



Rules Of The Road

This Study Guide Generated Fo

Preview Only

DO NOT DISTRIBUTE

INTERNATIONAL ONLY A vessel constrained by her draft may display which lights?

Three all-round red lights in addition to the lights required for a power-driven vessel of her class

Illustrations: RULE28_INT_CONSTRAINEDBYDRAFT

See REF1773

INTERNATIONAL ONLY A vessel constrained by her draft may display which lights?

Three all-round red lights in addition to the lights required for a power-driven vessel of her class

Illustrations: RULE28_INT_CONSTRAINEDBYDRAFT

See REF1773

INTERNATIONAL ONLY A vessel constrained by her draft may display which lights?

Three all-round red lights in addition to the lights required for a power-driven vessel of her class

Illustrations: RULE28_INT_CONSTRAINEDBYDRAFT

See REF1773

INLAND ONLY You are approaching a vessel displaying the lights as shown in illustration D075RR below. What type of situation is this?

Overtaking situation

Illustrations: D075RR_WM_020215

See REF1758

INLAND ONLY You are approaching a vessel displaying the lights as shown in illustration D075RR below. What type of situation is this?

Overtaking situation

Illustrations: D075RR_WM_020215

See REF1758

INLAND ONLY You are approaching a vessel displaying the lights as shown in illustration D075RR below. What type of situation is this?

Overtaking situation

Illustrations: D075RR_WM_020215

See REF1758

INLAND ONLY Identify the operation indicated by the lights exhibited as shown in illustration D085RR below.

Aircraft carrier engaged in the launching and recovery of aircraft

A vessel aground assisted by tugs

A submarine engaged in underway replenishment

None of the above

Illustrations: D085RR_WM_081214

See REF1748

INLAND ONLY Identify the operation indicated by the lights exhibited as shown in illustration D085RR below.

Aircraft carrier engaged in the launching and recovery of aircraft

A vessel aground assisted by tugs

A submarine engaged in underway replenishment

None of the above

Illustrations: D085RR_WM_081214

See REF1748

INLAND ONLY Identify the operation indicated by the lights exhibited as shown in illustration D085RR below.

Aircraft carrier engaged in the launching and recovery of aircraft

A vessel aground assisted by tugs

A submarine engaged in underway replenishment

None of the above

Illustrations: D085RR_WM_081214

See REF1748

INLAND ONLY A power-driven vessel when pushing ahead or towing alongside on the Western Rivers (above the Huey P. Long Bridge on the Mississippi River at mile 106.1) shall exhibit which of the following configurations?

sidelights and two towing lights

Illustrations: RULE24_INL_I

See REF1746

INLAND ONLY A power-driven vessel when pushing ahead or towing alongside on the Western Rivers (above the Huey P. Long Bridge on the Mississippi River at mile 106.1) shall exhibit which of the following configurations?

sidelights and two towing lights

Illustrations: RULE24_INL_I

See REF1746

INLAND ONLY A power-driven vessel when pushing ahead or towing alongside on the Western Rivers (above the Huey P. Long Bridge on the Mississippi River at mile 106.1) shall exhibit which of the following configurations?

sidelights and two towing lights

Illustrations: RULE24_INL_I

See REF1746

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F

See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F

See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F

See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D041RR below and will pass 1/4 mile apart. Which is one of the lights on vessel "B" that you will see if you are on vessel "A"?

special flashing light

Illustrations: D041RR_WM_091418, RULE24_INT_F
See REF1747

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?

ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E
See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?

ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E
See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?

ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E
See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?
ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E
See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?
ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E
See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?
ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E
See REF1724

BOTH INTERNATIONAL & INLAND You are on a vessel heading due north and see the lights shown in illustration D051RR below one point on your port bow. This vessel could be heading in what direction?
SE

Illustrations: D051RR_WM_052416
See REF1701

BOTH INTERNATIONAL & INLAND You are on a vessel heading due north and see the lights shown in illustration D051RR below one point on your port bow. This vessel could be heading in what direction?
SE

Illustrations: D051RR_WM_052416
See REF1701

BOTH INTERNATIONAL & INLAND You are on a vessel heading due north and see the lights shown in illustration D051RR below one point on your port bow. This vessel could be heading in what direction?
SE

Illustrations: D051RR_WM_052416
See REF1701

INLAND ONLY Two power-driven vessels are meeting in a narrow channel on the Great lakes as shown in illustration D029RR below. Vessel "A" is downbound with a following current. Vessel "B" should do which of the following?
Take action to permit safe passage

Illustrations: D029RR_WM_091318
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D029RR below and will pass 1/4 mile apart. Which statement is TRUE?
If a passing agreement is reached by radiotelephone whistle signals are optional.

Illustrations: D029RR_WM_091318
See REF1747

INLAND ONLY Two power-driven vessels are meeting in a narrow channel on the Great lakes as shown in illustration D029RR below. Vessel "A" is downbound with a following current. Vessel "B" should do which of the following?

Take action to permit safe passage

Illustrations: D029RR_WM_091318
See REF1747

INLAND ONLY Two power-driven vessels are meeting in a narrow channel on the Great lakes as shown in illustration D029RR below. Vessel "A" is downbound with a following current. Vessel "B" should do which of the following?

Take action to permit safe passage

Illustrations: D029RR_WM_091318
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D029RR below and will pass 1/4 mile apart. Which statement is TRUE?

If a passing agreement is reached by radiotelephone whistle signals are optional.

Illustrations: D029RR_WM_091318
See REF1747

INLAND ONLY Vessels "A" and "B" are meeting on a river as shown in illustration D029RR below and will pass 1/4 mile apart. Which statement is TRUE?

If a passing agreement is reached by radiotelephone whistle signals are optional.

Illustrations: D029RR_WM_091318
See REF1747

BOTH INTERNATIONAL & INLAND Which lights shall a 200-meter vessel exhibit when at anchor?
Working lights to illuminate the decks

Illustrations: RULE30_INL_ANCHOR, RULE30_INT_ANCHOR
See REF1699

BOTH INTERNATIONAL & INLAND Which lights shall a 200-meter vessel exhibit when at anchor?
Working lights to illuminate the decks

Illustrations: RULE30_INL_ANCHOR, RULE30_INT_ANCHOR
See REF1699

BOTH INTERNATIONAL & INLAND Which lights shall a 200-meter vessel exhibit when at anchor?
Working lights to illuminate the decks

Illustrations: RULE30_INL_ANCHOR, RULE30_INT_ANCHOR
See REF1699

BOTH INTERNATIONAL & INLAND Which lights shall a 200-meter vessel exhibit when at anchor?
Working lights to illuminate the decks

Illustrations: RULE30_INL_ANCHOR, RULE30_INT_ANCHOR
See REF1699

BOTH INTERNATIONAL & INLAND Which lights shall a 200-meter vessel exhibit when at anchor?
Working lights to illuminate the decks

Illustrations: RULE30_INL_ANCHOR, RULE30_INT_ANCHOR

See REF1699

BOTH INTERNATIONAL & INLAND Which lights shall a 200-meter vessel exhibit when at anchor?

Working lights to illuminate the decks

Illustrations: RULE30_INL_ANCHOR, RULE30_INT_ANCHOR

See REF1699

BOTH INTERNATIONAL & INLAND Which is TRUE of a tug boat displaying the shape shown in illustration D010RR below?

Has a tow that exceeds 200 meters in length

Illustrations: D010RR_WM_052416

See REF1685

BOTH INTERNATIONAL & INLAND Which is TRUE of a tug boat displaying the shape shown in illustration D010RR below?

Has a tow that exceeds 200 meters in length

Illustrations: D010RR_WM_052416

See REF1685

BOTH INTERNATIONAL & INLAND Which is TRUE of a tug boat displaying the shape shown in illustration D010RR below?

Has a tow that exceeds 200 meters in length

Illustrations: D010RR_WM_052416

See REF1685

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?

ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E

See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?

ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E

See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?

ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E

See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?

ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E

See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?
ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E
See REF1724

BOTH INTERNATIONAL & INLAND The tow shown in illustration D024RR below is less than 200 meters in length and severely restricted in her ability to deviate from her course. Which shape(s) would be displayed by day from the vessel(s)?
ball-diamond-ball on the towing vessel

Illustrations: D024RR_WM_091318, RULE27_INL_C_2, RULE24_INT_A, RULE24_INT_E
See REF1724

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?
the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?
the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?
the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?
the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?
the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND Which is TRUE for a fishing vessel displaying the lights shown in illustration D067RR below?

the vessel is fishing by trawling

Illustrations: D067RR_WM_081214, RULE26_INLTRAWL2, RULE26_INTTRAWL2, RULE26_INLTRAWL1, RULE26_INTTRAWL1
See REF1683

BOTH INTERNATIONAL & INLAND While underway you sight a vessel displaying the shapes shown in illustration D006RR below. What action should you take?

stay clear, the other vessel cannot get out of the way

Illustrations: D006RR_WM_052416
See REF1662

BOTH INTERNATIONAL & INLAND While underway you sight a vessel displaying the shapes shown in illustration D006RR below. What action should you take?

stay clear, the other vessel cannot get out of the way

Illustrations: D006RR_WM_052416
See REF1662

BOTH INTERNATIONAL & INLAND While underway you sight a vessel displaying the shapes shown in illustration D006RR below. What action should you take?

stay clear, the other vessel cannot get out of the way

Illustrations: D006RR_WM_052416
See REF1662

INTERNATIONAL ONLY Two power-driven vessels are crossing within one half mile of each other as shown in illustration D042RR below. Vessel "A" sounds one short blast of the whistle. What signal should vessel "B" sound?

None of the above

Illustrations: D042RR_WM_091418
See REF1747

BOTH INTERNATIONAL & INLAND Two power-driven vessels are crossing as shown in illustration D042RR below. Vessel "A" sounds two short blasts on the whistle. You are on vessel "B" and are in doubt that sufficient action is being taken by vessel "A" to avoid collision. What action should you take?

Sound five or more short and rapid blasts

Illustrations: D042RR_WM_091418
See REF1747

INTERNATIONAL ONLY Two power-driven vessels are crossing within one half mile of each other as shown in illustration D042RR below. Vessel "A" sounds one short blast of the whistle. What signal should vessel "B" sound?

None of the above

Illustrations: D042RR_WM_091418
See REF1747

BOTH INTERNATIONAL & INLAND Two power-driven vessels are crossing as shown in illustration D042RR below. Vessel "A" sounds two short blasts on the whistle. You are on vessel "B" and are in doubt that sufficient action is being taken by vessel "A" to avoid collision. What action should you take?

Sound five or more short and rapid blasts

Illustrations: D042RR_WM_091418
See REF1747

BOTH INTERNATIONAL & INLAND Two power-driven vessels are crossing as shown in illustration D042RR below. Vessel "A" sounds two short blasts on the whistle. You are on vessel "B" and are in doubt that sufficient action is being taken by vessel "A" to avoid collision. What action should you take?

Sound five or more short and rapid blasts

Illustrations: D042RR_WM_091418

See REF1747

INTERNATIONAL ONLY Two power-driven vessels are crossing within one half mile of each other as shown in illustration D042RR below. Vessel "A" sounds one short blast of the whistle. What signal should vessel "B" sound?

None of the above

Illustrations: D042RR_WM_091418

See REF1747

BOTH INTERNATIONAL & INLAND You are aboard vessel "A", a power-driven vessel, on open waters and vessel "B", a sailing vessel, is sighted off your port bow as shown in illustration D027RR below. Which vessel is the stand-on vessel?

Vessel "B" because it is sailing

Illustrations: D027RR_WM_081214

See REF1662

BOTH INTERNATIONAL & INLAND You are aboard vessel "A", a power-driven vessel, on open waters and vessel "B", a sailing vessel, is sighted off your port bow as shown in illustration D027RR below. Which vessel is the stand-on vessel?

Vessel "B" because it is sailing

Illustrations: D027RR_WM_081214

See REF1662

BOTH INTERNATIONAL & INLAND You are aboard vessel "A", a power-driven vessel, on open waters and vessel "B", a sailing vessel, is sighted off your port bow as shown in illustration D027RR below. Which vessel is the stand-on vessel?

Vessel "B" because it is sailing

Illustrations: D027RR_WM_081214

See REF1662

BOTH INTERNATIONAL & INLAND Vessel "A" is overtaking vessel "B" as shown in illustration D017RR below. Vessel "B" should do which of the following?

should hold her course and speed

Illustrations: D017RR_WM_091218

See REF1669

BOTH INTERNATIONAL & INLAND Vessel "A" is overtaking vessel "B" as shown in illustration D017RR below. Vessel "B" should do which of the following?

should hold her course and speed

Illustrations: D017RR_WM_091218

See REF1669

BOTH INTERNATIONAL & INLAND Vessel "A" is overtaking vessel "B" as shown in illustration D017RR below. Vessel "B" should do which of the following?

should hold her course and speed

Illustrations: D017RR_WM_091218

See REF1669

Your vessel has a draft of 23 feet. On 23 June 1983 you wish to pass over a temporary obstruction near Beaufort, SC, that has a charted depth of 22 feet. Allowing for a safety margin of 3 feet, what is the earliest time after 1600 DST (ZD +4) that this passage can be made?

1750

Illustrations: TIDE557, TABLE3_557

See REF1337

Your vessel has a draft of 23 feet. On 23 June 1983 you wish to pass over a temporary obstruction near Beaufort, SC, that has a charted depth of 22 feet. Allowing for a safety margin of 3 feet, what is the earliest time after 1600 DST (ZD +4) that this passage can be made?

1750

Illustrations: TIDE557, TABLE3_557

See REF1337

The charted depth alongside the south face of Mystic Pier, Charlestown, MA, is 35 feet. Your maximum draft is 38 feet. You wish to have 2 feet under the bottom, on a rising tide, when you go alongside to discharge a heavy lift. What is the earliest time after 0900 EST (ZD +5), on 2 February 1983, that you can dock?

1137

Illustrations: TIDE607, TABLE3_607

See REF1331

The charted depth alongside the south face of Mystic Pier, Charlestown, MA, is 35 feet. Your maximum draft is 38 feet. You wish to have 2 feet under the bottom, on a rising tide, when you go alongside to discharge a heavy lift. What is the earliest time after 0900 EST (ZD +5), on 2 February 1983, that you can dock?

1137

Illustrations: TIDE607, TABLE3_607

See REF1331

On 6 July 1983, at 1830 DST (ZD +4), what will be the predicted height of tide at Newburgh, NY?

2.0 feet

Illustrations: TIDE417, TABLE3_417

See REF1317

On 6 July 1983, at 1830 DST (ZD +4), what will be the predicted height of tide at Newburgh, NY?

2.0 feet

Illustrations: TIDE417, TABLE3_417

See REF1317

On 5 March 1983, at 0630 EST (ZD +5), what will be the predicted height of tide at Ocracoke, Ocracoke Inlet, NC?

0.1 foot

Illustrations: TIDE517, TABLE3_517

See REF1315

On 5 March 1983, at 0630 EST (ZD +5), what will be the predicted height of tide at Ocracoke, Ocracoke Inlet, NC?

0.1 foot

Illustrations: TIDE517, TABLE3_517

See REF1315

Find the height of the tide at Port Wentworth, GA, on 5 October 1983, at 1840 DST (ZD +4).

4.4 feet

Illustrations: TIDE457

See REF1310

You wish to make good a course of 035°T while turning for an engine speed of 12 knots. The set is 340°T, and the drift is 2 knots. What speed will you make good along the track line?

13.0 knots

Illustrations: CSEINCURRENT3452

See REF1168

You are underway and intend to make good a course of 040°T. You experience a current with a set and drift of 190°T at 1.4 knots, and a northwest wind produces a leeway of 3°. You adjust your course to compensate for the current and leeway, while maintaining an engine speed of 10 knots. What will be your speed made good over your intended course of 040°T?

8.8 knots

Illustrations: CSEINCURRENT3451

See REF1167

Your vessel is steering course 149°psc, variation for the area is 13°E, and deviation is 4°E. The wind is from the northeast, producing a 4° leeway. What true course are you making good?

170°T o (C) 162°T o (D) 128°T

Illustrations: BLANKCOMPSPERR_WM

You desire to make good a true course of 007°. The variation is 5°E, magnetic compass deviation is 3°W, and gyrocompass error is 2°E. A southwest by west wind produces a 2° leeway. What is the course to steer per standard magnetic compass to make the true course good?

003°psc

Illustrations: BLANKCOMPSPERR_WM

Entering a harbor, you take a bearing on a range and get 338° per gyrocompass (pgc). The true bearing from the chart is 340°T. Variation for the area is 14°E. Your course is 329° per standard magnetic compass (psc) and 338°pgc. What is the deviation on this heading?

3°W

Illustrations: BLANKCOMPSPERR_WM

The track line on the chart is 274°T. Variation is 4°E, and deviation is 2°E. The gyro error is 1.5°E. What course would be steered by gyrocompass to make good the desired course?

272.5°pgc

Illustrations: BLANKCOMPSPERR_WM

Your vessel is proceeding up a channel, and you see a pair of range lights that are in line ahead. The chart indicates that the direction of this pair of lights is 014°T, and the variation is 11°E. If the heading of your vessel at the time of the sighting is 009° per standard magnetic compass, what is the correct deviation?

6°W

Illustrations: BLANKCOMPSPERR_WM

Your vessel is proceeding up a channel, and you see a pair of range lights that are in line ahead. The chart indicates that the direction of this pair of lights is 352°T, and the variation is 4°W. If the heading of your vessel at the time of the sighting is 359° per standard magnetic compass, what is the correct deviation?

3°W

Illustrations: BLANKCOMPSPERR_WM

You desire to make good a true course of 203°. The variation is 19°E, magnetic compass deviation is 2°W, and gyrocompass error is 1°E. A westerly wind produces a 3° leeway. What is the course to steer per standard magnetic compass to make the true course good?

189°psc

Illustrations: BLANKCOMPSPERR_WM

The true course between two points is 106°. Your gyrocompass has an error of 2°E and you make an allowance of 2° leeway for a south wind. What gyro course should be steered to make the true course good?

106°pgc

Illustrations: BLANKCOMPSPERR_WM

You are outbound in a channel marked by a range astern. The range line is 309°T. You are steering 127°T and have the range in sight as shown in illustration D047NG below. What action should you take?

Come right to close the range then when on the range steer 129°T.

Illustrations: D047NG_WM_091018

In illustration D051NG below what is indicated by the position labeled "C"?

Running fix

Illustrations: D051NG_WM_091118

See REF246

Illustration D011NG below represents the geographic location of a vessel and the radar presentation at the same time. Which statement is TRUE?

Ship No. 1 does not appear as an individual target due to the effect of beam width.

Illustrations: D011NG_WM_082918

Illustration D011NG below represents the geographic location of a vessel and the radar presentation at the same time. Which statement is TRUE?

A tangent bearing of the headland to the south-southeast should be corrected by adding one-half of the beam width.

Illustrations: D011NG_WM_082918

The world is divided into NAVAREAS for the dissemination of important marine information. Which NAVAREAS include the U.S. coasts?

IV and XII

Illustrations: NAVAREAS

See REF1045

The luminous range of a light takes into account which factor?

The existing visibility conditions

Illustrations: LUMGEORNGE

See REF1027

What is the approximate geographic range of Assateague Light, VA, if your height of eye is 52 feet (15.8 meters)? Refer to "Reprints from the LIGHT LISTS AND COAST PILOTS".

23.0 nm

Illustrations: GEO1072_WM

See REF2669

You are entering an east coast port and see a buoy with a yellow triangle painted on it. What does the symbol indicate?

You are in the vicinity of the ICW

Illustrations: ICW01

See REF1020

You are sailing south on the Intracoastal Waterway (ICW) when you sight a green can buoy with a yellow square painted on it. Which of the following is TRUE?

You should leave the buoy to port.

Illustrations: ICW01

See REF1020

You are sailing south on the Intracoastal Waterway (ICW) when you sight a red nun buoy with a yellow square painted on it. Which statement is TRUE?

You should leave the buoy to port.

Illustrations: ICW01

See REF1020

In both regions of the IALA buoyage system, which topmark shown in illustration D022NG below is used on a special mark?

D

Illustrations: D022NG_WM_082918, IALA_A_B

Under the IALA Buoyage System, which topmark shown in illustration D023NG below will be displayed on a safe watermark?

A

Illustrations: D023NG_WM_082918, IALA_A_B

A mooring buoy, if lighted, shows which color light?

White

Illustrations: STATE01, STATE02

A mooring buoy, if lighted, shows which color light?

White

Illustrations: STATE01, STATE02

In illustration D044NG below, a pillar buoy is indicated by which letter?

C

Illustrations: D044NG_WM_050719

Red lights may appear on which buoys?

Horizontally banded buoys

Illustrations: USAIDS02

See REF1009

A buoy having red and green horizontal bands would have which light characteristic?

Composite group flashing

Illustrations: USAIDS02

What is the light phase characteristic of a lighted isolated-danger mark?

Group flashing

Illustrations: USAIDS03

See REF1007

"Proceeding from seaward" for the purpose of the direction of buoying offshore, lateral system buoys would be proceeding

northerly on the Pacific Coast

Illustrations: USAIDS05

You are steaming in a westerly direction along the Gulf Coast. You see ahead of you a lighted buoy showing a red isophase light. Which action should you take?

Alter course to port and leave the buoy to starboard.

Illustrations: USAIDS05

See REF207

Which type of daymark is used to mark the starboard side of the channel when entering from sea?

Red triangle

Illustrations: USAIDS05

See REF1002

A List of Lights entry (L FI) is a single flashing light which shows a long flash of not less than which duration?

2.0 seconds duration

Illustrations: LIGHTCHAR

A List of Lights entry (L FI) is a single flashing light which shows a long flash of not less than which duration?

2.0 seconds duration

Illustrations: LIGHTCHAR

Under the IALA Buoyage Systems, which is TRUE of the topmark of a red and white vertically- striped buoy?

It shall be a single red sphere

Illustrations: IALA_A_B, IALA_B, IALA_A, IALASYSTEM

In the IALA Maritime Buoyage System, what is a red and white vertically-striped buoy used to indicate?

