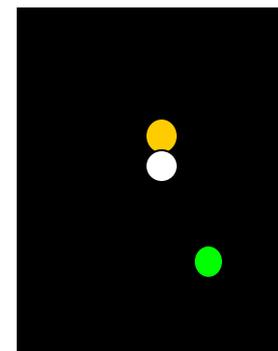


# International and Inland Lights and Day Shapes

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## – Submarines

- power driven vessel lights
- amber light : 1 flsh/sec for 3 sec, 3 sec off





# Sound and Light Signals

- Definitions (Rule 32)
  - Whistle – any sound signaling appliance capable of producing prescribed blasts
  - Short blast – 1 second's duration
  - Prolonged blast – 4-6 second's duration



# Sound and Light Signals

## – **Equipment for Sound Signals (Rule 33)**

- < 12m : means of making an efficient sound signal
- 12m or more : whistle and a bell
- 100m or more : whistle, bell & gong



# Sound and Light Signals

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- **Maneuvering and Warning Signals – (Rule 34)**
- **Inland sound signals- meeting or crossing**
  - 1 short blast: I intend to leave you on my port
  - 2 short blasts : I intend to leave you on my stbd
  - 3 short blasts: I am operating astern propulsion
  - Answer : same signal or 5 short blasts
- **International sound signals – meeting or crossing**
  - 1 short blast : I am altering my course to stbd
  - 2 short blasts: I am altering my course to port
  - 3 short blasts: I am operating astern propulsion
- Similar light signals may be used as supplements to the sound signals



# Sound and Light Signals

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## – Other sound signals (Rule 34)

- **Inland sound signals- overtaking**

- 1 short blast: I intend to overtake you on your starboard
- 2 short blasts : I intend to overtake you on your port
- Answer : same signal or 5 short blasts

- **International sound signals - overtaking**

- 2 prolonged, 1 short blast : I intend to overtake you on your starboard
- 2 prolonged, 2 short blasts: I intend to overtake you on your port
- Answer: 1 prolonged, 1 short, 1 prolonged, 1 short

- **Uncertainty** - a vessel uncertain as to another vessel's intentions or is fearful that a collision will occur will sound 5 short blasts

- **Blind bend** – 1 prolonged

- **Leaving dock** - a power-driven vessel will sound 1 prolonged blasts



# Sound and Light Signals

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## – **Sound Signals in Restricted Visibility (Rule 35)**

- Power driven vessel making way shall sound at intervals of not more than 2 minutes: 1 prolonged blast
- Power driven vessel underway but not making way shall sound at intervals of not more than 2 minutes: 1 prolonged- 2 sec – 1 prolonged
- The following vessels shall sound at intervals of not more than 2 minutes: 1 prolonged, 2 short
  - not under command
  - restricted in maneuverability (either underway or at anchor)
  - constrained by draft
  - sailing
  - engaged in fishing (either underway or at anchor)
  - engaged in towing or pushing



# Sound and Light Signals

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- **A vessel towed** (or the last vessel of the tow, if manned)
  - at intervals of not more than 2 minutes sound 1 prolonged - 3 short, immediately following the tugs signal if practicable
- **Vessels at anchor**
  - at intervals of not more than one minute ring the bell rapidly for about 5 seconds
  - > 100m in length, 5 sec bell forward, 5 sec gong aft
  - A vessel at anchor may in addition sound 1 prolonged – 3 short
- **Vessels aground**
  - 3 strokes bell, 5 sec bell, 3 strokes bell
  - >100 m in length : 3 strokes bell, 5 sec bell , 3 strokes bell, 5 sec gong
- **Pilot vessel**
  - when engaged in pilotage duty - 4short blasts



# Sound and Light Signals

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- Signals to attract attention-
  - Any light or sound signals that cannot be mistaken for any signal authorized elsewhere in the rules
  - Distress signals-
    - International: red star shells, continuous fog horn, flames, gun fired at intervals of 1 min, waving of arms, dye marker, mayday on radio, etc
    - Inland: All above plus, high intensity white light flashing at regular intervals from 50 to 70 times per minute