Safe water

Illustrations: IALA_A_B, IALA_B, IALA_A, IALASYSTEM

Under the IALA Buoyage Systems, which is TRUE of the topmark of a red and white vertically- striped buoy?
It shall be a single red sphere

Illustrations: IALA_A_B, IALA_B, IALA_A, IALASYSTEM

In the IALA Maritime Buoyage System, what is a red and white vertically-striped buoy used to indicate?
Safe water

Illustrations: IALA_A_B, IALA_B, IALA_A, IALASYSTEM

In the IALA Maritime Buoyage System, what is a red and white vertically-striped buoy used to indicate?
Safe water

Illustrations: IALA_A_B, IALA_B, IALA_A, IALASYSTEM

Under the IALA Buoyage Systems, which is TRUE of the topmark of a red and white vertically- striped buoy?
It shall be a single red sphere

Illustrations: IALA_A_B, IALA_B, IALA_A, IALASYSTEM

In the IALA Maritime Buoyage System, what is a red and white vertically-striped buoy used to indicate?
Safe water

Illustrations: IALA_A_B, IALA_B, IALA_A, IALASYSTEM

Under the IALA Buoyage System, which topmark shown in illustration D023NG below will be displayed on a safe watermark?

A

Illustrations: D023NG_WM_082918, IALA_A_B

In both regions of the IALA buoyage system, which topmark shown in illustration D022NG below is used on a special mark?

D

Illustrations: D022NG_WM_082918, IALA_A_B

Under the IALA Buoyage Systems, which is TRUE of the topmark of a red and white vertically- striped buoy?
It shall be a single red sphere

Illustrations: IALA_A_B, IALA_B, IALA_A, IALASYSTEM

An orange and white buoy indicating a vessel-exclusion area will be marked with what symbol?
Diamond with a cross

Illustrations: USAIDS07
See REF1006

An orange and white buoy indicating a vessel-exclusion area will be marked with what symbol?
Diamond with a cross

Illustrations: USAIDS07
See REF1006

Under the U.S. Aids to Navigation System, which category is a yellow buoy?

A special purpose mark

Illustrations: USAIDS06

See REF997

Which light characteristic may be used on a special purpose mark?

Flashing

Illustrations: USAIDS06

See REF997

Buoys which mark dredging areas are painted which color?

Yellow

Illustrations: USAIDS06

See REF997

In illustration D015SA below, which item number correctly identifies the hydrostatic release?

6

Illustrations: D015SA_WM_110218

See REF994

In illustration D015SA below, which item number correctly identifies the hydrostatic release?

6

Illustrations: D015SA_WM_110218

See REF994

How should the number "1" be pronounced when spoken on the radiotelephone?

OO-NAH-WUN

Illustrations: PHONETICALPHABET

How should the letter "W" be pronounced when spoken on the radiotelephone?

WISS KEY

Illustrations: PHONETICALPHABET

How should the letter "W" be pronounced when spoken on the radiotelephone?

WISS KEY

Illustrations: PHONETICALPHABET

The lookout sights a vessel dead ahead. How would this be reported on the bell?

Three strikes on the bell

Illustrations: REPORTING BERRINGS

See REF2576

You have determined the maneuvering characteristics of your vessel by taking the radar ranges and bearings of an isolated light while making a turn. The results are listed in illustration D035DG. Based on this data what is the tactical diameter of the turning circle? D035DG

880 yards

Illustrations: D035DG_WM_081618

See REF012

You have determined the maneuvering characteristics of your vessel by taking radar ranges and bearings of an isolated light while making a turn. The results are shown in illustration D035DG below. What is the transfer for a turn of 90°?

400 yards

Illustrations: D035DG_WM_081618

See REF012

You are conducting trials to determine the maneuvering characteristics of your vessel. While making a turn, you take ranges and bearings of an isolated light. The results are shown in illustration D034DG below. What is the transfer for a turn of 180°?

910 yards

Illustrations: D034DG_WM_081618

You are conducting trials to determine the maneuvering characteristics of your vessel. While making a turn, you take ranges and bearings of an isolated light with the results as shown. Based on this information, what is the advance for a turn of 90°? Illustration D034DG

870 yards

Illustrations: D034DG_WM_081618

You are conducting trials to determine the maneuvering characteristics of your vessel. While making a turn, you take ranges and bearings of an isolated light. The results are shown in illustration D034DG below. What is the transfer for a turn of 180°?

910 yards

Illustrations: D034DG_WM_081618

Which type of line would have the LEAST resistance to mildew and rot?

Manila

Illustrations: FIBERLINE_WM

See REF499

Which knot in illustration D030DG below is secure only when there is a strain on the line?

L

Illustrations: D030DG_WM_112718

See REF489

You are using tackle number 12 as shown in illustration D029DG below to lift a weight. The hauling part of this tackle is bent to the weight hook (w) of tackle number 2. What is the mechanical advantage of this rig?

14

Illustrations: D029DG_WM_073018, TACKLE_WM

See REF005

What is the mechanical advantage, neglecting friction, of tackle number 4 as shown in illustration D029DG below?

4

Illustrations: D029DG_WM_073018, TACKLE_WM

See REF005

What is the mechanical advantage, neglecting friction, of tackle number 12 as shown in illustration D029DG below?

7

Illustrations: D029DG_WM_073018, TACKLE_WM

See REF005

Where on a vessel are the load line markings shown in illustration D031DG inscribed?

Both the port and starboard sides

Illustrations: D031DG_WM_081318

See REF351

Where on a vessel are the load line markings shown in illustration D031DG inscribed?

Both the port and starboard sides

Illustrations: D031DG_WM_081318

See REF351

The tankship Northland is loaded as shown in table BL-0004 below. Use the salmon colored pages in the Stability Data Reference Book to determine the hogging numeral.

49.73 numeral

Illustrations: BL0004WM

See REF337

The tankship Northland is loaded as shown in table BL-0004 below. Use the salmon colored pages in the Stability Data Reference Book to determine the hogging numeral.

49.73 numeral

Illustrations: BL0004WM

See REF337

The signal man assisting the crane operator has his arm extended, his fingers closed, and his thumb pointing downward. This is the signal to _____.

lower the boom

Illustrations: CRANESIGNAL_WM

Two navigational hazards are located near to each other, but each is marked by an individual cardinal buoyage system. How are the buoys of one cardinal system identified from the other system?

The difference in the periods of the light

Illustrations: MYCARDINAL_WM

While steaming on course 280°T, you sight a buoy showing a very quick flashing (VQ) white light well to port. Maintaining course, you sight another buoy showing a quick flashing (Q) white light. How should you pass?

North of the buoy

Illustrations: MYCARDINAL_WM

You are steaming along the coast of Ireland in the Irish Sea. You sight a lighted buoy with a white flashing light showing a group of two flashes. The buoy indicates you should take which action?

You should pass well clear on either side of the buoy

Illustrations: MYCARDINAL_WM

If your vessel were proceeding up river (ascending), how is the port side of the channel marked according to the U. S. Aids to Navigation System on the Western Rivers?

Green can buoys

Illustrations: WESTERNRIVSYS

In which situation is the light characteristic of composite group flashing (2 + 1) used in the Aids to Navigation System on the Western Rivers?

On preferred-channel buoys

Illustrations: WESTERNRIVSYS

In the U.S. Aids to Navigation System on the Western Rivers, a preferred channel buoy to be left to port while proceeding downstream will _____.

show a red light if lighted

have a characteristic of composite group flashing if lighted

have the upper band red

All of the above

Illustrations: WESTERNRIVSYS

Under the U.S. Aids to Navigation System on the Western Rivers, which is TRUE of a preferred channel buoy?

It shall be horizontally-banded red and green

Illustrations: WESTERNRIVSYS

While proceeding downriver, you sight a red triangular-shaped daymark on the left bank. What does this daymark represent under the U.S. Aids to Navigation System on the Western Rivers?

It is a passing daymark

Illustrations: WESTERNRIVSYS

In illustration D033DG below, what is the space indicated by the letter J known as?

The double bottom

Illustrations: D033DG_WM_080318, STRUCTURALMEMBER

See REF128

In illustration D033DG below, what is the joint indicated by letter D?

A butt

Illustrations: D033DG_WM_080318, STRUCTURALMEMBER

See REF128

In illustration D033DG below, what is the joint indicated by letter D?

A butt

Illustrations: D033DG_WM_080318, STRUCTURALMEMBER

See REF128

In illustration D033DG below, the structural member indicated by the letter K was fitted in segments between continuous longitudinals. It is known as which type of floor?

Intercostal

Illustrations: D033DG_WM_080318, STRUCTURALMEMBER
See REF128

In illustration D033DG below, what is the space indicated by the letter J known as?

The double bottom

Illustrations: D033DG_WM_080318, STRUCTURALMEMBER
See REF128

In illustration D033DG below, what is the joint indicated by letter D?

A butt

Illustrations: D033DG_WM_080318, STRUCTURALMEMBER
See REF128

In illustration D033DG below, what is the joint indicated by letter D?

A butt

Illustrations: D033DG_WM_080318, STRUCTURALMEMBER
See REF128

In illustration D033DG below, the structural member indicated by the letter K was fitted in segments between continuous longitudinals. It is known as which type of floor?

Intercostal

Illustrations: D033DG_WM_080318, STRUCTURALMEMBER
See REF128

In illustration D039SA below, what is the fire control plan symbol represented by number (67)?

Emergency generator

Illustrations: D039SA_WM_110218, D039SA1_WM_072020, D039SA2_WM_072020

In illustration D039SA below, what is the fire control plan symbol represented by number (67)?

Emergency generator

Illustrations: D039SA_WM_110218, D039SA1_WM_072020, D039SA2_WM_072020

In illustration D039SA below, what is the fire control plan symbol represented by number (67)?

Emergency generator

Illustrations: D039SA_WM_110218, D039SA1_WM_072020, D039SA2_WM_072020

You are on watch at sea on course 090°T. A man falls overboard on your starboard side. You immediately start a Williamson Turn. Which action is NOT a part of a Williamson Turn?

Stop the engines until clear of the man.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN
See REF095

If you see an individual fall overboard, which action(s) should you take?

Pass the word to the bridge

Throw him/her a life buoy

Hail "man overboard"

All of the above

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

If you see an individual fall overboard, which action(s) should you take?

Pass the word to the bridge

Throw him/her a life buoy

Hail "man overboard"

All of the above

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

You suspect that a crewmember has fallen overboard during the night and immediately execute a Williamson turn. What is the primary advantage of this maneuver under these circumstances?

You will be on a reciprocal course and nearly on the track-line run during the night.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

You suspect that a crewmember has fallen overboard during the night and immediately execute a Williamson turn. What is the primary advantage of this maneuver under these circumstances?

You will be on a reciprocal course and nearly on the track-line run during the night.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

If you see an individual fall overboard, which action(s) should you take?

Pass the word to the bridge

Throw him/her a life buoy

Hail "man overboard"

All of the above

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

If you see an individual fall overboard, which action(s) should you take?

Pass the word to the bridge

Throw him/her a life buoy

Hail "man overboard"

All of the above

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

You suspect that a crewmember has fallen overboard during the night and immediately execute a Williamson turn. What is the primary advantage of this maneuver under these circumstances?

You will be on a reciprocal course and nearly on the track-line run during the night.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

You suspect that a crewmember has fallen overboard during the night and immediately execute a Williamson turn. What is the primary advantage of this maneuver under these circumstances?

You will be on a reciprocal course and nearly on the track-line run during the night.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

You are on watch at sea on course 090°T. A man falls overboard on your starboard side. You immediately start a Williamson Turn. Which action is NOT a part of a Williamson Turn?

Stop the engines until clear of the man.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

If you see an individual fall overboard, which action(s) should you take?

Pass the word to the bridge

Throw him/her a life buoy

Hail "man overboard"

All of the above

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

If you see an individual fall overboard, which action(s) should you take?

Pass the word to the bridge

Throw him/her a life buoy

Hail "man overboard"

All of the above

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

You suspect that a crewmember has fallen overboard during the night and immediately execute a Williamson turn. What is the primary advantage of this maneuver under these circumstances?

You will be on a reciprocal course and nearly on the track-line run during the night.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

You suspect that a crewmember has fallen overboard during the night and immediately execute a Williamson turn. What is the primary advantage of this maneuver under these circumstances?

You will be on a reciprocal course and nearly on the track-line run during the night.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

You are on watch at sea on course 090°T. A man falls overboard on your starboard side. You immediately start a Williamson Turn. Which action is NOT a part of a Williamson Turn?

Stop the engines until clear of the man.

Illustrations: WILLIAMSON_TURN, ANDERSON_TURN, SCHARNOW_TURN

See REF095

In launching a lifeboat, when should the tricing pendants be released?

After all people have been embarked

Illustrations: D016SA_WM_110818, D016SA2

See REF084

In launching a lifeboat, when should the tricing pendants be released?

After all people have been embarked

Illustrations: D016SA_WM_110818, D016SA2

See REF084

In launching a lifeboat, when should the tricing pendants be released?

After all people have been embarked

Illustrations: D016SA_WM_110818, D016SA2

See REF084

In launching a lifeboat, when should the tricing pendants be released?

After all people have been embarked

Illustrations: D016SA_WM_110818, D016SA2

See REF084

Which term is used to describe the projecting lugs of the rudderpost which furnish support to the rudder?

Gudgeons

Illustrations: PINTLE_AND_GUDGEON_RUDDER_SYSTEM

Which term is used to describe the projecting lugs of the rudderpost which furnish support to the rudder?

Gudgeons

Illustrations: PINTLE_AND_GUDGEON_RUDDER_SYSTEM

You are using tackle number 12 as shown in illustration D029DG below to lift a weight. The hauling part of this tackle is bent to the weight hook (w) of tackle number 2. What is the mechanical advantage of this rig?

14

Illustrations: D029DG_WM_073018, TACKLE_WM

See REF005

What is the mechanical advantage, neglecting friction, of tackle number 4 as shown in illustration D029DG below?

4

Illustrations: D029DG_WM_073018, TACKLE_WM

See REF005

What is the mechanical advantage, neglecting friction, of tackle number 12 as shown in illustration D029DG below?

7

Illustrations: D029DG_WM_073018, TACKLE_WM

See REF005

A situation has occurred where it becomes necessary for you to be towed. What action should be taken to prevent your vessel from yawing?

Shift weight to the stern

Illustrations: PITCH_ROLL_YAW

See REF001

A situation has occurred where it becomes necessary for you to be towed. What action should be taken to prevent your vessel from yawing?

Shift weight to the stern

Illustrations: PITCH_ROLL_YAW

See REF001

What can an oxygen indicator can be used to determine?

If there is sufficient oxygen in a compartment to support life

See REF125

The two courses of action if the underwater hull is severely damaged are to plug the openings or to take which action?

Establish and maintain flooding boundaries

What is the color of the signal flare sent up by a submarine indicating that a torpedo has been fired in a training exercise?

Green

See REF097

You are plotting a running fix in an area where there is a determinable current. How should this current be treated in determining the position?

The course and speed made good should be determined and used to advance the LOP.

Information about the pilotage available at Miami harbor may best be obtained from which publication?

United States Coast Pilot

See REF1032

At 0000 you fix your position and plot a new DR track line. At 0200 you again fix your position and it is 0.5 mile east of your DR. Which statement is TRUE?

The drift is 0.25 knot.

When adjusting a magnetic compass for error, which is TRUE concerning the deviation table?

Construct the table after adjusting the fore-and-aft permanent magnets

Based on your 0500 fix, which statement is TRUE?

You should alter course to port to clear Southwest Ledge Shoal.

See REF2671

Which statement concerning storm surges on the Great Lakes is TRUE?

Are a result of strong winds and sharp change in barometric pressure

BOTH INTERNATIONAL & INLAND Which statement is TRUE concerning seaplanes on the water?

A seaplane on the water shall, in general, keep well clear of all vessels.

See REF2646

INLAND ONLY If you were coming up on another power-driven vessel from dead astern and desired to overtake on the other vessel's starboard side, which whistle signal would you sound?

One short blast

See REF1747

BOTH INTERNATIONAL & INLAND You are preparing to cross a narrow channel. You see a vessel that can only be navigated safely within the channel. Which action should you take?

Do not cross the channel if you might impede the other vessel

See REF1668

BOTH INTERNATIONAL & INLAND You are watching another vessel approach and her compass bearing is not changing. What does this indicate?

a risk of collision exists

BOTH INTERNATIONAL & INLAND Which light(s) shall a vessel or object being towed astern display?

stern light

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing during the day would show which shape?

two cones, apexes together

You are planning the stowage of two incompatible products on your multiple-product tankship. What will NOT provide the minimum required segregation?

Solid (non-intercostal) bulkhead

Multiple factors will have an effect on your vessel when it is maneuvering in restricted waters. Which of the following factors is the combination of sinkage and trim of the vessel?

Squat

See REF081

When would a U.S. merchant vessel in ocean service NOT subject to the requirements of Annex V to MARPOL 73/78?

A U.S. vessel in ocean service is ALWAYS subject to MARPOL.

You are piloting your vessel in a narrow channel. How will the vessel react to a steep bank on your starboard side?

The bow will swing away from the bank, and stern will swing into the bank

Your vessel is port side to a pier with a spring line led aft from the bow. How will the vessel respond in calm weather, with the engines ahead and hard left rudder?

The bow will swing in and the stern out

Why should foam be banked off a bulkhead when extinguishing an oil fire?

To prevent agitation of the oil and spreading the fire

See REF053

What will a sea anchor accomplish if deployed correctly?

reduce the drift rate of the liferaft

What is the most important characteristic of the extinguishing agent in fighting a class "C" fire?

Electrical nonconductivity

See REF628

Lifesaving regulations in Subchapter W require that a fire drill include which of the following?

Checking arrangements for abandon ship

Checking the operation of watertight doors

Starting the fire pumps

All of the above

See REF052

What does a buoy with a composite group-flashing light indicate?

Bifurcation (channel junction)

See REF1009

How can the accuracy of an azimuth circle be checked?

comparing observed azimuths at different altitudes with computed values at the times of observation to see if the difference is constant

See REF1055

When approaching a lock entrance, which flashing light is the visual signal displayed when a single lock is ready for entrance?

A green light

See REF1001

You depart from the position in the previous question at 2114 and make good 12 knots on a course of 040°T. At what time will you sight New Haven Light if the visibility is 11 miles?

2159

See REF2672

A vessel operating on the Great Lakes, and whose position is south of an eastward-moving storm center, would experience which condition?

A southeast to south wind

How are nautical charts published by the Canadian Hydrographic service which are referenced in the United States Coast Pilot identified?

An asterisk preceding the chart number

BOTH INTERNATIONAL & INLAND An all-round flashing yellow light may be exhibited by which vessel?

an air-cushion vessel

INLAND ONLY Which of the following is indicated by a vessel displaying a flashing blue light?

A law enforcement vessel

See REF1748

INTERNATIONAL ONLY A wing in ground (WIG) craft cannot comply with the spacing requirement for masthead lights. What is required in this situation?

The WIG's lights must comply as closely as possible, as determined by her government.

See REF1772

BOTH INTERNATIONAL & INLAND What is TRUE when operating in fog and other vessels are detected by radar?

You should maneuver in ample time if a close-quarters situation is developing.

See REF1666

INLAND ONLY Which signal must a power-driven vessel give, in addition to one prolonged blast, when backing out of a berth with another vessel in sight 0.5 nm away?

3 short blasts

See REF1747

BOTH INTERNATIONAL & INLAND You are involved in a crossing situation with a vessel off your port bow. The other vessel is showing a high intensity all-round flashing red light. Which action should you take?

Maintain course and speed

The effect known as "bank cushion" acts in which of the following ways on a single-screw vessel proceeding along a narrow channel?

It forces the bow away from the bank.

See REF013

You are releasing carbon dioxide gas (CO₂) into an engine compartment to extinguish a fire. In which situation will the CO₂ be most effective?

The compartment is closed and airtight

Where can the deepest water when rounding a bend in a river be located?

Toward the outside of the bend

What is the function of a red triangular daymark?

To indicate the starboard side of a channel

See REF996

Which would influence a magnetic compass?

Radio

Electrical wiring

Iron pipe

All of the above

What is your course made good from 2045 to 2111?

193°T

See REF2669

BOTH INTERNATIONAL & INLAND Which is TRUE for a vessel in a traffic separation scheme that is joining a traffic lane from the side?

the vessel should enter at as small an angle as possible to the traffic flow

BOTH INTERNATIONAL & INLAND Which vessel must have a gong, or other equipment which will make the sound of a gong?

Any vessel over 100 meters

See REF1705

INLAND ONLY For the purpose of the Inland Navigation Rules, the term "Inland Waters" includes which of the following?

The Mississippi River System

See REF1678

BOTH INTERNATIONAL & INLAND For the purpose of the Rules, except where otherwise required, the term

"vessel" includes seaplanes

Which statement about stopping a vessel is TRUE?

When a vessel is dead in the water any speed displayed by Doppler log reflects the current.

When do the pollution prevention regulations in MARPOL apply to U. S. flag vessels that are certified for ocean service?

When the vessel is on all international and inland waters

Which of the following statements is/are TRUE in regard to Ro-Ro vessels' spaces that are "specially suitable for vehicles"?

The spaces shall be fitted with an approved fire or smoke detecting system.

What must be present in order for combustion to occur inside a piping system such as a vapor collection header in a marine emission control system?

fuel

oxygen

ignition

All of the above

The tank barge on which you are preparing to load petroleum is required to have on board one B-II fire extinguisher. What does NOT meet this requirement?

5 gallon water (stored pressure)

As a vessel sinks to a depth of 15 feet, the hydrostatic trip releases the liferaft container from its cradle by _____.

releasing the tie-down strap

See REF392

What type of stern tube bearing has the least friction?

Oil-lubricated bearings

Which describes the floors aboard a ship?

The frames to which the tank top and bottom shell are fastened on a double bottomed ship

See REF116

Radiation spreads a fire by _____.

transferring heat across an unobstructed space

See REF124

The nominal range of a light may be accurately defined as the maximum distance at which a light may be seen _____.

with ten miles visibility

See REF1029

When would cloud formations be minimal?

When the surface temperature and temperature aloft are equal

Which term is used to express the maximum distance at which a light may be seen under existing visibility conditions?

Luminous range

What is the relative bearing of an object sighted dead ahead?

000°

See REF1120

At 0520 your position is LAT 41°07.2'N, LONG 71°41.6'W. You set course to leave Race Rock Light abeam to starboard at 0.5 mile. What is the course to steer per standard magnetic compass? (Assume no current)

307.5°

See REF2671

If the speed necessary for reaching port at a designated time is 23.7 knots and the pitch of the propeller is 20.8 feet, how many revolutions per minute will the shaft have to turn, assuming a 7% negative slip?

108 RPM

See REF1272

BOTH INTERNATIONAL & INLAND Which is TRUE for a vessel in a traffic separation scheme that is joining a traffic lane from the side?

the vessel should enter at as small an angle as possible to the traffic flow

BOTH INTERNATIONAL & INLAND Which vessel must have a gong, or other equipment which will make the sound of a gong?

Any vessel over 100 meters

See REF1705

INLAND ONLY For the purpose of the Inland Navigation Rules, the term "Inland Waters" includes which of the following?

The Mississippi River System

See REF1678

BOTH INTERNATIONAL & INLAND For the purpose of the Rules, except where otherwise required, the term

"vessel" includes seaplanes

You are using the anchor to steady the bow while maneuvering. When do you know you have the proper scope of anchor cable out?

When the bow is held in position with the engines coming slowly ahead

What is an enclosure which will withstand ignition of a flammable gas, and which will prevent the transmission of any flame able to ignite a flammable gas, which may be present in the surrounding atmosphere called?

explosion proof

Which term defines cargo that is highly susceptible to damage by tainting from odorous cargo?

Delicate cargo

See REF157

When the dew point of the outside air is higher than the dew point of the air in the cargo hold, which action should you take?

Do not ventilate the cargo holds

See REF173

Prior to being able to sail, each vessel that carries grain in bulk must have a certificate of loading. Which organization issues this certificate?

National Cargo Bureau

See REF274

A vessel is constructed with a steel hull and an aluminum superstructure. Which statement is TRUE?

The aluminum structure is usually attached to a steel coaming by a method that insulates the two metals.

See REF128

What is the danger to personnel associated with using carbon dioxide in an enclosed space?

Asphyxiation

See REF098

Which statement is TRUE concerning distress signals in a lifeboat?

Parachute flares, hand held flares and orange smoke signals are required in a lifeboat

You are approaching a disabled vessel in order to remove survivors from it. If your vessel drifts faster than the disabled vessel, how should you make your approach?

To windward of the disabled vessel

Which type of cloud is among the most dependable for giving an indication of an approaching weather system?

Altostratus

See REF171

To make sure of getting the full advantage of a favorable current, you should reach an entrance or strait at which time in relation to the predicted time of the favorable current?

30 minutes before

When using GPS without Selective Availability, what can you expect your horizontal accuracy to be of the unit?

20 meters

At 2142, you take the following bearings:

Stratford Point Light 331°T
Stratford Shoal Middle Ground Light 280°T
Old Field Point Light 223°T
What is your 2142 position?
LAT 41°03.0'N, LONG 73°01.7'W
See REF2672

Aboard a vessel, what does dividing the sum of the longitudinal moments by the total weight yield?
The vessel's LCG

Regulations define the bulkhead deck as _____. (subdivision and stability regulations)
the uppermost deck to which transverse watertight bulkheads extend
See REF720

BOTH INTERNATIONAL & INLAND Which vessel is the stand-on vessel when two vessels crossing in fog are NOT in sight of one another?
Neither vessel is the stand-on vessel.
See REF1666

INTERNATIONAL ONLY Which vessel is to keep out of the way of the others?
A vessel engaged in trawling
See REF1763

BOTH INTERNATIONAL & INLAND When shall a proper look-out be maintained?
at all times

BOTH INTERNATIONAL & INLAND Except where specifically required by the rules, a sailing vessel is NOT required to keep out of the way of which vessel?
power-driven pilot vessel on station

BOTH INTERNATIONAL & INLAND According to the Navigation Rules, you may depart from the Rules when _____.
you are in immediate danger

As a ship moves through the water, it drags with it a body of water called the wake. Which term defines the ratio of the wake speed to the ship's speed?
Wake fraction
See REF056

Which statement concerning carbon dioxide is FALSE?
It is safe to use near personnel in a confined space.
See REF655

You are 15 feet off a pier and docking a vessel using only a bow breast line and stern breast line. Once the slack is out of both lines you begin to haul in on the bow breast line. What is the effect on the vessel?
The bow will come in and the stern will remain the same distance off the pier.

How can Northern right whales be identified?
Whitish patches of skin on top of the head
No dorsal fin on the back
"V" shaped blow easily visible from ahead or behind
All of the above

What do the agonic line on an isomagnetic chart indicate?

Points where there is no variation

See REF163

An ECDIS is required to display which information?

Soundings

See REF1059

If you are going to head directly for Chesapeake Light from your 2111 fix, what is the course to make good?

190°T

See REF2669

INTERNATIONAL ONLY Two power-driven vessels are meeting. What would a two blast whistle signal by either vessel mean?

"I am altering course to port"

See REF1740

BOTH INTERNATIONAL & INLAND You are on watch in the fog. Your vessel is proceeding at a safe speed when you hear a fog signal ahead of you. The Rules require you to navigate with caution and take which action if danger of collision exists?

Slow to minimum that the vessel can be kept on course

See REF1666

BOTH INTERNATIONAL & INLAND When a vessel signals her distress by means of a gun or other explosive signal, which firing intervals should be used?

Once every minute

See REF1738

BOTH INTERNATIONAL & INLAND When is a stand-on vessel in a crossing situation allowed to take action?

it becomes apparent to her that the give-way vessel is not taking appropriate action

INLAND ONLY Which term is NOT defined in the Inland Navigation Rules?

Vessel constrained by her draft

See REF1678

A Permit to Proceed is issued by which organization?

U.S. Coast Guard

Your vessel is disabled and in imminent danger of grounding on a lee shore. The Master agrees to salvage services using Lloyd's Open Form of Salvage Agreement. Which is TRUE?

The salvage service is on a "no cure-no pay" basis.

Grade D liquids are those having flash points of _____.

greater than 80°F and less than 150°F

See REF044

You are docking a vessel. When are the wind and current most favorable in this situation?

When they are both parallel to the pier from ahead

How would the exhaust of a properly operating diesel engine appear?

Perfectly clear

Which term defines the minimum concentration of a vapor in air which can form a mixture that ignites and burns?

Lower flammable limit (LFL)

See REF126

Which causes spontaneous combustion?

A chemical action within a substance

See REF047

You are approaching a disabled vessel in order to remove survivors from it. If your vessel drifts faster than the disabled vessel, how should you make your approach?

To windward of the disabled vessel

Which statement(s) is/are TRUE concerning radio equipment on towing vessels of 26 feet or more in length?

The vessel must have a ship-radio-station license issued by the FCC.

Each radio operator must hold an FCC-issued restricted operator's license, or higher.

Maintain a continuous listening watch on VHF channel 16 and the bridge-to-bridge channel.

All of the above.

Information about the direction and velocity of rotary tidal currents can be found in which publication?

Tidal Current Tables

When do Spring tides occur?

When the Moon is new or full

See REF229

Visibility becomes variable in patchy fog and you maintain 5 knots speed. At 0610 you sight Montauk Point Light bearing 239°pgc. At 0630 you sight Watch Hill Point Light bearing 333°pgc. What is the position of your 0630 running fix?

LAT 41°08.3'N, LONG 71°45.4'W

See REF2671

When turning a ship in restricted space with a strong wind, which is the BEST action to take?

Turn so that the tendency to back into the wind can be used, if on a single-screw vessel

INTERNATIONAL ONLY Two power-driven vessels are meeting. What would a two blast whistle signal by either vessel mean?

"I am altering course to port"

See REF1740

BOTH INTERNATIONAL & INLAND You are on watch in the fog. Your vessel is proceeding at a safe speed when you hear a fog signal ahead of you. The Rules require you to navigate with caution and take which action if danger of collision exists?

Slow to minimum that the vessel can be kept on course

See REF1666

BOTH INTERNATIONAL & INLAND When a vessel signals her distress by means of a gun or other explosive signal, which firing intervals should be used?

Once every minute

See REF1738

BOTH INTERNATIONAL & INLAND When is a stand-on vessel in a crossing situation allowed to take action?

it becomes apparent to her that the give-way vessel is not taking appropriate action

INLAND ONLY Which term is NOT defined in the Inland Navigation Rules?

Vessel constrained by her draft

See REF1678

Which item may be substituted for, in the fireman's outfit, on a cargo vessel?

Flame safety lamp

In accordance with U.S. regulations, where are the signs prohibiting smoking required to be posted while the vessel is loading Class 1 explosive materials?

At all locations where Class 1 materials are being handled

Which item do you NOT have to provide for the Coast Guard representative at the time of a stability test?

A stability letter.

The possibility of wake damage can be reduced by following which action?

Slow down when passing moored vessels

When will a vessel "squat" while underway?

In all depths of water

All lifeboats, rescue boats, and rigid-type liferafts shall be stripped, cleaned, and thoroughly overhauled at which time interval?

Yearly

All personnel on board a vessel should be familiar with the rescue boat's _____.

boarding and operating procedure

When a ship is abandoned and there are several liferafts in the water, which task must be done to aid in your rescue?

Secure the rafts together to keep them from drifting apart

Which statement about damage control is TRUE?

A hole in the hull at the waterline is more dangerous than a hole below the inner bottom.

You are operating on the Red River Waterway and two different air masses of differing characteristics are converging at your location. What weather phenomenon is in your vicinity?

A front

Which is TRUE of a vertically-striped buoy?

It may be lighted with a white light

Which describes a diurnal tide?

Only one high and one low water occur during a lunar day

See REF134

What was the speed made good between 2114 and 2142?

11.4 knots

See REF2672

On the Great Lakes, winter storms compound the ice threat by bringing a variety of wind, wave, and weather problems. On an average of how often does these storms occur?

Every four days

Which is usually the most gentle way of riding out a severe storm on a larger vessel?

Running before the seas

See REF021

BOTH INTERNATIONAL & INLAND A vessel shall slacken her speed, stop, or reverse her engines, if necessary, to

be stopped in an appropriate distance
avoid collision
allow more time to assess the situation
All of the above
See REF1664

BOTH INTERNATIONAL & INLAND Which is TRUE for a vessel using a traffic separation scheme?
avoid anchoring in areas near the termination of the scheme

INLAND ONLY Which statement is TRUE concerning the Inland Navigation Rules?
They list requirements for Traffic Separation Schemes.
See REF1756

BOTH INTERNATIONAL & INLAND You are at anchor in fog. The fog signal of a vessel underway has been steadily growing louder and the danger of collision appears to exist. In addition to your fog signal, what signal may be used to indicate the presence of your vessel?
Three blasts on the whistle; one short, one prolonged, and one short.

BOTH INTERNATIONAL & INLAND When navigating in restricted visibility, what action shall a power-driven vessel take?
Have her engines ready for immediate maneuver

The galley on your cargo vessel has an area of 2,500 square feet. Which of the following would fulfill the minimum requirements for fire protection?
One B-II extinguisher
See REF388

Why is carbon dioxide (CO₂) better than dry chemical for fighting a class "C" fire?
The dry chemical leaves a residue.
See REF652

Which of the following statements is TRUE regarding automatic identification systems (AIS)?
AIS can be used to make passing arrangements via ship-to-ship text messaging but a vessel operator is not relieved from the requirement to sound whistle signals or make arrangements via bridge-to-bridge radiotelephone.

You are approaching Chatham Strait from the south in foggy weather. You have Coronation Island and Hazy Islands on the radar. Suddenly the radar malfunctions. You then resort to using whistle echoes to determine your distance off Coronation Island. Your stopwatch reads 16.3 seconds for the echo to be heard. How far are you off Coronation Island?
1.5 miles
See REF1064

Which defines the range of tide?
The difference between the heights of high and low tide

Which is TRUE of an alternating light?
It shows a light that changes color
See REF1003

At 2200, you alter course to 204°T, at 14 knots. You expect a current on this leg of the trip, setting 325° at 1.5 knots. Which course should you steer per gyrocompass to make good the true course?
201°pgc
See REF2669

BOTH INTERNATIONAL & INLAND An all-round flashing yellow light may be exhibited by which vessel?
an air-cushion vessel

INLAND ONLY Which of the following is indicated by a vessel displaying a flashing blue light?
A law enforcement vessel
See REF1748

INTERNATIONAL ONLY A wing in ground (WIG) craft cannot comply with the spacing requirement for masthead lights. What is required in this situation?
The WIG's lights must comply as closely as possible, as determined by her government.
See REF1772

BOTH INTERNATIONAL & INLAND What is TRUE when operating in fog and other vessels are detected by radar?
You should maneuver in ample time if a close-quarters situation is developing.
See REF1666

INLAND ONLY Which signal must a power-driven vessel give, in addition to one prolonged blast, when backing out of a berth with another vessel in sight 0.5 nm away?
3 short blasts
See REF1747

BOTH INTERNATIONAL & INLAND You are involved in a crossing situation with a vessel off your port bow. The other vessel is showing a high intensity all-round flashing red light. Which action should you take?
Maintain course and speed

A vessel is to make a voyage between New York and San Juan, Puerto Rico, and return. The crew should be signed on which articles?
Coastwise Articles

Who is responsible for seeing that all hands are familiar with their duties, as specified in the muster list, and that the muster list is correct?
The Master
See REF033

Your vessel is proceeding through a narrow channel. What actions can you take to avoid any sudden sheers of the vessel?
Reduce speed and stay in the deepest part of the channel

As a general guide, under which condition should hygroscopic cargoes be ventilated?
When going from a warm to a cold climate

You are on a 120,000 DWT loaded bulk carrier. What is the maximum safe docking speed when coming alongside?
0.2 foot per second (0.12 knot)

All personnel on board a vessel should be familiar with the rescue boat's _____.
boarding and operating procedure

Which statement about damage control is TRUE?
A hole in the hull at the waterline is more dangerous than a hole below the inner bottom.

Which item is a safety feature provided on all inflatable liferafts?
Water stabilizing pockets

You hear the general alarm and ship's whistle sound for over 10 seconds. What does this signal mean?
Fire and emergency

See REF033

Two beacons form a range in the direction of $221.5^{\circ}T$. The range is seen in line from your vessel bearing 223° per gyrocompass. The variation in the area is $4^{\circ}E$. What is the error of your gyrocompass?

$1.5^{\circ}W$

While navigating in fog off a coastline of steep cliffs, you hear the echo of the ships fog horn 2 seconds after the signal was sounded. What is the distance to the shore?

360 yards

See REF1064

At 0630 you increase speed to 12.0 knots.

At 0645 Race Rock Light bears $294^{\circ}pgc$.

At 0700 Race Rock Light bears $293^{\circ}pgc$.

Based on this, what action should you take?

alter course to port

See REF2671

Which publication would give detailed information on the commercial vessel traffic reporting system for connecting waters from Lake Erie to Lake Huron?

Code of Federal Regulations - Title 33

See REF515

BOTH INTERNATIONAL & INLAND An all-round flashing yellow light may be exhibited by which vessel?

an air-cushion vessel

INLAND ONLY Which of the following is indicated by a vessel displaying a flashing blue light?

A law enforcement vessel

See REF1748

INTERNATIONAL ONLY A wing in ground (WIG) craft cannot comply with the spacing requirement for masthead lights. What is required in this situation?

The WIG's lights must comply as closely as possible, as determined by her government.

See REF1772

BOTH INTERNATIONAL & INLAND What is TRUE when operating in fog and other vessels are detected by radar?

You should maneuver in ample time if a close-quarters situation is developing.

See REF1666

INLAND ONLY Which signal must a power-driven vessel give, in addition to one prolonged blast, when backing out of a berth with another vessel in sight 0.5 nm away?

3 short blasts

See REF1747

BOTH INTERNATIONAL & INLAND You are involved in a crossing situation with a vessel off your port bow. The other vessel is showing a high intensity all-round flashing red light. Which action should you take?

Maintain course and speed

You are operating an ocean-going vessel of 322 gross tons. If your vessel does NOT have an oily-water separator then she must have a fixed piping system to discharge oily ballast to a shore facility. This system must include which item(s)?

A means to stop each pump near the discharge outlet

See REF376

According to Pollution Prevention Regulations (33CFR), who is required to sign each completed page in the Oil Record Book?

The master

See REF592

While standing look-out at night, which is the BEST way to see a dim light on the horizon?

Look a little above the horizon

In accordance with U.S. regulations which signal is required to be displayed during hours of darkness if a vessel is handling Class 1 explosive materials?

One all-round fixed red light

When is a lookout permitted to leave his station?

Only when properly relieved

Radiation spreads a fire by _____.

transferring heat across an unobstructed space

See REF124

What can an oxygen indicator can be used to determine?

If there is sufficient oxygen in a compartment to support life

See REF125

You are on a 165 foot (50.3 meters) long vessel with a draft of 9 feet (2.7 meters) and twin screws. Which statement about rescuing a survivor in the water with ship pickup is TRUE?

A pickup off the weather bow gives maximum maneuverability with the least possibility of injury to the man.

Which is one of the signals, other than a distress signal, that can be used by a rescue boat to attract attention?

A searchlight

Which of the following aspects of a flooded space will most adversely affect transverse stability if it is subject to free communication?

Off-center

See REF156

Your vessel is steering 238°T at 11 knots. At 2304 a light bears 176°T, and at 2323 the same light bears 155°T. What will be your distance off abeam?

8.5 miles

See REF1165

What do clear skies, with the exception of a few cumulus clouds indicate?

Fair weather

After an item of required safety equipment on a towing vessel fails, the owner or Master must consider all of these factors before continuing the voyage, EXCEPT the _____.

estimated time of arrival promised to the customer

While on a course of 349°T, a light bears 13° on your starboard bow at a distance of 10.8 miles. What course should you steer to pass 2.5 miles abeam of the light, leaving it to starboard?

349°

At 2142, you change course to make good 030°T and increase speed to 14 knots. You rendezvous with another vessel and receive fresh supplies while off New Haven Harbor lighted whistle buoy "NH". What is the light characteristic of this buoy?

* -

See REF2672

Which statement about stopping a vessel is TRUE?

When a vessel is dead in the water any speed displayed by Doppler log reflects the current.

Ice concentration is measured in tenths. What concentration range of ice corresponds to "Open Pack"?
4 - 6 tenths

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing while at anchor shall sound which fog signal?
One prolonged and two short blasts at two minute intervals

See REF1686

BOTH INTERNATIONAL & INLAND While underway in fog, you hear a signal of one prolonged blast followed by three short blasts. Which vessel shall sound this fog signal?
A manned vessel being towed

BOTH INTERNATIONAL & INLAND Your vessel is underway in fog and you hear one prolonged and three short blasts. Which vessel would this signal indicate?
A vessel being towed

BOTH INTERNATIONAL & INLAND By radar alone, you detect a vessel ahead on a collision course, about 3 miles distant. Your radar plot shows this to be a meeting situation. Which action should you take?
Turn the vessel to starboard

See REF1666

BOTH INTERNATIONAL & INLAND A pilot vessel may continue to sound an identity signal under which situation?
At anchor

Squat is a natural phenomena as a ship moves through a restricted channel due to what basic principle?
Decreased pressure on the hull resulting from increased speed

See REF013

Which is the BETTER holding ground, for a conventional anchor?
A mixture of mud and clay

After casting off moorings at a mooring buoy in calm weather, which action should you take?
Back away a few lengths to clear the buoy and then go ahead on the engines

Which is the reference datum used in determining the heights of land features on most charts?
Mean high water

See REF168

The set of the current is the _____.
direction in which the current flows

See REF1150

Entering from seaward, what do triangular-shaped daymarks mark?
The starboard side of the channel

See REF1002

On the 10th of May at 1130, you leave the fleeting area at Gartness Lt.(mile 227.8 AHP) bound for the Monsanto Terminal in St. Louis (mile 178.0 UMR). Your engines turn for 8.5 mph in still water. What is the length of the trip?
904.0 miles

See REF2670

BOTH INTERNATIONAL & INLAND Which vessel is the stand-on vessel when two vessels crossing in fog are NOT in sight of one another?

Neither vessel is the stand-on vessel.

See REF1666

INTERNATIONAL ONLY Which vessel is to keep out of the way of the others?

A vessel engaged in trawling

See REF1763

BOTH INTERNATIONAL & INLAND When shall a proper look-out be maintained?

at all times

BOTH INTERNATIONAL & INLAND Except where specifically required by the rules, a sailing vessel is NOT required to keep out of the way of which vessel?

power-driven pilot vessel on station

BOTH INTERNATIONAL & INLAND According to the Navigation Rules, you may depart from the Rules when

you are in immediate danger

According to the Chemical Data Guide, what is a characteristic of allyl chloride?

It is classified as a grade B poison.

See REF044

If you shorten the scope of anchor cable, what is the effect of your anchor's holding power?

The holding power decreases

You are loading 530,000 barrels of cargo oil. At 0945 on 13 April, you find that you have loaded 202,000 barrels. At 1130, you find that you have loaded 223,000 barrels. When will you complete loading if you continue at the same rate?

1305, 14 April

Which describes ice blink?

A whitish glare on the underside of a cloud layer

Which statement concerning solid floors is TRUE?

They may have lightening, limber, or air holes cut into them.

See REF105

After an engine is started which is the best action(s) to take?

Check operating pressures and temperatures, and check for leaks

Motor-propelled lifeboats are required to have sufficient fuel to operate continuously at 6 knots for how many hours?

24

You must evacuate a seaman by helicopter lift. Which statement is TRUE?

The hoist line should be slack before the basket or stretcher is hooked on.

See REF108

Charts should be corrected by using information published in which text?

Notice to Mariners

See REF133

If the current and wind are in the same direction, what does the sea surface represent concerning the true wind speed?

It appears less than actually exists

On the Western Rivers, you should normally expect thunderstorms to be more violent under which of the following weather conditions?

Warm and humid

When is an air mass termed "warm"?

If the ground over which it moves is cooler than the air

See REF141

The Tidal Current Tables indicate the following for the Race:

Slack	Max	
0328	0642	3.9F
0947	1301	3.2E

What current should you expect when transiting the Race?

3.9 knots, flooding

See REF2671

Ice concentration is measured in tenths. What concentration range of ice corresponds to "Open Pack"?

4 - 6 tenths

BOTH INTERNATIONAL & INLAND Which vessel is the stand-on vessel when two vessels crossing in fog are NOT in sight of one another?

Neither vessel is the stand-on vessel.

See REF1666

INTERNATIONAL ONLY Which vessel is to keep out of the way of the others?

A vessel engaged in trawling

See REF1763

BOTH INTERNATIONAL & INLAND When shall a proper look-out be maintained?

at all times

BOTH INTERNATIONAL & INLAND Except where specifically required by the rules, a sailing vessel is NOT required to keep out of the way of which vessel?

power-driven pilot vessel on station

BOTH INTERNATIONAL & INLAND According to the Navigation Rules, you may depart from the Rules when

you are in immediate danger

You are on a single-screw vessel with a right-handed propeller, and you are making headway. What occurs when you enter shallow water?