# International and Inland Rules Special Cases

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- Special circumstances not specifically addressed by the rules
  - Situations where the vessels find themselves already “in extremis.” (“Extremis” is used in the text; however, it is no longer a recognized legal term. The court has determined that vessels should take due action to avoid situations deemed to be “in extremis”)
    - It is the duty of the stand-on vessel to take action when it becomes apparent that action by the give-way vessel alone will not prevent a collision
    - A vessel shall not use the fact that the approaching vessel is breaking the rules as an excuse for maintaining course and speed but shall take actions, even if not covered by the rules, to prevent collision



# International and Inland Rules Special Cases

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- Presence of more than two vessels approaching simultaneously
  - signal early
- Situations not covered by the rules
  - Vessels are to time their leaving dock such as to not impede vessels already proceeding by the pier
  - Vessels backing up
  - Vessels are liable for the wakes they create
  - Vessels should remain outside formations of ships



# International and Inland Rules Special Cases

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- Approach situations where the vessels have agreed to depart from the rules
  - agreement is not binding
  - must obey rules until both have agreed
  - neither has right-of-way but must proceed with caution



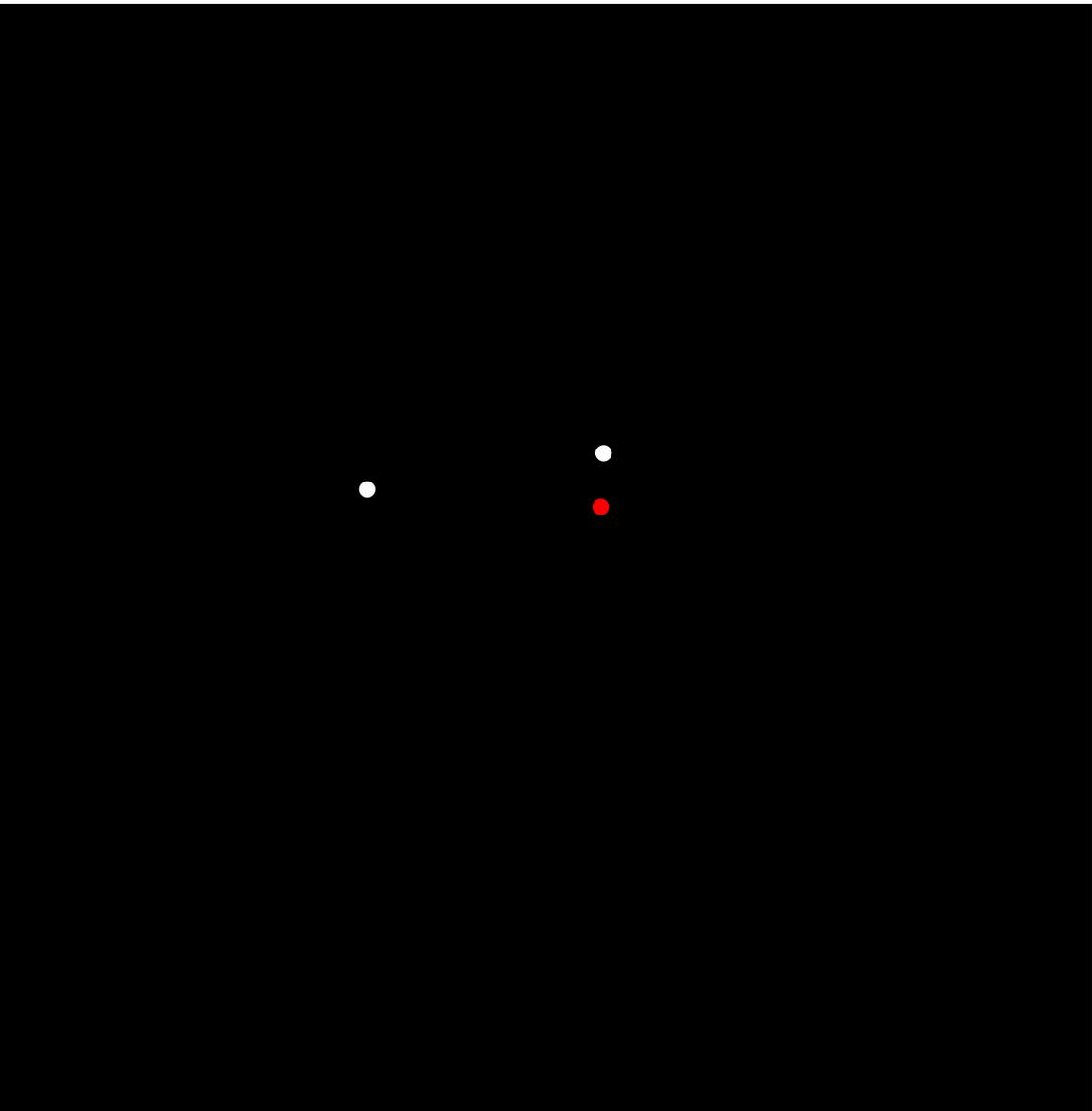
# Situational Awareness

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- Plan ahead when you make passing agreements
  - Look at the chart to make sure you know where he is and where he will be traveling (ie. he may be making a turn at a buoy or continuing along a channel)
  - Let the other vessel know if you will have to tack/jibe prior to passing so that the change in your profile/light configuration from his prospective doesn't make him think you're changing the agreement



# Lights



Power driven vessel

50 m in length

Port aspect (beam)