Your rudder response will become sluggish

See REF519

What describes a tandem crane lift?

Two sets of twin cranes hoisting 120 tons

You are mooring to a buoy. How should you make your approach?

The current should be dead ahead

You are picking up an unconscious person that has fallen overboard in a fresh breeze. For safety reasons how should a small craft approach?

With the victim to windward

A fire in the radio transmitter would be of what class?

C

See REF629

Which defines the function of a spark arrestor?

Prevents sparks from getting out of an engine's exhaust system

See REF070

You hear the general alarm and ship's whistle sound for over 10 seconds. What does this signal mean?

Fire and emergency

See REF033

What occurs when rising air cools to the dew point?

Clouds form

See REF1067

You want to transit Hell Gate, NY on 23 July 1983. What is the period of time around the AM (ZD +4) slack before ebb when the current will be less than 0.3 knot?

0943 to 0953

You are underway and intend to make good a course of 350°T. You experience a current with a set and drift of 070°T at 1.5 knots, and a westerly wind produces a leeway of 4°. You adjust your course to compensate for the current and leeway, while maintaining an engine speed of 10 knots. What will be your speed made good over your intended course of 350°T?

10.2 knots

What will a buoy marking a wreck show?

A white light FL (2) and a topmark of 2 black spheres

When does a Doppler speed log indicate speed over ground?

When sensing the bottom in depths of less than 600 feet

See REF169

At 0109 you get underway, and at 0112 you take the following bearings: Branford Reef Light bearing 051° true Stratford Point Light bearing 258° true What is your 0112 position?

LAT 41°11.4'N, LONG 72°51.3'W

See REF2672

If the cause of a sudden severe list or trim is negative initial stability, counter-flooding into empty tanks may cause which of the following?

Cause the unit to flop to a greater angle

Which describes the difference between the height of the metacenter and the height of the center of gravity of a vessel?

Metacentric height

BOTH INTERNATIONAL & INLAND For the purpose of the Rules, except where otherwise required, the term

"vessel" includes seaplanes

See REF2574

BOTH INTERNATIONAL & INLAND In fog you observe your radar and determine that risk of collision exists with a vessel which is 2 miles off your port bow. Which action should you take?

Take avoiding action as soon as possible

See REF1666

BOTH INTERNATIONAL & INLAND Which vessel is NOT to be regarded as "restricted in her ability to maneuver"?

A pushing vessel and a vessel being pushed when connected in a composite unit

See REF1678

BOTH INTERNATIONAL & INLAND Which lights is a vessel not under command making way at night is required to show?

two all-round red lights in a vertical line, sidelights, and a stern light

INLAND ONLY Which is TRUE of a vessel downbound with a following current when meeting an upbound vessel on the Western Rivers?

She has the right of way only if she is power-driven.

See REF1745

BOTH INTERNATIONAL & INLAND The Rules state that certain factors are to be taken into account when determining safe speed. Which is one of the factors?

current

INLAND ONLY Your power-driven vessel is overtaking another power-driven vessel in a narrow channel. You wish to overtake her on her starboard side. Which whistle signal should you sound?

one short blast

See REF1747

Which part of a windlass physically engages the chain during hauling or paying out?

The wildcat

While proceeding up a narrow waterway you observe a vessel berthed in the river with slack mooring lines. Which is the most prudent action to take FIRST?

Reduce the speed of your vessel

How do preferred channel buoys indicate the preferred channel to transit?

The color of their top band

What will be the velocity of the tidal current at Grant's Tomb, 123rd Street, NY, NY, at 1412 EST (ZD +5) on 22 March 1983?

1.1 knots

Your radar displays your ship off center. As you proceed on your course, your ship's marker moves on the PPI scope while echoes from land masses remain stationary. What is this display called?

True motion

See REF1062

When does a Doppler speed log indicate speed over ground?

When sensing the bottom in depths of less than 600 feet

See REF169

You estimate the current as 2.5 mph. What is the speed over the ground?

6.0 mph

See REF2670

BOTH INTERNATIONAL & INLAND A vessel shall slacken her speed, stop, or reverse her engines, if necessary, to

be stopped in an appropriate distance

avoid collision

allow more time to assess the situation

All of the above

See REF1664

BOTH INTERNATIONAL & INLAND Which is TRUE for a vessel using a traffic separation scheme?
avoid anchoring in areas near the termination of the scheme

INLAND ONLY Which statement is TRUE concerning the Inland Navigation Rules?
They list requirements for Traffic Separation Schemes.
See REF1756

BOTH INTERNATIONAL & INLAND You are at anchor in fog. The fog signal of a vessel underway has been steadily growing louder and the danger of collision appears to exist. In addition to your fog signal, what signal may be used to indicate the presence of your vessel?
Three blasts on the whistle; one short, one prolonged, and one short.

BOTH INTERNATIONAL & INLAND When navigating in restricted visibility, what action shall a power-driven vessel take?
Have her engines ready for immediate maneuver

In insurance terms, which describes the term Particular Average?
The cargo loss sustained by only one party
See REF011

A seaman deserts the vessel in a foreign port. What should the Master do with any of the deserter's personal effects remaining on board?
Transfer them to the appropriate district court of the U.S. at the end of the voyage.

You are piloting your vessel in a narrow channel. How will the vessel react to a steep bank on your starboard side?
The bow will swing away from the bank, and stern will swing into the bank

Your stability calculations indicate your vessel has a marginal GM. Which of the following is the most effective way to increase the stability of the vessel?
Lower the center of gravity and raise reserve buoyancy
See REF041

Which is one of the signals, other than a distress signal, that can be used by a rescue boat to attract attention?
A searchlight

Which term is given to the brickwork surrounding the firebox of a boiler?
Refractory
See REF101

An "ABC" dry chemical fire extinguisher would be LEAST effective against a fire in _____.
a mattress
See REF090

Your vessel is on a course of 311°T at 21 knots. At 1957 a light bears 337.5°T, and at 2018 the light bears 356°T. At what time and at what distance off will your vessel be when abeam of the light?
2039, 7.4 miles

You are on course 079°T, speed 11.2 knots. At 0904 you see a daymark bearing 078°T at a range of 4.6. If you change course at 0910 to leave the daymark abeam to starboard at 0.5 mile, at what time will the daymark be abeam?
0928

Which Naval Control of Shipping publication should be aboard your vessel?
ATP-2, Volume II "Allied Control of Shipping Manual - Guide to Masters"
See REF1037

Using sheet 25 in the Guidance Manual for Loading M.V. Grand Haven, determine the amount of ballast required in tank No. 5 (P & S) to maintain drafts of 17'-00" forward and 22'-06" aft for a vessel loaded with grain which has a test weight of 33 lbs.

1070 tons each

Which of the Great Lakes generally has the shortest navigation season?

Lake Superior

BOTH INTERNATIONAL & INLAND A vessel shall slacken her speed, stop, or reverse her engines, if necessary, to

be stopped in an appropriate distance

avoid collision

allow more time to assess the situation

All of the above

See REF1664

BOTH INTERNATIONAL & INLAND Which is TRUE for a vessel using a traffic separation scheme?

avoid anchoring in areas near the termination of the scheme

INLAND ONLY Which statement is TRUE concerning the Inland Navigation Rules?

They list requirements for Traffic Separation Schemes.

See REF1756

BOTH INTERNATIONAL & INLAND You are at anchor in fog. The fog signal of a vessel underway has been steadily growing louder and the danger of collision appears to exist. In addition to your fog signal, what signal may be used to indicate the presence of your vessel?

Three blasts on the whistle; one short, one prolonged, and one short.

BOTH INTERNATIONAL & INLAND When navigating in restricted visibility, what action shall a power-driven vessel take?

Have her engines ready for immediate maneuver

Who must approve the vessel's trim and stability booklet?

United States Coast Guard

As a general guide, under which condition should hygroscopic cargoes be ventilated?

When going from a warm to a cold climate

A Permit to Proceed is issued by which organization?

U.S. Coast Guard

You are standing the wheel watch on entering port and the Master gives you a rudder command which conflicts with a rudder command from the Pilot. What should you do?

Obey the Master.

A magnesium fire is classified as class _____.

D

See REF630

What power source actuates a solenoid valve?

Electric current

See REF619

Which wind results from a land mass cooling more quickly at night than an adjacent water area?

Land breeze

You are on course 030°T. The relative bearing of a lighthouse is 45°. What is the true bearing?
075°

Which causes the Earth's irregular heating?

- The geography**
- The seasons**
- The time of day**
- All of the above**

Apparent wind speed blowing across your vessel while underway can be measured by which instrument?

- anemometer**
- See REF236

The direction in which a vessel should be steered between two points is the _____.

- course**
- See REF1123

At 0112, what is the approximate depth under the keel?

- 38 feet (11.5 meters)**
- See REF2672

Which publication would give detailed information on the commercial vessel traffic reporting system for connecting waters from Lake Erie to Lake Huron?

- Code of Federal Regulations - Title 33**
- See REF515

Assuming that the recommended hatch loading sequence is followed, how many long tons of iron ore may be loaded through hatch No. 20 while using a single belt loader to arrive at a desired mean keel draft of 29'-06"? (Use the Guidance Manual for Loading M.V. GRAND HAVEN.)

- 2920 tons**

INLAND ONLY Which statement is TRUE concerning lighting requirements for Great Lakes vessels?

- An all-round white light may be carried in lieu of the second masthead light and stern light.**
- See REF1760

INTERNATIONAL ONLY Which vessel shall avoid impeding the safe passage of a vessel constrained by her draft?

- A sailing vessel**
- See REF1763

INLAND ONLY While underway during the day you sight a small motorboat showing a flashing blue light. What does the blue light indicate?

- law enforcement boat**
- See REF1748

INLAND ONLY A power-driven vessel crossing on the Western Rivers has the right of way over which vessels?

- All vessels ascending and descending the river**
- Vessels descending the river**
- Vessels ascending the river**
- None of the above**
- See REF1745

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing while at anchor shall sound which fog signal?

- One prolonged and two short blasts at two minute intervals**

BOTH INTERNATIONAL & INLAND What is a "vessel restricted in her ability to maneuver"?

A vessel laying revetment mats to provide bank protection along a channel

See REF1678

INLAND ONLY A power-driven vessel proceeding downstream in a narrow channel on the Western Rivers sights another power-driven vessel moving upstream. Which vessel has the right of way?

The vessel moving downstream with a following current

See REF1745

You are using the anchor to steady the bow while maneuvering. When do you know you have the proper scope of anchor cable out?

When the bow is held in position with the engines coming slowly ahead

Which is the BEST holding ground for conventional anchors?

Hard mud

When compared to a high-expansion foam, a low-expansion foam will _____.

be more heat resistant

See REF053

The revision date of a chart is printed on which area of the chart?

Lower left corner

Which publication indicates the HYDROLANTS or HYDROPACS issued since the previous working day?

Daily Memorandum

See REF1048

Which statement about gyrocompass error is TRUE?

The amount of the error and the sign will generally be the same on all headings.

As you approach Casting Yard Dock Lt. (mile 265.4 AHP) you notice on the map a circle with 2 black sectors. This symbol indicates a _____.

river gage

See REF2670

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing while at anchor shall sound which fog signal?

One prolonged and two short blasts at two minute intervals

See REF1686

BOTH INTERNATIONAL & INLAND While underway in fog, you hear a signal of one prolonged blast followed by three short blasts. Which vessel shall sound this fog signal?

A manned vessel being towed

BOTH INTERNATIONAL & INLAND Your vessel is underway in fog and you hear one prolonged and three short blasts. Which vessel would this signal indicate?

A vessel being towed

BOTH INTERNATIONAL & INLAND By radar alone, you detect a vessel ahead on a collision course, about 3 miles distant. Your radar plot shows this to be a meeting situation. Which action should you take?

Turn the vessel to starboard

See REF1666

BOTH INTERNATIONAL & INLAND A pilot vessel may continue to sound an identity signal under which situation?

At anchor

Fire fighting equipment requirements for a particular vessel may be found on which document?

Certificate of Inspection

See REF009

Which is the root cause of wake damage to a vessel or structure in a narrow channel?

Excessive speed

When the dew point of the outside air is higher than the dew point of the air in the cargo hold, which action should you take?

Do not ventilate the cargo holds

See REF173

After an IOPP Certificate is issued to an inspected vessel, how many other surveys of the vessel's pollution prevention equipment are conducted during the period of validity of the certificate?

Three

A fire hose has a _____.

male coupling at the nozzle end and a female coupling at the hydrant end

How does foam extinguish a fire?

By smothering the burning material

See REF053

Which statement is TRUE concerning distress signals in a lifeboat?

Parachute flares, hand held flares and orange smoke signals are required in a lifeboat

A magnesium fire is classified as class _____.

D

See REF630

Which towing vessel(s) is/are exempt from carrying radar?

A vessel used solely in a limited area, such as a barge fleeting area.

A vessel exempted, in writing, by the Captain of the Port.

A vessel used solely for pollution response or assistance towing.

All of the above

What is the primary source of the earth's weather?

The sun

You have steamed 824 miles at 15.5 knots, and consumed 179 tons of fuel. If you have 221 tons of usable fuel remaining, how far can you steam at 18 knots?

754 miles

See REF1203

On the Great Lakes, winter storms compound the ice threat by bringing a variety of wind, wave, and weather problems. On an average of how often does these storms occur?

Every four days

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing while at anchor shall sound which fog signal?

One prolonged and two short blasts at two minute intervals

See REF1686

BOTH INTERNATIONAL & INLAND While underway in fog, you hear a signal of one prolonged blast followed by three short blasts. Which vessel shall sound this fog signal?

A manned vessel being towed

BOTH INTERNATIONAL & INLAND Your vessel is underway in fog and you hear one prolonged and three short blasts. Which vessel would this signal indicate?

A vessel being towed

BOTH INTERNATIONAL & INLAND By radar alone, you detect a vessel ahead on a collision course, about 3 miles distant. Your radar plot shows this to be a meeting situation. Which action should you take?

Turn the vessel to starboard

See REF1666

BOTH INTERNATIONAL & INLAND A pilot vessel may continue to sound an identity signal under which situation?

At anchor

Which of the following statements is/are TRUE in regard to Ro-Ro vessels' spaces that are "specially suitable for vehicles"?

The spaces shall be fitted with an approved fire or smoke detecting system.

Which is the BEST holding ground for conventional anchors?

Hard mud

If you are loading fruit in reefer spaces and you notice that the fruit is beginning to mold, which action should you take?

Write up exceptions on the cargo

Which portable fire extinguisher is classified as a type B-III extinguisher?

20 pound dry chemical

A fire in the galley ALWAYS poses which additional threat?

A grease fire in the ventilation system

Regulations define the bulkhead deck as _____. (subdivision and stability regulations)

the uppermost deck to which transverse watertight bulkheads extend

See REF720

Which hand held instrument is used to measure distances between objects and the ship?

A stadimeter

See REF2664

You have another ship overtaking you close aboard to starboard. You have 3 radar targets bearing 090° relative at ranges of _____, .5 mile, 1 mile, and 1.5 miles. Which term is given to these unwanted echoes?

Multiple echoes

Your vessel will be entering the navigable waters of the United States. You are required by regulations to take which action?

Correct the charts of the area to be transited using the Notice(s) to Mariners or foreign equivalent reasonably available

What is published by the U.S. Coast Guard?

Light List

At 0112, you are on course 124°T and turning for 12.0 knots. What course will you make good if the current is 255°T at 1.2 knots?

129°

See REF2672

Assume that your vessel has just entered Lake Erie by way of the Welland Canal and is proceeding in a southwesterly direction. Which statement about the aids to navigation you can expect to encounter along the route is TRUE?

The characteristics of buoys and other aids are as if "returning from seaward" when proceeding in this direction.

Which of the Great Lakes generally has the shortest navigation season?

Lake Superior

BOTH INTERNATIONAL & INLAND A vessel hearing a fog signal forward of her beam has not determined if risk of collision exists. What shall she reduce speed to?

bare steerageway

See REF1666

BOTH INTERNATIONAL & INLAND How long is the duration of a prolonged blast of the whistle?

4 to 6 seconds

INLAND ONLY What signal is a power-driven vessel, when leaving a dock or berth, required to sound?

one prolonged blast

BOTH INTERNATIONAL & INLAND In which situation would risk of collision definitely exist?

A vessel is on your starboard quarter, range decreasing, bearing is constant.

You are docking a vessel. Which statement is TRUE?

You should go in against the current

A twin-screw vessel is easier to maneuver than a single-screw vessel because the twin-screw vessel has which advantage?

It can turn without using her rudder

Which is TRUE for the connection facilities utilized for the international shore connection aboard the vessel?

The facilities shall be available on each side of the vessel

The Light List indicates that a dayboard is a type KGW. You should take which action?

Look for another daymark to form the range

See REF1000

At what time after 1400 EST (ZD +5), on 4 January 1983, will the height of the tide at Port Wentworth, GA, be 3.0 feet?

1653

Which is TRUE of the velocity of the current in large coastal harbors?

The current is predicted in Tidal Current Tables

What is the gyrocompass error resulting from your vessel's movement in OTHER than an east-west direction?

Speed error

Your ARPA has been tracking a target and has generated the target's course and speed. The radar did not receive a target echo on its last two scans due to the weather. What should you expect under these circumstances?

The ARPA will generate data as if the target was still being tracked by radar.

From Baton Rouge to Cairo, what is the maintained minimum channel depth during low water?

9 feet

See REF2670

BOTH INTERNATIONAL & INLAND For the purpose of the Rules, except where otherwise required, the term

"vessel" includes seaplanes

See REF2574

BOTH INTERNATIONAL & INLAND In fog you observe your radar and determine that risk of collision exists with a vessel which is 2 miles off your port bow. Which action should you take?

Take avoiding action as soon as possible

See REF1666

BOTH INTERNATIONAL & INLAND Which vessel is NOT to be regarded as "restricted in her ability to maneuver"?

A pushing vessel and a vessel being pushed when connected in a composite unit

See REF1678

BOTH INTERNATIONAL & INLAND Which lights is a vessel not under command making way at night is required to show?

two all-round red lights in a vertical line, sidelights, and a stern light

INLAND ONLY Which is TRUE of a vessel downbound with a following current when meeting an upbound vessel on the Western Rivers?

She has the right of way only if she is power-driven.

See REF1745

BOTH INTERNATIONAL & INLAND The Rules state that certain factors are to be taken into account when determining safe speed. Which is one of the factors?

current

INLAND ONLY Your power-driven vessel is overtaking another power-driven vessel in a narrow channel. You wish to overtake her on her starboard side. Which whistle signal should you sound?

one short blast

See REF1747

When will a vessel "squat" while underway?

In all depths of water

You have been granted authorization to use chemical agents on an oil spill. What is the main purpose for using the chemicals?

To facilitate the removal of the pollutant from the water

Which portable fire extinguisher is classified as a type B-III extinguisher?

20 pound dry chemical

When bunkering at a dock which of the following signals must be displayed?

A red flag by day, red light by night

See REF343

What is the most probable cause of reduced capacity in a reciprocating air compressor?

Leaking air valves

Which fuel is used in a survival craft's engine?

Diesel oil

Which of the following aspects of a flooded space will most adversely affect transverse stability if it is subject to free communication?

Off-center

See REF156

While upbound through Memphis, the weather report on the TV news indicates that a cold front will cross western Kentucky and Tennessee the next morning. What weather should accompany this front?

Gusting winds shifting to the northwest with thunderstorms

Which cloud commonly produces a halo about the Sun or Moon?

Cirrostratus

See REF171

Which publication should you check for complete information on Puget Sound weather conditions?

Coast Pilot

See REF1032

Assuming that the recommended hatch loading sequence is followed, how many long tons of iron ore may be loaded through hatch No. 20 while using a single belt loader to arrive at a desired mean keel draft of 29'-06"? (Use the Guidance Manual for Loading M.V. GRAND HAVEN.)

2920 tons

Which statement about stopping a vessel is TRUE?

When a vessel is dead in the water any speed displayed by Doppler log reflects the current.

BOTH INTERNATIONAL & INLAND For the purpose of the Rules, except where otherwise required, the term

"vessel" includes seaplanes

See REF2574

BOTH INTERNATIONAL & INLAND In fog you observe your radar and determine that risk of collision exists with a vessel which is 2 miles off your port bow. Which action should you take?

Take avoiding action as soon as possible

See REF1666

BOTH INTERNATIONAL & INLAND Which vessel is NOT to be regarded as "restricted in her ability to maneuver"?

A pushing vessel and a vessel being pushed when connected in a composite unit

See REF1678

BOTH INTERNATIONAL & INLAND Which lights is a vessel not under command making way at night is required to show?

two all-round red lights in a vertical line, sidelights, and a stern light

INLAND ONLY Which is TRUE of a vessel downbound with a following current when meeting an upbound vessel on the Western Rivers?

She has the right of way only if she is power-driven.

See REF1745

BOTH INTERNATIONAL & INLAND The Rules state that certain factors are to be taken into account when determining safe speed. Which is one of the factors?

current

INLAND ONLY Your power-driven vessel is overtaking another power-driven vessel in a narrow channel. You wish to overtake her on her starboard side. Which whistle signal should you sound?

one short blast

See REF1747

Which mooring line checks forward motion of a vessel at a pier?

The stern line

You are loading 530,000 barrels of cargo oil. At 0945 on 13 April, you find that you have loaded 202,000 barrels. At 1130, you find that you have loaded 223,000 barrels. When will you complete loading if you continue at the same rate?

1305, 14 April

What is NOT a problem when carrying coal?

The requirement for through-ventilation

Pedestal cranes have limit switches to restrict the movement of which function?

Slew travel limits

Turntable limits

Luff travel limits

All of the above

See REF130

Which term defines the minimum concentration of a vapor in air which can form a mixture that ignites and burns?

Lower flammable limit (LFL)

See REF126

What should you do if you have transmitted a distress call a number of times on channel 16 and have received no reply?

Repeat the message using any other channel on which you might attract attention.

A fire hose has a _____.

male coupling at the nozzle end and a female coupling at the hydrant end

An "ABC" dry chemical fire extinguisher would be LEAST effective against a fire in _____.

a mattress

See REF090

Which term is used to express the maximum distance at which a light may be seen under existing visibility conditions?

Luminous range

What does a white buoy with an orange rectangle on it indicate?

General information

Mariners are FIRST warned of serious defects or important changes to aids to navigation by which means?

Marine broadcast Notice to Mariners

See REF133

While entering a harbor on a course of 225° per gyrocompass, you take a bearing on a pair of range lights and get 220° per gyrocompass. The bearing on the chart is 217°T. The variation for the area is 6°W, and deviation is 2°W. What course would you steer per gyrocompass to make good a true course of 232°?

235°pgc

What does the Flinders bar on a magnetic compass compensates for?

Induced magnetism in vertical soft iron

Branford Reef is _____.

completely submerged at all stages of the tide

See REF2672

Which action will affect the trim of a vessel?

Moving a weight forward

Which statement concerning storm surges on the Great Lakes is TRUE?

Are a result of strong winds and sharp change in barometric pressure

BOTH INTERNATIONAL & INLAND Which is the duration of each prolonged blast on whistle signals used by a power-driven vessel in fog, whether making way or underway but not making way?

four to six seconds

BOTH INTERNATIONAL & INLAND By radar alone, you detect a vessel ahead on a collision course, about 3 miles distant. Your radar plot shows this to be a meeting situation. Which action should you take?

Turn the vessel to starboard

See REF1666

BOTH INTERNATIONAL & INLAND In restricted visibility, when must a towed vessel sound a fog signal?

When it is the last vessel in the tow and it is carrying a crew

BOTH INTERNATIONAL & INLAND Which is TRUE if your vessel is the stand-on vessel in a crossing situation?

you must keep your course and speed

BOTH INTERNATIONAL & INLAND You are on a sailing vessel with the wind on the starboard side and are approaching another sailing vessel that has the wind on the port side. Which action should you take?

Maintain course and speed.

BOTH INTERNATIONAL & INLAND A head-on situation at night occurs when you can see which light(s)?

both sidelights of a vessel dead ahead of you

The Fire Control Plan must contain detailed information on which of the following systems?

Ventilation

Fixed fire suppression

Ship construction

All of the above

When backing down with sternway, where will the pivot point of a vessel be located?

The pivot point will be about one-quarter of the vessel's length from the stern

Which device maintains a continuous graphic record of the heading of the vessel?

The course recorder

See REF172

Which corrector will compensate for the deviation which is maximum on intercardinal compass headings?

Quadrantal spheres

On which of the following does an automatic identification system (AIS) transponder transmit and receive information?

VHF maritime band

An electronic depth finder operates on which principle?

Sound waves travel at a constant speed through water

On which map would you find Redman Point, Arkansas?

20

See REF2670

INLAND ONLY Which statement is TRUE concerning lighting requirements for Great Lakes vessels?

An all-round white light may be carried in lieu of the second masthead light and stern light.

See REF1760

INTERNATIONAL ONLY Which vessel shall avoid impeding the safe passage of a vessel constrained by her draft?

A sailing vessel

See REF1763

INLAND ONLY While underway during the day you sight a small motorboat showing a flashing blue light. What does the blue light indicate?

law enforcement boat

See REF1748

INLAND ONLY A power-driven vessel crossing on the Western Rivers has the right of way over which vessels?

All vessels ascending and descending the river

Vessels descending the river

Vessels ascending the river

None of the above

See REF1745

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing while at anchor shall sound which fog signal?

One prolonged and two short blasts at two minute intervals

BOTH INTERNATIONAL & INLAND What is a "vessel restricted in her ability to maneuver"?

A vessel laying revetment mats to provide bank protection along a channel

See REF1678

INLAND ONLY A power-driven vessel proceeding downstream in a narrow channel on the Western Rivers sights another power-driven vessel moving upstream. Which vessel has the right of way?

The vessel moving downstream with a following current

See REF1745

Multiple factors will have an effect on your vessel when it is maneuvering in restricted waters. Which of the following factors is the combination of sinkage and trim of the vessel?

Squat

See REF081

By law, a user of marijuana shall be subject to which of the following?

revocation of Merchant Mariner Credential

Which term defines cargo that is highly susceptible to damage by tainting from odorous cargo?

Delicate cargo

See REF157

Which spaces are required to be segregated from cargo tanks carrying grades A, B, C, or D cargoes?

Navigation spaces

See REF282

How many ring life buoys should a 700 foot cargo vessel, not subject to SOLAS, navigating the Great Lakes carry?

14

See REF406

You are fighting a fire in a cargo hold on your vessel. Which action is most important concerning the stability of the vessel?

Draining fire-fighting water and pumping it overboard

A liferaft with a capacity of 8 people used in ocean service is required by regulations to carry items?

12 liters of fresh water

See REF088

In which source could you find the vertical clearance of a bridge on the Ohio River?

Light List of the Mississippi River System

Determine the duration of the first PM slack water on 3 March 1983, east of the Statue of Liberty, when the current is less than 0.1 knot.

13 minutes

Which statement is TRUE for an unlighted, red and green, horizontally-banded buoys with the topmost band red?

They are conical in shape and called nun buoys

Which describes ice blink?

A whitish glare on the underside of a cloud layer

You have steamed 607 miles at 17.0 knots, and consumed 121 tons of fuel. If you have 479 tons of usable fuel remaining, how far can you steam at 14.5 knots?

3303 miles

See REF1207

INLAND ONLY Which statement is TRUE concerning lighting requirements for Great Lakes vessels?

An all-round white light may be carried in lieu of the second masthead light and stern light.

See REF1760

INTERNATIONAL ONLY Which vessel shall avoid impeding the safe passage of a vessel constrained by her draft?

A sailing vessel

See REF1763

INLAND ONLY While underway during the day you sight a small motorboat showing a flashing blue light. What does the blue light indicate?

law enforcement boat

See REF1748

INLAND ONLY A power-driven vessel crossing on the Western Rivers has the right of way over which vessels?

All vessels ascending and descending the river

Vessels descending the river

Vessels ascending the river

None of the above

See REF1745

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing while at anchor shall sound which fog signal?

One prolonged and two short blasts at two minute intervals

BOTH INTERNATIONAL & INLAND What is a "vessel restricted in her ability to maneuver"?

A vessel laying revetment mats to provide bank protection along a channel

See REF1678

INLAND ONLY A power-driven vessel proceeding downstream in a narrow channel on the Western Rivers sights another power-driven vessel moving upstream. Which vessel has the right of way?

The vessel moving downstream with a following current

See REF1745

In the manufacture of wire rope, if the wires are shaped to conform to the curvature of the finished rope before they are laid up, the rope is called _____.

preformed

Which item is a journal kept by the officer of the watch in which day to day happenings are recorded regarding the deck department?

The deck log

See REF008

You are loading propanolamine and spill a small quantity on deck. According to the Chemical Data Guide, you would expect its odor to be _____.

fishy

See REF044

If a tug equipped with flanking rudders is to be turned in a confined circle, when going astern, which is the best action to take to make the stern move to port?

The rudder is hard to port and the flanking rudders are hard to port

See REF049

Channel 13 is primarily used for ship to ship communication. Channel 13 is also authorized for which purpose?

Lock & bridge communications

You must shore up the collision bulkhead due to solid flooding forward. The bulkhead approximates an inverted triangle. Where should the center of pressure of the shores on the bulkhead be located?

Approximately halfway up the bulkhead

You are on the beach and want to signal to a small boat in distress that your present location is dangerous and that they should land to the left. How would you indicate this?

Send the code signal S followed by L

What agency of the U.S. Government issues charts of U.S. waters and Coast Pilots?

National Oceanic and Atmospheric Administration

See REF1032

Where would you expect to find climatological and meteorological tables for the Gulf Coast area?

In the back of Coast Pilot #5

A position that is obtained by applying estimated current and wind to your vessel's course and speed is a(n) _____.

estimated position

See REF246

The moon is full and at perigee on 20 January 1983. What is the maximum current you could expect at 2350 (ZD +5) at Nantucket Shoals?

1.0 knot

At 0112, the radar range to Branford Reef Light is 2.9 miles. At 0125, the range is 3.6 miles. What is the position of your 0125 running fix if you are steering 124°T at 12 knots?

LAT 41°09.7'N, LONG 72°48.1'W

See REF2672

Using sheet 25 in the Guidance Manual for Loading M.V. Grand Haven, determine the amount of ballast required in tank No. 5 (P & S) to maintain drafts of 17'-00" forward and 22'-06" aft for a vessel loaded with grain which has a test weight of 33 lbs.

1070 tons each

BOTH INTERNATIONAL & INLAND Which statement is TRUE regarding equipment for bell and gong signals?

Manual sounding of the signals must always be possible.

See REF1705

BOTH INTERNATIONAL & INLAND A 200-meter vessel is aground in fog. Which signal is optional?

A whistle signal

See REF1686

BOTH INTERNATIONAL & INLAND Under which conditions is a sailing vessel NOT allowed to show the all-round red over green lights on the mast?

when her sidelights and stern light are combined in one lantern and shown on the mast

BOTH INTERNATIONAL & INLAND You are underway in restricted visibility. You hear the fog signal of another vessel about 22° on your starboard bow. If danger of collision exists, which action(s) are you required to take?

Slow to a minimum that the vessel can stay on course

BOTH INTERNATIONAL & INLAND When action to avoid a close-quarters situation is taken, a course change alone may be the most effective action provided that _____.

it is a large course change

Which type of portable fire extinguishers is NOT designed for use on flammable liquid fires?

Water (cartridge-operated)

See REF099

The BEST way to steer a twin-screw vessel if you lose your rudder is by using _____.

one engine running at reduced speed and controlling the vessel with the other

What is published by the U.S. Coast Guard?

Light List

Your vessel is on a course of 343°T at 14 knots. At 2156 a light bears 320.5°T, and at 2217 the light bears 298°T. At what time and distance off will your vessel be when abeam of the light?

2232, 3.4 miles

Which is TRUE concerning privately maintained aids to navigation included in the Light List?

They must conform to the standards of the U.S. Aids to Navigation System

Which symbol represents a 10-fathom curve?

_____ . _____ . _____ . _____

You will be entering the Mystic River in Connecticut. What is the current at the Highway Bridge at 1900 EST (ZD +5) on 24 January 1983?

Slight ebb

At 1000, on May 11th, you are passing George Prince Lt. (mile 364.1 AHP) in Natchez, Mississippi and must send an ETA to the Monsanto Terminal in St. Louis (mile 178.0 UMR). Your engines are still turning for 8.5 mph and you estimate the current at 2.5 mph. What will be your arrival time in St. Louis?

1757 on 16 May

See REF2670

BOTH INTERNATIONAL & INLAND A vessel hearing a fog signal forward of her beam has not determined if risk of collision exists. What shall she reduce speed to?

bare steerageway

See REF1666

BOTH INTERNATIONAL & INLAND How long is the duration of a prolonged blast of the whistle?

4 to 6 seconds

INLAND ONLY What signal is a power-driven vessel, when leaving a dock or berth, required to sound?

one prolonged blast

BOTH INTERNATIONAL & INLAND In which situation would risk of collision definitely exist?

A vessel is on your starboard quarter, range decreasing, bearing is constant.

If you are loading fruit in reefer spaces and you notice that the fruit is beginning to mold, which action should you take?

Write up exceptions on the cargo

You are loading a cargo that includes cylinders of acetylene aboard your break bulk vessel. Which statement is true?

The cylinders must be stowed at least 10 horizontal feet from corrosive materials in the same space.

You are mooring to a buoy. How should you make your approach?

The current should be dead ahead

In some cases, the 50% duty on all foreign repairs made to American flag merchant vessels may be remitted. Which work does NOT come under the remitting policy of U.S. Customs?

Chipping, painting, and scaling by foreign labor

What will a sea anchor accomplish if deployed correctly?

reduce the drift rate of the liferaft

You are involved in an emergency landing of a helicopter on the water. When should you inflate your life jacket?

After exiting clear of the helicopter

Ventilation systems connected to a compartment in which a fire is burning are normally closed to prevent the rapid spread of the fire by which method?

Convection

See REF647

Which is TRUE concerning the length of the steering oar in a lifeboat?

It is longer than the rowing oars

Which characteristic and color will a preferred-channel buoy show?

A composite group-flashing (2 + 1) red or green light

What is the relative bearing of an object on the starboard beam?

090°

See REF1120

Which term is given to a line on a weather chart connecting places which have the same barometric pressure?

Isobar

See REF139

Discounting slip, if your vessel is turning RPM for 10 knots and making good a speed of 10 knots, the current could be _____.

slack

Which statement is TRUE concerning weather conditions on the Great Lakes?

When a vessel is north of an eastward-moving storm center, changes in the weather are less distinctive than when sailing south of the center.

On 20 July your vessel's 1626 zone time DR position is LAT 27°13.0'N, LONG 63°42.0'W, when you take an azimuth of the Sun. Determine the gyro error using the azimuth information.

Chronometer time: 08h 24m 18s
Chronometer error: slow 02m 12s
Gyro bearing: 279.3°
Variation: 15°W

1.9°W

See REF1114

BOTH INTERNATIONAL & INLAND A vessel hearing a fog signal forward of her beam has not determined if risk of collision exists. What shall she reduce speed to?

bare steerageway

See REF1666

BOTH INTERNATIONAL & INLAND How long is the duration of a prolonged blast of the whistle?

4 to 6 seconds

INLAND ONLY What signal is a power-driven vessel, when leaving a dock or berth, required to sound?

one prolonged blast

BOTH INTERNATIONAL & INLAND In which situation would risk of collision definitely exist?

A vessel is on your starboard quarter, range decreasing, bearing is constant.

According to the Chemical Data Guide, epichlorohydrin is a(n) _____.

class B poison

See REF044

According to the Chemical Data Guide, what does the grade B flammable liquid carbon disulfide produce when burning?

sulfur dioxide gas

See REF044

Which statement about tunnel bow thrusters fitted to large vessels is TRUE?

When going astern at slow speed, they provide effective steering control.

How long is a credential issued by the U.S. Coast Guard for Master of Towing Vessels valid for?

5 years and must be renewed

How many ring life buoys should a 700 foot cargo vessel, not subject to SOLAS, navigating the Great Lakes carry?

14

See REF406

The Master of a fishing vessel must ensure that each crew member participates in at least one fire drill during which time frame?

Once a month

A fire starts on your vessel while refueling. Which action should you take FIRST?

Sound the general alarm

Which best defines current?

The horizontal movement of the water

When entering from seaward, what does a buoy displaying a single-flashing red light indicate?

The starboard side of the channel

See REF207

Where can data relating to the direction and velocity of rotary tidal currents in a U.S. Port be found?

Tidal Current Tables

At 0130, your position is LAT 41°09.3'N, LONG 72°46.9'W when you change course to 086°T. If you make good 086°T, what is the closest point of approach to Twenty-Eight Foot Shoal Lighted Buoy?

0.9 miles

See REF2672

How are aids to navigation on the Great Lakes arranged geographically?

In a westerly and northerly direction, except on Lake Michigan

INLAND ONLY A barge more than 50 meters long is required to show how many white anchor lights when anchored in a Secretary approved "special anchorage area"?

2

See REF1759

BOTH INTERNATIONAL & INLAND Which of the signals, other than a distress signal, can be used by a vessel to attract attention?

The vessel's searchlight

See REF1738

BOTH INTERNATIONAL & INLAND In a crossing situation, which vessel may sound a signal to indicate failure to understand the intentions or actions of another vessel consisting of at least five short and rapid blasts of the whistle?

Either vessel

See REF1672

INLAND ONLY Which of the following is indicated by a vessel displaying a flashing blue light?

A law enforcement vessel

See REF1748

INLAND ONLY A vessel engaged in public safety activities may display an alternately flashing red and yellow light. This special light may be used by a vessel engaged in which of the following?

patrolling a regatta

See REF1748

Mooring with two bow anchors has which major advantage over anchoring with one bow anchor?

The radius of the vessel's swing will be shortened.

You are proceeding along the right bank of a narrow channel aboard a right-handed single-screw vessel. The vessel starts to sheer due to bank suction/cushion effect. Which action should you take?

Increase speed and put the rudder hard right

See REF079

Chart information details to be used in ECDIS should be the latest edition of information originated by a government-authorized hydrographic office and conform to the standards of which organization?

International Hydrographic Organization

Where will you find information about the duration of slack water?

Tidal Current Tables

As you approach Ashland Light (mile 378.1 AHP) which daymark would you see?

Red triangle

See REF2670

BOTH INTERNATIONAL & INLAND Which is the duration of each prolonged blast on whistle signals used by a power-driven vessel in fog, whether making way or underway but not making way?

four to six seconds

BOTH INTERNATIONAL & INLAND By radar alone, you detect a vessel ahead on a collision course, about 3 miles distant. Your radar plot shows this to be a meeting situation. Which action should you take?

Turn the vessel to starboard

See REF1666

BOTH INTERNATIONAL & INLAND In restricted visibility, when must a towed vessel sound a fog signal?

When it is the last vessel in the tow and it is carrying a crew

BOTH INTERNATIONAL & INLAND Which is TRUE if your vessel is the stand-on vessel in a crossing situation?

you must keep your course and speed

BOTH INTERNATIONAL & INLAND You are on a sailing vessel with the wind on the starboard side and are approaching another sailing vessel that has the wind on the port side. Which action should you take?

Maintain course and speed.

BOTH INTERNATIONAL & INLAND A head-on situation at night occurs when you can see which light(s)?

both sidelights of a vessel dead ahead of you

You are on a single-screw vessel with a right-handed propeller, and you are making headway. What occurs when you enter shallow water?

Your rudder response will become sluggish

See REF519

Which statement about tunnel bow thrusters fitted to large vessels is TRUE?

When going astern at slow speed, they provide effective steering control.

You are standing the wheel watch on entering port and the Master gives you a rudder command which conflicts with a rudder command from the Pilot. What should you do?

Obey the Master.

Which is the proper term for a band or collar on the top end of a boom to which the topping lift, midships guy, and outboard guys are secured?

The spider band

See REF042

To prevent the spread of fire by convection you should take which action?

Close all openings to the area

See REF124

Overhauling a fire in the living quarters on a vessel must include _____.

opening dead spaces to check for heat or fire

Which action will affect the trim of a vessel?

Moving a weight forward

A ship station license for your radiotelephone is valid for which of the following terms?

Ten years

On what type of pump would you find an impeller?

Centrifugal

Which device maintains a continuous graphic record of the heading of the vessel?

The course recorder

See REF172

When recording the wind direction in the weather log, which information would you report?

The direction the wind is blowing from

See REF192

What is the standard atmospheric pressure in millibars?

1013.2

See REF191

If the pitch of the propeller is 26.7 feet, and the revolutions per day are 131,717, calculate the day's run allowing 4% negative slip.

601.6 miles

See REF1258

BOTH INTERNATIONAL & INLAND Which is the duration of each prolonged blast on whistle signals used by a power-driven vessel in fog, whether making way or underway but not making way?

four to six seconds

BOTH INTERNATIONAL & INLAND By radar alone, you detect a vessel ahead on a collision course, about 3 miles distant. Your radar plot shows this to be a meeting situation. Which action should you take?

Turn the vessel to starboard

See REF1666

BOTH INTERNATIONAL & INLAND In restricted visibility, when must a towed vessel sound a fog signal?

When it is the last vessel in the tow and it is carrying a crew

BOTH INTERNATIONAL & INLAND Which is TRUE if your vessel is the stand-on vessel in a crossing situation?

you must keep your course and speed

BOTH INTERNATIONAL & INLAND You are on a sailing vessel with the wind on the starboard side and are approaching another sailing vessel that has the wind on the port side. Which action should you take?

Maintain course and speed.

BOTH INTERNATIONAL & INLAND A head-on situation at night occurs when you can see which light(s)?

both sidelights of a vessel dead ahead of you

Which statement is TRUE when an anchor is used to assist in turning the vessel in restricted waters?

Deploying the anchor underfoot shifts the pivot point forward

Which term defines the strainer at the bottom of a bilge suction pipe to prevent clogging?

Rose box

See REF086

You are loading a cargo that includes cylinders of acetylene aboard your break bulk vessel. Which statement is true?

The cylinders must be stowed at least 10 horizontal feet from corrosive materials in the same space.

What can be used to measure the percentage of oxygen inside a chain locker?

Oxygen indicator

See REF125

When abandoning ship, after launching the motor lifeboat which is the recommended action to take?

Stay in the immediate area

Motor-propelled lifeboats are required to have sufficient fuel to operate continuously at 6 knots for how many hours?
24

To prevent the spread of fire by convection you should take which action?

Close all openings to the area

See REF124

You are at sea and have received a General Emergency message announcing the outbreak of war in Europe. You are directed to comply with the instructions in NGA (NIMA) PUB 117, Chapter Eight. Which statement is TRUE?

You should attempt to submit an AMVER report to NSA.

Which statement about gyrocompass error is TRUE?

The amount of the error and the sign will generally be the same on all headings.

You will be advised of any hazardous areas due to the fallout of a nuclear explosive by a message with which code word?

MERWARN

Which device maintains a continuous graphic record of the heading of the vessel?

The course recorder

See REF172

Which information is found in the chart title?

Survey information

Which compensates for induced magnetism in the horizontal soft iron of a vessel?

Iron spheres mounted on the binnacle

At 0200, you take the following bearings:

Falkner Island Light 004.5°T

Kelsey Pt. Breakwater Lt. 054.0°T

Horton Point Light 115.0°T

What were the set and drift from 0130?

260° at 1.0 knot

See REF2672

When turning a ship in restricted space with a strong wind, which is the BEST action to take?

Turn so that the tendency to back into the wind can be used, if on a single-screw vessel

INLAND ONLY The masthead light may be located at other than the fore and aft centerline on which power-driven vessel?

less than 12 meters in length

See REF1753

INLAND ONLY You are proceeding against the current on a river in the Great Lakes System. You are meeting a downbound vessel. Both vessels are power-driven. The other vessel sounds one short blast. What action must you take?

sound one short blast

BOTH INTERNATIONAL & INLAND The masthead light may be displaced from the centerline on which of the following vessels?

a vessel of special construction

INLAND ONLY A flashing blue light is used to identify which of the following vessels?

law enforcement vessels

See REF1748

Who issues the regulations governing the frequencies of the bridge-to-bridge radiotelephone?
Federal Communications Commission

Which statement about tunnel bow thrusters fitted to large vessels is TRUE?
When going astern at slow speed, they provide effective steering control.