# Lights

Power driven vessel towing astern

towing vessel < 50 m in length

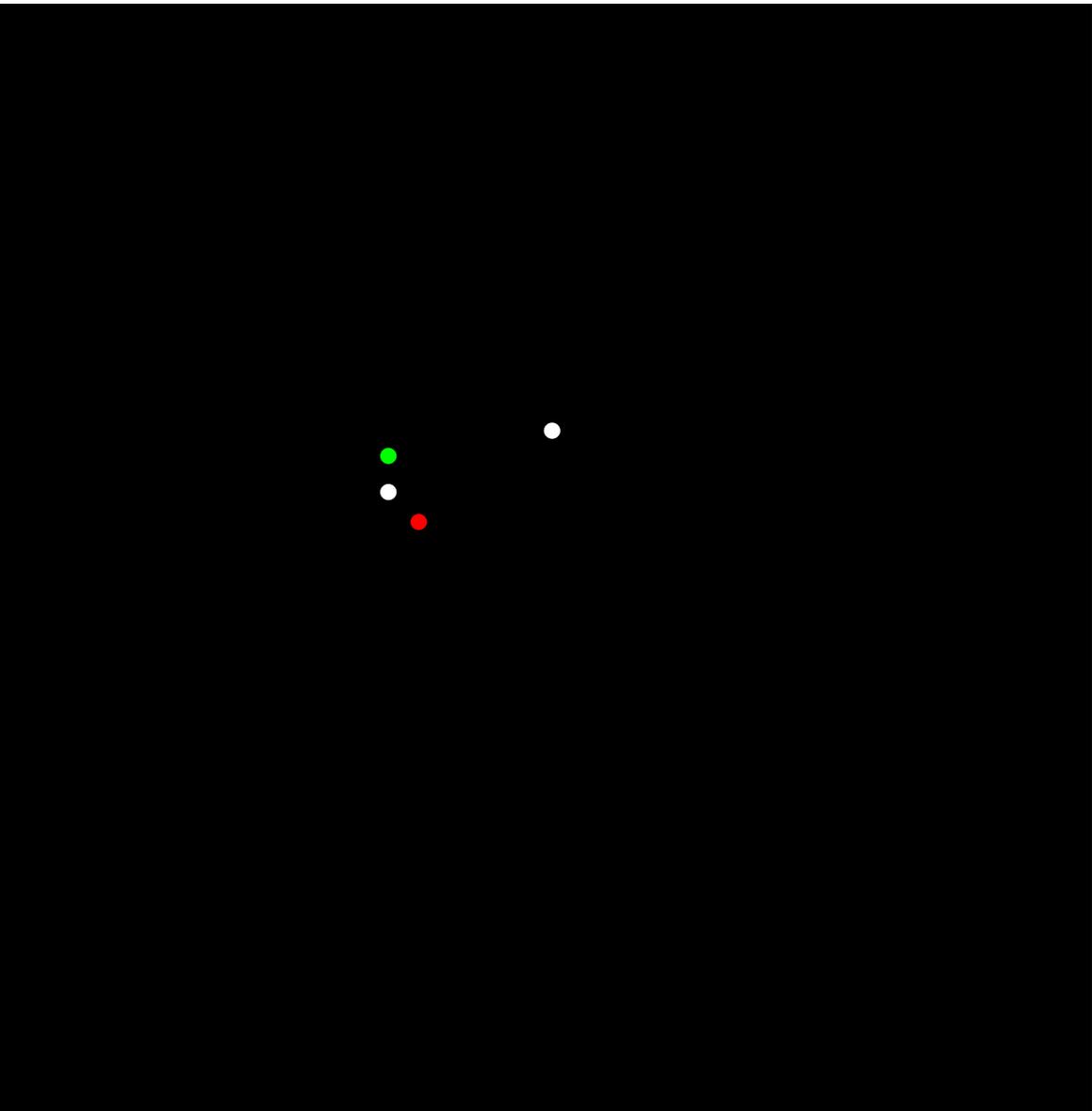
length of tow > 200 m,

Starboard aspect





# Lights



Vessel engaged in trawling

length > 50 m

Port aspect (beam)

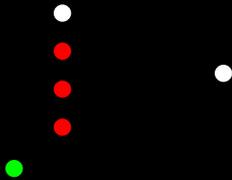


# Lights

Vessel constrained by draft

length > 50 m

Starboard aspect (narrow)