Your ship is in shallow water and the bow rides up on its bow wave while the stern sinks into a depression of its transverse wave system. What is this called?
Squatting
See REF521

What is the function of the "rudder adjustment" control on an autopilot steering stand?
To set the number of degrees of rudder per degree of course error

When a helmsman receives the command "Right 15 degrees rudder," What should the helmsman's immediate reply be?
"Right 15 degrees rudder"

At 2000 Hog Island Lighted Bell Buoy "12" bears 199°T and Buoy "GM" bears 249°T. What is your position ?
37°23.5'N, 75°32.2'W
See REF2669

What is your clearance as you pass under the Vicksburg Highway 80 Bridge (mile 437.8 AHP). if the Vicksburg Gage reads 14.8 feet and the highest point on your tow boat is 44.5 feet?
57 feet
See REF2670

BOTH INTERNATIONAL & INLAND Which statement is TRUE regarding equipment for bell and gong signals?
Manual sounding of the signals must always be possible.
See REF1705

BOTH INTERNATIONAL & INLAND A 200-meter vessel is aground in fog. Which signal is optional?
A whistle signal
See REF1686

BOTH INTERNATIONAL & INLAND Under which conditions is a sailing vessel NOT allowed to show the all-round red over green lights on the mast?
when her sidelights and stern light are combined in one lantern and shown on the mast

BOTH INTERNATIONAL & INLAND You are underway in restricted visibility. You hear the fog signal of another vessel about 22° on your starboard bow. If danger of collision exists, which action(s) are you required to take?
Slow to a minimum that the vessel can stay on course

BOTH INTERNATIONAL & INLAND When action to avoid a close-quarters situation is taken, a course change alone may be the most effective action provided that _____.
it is a large course change

The master or individual in charge of a vessel prepares a certificate of discharge for each mariner being discharged from the vessel. Which party receives the original copy?
Mariner

Grade E combustible liquids are those having flash points of _____.
150°F or greater
See REF044

You are planning the stowage of two incompatible products on your multiple-product tankship. What will NOT provide the minimum required segregation?

Solid (non-intercostal) bulkhead

A vessel puts into the port of Kobe, Japan to discharge cargo. While awaiting completion of the cargo operation, the vessel contracts with a local shipyard to have the hull chipped, scaled, and painted. How is the cost of this maintenance handled with the Collector of Customs?

A declaration is required and duty is involved on the total cost.

You are picking up an unconscious person that has fallen overboard in a fresh breeze. For safety reasons how should a small craft approach?

With the victim to windward

You have a large, broken-down vessel in tow with a wire rope and anchor cable towline. Both vessels have made provision for slipping the tow in an emergency; however, unless there are special circumstances _____.

the towing vessel should slip first

What is the signal used with shore lifesaving equipment to indicate, "Affirmative"?

Vertical motion of the arms

How does combustion air enter the cylinder of a two-cycle diesel engine?

Ports

When abandoning ship, after launching the motor lifeboat which is the recommended action to take?

Stay in the immediate area

How are buoys which mark isolated dangers painted?

Alternating red and black bands

What should you apply to a fathometer reading to determine the depth of water?

Add the draft of the vessel.

Which is TRUE for the directive force acting on a gyrocompass?

The force increases as the latitude decreases, being maximum at the geographic equator

The Light List indicates that a light has a nominal range of 14 miles and is 42 feet high (12.8 meters). If the visibility is 6 miles and your height of eye is 20 feet (6.1 meters), at what approximate distance will you sight the light?

10.0 miles

See REF2671

Assume that your vessel has just entered Lake Erie by way of the Welland Canal and is proceeding in a southwesterly direction. Which statement about the aids to navigation you can expect to encounter along the route is TRUE?

The characteristics of buoys and other aids are as if "returning from seaward" when proceeding in this direction.

Your vessel is broken down and rolling in heavy seas. How can you reduce the danger of capsizing?

Rigging a sea anchor

BOTH INTERNATIONAL & INLAND Which statement is TRUE regarding equipment for bell and gong signals?

Manual sounding of the signals must always be possible.

See REF1705

BOTH INTERNATIONAL & INLAND A 200-meter vessel is aground in fog. Which signal is optional?

A whistle signal

See REF1686

BOTH INTERNATIONAL & INLAND Under which conditions is a sailing vessel NOT allowed to show the all-round red over green lights on the mast?

when her sidelights and stern light are combined in one lantern and shown on the mast

BOTH INTERNATIONAL & INLAND You are underway in restricted visibility. You hear the fog signal of another vessel about 22° on your starboard bow. If danger of collision exists, which action(s) are you required to take?

Slow to a minimum that the vessel can stay on course

BOTH INTERNATIONAL & INLAND When action to avoid a close-quarters situation is taken, a course change alone may be the most effective action provided that _____.

it is a large course change

The transfer procedures required to be followed on tankships shall contain which item?

A line diagram of the vessel's transfer piping

See REF375

Sidewise force of the propeller tends to throw a vessel's stern to the right or left, depending on rotation. Which causes this force?

The torque from the velocity and angle at which the surrounding water impinges upon the propeller blades

When are Operators of Uninspected Passenger Vessels required to keep their Coast Guard credential aboard their vessel?

only when carrying passengers for hire

See REF067

While reading the muster list you see that "3 short blasts on the whistle and three short rings on the general alarm" is the signal for _____.

dismissal from fire and emergency stations

See REF033

As a vessel sinks to a depth of 15 feet, the hydrostatic trip releases the liferaft container from its cradle by _____.

releasing the tie-down strap

See REF392

You are involved in an emergency landing of a helicopter on the water. When should you inflate your life jacket?

After exiting clear of the helicopter

A liferaft with a capacity of 8 people used in ocean service is required by regulations to carry items?

12 liters of fresh water

See REF088

Which item is a safety feature provided on all inflatable liferafts?

Water stabilizing pockets

The best estimate of the wind direction at sea level can be obtained from observing the direction of the _____.

waves

Geographic range is the maximum distance at which a light may be seen under which conditions?

Perfect visibility conditions, limited only by the curvature of the Earth

See REF1022

On a weather map, what does a large letter "H" indicate?

A high pressure area with cool, dry air, and fair weather

What is the distance from your 0200 position to the point where Twenty-Eight Foot Shoal lighted buoy is abeam to starboard?

6.9 miles

See REF2672

Which describes ice blink?

A whitish glare on the underside of a cloud layer

INLAND ONLY Which statement is TRUE concerning the Inland Navigation Rules?

They list requirements for Traffic Separation Schemes.

See REF1756

BOTH INTERNATIONAL & INLAND You are approaching a narrow channel. Another vessel in the channel can only be navigated safely in that channel. Which action should you take?

not cross the channel if you might impede the other vessel

See REF1668

BOTH INTERNATIONAL & INLAND Your power-driven vessel is stopped and making no way, but is not in any way disabled. Another vessel is approaching you on your starboard beam. Which statement is TRUE?

Your vessel is the give-way vessel in a crossing situation.

See REF1672

BOTH INTERNATIONAL & INLAND You are underway in reduced visibility. You hear the fog signal of another vessel about 20° on your starboard bow. Risk of collision may exist. Which action should you take?

reduce your speed to bare steerageway

BOTH INTERNATIONAL & INLAND In a crossing situation, the vessel which has the other on her own starboard side shall take which action?

if the circumstances of the case admit, avoid crossing ahead of the other

You are docking a vessel in a slip which has its entrance athwart the tide. You land the ship across the end of the pier, stemming the tide, preparatory to breaking the ship around the corner. You have one tug to assist. Where would you generally tie up the tug?

Tie her up on the offshore bow.

You are approaching the pilot station with the wind fine on the starboard bow and making about 3 knots. You can help to calm the seas by taking what action just before the pilot boat comes along on the port side?

A short burst of ahead full with left full rudder

Traditionally, the signal for fire aboard ship is _____.

continuous sounding of the ship's whistle and the general alarm for at least 10 seconds

See REF033

You are docking a vessel starboard side to with the assistance of two tugs. You are attempting to hold the vessel off by operating both tugs at right angles to the vessel and at full power. Which statement is TRUE?

The ship has no headway at the time

Which describes a diurnal tide?

Only one high and one low water occur during a lunar day

See REF134

You are to sail from Elizabethport, N.J., on 17 November 1983 with a maximum draft of 27 feet. You will pass over an obstruction in the channel near Sandy Hook that has a charted depth of 25.5 feet. The steaming time from Elizabethport to the obstruction is 1h 50m. What is the earliest time (ZD +5) you can sail on 17 November and pass over the obstruction with 2 feet of clearance?

0121

See REF1332

Which publication would describe the explosive anchorages in the ports on the east coast of the United States?

Coast Pilot

See REF1032

From your 2000 position you change course to 206°T. What time would you expect to be abeam of Hog Island Buoy "12"?

2026

See REF2669

After entering Milliken Bend (mile 455 AHP) you wish to locate the river service in Madison Parish, Louisiana. The river service is indicated by the square containing which number?

4

See REF2670

INLAND ONLY A barge more than 50 meters long is required to show how many white anchor lights when anchored in a Secretary approved "special anchorage area"?

2

See REF1759

BOTH INTERNATIONAL & INLAND Which of the signals, other than a distress signal, can be used by a vessel to attract attention?

The vessel's searchlight

See REF1738

BOTH INTERNATIONAL & INLAND In a crossing situation, which vessel may sound a signal to indicate failure to understand the intentions or actions of another vessel consisting of at least five short and rapid blasts of the whistle?

Either vessel

See REF1672

INLAND ONLY Which of the following is indicated by a vessel displaying a flashing blue light?

A law enforcement vessel

See REF1748

INLAND ONLY A vessel engaged in public safety activities may display an alternately flashing red and yellow light. This special light may be used by a vessel engaged in which of the following?

patrolling a regatta

See REF1748

Which publication would give detailed information on the commercial vessel traffic reporting system for connecting waters from Lake Erie to Lake Huron?

Code of Federal Regulations - Title 33

See REF515

How is the anchor chain marked for 30 fathoms?

Two links on each side of the 30 fathom detachable link are painted white

Which is a requirement of a Type III marine sanitation device?

A device that is designed to prevent the overboard discharge of treated or untreated sewage

When referring to dry bulk cargoes, which defines the term "flow state"?

The saturation of a dry bulk product with a liquid to the point where it behaves as a liquid

All lifeboats, rescue boats, and rigid-type liferafts shall be stripped, cleaned, and thoroughly overhauled at which time interval?

Yearly

A floating vessel will behave as if all of its weight is acting downward through which point?

The center of gravity

See REF111

Aboard a vessel, what does dividing the sum of the longitudinal moments by the total weight yield?

The vessel's LCG

If the cause of a sudden severe list or trim is negative initial stability, counter-flooding into empty tanks may cause which of the following?

Cause the unit to flop to a greater angle

When considering currents, which defines the term set?

It is the direction towards which it flows

Which corrector will compensate for the deviation which is maximum on intercardinal compass headings

Quadrantal spheres

At 0400 your position is: Latitude 40° 50.2' North Longitude 071° 36.2' West From your 0400 fix, you steer a course to make good 347°T at 12.5 knots. Visibility is good. What is the earliest time you can expect to raise Montauk Point Light? (Nominal range - 24 miles, height above water - 168 feet)

The light is visible at 0400.

See REF2671

On Sunday, 8 November, your ship is enroute from Texas City, TX, to Portland, ME. At 0632 ZT, you fix your position at LAT 27°06'N, LONG 90°36'W. When the lower limb of the Sun was two-thirds of a diameter above the visible horizon, the Sun bore 105° per standard magnetic compass. At this time the chronometer read 12h 39m 20s and is 3m 20s slow. If the variation is 3°E, determine the deviation of the standard compass.

0.8°E

See REF1114

How are aids to navigation on the Great Lakes arranged geographically?

In a westerly and northerly direction, except on Lake Michigan

INLAND ONLY A barge more than 50 meters long is required to show how many white anchor lights when anchored in a Secretary approved "special anchorage area"?

2

See REF1759

BOTH INTERNATIONAL & INLAND Which of the signals, other than a distress signal, can be used by a vessel to attract attention?

The vessel's searchlight

See REF1738

BOTH INTERNATIONAL & INLAND In a crossing situation, which vessel may sound a signal to indicate failure to understand the intentions or actions of another vessel consisting of at least five short and rapid blasts of the whistle?

Either vessel

See REF1672

INLAND ONLY Which of the following is indicated by a vessel displaying a flashing blue light?

A law enforcement vessel

See REF1748

INLAND ONLY A vessel engaged in public safety activities may display an alternately flashing red and yellow light. This special light may be used by a vessel engaged in which of the following?

patrolling a regatta

See REF1748

Which part of an anchor actually digs into the bottom?

Fluke

Your vessel is proceeding through a narrow channel. What actions can you take to avoid any sudden sheers of the vessel?

Reduce speed and stay in the deepest part of the channel

What must be present in order for combustion to occur inside a piping system such as a vapor collection header in a marine emission control system?

fuel

oxygen

ignition

All of the above

Which spaces are required to be segregated from cargo tanks carrying grades A, B, C, or D cargoes?

Navigation spaces

See REF282

A ship station license for your radiotelephone is valid for which of the following terms?

Ten years

The two courses of action if the underwater hull is severely damaged are to plug the openings or to take which action?

Establish and maintain flooding boundaries

Which is TRUE concerning the length of the steering oar in a lifeboat?

It is longer than the rowing oars

Which term is given to the brickwork surrounding the firebox of a boiler?

Refractory

See REF101

Overhauling a fire in the living quarters on a vessel must include _____.

opening dead spaces to check for heat or fire

How are aids to navigation marking the intracoastal waterway identified?

Yellow stripes, squares, or triangles marked on them

At 0000 you fix your position and change course to 270°T. At 0030 you again fix your position, and it is 0.5 mile east of your DR. Which statement is TRUE?

The set is 090°, drift 1.0 knot.

You are underway on course 215°T at 12 knots. The current is 000°T at 2.3 knots. What is the speed being made good?

10.2 knots

Which would be the characteristic of an occulting light?

4 sec. flash, 2 sec. eclipse, 3 sec. flash, 2 sec. eclipse

See REF1004

The shoreline along Rocky Point should give a good radar return because .

the shore is bluff and rocky

See REF2672

INTERNATIONAL ONLY Which lights is a 45-meter power-driven vessel pushing ahead or towing alongside required to display?

Two masthead lights in a vertical line

See REF1741

BOTH INTERNATIONAL & INLAND What does the continuous sounding of a fog whistle by a vessel indicate?

A vessel is in distress

BOTH INTERNATIONAL & INLAND During the day, which shape is required for a dredge to exhibit to indicate the side on which it is safe to pass?

two diamonds in a vertical line

You are on a large vessel fitted with a right-handed controllable-pitch propeller set at maximum forward pitch. Which statement about reversing is TRUE?

There will probably be a loss of steering control.

See REF519

A large fire, involving class "A" material, has developed in the ship's galley. In combating this fire, which action should you take?

Cool adjoining horizontal and vertical surfaces before opening the galley door

See REF054

When a vessel is entering or leaving a port, where is the record of engine speeds kept?

The bell book

See REF590

Geographic range is the maximum distance at which a light may be seen under which conditions?

Perfect visibility conditions, limited only by the curvature of the Earth

See REF1022

You should expect to pass how far off buoy "12"?

0.8 mile

See REF2669

At Filter Point Light (mile 475 AHP) there are 3 close straight dashed lines on the map passing through the black dot below the number 475. What do these lines represent?

Power Cables

See REF2670

INLAND ONLY The masthead light may be located at other than the fore and aft centerline on which power-driven vessel?

less than 12 meters in length

See REF1753

INLAND ONLY You are proceeding against the current on a river in the Great Lakes System. You are meeting a downbound vessel. Both vessels are power-driven. The other vessel sounds one short blast. What action must you take?

sound one short blast

BOTH INTERNATIONAL & INLAND The masthead light may be displaced from the centerline on which of the following vessels?

a vessel of special construction

INLAND ONLY A flashing blue light is used to identify which of the following vessels?

law enforcement vessels

See REF1748

Which type of ice is a hazard to navigation?

Growlers

Ice concentration is measured in tenths. What concentration range of ice corresponds to "Open Pack"?

4 - 6 tenths

The number of certificated able seamen and lifeboatmen required on a vessel is determined by which organization?

Coast Guard

Prior to handling Class 1 explosive materials, which signal(s) is/are required to be displayed by the vessel?

the Bravo flag and signs posted prohibiting smoking

A vessel's "quarter" is that section which is _____.

on either side of the stern

See REF729

The Master of a fishing vessel must ensure that each crew member participates in at least one fire drill during which time frame?

Once a month

Channel 13 is primarily used for ship to ship communication. Channel 13 is also authorized for which purpose?

Lock & bridge communications

Which describes the difference between the height of the metacenter and the height of the center of gravity of a vessel?

Metacentric height

The Light List shows a lighted aid to navigation on the left bank. This means that the light can be seen on the starboard side of a vessel under which circumstances?

The vessel is ascending the river

If a towboat requires a double lockage it shall give which sound signal at a distance of not more than one mile from the lock?

One long blast followed by two short blasts

A Doppler speed log indicates speed through the water _____.

in the volume reverberation mode

See REF169

You estimate the current to be 125° at 0.6 knot, and the wind is westerly causing 3° of leeway. What course should you steer per gyrocompass to make good 347°T while turning for 12.5 knots?

340° pgc

See REF2671

How are nautical charts published by the Canadian Hydrographic service which are referenced in the United States Coast Pilot identified?

An asterisk preceding the chart number

If a tug equipped with flanking rudders is to be turned in a confined circle, when going astern, which is the best action to take to make the stern move to port?

The rudder is hard to port and the flanking rudders are hard to port

See REF049

INLAND ONLY The masthead light may be located at other than the fore and aft centerline on which power-driven vessel?
less than 12 meters in length

See REF1753

INLAND ONLY You are proceeding against the current on a river in the Great Lakes System. You are meeting a downbound vessel. Both vessels are power-driven. The other vessel sounds one short blast. What action must you take?
sound one short blast

BOTH INTERNATIONAL & INLAND The masthead light may be displaced from the centerline on which of the following vessels?

a vessel of special construction

INLAND ONLY A flashing blue light is used to identify which of the following vessels?

law enforcement vessels

See REF1748

In relation to the turning circle of a ship, which describes the term "advance"?

The distance gained in the direction of the original course

See REF012

Using a scope of 6, determine how many feet of anchor cable you should put out to anchor in 12 feet (3.7 meters) of water.
72 feet (21.9 meters)

The tank barge on which you are preparing to load petroleum is required to have on board one B-II fire extinguisher. What does NOT meet this requirement?

5 gallon water (stored pressure)

Which defines the pitch of a propeller on a merchant vessel?

The number of feet per revolution the propeller is designed to advance in still water without slip

See REF018

You are fighting a fire in a cargo hold on your vessel. Which action is most important concerning the stability of the vessel?

Draining fire-fighting water and pumping it overboard

You have a large, broken-down vessel in tow with a wire rope and anchor cable towline. Both vessels have made provision for slipping the tow in an emergency; however, unless there are special circumstances _____.

the towing vessel should slip first

How does foam extinguish a fire?

By smothering the burning material

See REF053

On the Western Rivers, you should normally expect thunderstorms to be more violent under which of the following weather conditions?

Warm and humid

Which term is given to a radar display which is oriented, so that north is always at the top of the screen?

Stabilized display

See REF177

In modern fathometers, what produces the sonic or ultrasonic sound waves?

A transducer

See REF160

Which describes a line of position derived by radar range from an identified point on a coast?

Arc

You sight Bartlett Reef Light in line with New London Harbor Light bearing 043°pgc. You are heading 088°pgc and 098.5° per standard magnetic compass at the time of the observation. Which statement is TRUE?

The deviation is 1.5°E by observation.

See REF2672

BOTH INTERNATIONAL & INLAND Which statement is TRUE concerning seaplanes on the water?

A seaplane on the water shall, in general, keep well clear of all vessels.

See REF2646

INLAND ONLY If you were coming up on another power-driven vessel from dead astern and desired to overtake on the other vessel's starboard side, which whistle signal would you sound?

One short blast

See REF1747

BOTH INTERNATIONAL & INLAND You are preparing to cross a narrow channel. You see a vessel that can only be navigated safely within the channel. Which action should you take?

Do not cross the channel if you might impede the other vessel

See REF1668

BOTH INTERNATIONAL & INLAND You are watching another vessel approach and her compass bearing is not changing. What does this indicate?

a risk of collision exists

BOTH INTERNATIONAL & INLAND Which light(s) shall a vessel or object being towed astern display?

stern light

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing during the day would show which shape?

two cones, apexes together

If you are fighting a fire below the main deck of your vessel, which action is most important concerning the stability of the vessel?

Pumping fire-fighting water overboard

What speed do most bow thrusters generally become ineffective?

Over 3 knots headway

General information about the location, characteristics, facilities, and services for U.S. and foreign ports may be obtained from which publication?

World Port Index

See REF1050

You are steaming on a course of 025°T at 15.5 knots. At 0645 you observe a lighthouse bearing 059°T. At 0655 the same lighthouse bears 075°T. What is your distance off at the second bearing?

5.3 miles

At 2030 you take the following bearings: Sand Shoal Inlet South Light - 275°T Cape Charles Light - 235°T What is the set and drift from 2000 to 2030?

268° at 1.4 knots

See REF2669

Local Knowledge

Determined by CG Sector for local area and desired route. Contact REC for details.

Determined by CG Sector for local area and desired route. Contact REC for details.

Determined by CG Sector for local area and desired route. Contact REC for details.

Determined by CG Sector for local area and desired route. Contact REC for details.

INLAND ONLY Which statement is TRUE concerning the Inland Navigation Rules?

They list requirements for Traffic Separation Schemes.

See REF1756

BOTH INTERNATIONAL & INLAND You are approaching a narrow channel. Another vessel in the channel can only be navigated safely in that channel. Which action should you take?

not cross the channel if you might impede the other vessel

See REF1668

BOTH INTERNATIONAL & INLAND Your power-driven vessel is stopped and making no way, but is not in any way disabled. Another vessel is approaching you on your starboard beam. Which statement is TRUE?

Your vessel is the give-way vessel in a crossing situation.

See REF1672

BOTH INTERNATIONAL & INLAND You are underway in reduced visibility. You hear the fog signal of another vessel about 20° on your starboard bow. Risk of collision may exist. Which action should you take?

reduce your speed to bare steerageway

BOTH INTERNATIONAL & INLAND In a crossing situation, the vessel which has the other on her own starboard side shall take which action?

if the circumstances of the case admit, avoid crossing ahead of the other

Which item may be substituted for, in the fireman's outfit, on a cargo vessel?

Flame safety lamp

While standing look-out at night, which is the BEST way to see a dim light on the horizon?

Look a little above the horizon

The scuppers had been plugged as required at the time a small oil spill occurs on deck from a leaking dresser coupler. After shutting down the transfer, the engine room should first be informed and then which action should be taken?