# Lights



Power driven vessel towing astern

length < 50 m

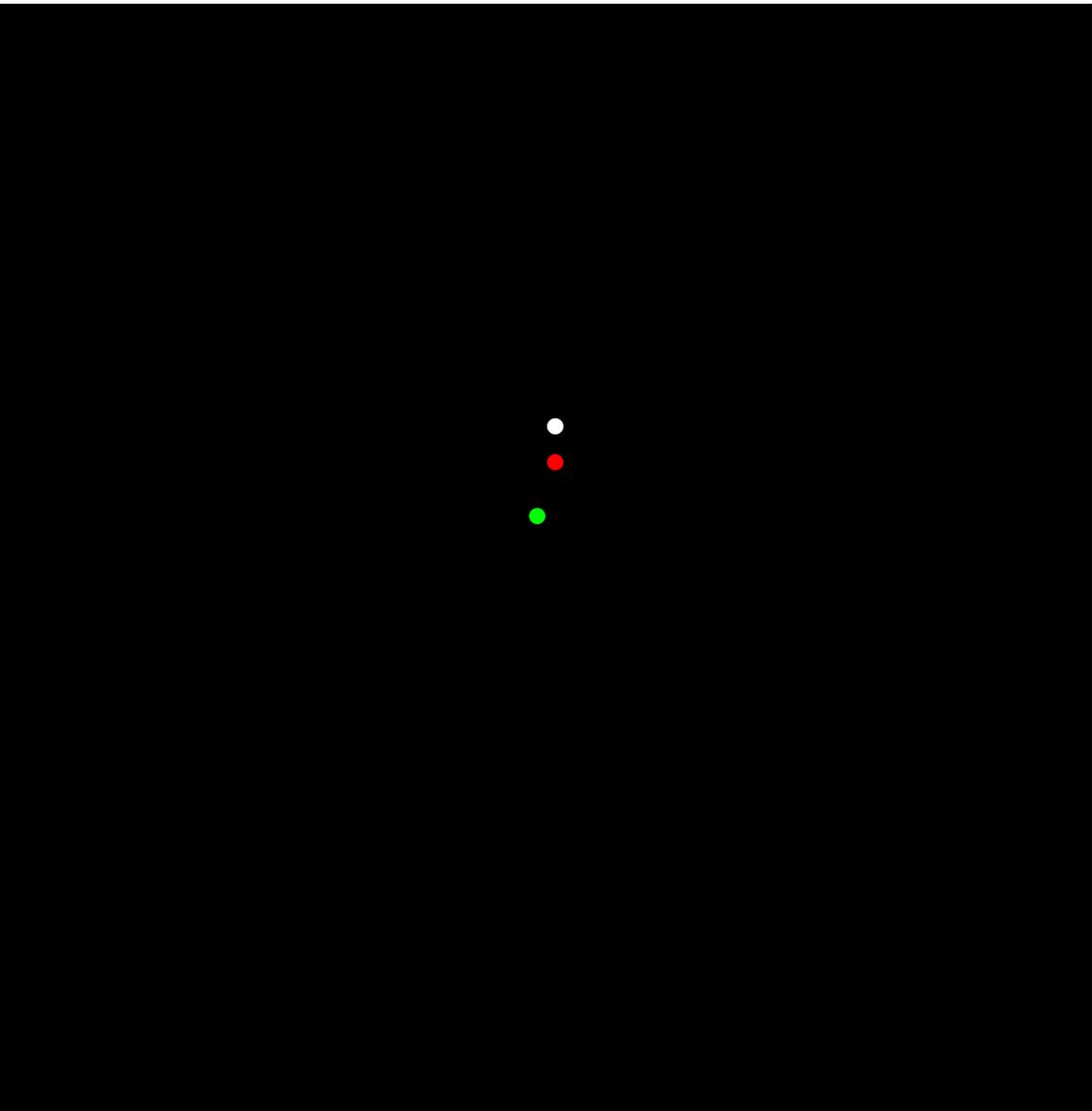
length of tow < 200 m

restricted in maneuverability

Starboard aspect (narrow)