Spread an absorbent material, such as sawdust

The possibility of wake damage can be reduced by following which action?

Slow down when passing moored vessels

A 100-GT vessel, constructed before July 1, 1974, is loading diesel fuel. What is the minimum capacity of the portable container required for placement under or around each fuel tank vent, overflow, and fill pipe?

5 gallons

Which type of weld testing can be used to detect internal flaws?

Radiographic

See REF727

Which defines the function of a spark arrestor?

Prevents sparks from getting out of an engine's exhaust system

See REF070

Which is TRUE concerning drinking salt water?

Consuming saltwater will dehydrate you

To avoid error, how should you read the scale of an aneroid barometer?

With your eye directly in front of the pointer

Which publication lists Class I and II private aids to navigation in or along navigable waters of the United States?

Light List

To find the specific phase characteristic of a lighthouse on a sound of the United States you would use Which reference?

Light List

What is the reaction of a gyrocompass to an applied force known as?

Precession

See REF143

At 0445 you take the following lines bearings:

Montauk Point Light 292°pgc

Block Island Southeast Point Light 024°pgc

What was the current encountered since your 0400 fix?

004°, 0.9 knot

See REF2671

Which type of ice is a hazard to navigation?

Growlers

Local Knowledge

Determined by CG Sector for local area and desired route. Contact REC for details.

Determined by CG Sector for local area and desired route. Contact REC for details.

Determined by CG Sector for local area and desired route. Contact REC for details.

Determined by CG Sector for local area and desired route. Contact REC for details.

INLAND ONLY Which statement is TRUE concerning the Inland Navigation Rules?

They list requirements for Traffic Separation Schemes.

See REF1756

BOTH INTERNATIONAL & INLAND You are approaching a narrow channel. Another vessel in the channel can only be navigated safely in that channel. Which action should you take?

not cross the channel if you might impede the other vessel

See REF1668

BOTH INTERNATIONAL & INLAND Your power-driven vessel is stopped and making no way, but is not in any way disabled. Another vessel is approaching you on your starboard beam. Which statement is TRUE?

Your vessel is the give-way vessel in a crossing situation.

See REF1672

BOTH INTERNATIONAL & INLAND You are underway in reduced visibility. You hear the fog signal of another vessel about 20° on your starboard bow. Risk of collision may exist. Which action should you take?

reduce your speed to bare steerageway

BOTH INTERNATIONAL & INLAND In a crossing situation, the vessel which has the other on her own starboard side shall take which action?

if the circumstances of the case admit, avoid crossing ahead of the other

When referring to dry bulk cargoes, which defines the term "flow state"?

The saturation of a dry bulk product with a liquid to the point where it behaves as a liquid

Which statement about splices is TRUE?

A long splice is used to connect two lines that will pass through narrow openings.

What is the minimum standard for making an eye splice in a wire to be used as cargo gear?

Make three tucks with full strands, remove half the wires from each strand, and make two more tucks.

You are arriving in port and are assigned to anchor in anchorage circle B-4. It has a diameter of 600 yards and your vessel's LOA is 525 feet. If you anchor in 10 fathoms at the center of the circle, what is the maximum number of shots of chain you can use and still remain in the circle?

4 shots

See REF534

Ventilation systems connected to a compartment in which a fire is burning are normally closed to prevent the rapid spread of the fire by which method?

Convection

See REF647

Fire alarm system thermostats are actuated by which means?

The difference in thermal expansion of two dissimilar metals

What is the signal used with shore lifesaving equipment to indicate, "Affirmative"?

Vertical motion of the arms

Which datum is used for soundings on charts of the East Coast of the United States?

Mean lower low water

How is the intensity of a light expressed in the Light Lists?

Nominal range

Which statement is TRUE concerning weather conditions on the Great Lakes?

When a vessel is north of an eastward-moving storm center, changes in the weather are less distinctive than when sailing south of the center.

BOTH INTERNATIONAL & INLAND Which is TRUE for a vessel in a traffic separation scheme that is joining a traffic lane from the side?

the vessel should enter at as small an angle as possible to the traffic flow

BOTH INTERNATIONAL & INLAND Which vessel must have a gong, or other equipment which will make the sound of a gong?

Any vessel over 100 meters

See REF1705

INLAND ONLY For the purpose of the Inland Navigation Rules, the term "Inland Waters" includes which of the following?

The Mississippi River System

See REF1678

BOTH INTERNATIONAL & INLAND For the purpose of the Rules, except where otherwise required, the term

"vessel" includes seaplanes

What causes a single-screw vessel going ahead to turn more rapidly to port?

Side force of the propeller

Why are the anchors dropped well out from the pier while at a Mediterranean moor?

It permits the ship to maneuver in the stream while weighing anchors

See REF004

With regard to GPS, how can a civilian receiver may be capable of achieving the same accuracy as a military receiver?

If the selective availability is set to zero

In United States waters, a buoy having red and white vertical stripes if lighted, it will have which light characteristic?

Morse (A)

See REF203

From your 2030 fix you change course to 195°T, and leave the engine speed at 14 knots. At 2045, your position is Lat 37°13.50'N Long 075°38.05'W Which statement is TRUE?

Cape Charles Light bears 050° relative.

See REF2669

Chart Sketch

Determined by CG Sector for local area and desired route. Contact REC for details. Including recommended courses, distances, prominent aids to navigation, depths of waters in channels and over hazardous shoals, and other important features of the route, such as character of the bottom . The Coast Guard may accept chart sketching of only a portion or portions of the route for long or extended routes.

Determined by CG Sector for local area and desired route. Contact REC for details. Including recommended courses, distances, prominent aids to navigation, depths of waters in channels and over hazardous shoals, and other important features of the route, such as character of the bottom . The Coast Guard may accept chart sketching of only a portion or portions of the route for long or extended routes.

Determined by CG Sector for local area and desired route. Contact REC for details. Including recommended courses, distances, prominent aids to navigation, depths of waters in channels and over hazardous shoals, and other important features of the route, such as character of the bottom . The Coast Guard may accept chart sketching of only a portion or portions of the route for long or extended routes.

Determined by CG Sector for local area and desired route. Contact REC for details. Including recommended courses, distances, prominent aids to navigation, depths of waters in channels and over hazardous shoals, and other important features of the route, such as character of the bottom . The Coast Guard may accept chart sketching of only a portion or portions of the route for long or extended routes.

INTERNATIONAL ONLY Which lights is a 45-meter power-driven vessel pushing ahead or towing alongside required to display?

Two masthead lights in a vertical line

See REF1741

BOTH INTERNATIONAL & INLAND What does the continuous sounding of a fog whistle by a vessel indicate?

A vessel is in distress

BOTH INTERNATIONAL & INLAND During the day, which shape is required for a dredge to exhibit to indicate the side on which it is safe to pass?

two diamonds in a vertical line

You are the credentialed operator of a 100 GT towing vessel sailing coastwise. What percentage of the deck crew must be able to understand the language commonly used onboard the vessel?

75%

Which item do you NOT have to provide for the Coast Guard representative at the time of a stability test?

A stability letter.

Pedestal cranes have limit switches to restrict the movement of which function?

Slew travel limits

Turntable limits

Luff travel limits

All of the above

See REF130

How long is a credential issued by the U.S. Coast Guard for Master of Towing Vessels valid for?

5 years and must be renewed

According to U.S. regulations, how often are you are required to test cargo discharge piping?

12 months

See REF385

What can be used to measure the percentage of oxygen inside a chain locker?

Oxygen indicator

See REF125

While reading the muster list you see that "3 short blasts on the whistle and three short rings on the general alarm" is the signal for _____.

dismissal from fire and emergency stations

See REF033

Fire alarm system thermostats are actuated by which means?

The difference in thermal expansion of two dissimilar metals

You are at anchor in the anchorage at the entrance to Delaware Bay. You weigh anchor at 1445 DST (ZD +4) on 24 July 1983 and proceed northbound enroute to Philadelphia at a speed of 10 knots. Which of the following should you expect to experience?

a weak flood between Reedy Island and Edgemoor

What is the function of a red triangular daymark?

To indicate the starboard side of a channel

See REF996

You will find daily information about the duration of slack water in a port on the Atlantic Coast in which publication?

Tidal Current Tables

Which type of GPS receiver has at least four channels to process information from several satellites simultaneously?

Continuous

At 0455 you encounter fog and slow to 5 knots. At 0500, you obtain a radar fix from the following information: Radar range to Montauk Point is 9.1 miles. Tangent bearing to western edge of Block Is. is 015°pgc. Distance off the nearest part of Block Is. is 5.9 miles. What is your 0500 position?

LAT 41°03.5'N, LONG 71°39.3'W

See REF2671

Which is usually the most gentle way of riding out a severe storm on a larger vessel?

Running before the seas

See REF021

Chart Sketch

Determined by CG Sector for local area and desired route. Contact REC for details. Including recommended courses, distances, prominent aids to navigation, depths of waters in channels and over hazardous shoals, and other important features of the route, such as character of the bottom . The Coast Guard may accept chart sketching of only a portion or portions of the route for long or extended routes.

Determined by CG Sector for local area and desired route. Contact REC for details. Including recommended courses, distances, prominent aids to navigation, depths of waters in channels and over hazardous shoals, and other important features of the route, such as character of the bottom . The Coast Guard may accept chart sketching of only a portion or portions of the route for long or extended routes.

Determined by CG Sector for local area and desired route. Contact REC for details. Including recommended courses, distances, prominent aids to navigation, depths of waters in channels and over hazardous shoals, and other important features of the route, such as character of the bottom . The Coast Guard may accept chart sketching of only a portion or portions of the route for long or extended routes.

Determined by CG Sector for local area and desired route. Contact REC for details. Including recommended courses, distances, prominent aids to navigation, depths of waters in channels and over hazardous shoals, and other important features of the route, such as character of the bottom . The Coast Guard may accept chart sketching of only a portion or portions of the route for long or extended routes.

INTERNATIONAL ONLY Which lights is a 45-meter power-driven vessel pushing ahead or towing alongside required to display?

Two masthead lights in a vertical line

See REF1741

BOTH INTERNATIONAL & INLAND What does the continuous sounding of a fog whistle by a vessel indicate?

A vessel is in distress

BOTH INTERNATIONAL & INLAND During the day, which shape is required for a dredge to exhibit to indicate the side on which it is safe to pass?

two diamonds in a vertical line

Fire fighting equipment requirements for a particular vessel may be found on which document?

Certificate of Inspection

See REF009

The scuppers had been plugged as required at the time a small oil spill occurs on deck from a leaking dresser coupler. After shutting down the transfer, the engine room should first be informed and then which action should be taken?

Spread an absorbent material, such as sawdust

Prior to handling Class 1 explosive materials, which signal(s) is/are required to be displayed by the vessel?

the Bravo flag and signs posted prohibiting smoking

Who must sign the Declaration of Inspection made before oil transfer operations?

Person(s) in charge

When bunkering at a dock which of the following signals must be displayed?

A red flag by day, red light by night

See REF343

What is the color of the signal flare sent up by a submarine indicating that a torpedo has been fired in a training exercise?

Green

See REF097

Which is TRUE concerning drinking salt water?

Consuming saltwater will dehydrate you

Distress signals may be _____.

- sound signals**
- smoke signals**
- red flares**
- Any of the above**

If the current and wind are in the same direction, what does the sea surface represent concern the true wind speed?
It appears less than actually exists

Your position is LAT 40°59.0'N, LONG 73°06.2'W. What is the course psc to New Haven Harbor Lighted Whistle Buoy "NH"?

- 052°**
- See REF2672

Your vessel is broken down and rolling in heavy seas. How can you reduce the danger of capsizing?
Rigging a sea anchor

INTERNATIONAL ONLY Two power-driven vessels are meeting. What would a two blast whistle signal by either vessel mean?

- "I am altering course to port"**
- See REF1740

BOTH INTERNATIONAL & INLAND You are on watch in the fog. Your vessel is proceeding at a safe speed when you hear a fog signal ahead of you. The Rules require you to navigate with caution and take which action if danger of collision exists?

- Slow to minimum that the vessel can be kept on course**
- See REF1666

BOTH INTERNATIONAL & INLAND When a vessel signals her distress by means of a gun or other explosive signal, which firing intervals should be used?

- Once every minute**
- See REF1738

BOTH INTERNATIONAL & INLAND When is a stand-on vessel in a crossing situation allowed to take action?
it becomes apparent to her that the give-way vessel is not taking appropriate action

INLAND ONLY Which term is NOT defined in the Inland Navigation Rules?

- Vessel constrained by her draft**
- See REF1678

If you receive the signal over radiotelephone of "Romeo Papa Tango" while using the International Code of Signals, which action should you take?

- Repeat your last transmission**

Which agency must approve the Safety equipment on board inspected vessels?

- The U.S. Coast Guard**

When is a vessel wind rode?

- When the vessel is at anchor and heading into the wind**

See REF016

When operated over a muddy bottom, a fathometer may indicate which of the following?

- Two depth readings**

See REF170

You are steaming on course 126°T at 14.8 knots. At 1022 you sight a buoy bearing 128°T, at a range of 4.8 miles. If you change course at 1026, what true course will you steer to leave the buoy 0.5 mile abeam to port?

136°

Which publication contains information on Naval Cooperation and Guidance for Shipping (NCAGS) in time of emergency or war?

Pub. 117, Radio Navigational Aids

See REF1037

You will transit the Cape Cod Canal on 7 November 1983. If you arrive at the R R Bridge at 1655 EST (ZD +5), for what period of time during your transit will you have currents of not more than 0.5 knot?

1648 to 1702

You continue to steer 195°T. You pass Cape Charles Lighted Bell Buoy "14", 0.9 miles abeam to starboard at 2111. What is your speed made good from 2045 to 2111?

14.8 knots

See REF2669

BOTH INTERNATIONAL & INLAND Which statement is TRUE concerning seaplanes on the water?

A seaplane on the water shall, in general, keep well clear of all vessels.

See REF2646

INLAND ONLY If you were coming up on another power-driven vessel from dead astern and desired to overtake on the other vessel's starboard side, which whistle signal would you sound?

One short blast

See REF1747

BOTH INTERNATIONAL & INLAND You are preparing to cross a narrow channel. You see a vessel that can only be navigated safely within the channel. Which action should you take?

Do not cross the channel if you might impede the other vessel

See REF1668

BOTH INTERNATIONAL & INLAND You are watching another vessel approach and her compass bearing is not changing. What does this indicate?

a risk of collision exists

BOTH INTERNATIONAL & INLAND Which light(s) shall a vessel or object being towed astern display?

stern light

BOTH INTERNATIONAL & INLAND A vessel engaged in fishing during the day would show which shape?

two cones, apexes together

Prior to being able to sail, each vessel that carries grain in bulk must have a certificate of loading. Which organization issues this certificate?

National Cargo Bureau

See REF274

Which is the correct procedure for anchoring a small to medium size vessel in deep water?

Under power, back the anchor out until it is near, but clear, of the bottom before letting it fall.

Your vessel is chartered under a time charter party. Under this type of charter party, what is your responsibility as Master?

It is to the owner for vessel administration and to the charterer for cargo operations and schedule

See REF043

On stud-link anchor chain, how much does the addition of the stud increase the strength of the link?

15%

When turning a ship in restricted space with a strong wind, which is the BEST action to take?

Turn so that the tendency to back into the wind can be used, if on a single-screw vessel

What is the difference between net tonnage and gross tonnage?

Net tonnage is the gross tonnage less certain deductions for machinery and other areas.

See REF085

Normally, before taking drinking water on board in the U.S. or its possessions, the responsible person from the vessel should determine which information about the water source?

Is approved by the Public Health Service

REF001

A ship at sea moves in six degrees of motion: heave, sway, surge, roll, pitch and yaw. The first three are linear motions. Heaving is the linear motion along the vertical Z-axis, swaying is the motion along the transverse Y-axis, and surging is the motion along the longitudinal X-axis. Rolling is a rotation around a longitudinal axis, pitching is a rotation around the transverse axis and yawing is a rotation around the vertical axis. HEAVE: The alternate rising and falling of a vessel in a seaway. SWAY: A vessel's motion from side to side. SURGE: A vessel's transient motion along her fore and aft axis. ROLL : Motion of the ship from side to side, alternately raising and lowering each side of the deck. The oscillating motion of a vessel from side to side due to ground swell, heavy sea, or other causes. PITCHING: The alternate rising and falling motion of a vessel's bow in a nearly vertical plane as she meets the crests and troughs of the waves. YAWING: To turn from side to side on an uneven course.

REF004

Mediterranean mooring Mediterranean mooring, also known as "med mooring" or "Tahitian mooring", is a technique for mooring a vessel to pier. In a Mediterranean mooring the vessel sets a temporary anchor off the pier and then approaches the pier at a perpendicular angle. The vessel then runs two lines to the pier. Alternatively, simple moorings may be placed off the pier and vessels may tie to these instead of setting a temporary anchor. The advantage of Mediterranean mooring is that many more vessels can be connected to a fixed length of pier as they occupy only their width of pier rather than their length. The disadvantages of Mediterranean mooring are that it is more likely to result in collisions and that it is not practical in deep water or in regions with large tides.

REF005

Calculating Power of a Tackle 10% of the weight of the load \times Number of sheaves $+ \text{Weight of load} / \text{Number of sheaves} = \text{Force}$ or $F/W = 1 + ((1/10 \text{ number of sheaves}) / \text{T.M.A.})$ from Merchant Marine Officers' Handbook $F = \text{force}$ (in pounds or tons) to be applied at the hauling end of the block $W = \text{weight to be lifted}$ T.M.A. = theoretical mechanical advantage, the ratio of W to F , assuming no friction KINDS OF TACKLE Tackles are named according to the number of sheaves in the blocks that are used (single, two-fold, three-fold purchases), according to the purpose for which the tackle is used (yard-tackles, stay-tackles, etc.), or from names handed down from the past (luff-tackles, watchtackles, gun-tackles, Spanish-burtons, etc.). The tackles that may be found aboard cruising boats, and should be known are: 1. Single Whip-A single fixed block and fall-no increase in power. Gain only in height of lift or change in direction of pull. 2. Gun Tackle-Two single blocks. If lower block is movable, double force is gained. If upper block is movable, triple force is gained. 3. Luff Tackle-A double hook-block and single hook block. Force gained three if single block is movable, four if double block is movable .. 4. Two-Fold or Double Tackle-Two double sheave hook-blocks. Force gained four or five, depending upon application.

REF008

A logbook was originally a book for recording readings from the chip log, and is used to determine the distance a ship traveled within a certain amount of time. The readings of the log have been recorded in equal times to give the distance traveled with respect to a given start position. Today's ship's log has grown to contain many other types of information, and is a record of operational data relating to a ship or submarine, such as weather conditions, times of routine events and significant incidents, crew complement or what ports were docked at and when. It is essential to traditional navigation, and must be filled in at least daily. Most National shipping authorities and Admiralties specify that logbooks are kept to provide a record of events, and to help crews navigate should radio, radar or the GPS fail. Examination of the detail in a ship's log is often an important part of the investigative process for official maritime inquiries, in much the same way as a "black box" is used on airplanes (see Mary Celeste). Logbook entries are sometimes of great importance in legal cases involving maritime commercial disputes. The term logbook has spread to a wide variety of other endeavors, and logbooks are widely used for e.g. complex machines like nuclear plants or particle accelerators where one is more and more using a computer based electronic logbook. In military terms, a logbook is a series of official and legally binding documents. Each document (usually arranged by date) is marked with the time of an event or action of significance. Commercial ships and Naval vessels often keep a "rough log," - or "scrap log," - a preliminary draft of the ship's course, speed, location, and other data, which is then transcribed as the "smooth log," - or "official log" - the final version of the ship's record. Changes may be made to the rough log but the smooth log is considered permanent and no erasures are permitted. Alterations or corrections in an official logbook must be initialed by the authorized keeper of the logbook and the original data entries which have been cancelled or corrected must remain legible.

REF009

46 cfr 2.01–5 Certificate of inspection

REF011

Particular average is partial loss or damage to a ship or its cargo that affects only the ship owner or one cargo owner. Particular average losses are those borne by the owners of the ship or cargo due to direct damage to their property.

REF012

Turning Circles The circle is the path of the ship's pivot point as it executes a 360° turn. In shallow water, the rate of turn is likely to be decreased, so the vessel will have a larger turning circle. Advance This is the distance the ship travelled in the direction of the original heading, measured from the point at the moment when helm was first applied to the turn. Transfer This is the distance of the centre of gravity of the ship from the original track line. Thus, the transfer for a turn of 90° is the distance of the centre of gravity of the ship from the original track line when the heading of the ship is 90° relatively from the original heading, and it is about two ship's lengths. Tactical Diameter This is the transfer for a turn of 180°, which is almost equal to the max transfer and about the maximum advance. The diameter will vary, based on the speed, the amount of rudder used and the trim. 1: When the vessel is trimmed by the stern, the tactical diameter of turn is increased 2: When the vessel is trimmed by the head, the tactical diameter of turn is decreased 3: The vessel with a list will take longer to execute the turn, and, when turned into the list, will develop a larger circle 4: The vessel with a right-hand turn propeller, if making a turn to port, will end up with a smaller diameter than starboard due to the effect of transverse thrust. The ship should have a Turn Table, which gives the turning characteristics of the ship at various speeds and rudder angles.

REF013

Bow Cushion and Bank Suction In a restricted channel, when the ship moves near the bank, the bow is pushed away from the bank, an effect known as bow cushion, and the vessel is bodily attracted toward the bank, an effect known as bank suction. The bank cushion results from high pressure buildup between the bank and the bow of the ship, and the bank suction is caused by loss of pressure and increased velocity of water in the restricted space between the vessel and the bank. The squat effect is the hydrodynamic phenomenon by which a vessel moving quickly through shallow water creates an area of lowered pressure that causes the ship to be closer to the seabed than would otherwise be expected.

REF016

Tide-ride definition is - swung by the tide regardless of the wind when at anchor —opposed to wind-ride. Definition of wind-ride: Caused to ride with head to the wind practically unaffected by tide or current —used of a ship at anchor with wind and tide approximately opposed —opposed to tide-ride

REF018

Pitch is the theoretical forward distance, in inches, that a propeller travels during one revolution. There is always some "slip" between the propeller and the water (generally 10 to 15 percent) so the actual distance traveled is somewhat less than the theoretical value.

REF021

Correct answer. "Handling Steamers in Heavy Weather: The opinion of late years is that a steamer should run slowly before a sea or lie to within the sea astern or on the quarter ..."