# Lights

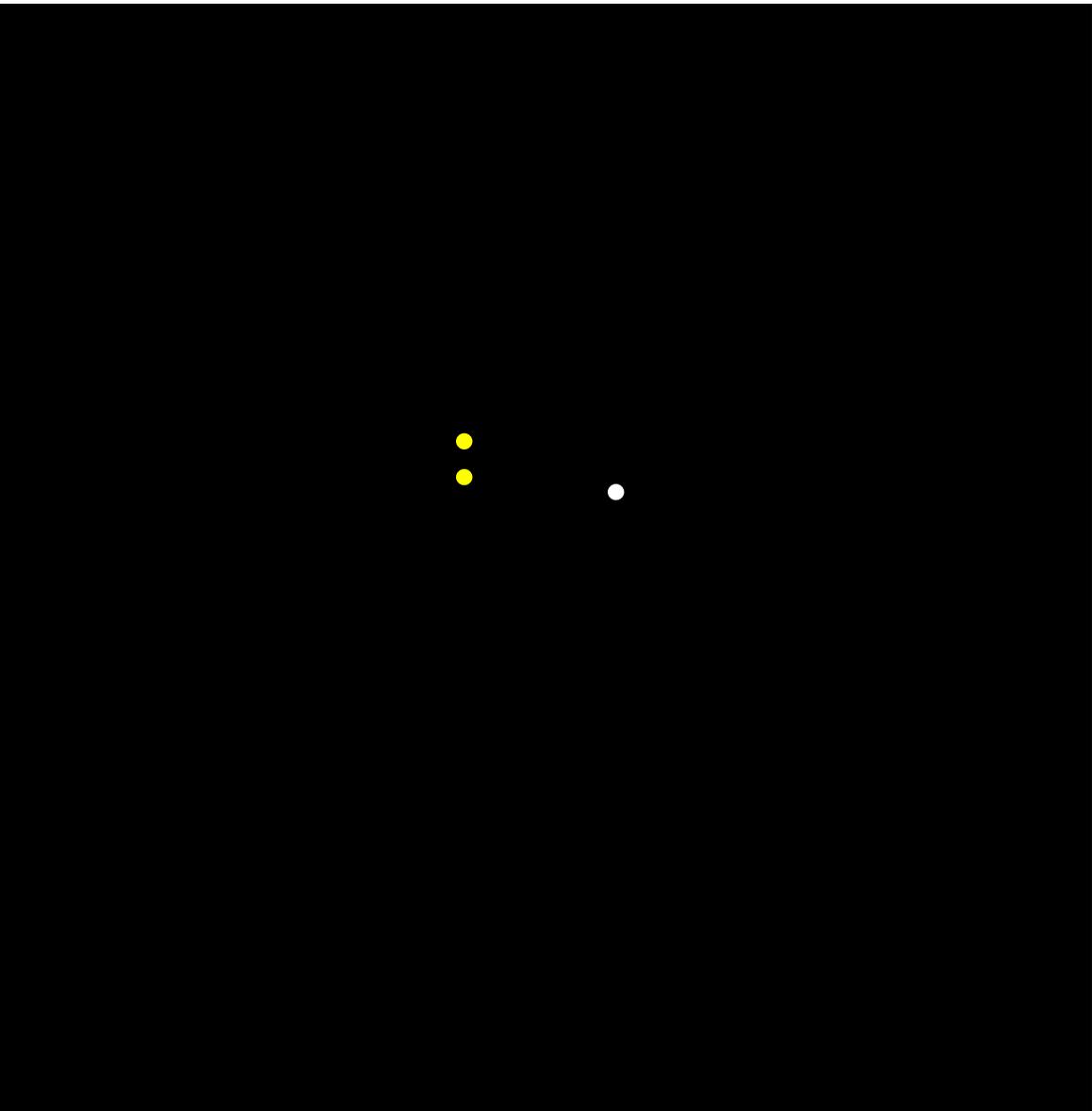


Pilot vessel

Starboard aspect



# Lights



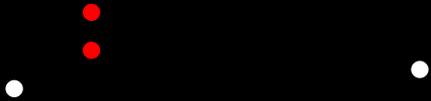
Vessel pushing along side

Stern aspect



# Lights

Vessel > 50 m in length aground





# Lights

Power driven vessel

< 50 m in length

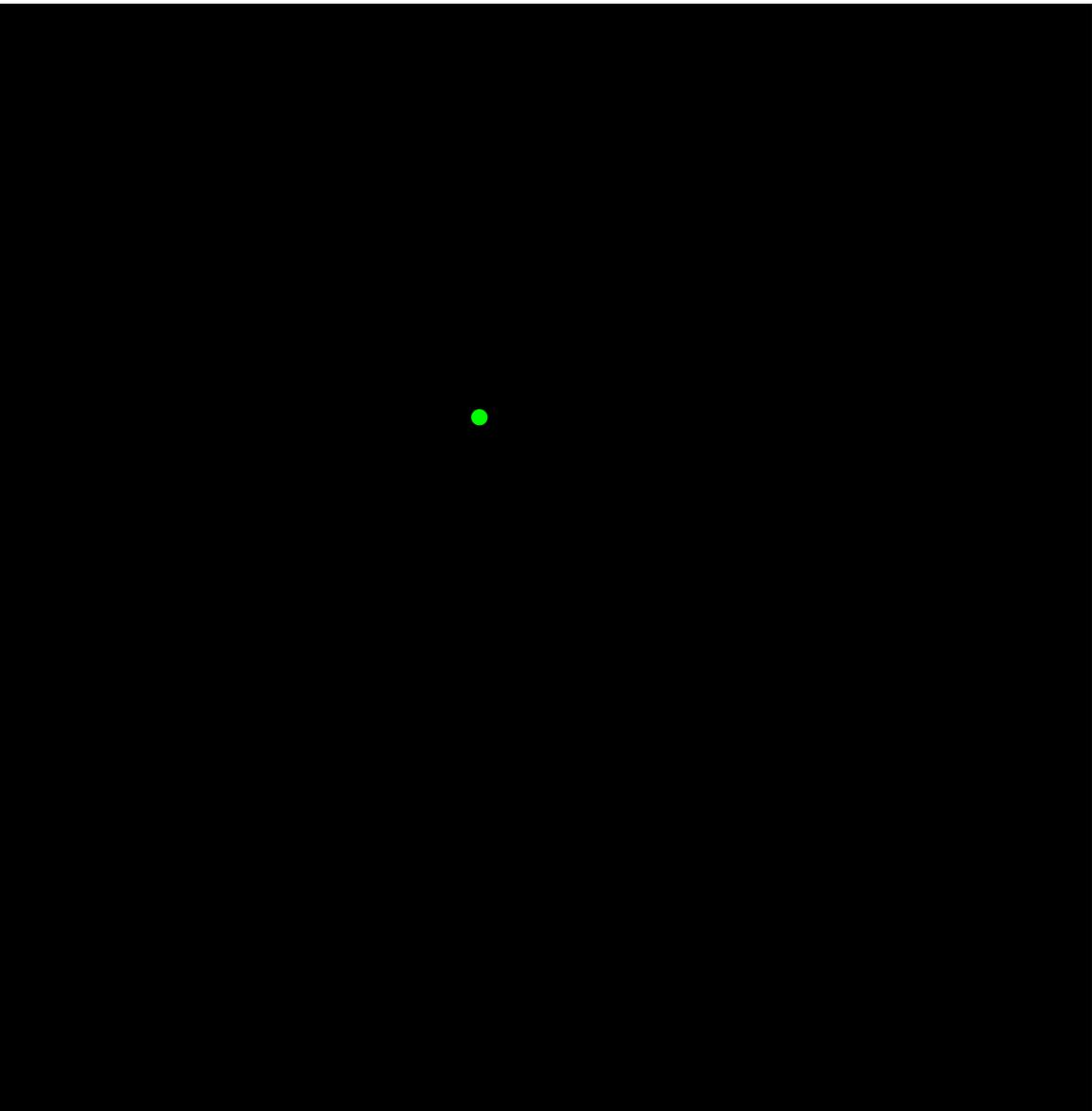
Starboard aspect (beam)





# Lights

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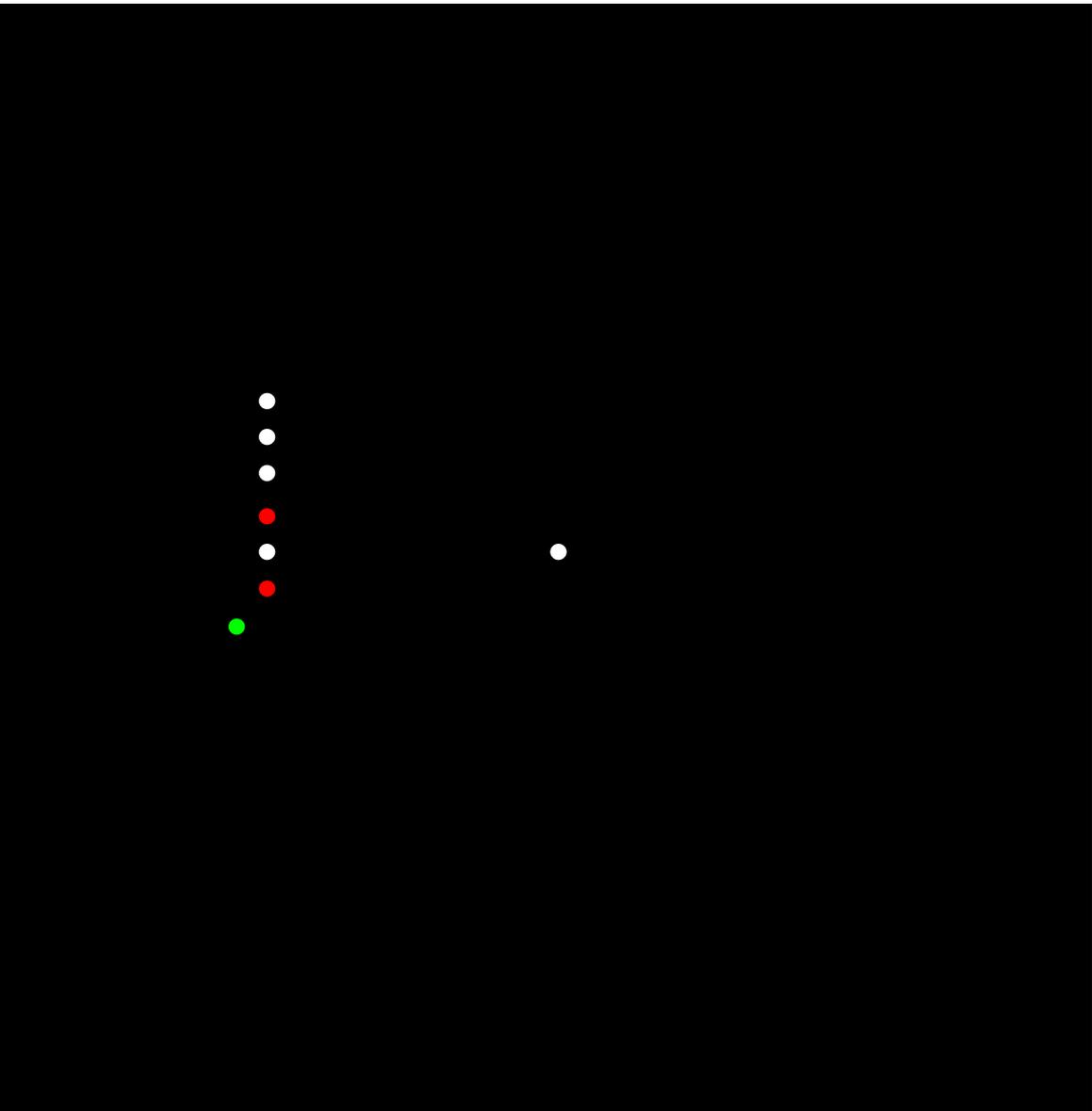


Sailing vessel

Starboard aspect



# Lights



Power driven vessel towing astern

towing vessel > 50 m in length

length of tow > 200 m

restricted in maneuverability

Starboard aspect



# Lights

Vessel engaged in trawling

length < 50 m

Starboard aspect (beam)





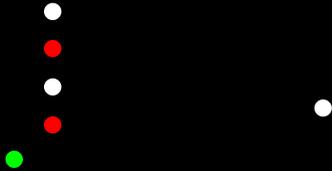
# Lights

Power driven vessel

length > 50 m

restricted in maneuverability

Starboard aspect





# Lights

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Power driven vessel sternlight

Power driven vessel masthead light

Sailing vessel stern aspect (tricolor)

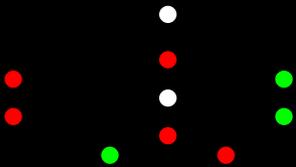




# Lights

Vessel engaged in dredging/underwater ops

Bow aspect





# International and Inland Rules

Questions?



# Useful websites

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- [www.navcen.uscg.gov/mwv/navrules/rotr\\_online.htm](http://www.navcen.uscg.gov/mwv/navrules/rotr_online.htm)
- [www.navcen.uscg.gov/mwv/mwv\\_files/NR\\_Files/navrules.pdf](http://www.navcen.uscg.gov/mwv/mwv_files/NR_Files/navrules.pdf)