REF033

The Station Bill 46 CFR 199.80 46 CFR 108.901 The Station Bill (now called a Muster List) lists your emergency station and also which lifeboat or life raft you are assigned to. You are required to read the Muster List as soon as you report aboard ship . The signal for "boat stations" (i.e., preparing to launch lifeboats and inflatable life rafts to abandon ship) is more than six short blasts and one long blast on the whistle followed by the same signal on the general alarm bells. When you hear this signal. go to your assigned station. A continuous blast of the whistle for at least 10 seconds and the same signal on the General Alarm bells is the fire and emergency signal. When you hear this signal, go to your fire station. If you are on watch in the engine room, start the fire pump and supply water under pressure to the fire main . During drills, one short blast of the whistle signals the crew to lower the boats. Two short blasts means to stop lowering the boats. Three short blasts is the signal to dismiss the crew from the drill. Additional emergency signals are assigned by the Master. Emergency duties must be comparable to regular duties.

REF041

Reserve buoyancy can be defined as the volume of the enclosed spaces above the waterline. It can be expressed as a volume or as a percentage of the total volume of the vessel. The volume of the enclosed area above the waterline are not providing buoyancy but are being held in reserve. If some extra weights are loaded to increase the displacement, these spaces above the waterline are there to provide the extra buoyancy required. Enclosed spaces, which provide buoyancy in addition to that required by a vessel to float. It is always considered in the assignment of freeboard to a ship.

REF042

Spider band – a steel lugged strap found around the head of a derrick which the rigging, such as the topping lift and guys are shackled onto. The equivalent on a mast structure is known as a 'Hounds Band'.

REF043

A time charter party is a contract whereby the lessor places a fully equipped and manned ship at the disposal of the lessee for a period of time for a consideration called hire. ... In such a case, the lessor places the fully equipped and manned ship with the lessee till the completion of the voyage.

REF044

Flammable liquids give off flammable vapors at or below a temperature of 80°F. Within this class, there are three grades, based on their Reid Vapor Pressure and flash point. All liquids that burn may be grouped into these five grades. It is apparent that flammable liquids are those that may be ignited at temperatures below 80°F whereas the combustible liquids must be heated to above 80°F before they will flash. Class IA flammable liquids have a flash point below 73 °F (22.8 °C) (the upper end of the common range of room temperature) and a boiling point below 100 °F Class IB flammable liquids have a flash point below 73 °F (22.8 °C) and a boiling point greater than or equal to 100 °F (37.8 °C) Class IC flammable liquids have a flash point greater than or equal to 73 °F (22.8 °C) and below 100 °F (37.8 °C) Class II combustible liquids have a flash point greater than or equal to 100 °F (37.8 °C) and below 140 °F (60 °C) Class IIIA combustible liquids have a flash point greater than or equal to 140 °F (60 °C) and below 200 °F (93.3 °C) Class IIIB combustible liquids have a flash point greater than or equal to 200 °F (93.3 °C) Grade A refers to a flammable liquid with Reid vapor pressure of 14 pounds per square inch absolute (psia) or more. Think of a Grade A cargo as a very volatile liquid that gives off lots of vapor even at relatively low temperatures...so much vapor, in fact, that the vapor can build up considerable measurable pressure inside a closed test container. Grade B refers to a flammable liquid with a Reid vapor pressure of more than 814 pounds (psia) but less than 14 pounds Grade C refers to a flammable liquid with a Reid vapor pressure of 814 pounds (psia) or less and a flash point of 80°F or below. Gasoline with a Reid vapor pressure of 7.4 pounds (psia) and a flash point of -40°F is an example of a grade C cargo. Since gasoline's primary hazard is its flammability it is a Subchapter D cargo rather than a Subchapter O cargo where properties other than or in addition to flammability are regulated. Grade D refers to a combustible liquid with a flash point above 80°F, but below 150°F. One example is Diesel oil that is either a Grade D or a Grade E liquid depending upon its flash point, which can vary between 110°F and 190°F. Grade E refers to a combustible liquid with a flash point of 150°F or above. "Bunker C," or heavy industrial fuel oil, is an example of a Grade E liquid. Liquefied flammable gas (LFG): Any flammable gas with a Reid Vapor Pressure (RVP) above 40 pounds and that has been changed from a gas to a liquid state. 46 CFR 30.10-39. Liquefied natural gas (LNG): C■ and C■ hydrocarbons that can be liquefied either by refrigeration or by pressurization at ambient temperatures. Reid Vapor Pressure is the pressure exerted by the vapor of a liquid as determined by laboratory tests in a Reid Apparatus at a standard temperature of 100°F, expressed in pounds per square inch (absolute) (psia) according to standards established by the American Society for Testing Materials (ASTM). It is now government policy to accept meaningful civilian standards, such as this ASTM standard, wherever possible rather than to develop and enforce separate government standards.

REF047

Spontaneous combustion, the outbreak of fire without application of heat from an external source. Spontaneous combustion may occur when combustible matter, such as hay or coal, is stored in bulk.

REF049

Flanking rudders are often used for inland river tow boats. They are located forward of the propellers in order to provide manoeuvrability during astern operations, giving the convoy control when backing or flanking.

REF052

199.180 Training and drills.

REF053

Aqueous film-forming foam (AFFF), also known as light water, is mechanical foam developed for use in a joint firefighting attack with dry chemical agents. AFFF controls the vaporization of flammable liquids by forming a water film and is especially suitable for engineroom bilge fires . A portable foam extinguisher is likely to freeze since it is filled with a water solution. This is one reason why most of these units were removed from service. This type of extinguisher is used mostly on Class B fires but also can be used on Class A fires. A foam fire extinguishing agent must never be used on a Class C fire since its extinguishing agent has a water base and conducts electricity. Foams extinguish a fire by smothering or blanketing it and thereby removing the oxygen. Secondly, foam also cools a fire. A portable foam extinguisher is likely to

freeze since it is filled with a water solution. This is one reason why most of these units were removed from service. This type of extinguisher is used mostly on Class B fires but also can be used on Class A fires. A foam fire extinguishing agent must never be used on a Class C fire since its extinguishing agent has a water base and conducts electricity. Foam is normally applied to a vertical surface to allow it to flow down and form a "blanket" over the fire. To be effective, the foam must cover the entire surface of burning oil. Be careful not to disturb or break the foam blanket or the fire could re-flash.

REF054

Class A includes fires in solids such as paper, canvas, wood, rubber, etc. You normally fight these fires by removing the heat by cooling or quenching. The most common agent used in fighting this type of fire is water in its various forms. You should fight fires in mattresses and bedding materials with a solid stream of water. This breaks up the bedding material and allows the water to reach deeply embedded pockets of combustion. A "solid stream" of water also has the greatest "reach" or effective distance when you cannot get close enough to the fire to be effective with other agents. High velocity fog is a better cooling agent than solid stream water. Use it when you do not need a long reach or the "breaking-up force" of a solid stream. On large fires on an open deck, Aqueous Film Forming Foam (AFFF), also known as "light water," is best suited when it is available. FOG is effective when used in closed spaces. High velocity fog has a longer reach than low velocity fog. However, low velocity fog is a better heat absorber and often is used as a heat shield for firefighters.

REF056

Wake fraction coefficient. The speed of advance of the propeller "VA" relative to the water in which it is working is lower than the observed speed of the vessel "V". This difference in speed, expressed as a percentage of the ship speed, is known as the wake fraction coefficient "w".

REF067

Subpart 26.20—Exhibition of Coast Guard Credential § 26.20–1 Must be available. If a person operates a vessel that carries one or more passengers-for-hire, he or she is required to have a valid Coast Guard license or MMC officer endorsement suitable for the vessel's route and service. He or she must have the license or MMC in his or her possession and must produce it immediately upon the request of a Coast Guard boarding officer.

REF070

A spark arrester (sometimes spark arrestor) is any device which prevents the emission of flammable debris from combustion sources, such as internal combustion engines, fireplaces, and wood burning stoves. Spark arresters play a critical role in the prevention of wildland fire and ignition of explosive atmospheres. Consequently, their use is required by law in many jurisdictions worldwide.

REF079

Right-hand propellers turn clockwise when going ahead, when viewed from the stern. A solid propeller has its blades cast integral with its hub. Bank Suction is the effect experienced when a vessel is navigating on the outer limits of a channel and the stern swings into the bank.

REF081

As a vessel moves through the water, it experiences a change in mean draft known as sinkage. This change could be equally distributed fore and aft or could be more pronounced on either the bow or stern. The simultaneous change in mean draft or sinkage and change in trim is known as squat.

REF084

The frapping line are used to pull the lifeboat over to the embarkation deck along with the tricing pendent to be loaded. ... Lines used to initially pull the lifeboat over to the embarkation deck so that the Frapping lines can be connected. Falls. The wires which lift or lower the lifeboat are known as falls. Tricing pendant is used to avoid the swinging of the boat when the ship is rolling or listed and bousing tackle is used to bring the boat near to the embarkation deck to allow the crew to embark safely.

REF085

Tonnage is a measure of the size or cargo carrying capacity of a ship. The term derives from the taxation paid on tons or casks of wine, and was later used in reference to the weight of a ship's cargo; however, in modern maritime usage, "tonnage" specifically refers to a calculation of the volume or cargo volume of a ship. Tonnage should not be confused with Displacement which refers to the loaded or empty weight of the vessel itself. Gross tonnage (often abbreviated as GT, G.T. or gt) is a unit less index related to a ship's overall internal volume. Gross tonnage is different from gross register tonnage.[1] Neither gross tonnage nor gross register tonnage is a measure of the ship's displacement (mass) and should

not be confused with terms such as deadweight tonnage or displacement. Gross tonnage, along with net tonnage, was defined by The International Convention on Tonnage Measurement of Ships, 1969, adopted by the International Maritime Organization in 1969, and came into force on July 18, 1982. These two measurements replaced gross register tonnage (GRT) and net register tonnage (NRT). Gross tonnage is calculated based on "the moulded volume of all enclosed spaces of the ship" and is used to determine things such as a ship's manning regulations, safety rules, registration fees, and port dues, whereas the older gross register tonnage is a measure of the volume of certain enclosed spaces. Net tonnage (often abbreviated as NT, N.T. or nt) is a dimensionless index calculated from the total moulded volume of the ship's cargo spaces by using a mathematical formula. Defined in The International Convention on Tonnage Measurement of Ships that was adopted by the International Maritime Organization in 1969, the net tonnage replaced the earlier net register tonnage (NRT) which denoted the volume of the ship's revenue-earning spaces in "register tons", units of volume equal to 100 cubic feet (2.83 m³). [1] Net tonnage is used to calculate the port duties and should not be taken as less than 30 per cent of the ship's gross tonnage. [2] Net tonnage is not a measure of the weight of the ship or its cargo, and should not be confused with terms such as deadweight tonnage or displacement. Also, unlike the net register tonnage, the net tonnage is unit less and thus can not be defined as "tons" or "net tons". Gross register tonnage (GRT, grt, g.r.t.) a ship's total internal volume expressed in "register tons", one of which equals a volume of 100 cubic feet (2.83 m³). It is calculated from the total permanently enclosed capacity of the vessel. The ship's net register tonnage is obtained by reducing the volume of non-revenue-earning spaces i.e. spaces not available for carrying cargo, for example engine rooms, fuel tanks and crew quarters, from its gross register tonnage. [1][2] Gross register tonnage is not a measure of the ship's weight or displacement and should not be confused with terms such as deadweight tonnage or displacement. Gross register tonnage was defined by the Moorsom Commission in 1854. Gross and net register tonnages were replaced by gross tonnage and net tonnage, respectively, when the International Maritime Organization (IMO) adopted The International Convention on Tonnage Measurement of Ships on 23 June 1969. The new tonnage regulations entered into force for all new ships on 18 July 1982, but existing vessels were given a migration period of 12 years to ensure that ships were given reasonable economic safeguards, since port and other dues are charged according to ship's tonnage. Since 18 July 1994 the gross and net tonnages, dimensionless indices calculated from the total moulded volume of the ship and its cargo spaces by mathematical formulae, have been the only official measures of the ship's tonnage. [3] However, the gross and net register tonnages are still widely used in describing older ships. Deadweight tonnage (also known as deadweight abbreviated to DWT, D.W.T., d.w.t., or dwt) is a measure of how much weight a ship is carrying or can safely carry. [1][2][3] It is the sum of the weights of cargo, fuel, fresh water, ballast water, provisions, passengers, and crew. [1] The term is often used to specify a ship's maximum permissible deadweight, the DWT when the ship is fully loaded so that its Plimsoll line is at the point of submersion, although it may also denote the actual DWT of a ship not loaded to capacity. Deadweight tonnage was historically expressed in long tons but is now usually given internationally in tonnes. [4] Deadweight tonnage is not a measure of the ship's displacement and should not be confused with gross tonnage or net tonnage (or their more archaic forms gross register tonnage or net register tonnage). A ship's displacement or displacement tonnage is the weight of the water that a ship displaces when it is floating; the term is defined ordinarily such that the ship's fuel tanks are full and all stores are aboard. The term is applied usually to naval vessels. Displacement is the actual weight of the ship, since a floating body displaces its own weight in water (Archimedes' principle). [1][2] Another way of thinking about displacement is the weight of the water that would spill out of a completely filled container were the ship placed into it. A number of synonymous terms exist for this maximum weight, such as loaded displacement, full load displacement and designated displacement. [3] As a measurement of weight, displacement should not be confused with similarly named measurements of volume or capacity such as net tonnage, gross tonnage, or deadweight tonnage. The density (weight per unit of volume) of water can vary. For example, the average density of seawater at the surface of the ocean is 1025 kg/m³ (10.25 lb/ga, 8.55 lb/US gallon); fresh water on the other hand has a density of about 1000 kg/m³ (10.00 lb/ga, 8.35 lb/US gallon). [3] Consider a 100-ton ship passing from a saltwater sea into a freshwater river. It always displaces exactly 100 tons of water, but it has to displace a greater volume of fresh water to amount to 100 tons. Therefore it would sit slightly lower in the water in the freshwater river than it would in the saltwater sea. It can be useful to know a ship's displacement when it is unloaded or loaded partially. Terms for these measurements include light displacement, standard displacement, and normal displacement. These terms are defined below.

REF086

Rose Box means: The strainer at the end of the suction pipe of a bilge pump which prevents solid material in the bilges from being sucked into the pump and choking it. Also known as a strum box.

REF088

46 CFR 199.175

REF090

Fires are divided into five different "classes"- A, B, C, D, and LFG. These classes indicate either the type of fuel involved or special dangers. The class also indicates the type of extinguishing agent to use and certain techniques that should or should not be used on that fire. Ordinary combustibles Class A fires consist of ordinary combustibles such as wood, paper, fabric, and most kinds of trash. They may be extinguished by water, wet chemical suppression, or dry powder. Flammable liquid and gas These are fires whose fuel is flammable or combustible liquid or gas. The US system designates all such fires "Class B". These fires follow the same basic fire tetrahedron (heat, fuel, oxygen, chemical reaction) as ordinary combustible fires, except that the fuel in question is a flammable liquid such as gasoline, or gas such as natural gas. A solid stream of water should never be used to extinguish this type because it can cause the fuel to scatter, spreading the flames. The most effective way to extinguish a liquid or gas fueled fire is by inhibiting the chemical chain reaction of the fire, which is done by dry chemical and Halon extinguishing agents, although smothering with CO₂ or, for liquids, foam is also effective. Halon has fallen out of favor in recent times (except for aircraft fire extinguishment systems) because it is an ozone-depleting material; the Montreal Protocol declares that Halon should no longer be used. Chemicals such as FM-200 are now the recommended halogenated suppressant. Electrical Electrical fires are fires involving potentially energized electrical equipment. The US system designates these "Class C". This sort of fire may be caused by short-circuiting machinery or overloaded electrical cables. These fires can be a severe hazard to firefighters using water or other conductive agents, as electricity may be conducted from the fire, through water, to the firefighter's body, and then earth. Electrical shocks have caused many firefighter deaths. Electrical fire may be fought in the same way as an ordinary combustible fire, but water, foam, and other conductive agents are not to be used. While the fire is or possibly could be electrically energized, it can be fought with any extinguishing agent rated for electrical fire. Carbon dioxide CO₂, NOVEC 1230, FM-200 and dry chemical powder extinguishers such as PKP and even baking soda are especially suited to extinguishing this sort of fire. PKP should be a last resort solution to extinguishing the fire due to its corrosive tendencies. Once electricity is shut off to the equipment involved, it will generally become an ordinary combustible fire. Metal Class D fires involve combustible metals - especially alkali metals like lithium and potassium, alkaline earth metals such as magnesium, and group 4 elements such as titanium and zirconium. Metal fires represent a unique hazard because people are often not aware of the characteristics of these fires and are not properly prepared to fight them. Therefore, even a small metal fire can spread and become a larger fire in the surrounding ordinary combustible materials. Certain metals burn in contact with air or water (for example, sodium), which exacerbates this risk. Masses of combustible metals do not usually represent great fire risks because heat is conducted away from hot spots so efficiently that the heat of combustion cannot be maintained. In consequence, significant heat energy is required to ignite a contiguous mass of combustible metal. Generally, metal fires are a hazard when the metal is in the form of sawdust, machine shavings or other metal "fines", which combust more rapidly than larger blocks. Metal fires can be ignited by the same ignition sources that would start other common fires. Care must be taken when extinguishing metal fires. Water and other common firefighting agents can excite metal fires and make them worse. The National Fire Protection Association recommends that metal fires be fought with dry powder extinguishing agents that work by smothering and heat absorption. Different metals require different agents and for a particular metal agents cannot necessarily be substituted for one another. The most common agents are sodium chloride granules and graphite powder. In recent years, powdered copper has also come into use. These dry powder extinguishers should not be confused with those that contain dry chemical agents. The two are not the same, and only dry powder should be used to extinguish a metal fire. Using a dry chemical extinguisher in error, in place of dry powder, can be ineffective or actually increase the intensity of a metal fire. Cooking oils and fats (kitchen fires) Class K fires involve unsaturated cooking oils in well-insulated cooking appliances located in commercial kitchens. Fires that involve cooking oils or fats are designated "Class K" under the American system. Though such fires are technically a subclass of the flammable liquid/gas class, the special characteristics of these types of fires, namely the higher flash point, are considered important enough to recognize separately. A special class K extinguisher will safely smother the fire by turning the oil into a foam. A water mist can also be used to extinguish such fires. As with Class B fires, a solid stream of water should never be used to extinguish this type because it can cause the fuel to scatter, spreading the flames. Appropriate fire extinguishers may also have hoods over them that help extinguish the fire. Sometimes fire blankets are used to stop a fire in a kitchen or on a stove. Flammable liquids give off flammable vapors at or below a temperature of 80°F. Within this class, there are three grades, based on their Reid Vapor Pressure and flash point. All liquids that burn may be grouped into these five grades. It is apparent that flammable liquids are those that may be ignited at temperatures below 80°F whereas the combustible liquids must be heated to above 80°F before they will flash. Class IA flammable liquids have a flash point below 73 °F (22.8 °C) (the upper end of the common range of room temperature) and a boiling point below 100 °F Class IB flammable liquids have a flash point below 73 °F (22.8 °C) and a boiling point greater than or equal to 100 °F (37.8 °C) Class IC flammable liquids have a flash point greater than or equal to 73 °F (22.8 °C) and below 100 °F (37.8 °C) Class II combustible liquids have a flash point greater than or equal to 100 °F (37.8 °C) and below 140 °F (60 °C) Class IIIA combustible liquids have a flash point greater than or equal to 140 °F (60 °C) and below 200 °F (93.3 °C) Class IIIB combustible liquids have a flash point greater than or equal to 200 °F (93.3 °C) Grade A refers to a flammable liquid with Reid vapor pressure of 14 pounds per square inch absolute (psia) or more. Think of a Grade A cargo as a very volatile liquid that gives off lots of vapor even at relatively low temperatures...so much vapor, in fact, that the vapor can

build up considerable measurable pressure inside a closed test container. Grade B refers to a flammable liquid with a Reid vapor pressure of more than 814 pounds (psia) but less than 14 pounds Grade C refers to a flammable liquid with a Reid vapor pressure of 814 pounds (psia) or less and a flash point of 80°F or below. Gasoline with a Reid vapor pressure of 7.4 pounds (psia) and a flash point of -40°F is an example of a grade C cargo. Since gasoline's primary hazard is its flammability it is a Subchapter D cargo rather than a Subchapter O cargo where properties other than or in addition to flammability are regulated. Grade D refers to a combustible liquid with a flash point above 80°F, but below 150°F. One example is Diesel oil that is either a Grade D or a Grade E liquid depending upon its flash point, which can vary between 110°F and 190°F. Grade E refers to a combustible liquid with a flash point of 150°F or above. "Bunker C," or heavy industrial fuel oil, is an example of a Grade E liquid. Liquefied flammable gas (LFG): Any flammable gas with a Reid Vapor Pressure (RVP) above 40 pounds and that has been changed from a gas to a liquid state. 46 CFR 30.10-39. Liquefied natural gas (LNG): C₁ and C₂ hydrocarbons that can be liquefied either by refrigeration or by pressurization at ambient temperatures. Reid Vapor Pressure is the pressure exerted by the vapor of a liquid as determined by laboratory tests in a Reid Apparatus at a standard temperature of 100°F, expressed in pounds per square inch (absolute) (psia) according to standards established by the American Society for Testing Materials (ASTM). It is now government policy to accept meaningful civilian standards, such as this ASTM standard, wherever possible rather than to develop and enforce separate government standards.

REF095

If you see a man fall overboard shout "man overboard" in a loud voice: quickly pass the word to the bridge. Throw the man overboard a ring life buoy as a data marker. Quick turn: The quick turn is the traditional response to a man overboard emergency on a sailboat. Despite many new approaches, it is still a robust strategy and often the best method. Certainly when the crew is shorthanded, or when the vessel is in heavy weather, the quick turn method has a lot of merit because it avoids a jibe. The quick turn is essentially a figure eight. On a sailboat it consists of the following steps:

Change course to a beam reach and hold for 15 seconds

Head into the wind and tack, leave the jib fluttering

Veer off until the boat is at a broad reach

Turn upwind until the vessel is pointing at the victim; at this point the vessel should be

Slacken the mainsail until the vessel comes to a stop with the victim in the lee side of

Anderson turn: The Anderson turn is a maneuver used to bring a ship or boat back to a point it previously passed through, often for the purpose of recovering a man overboard, an emergency situation in almost all circumstances. The Anderson turn is most appropriate when the point to be reached remains clearly visible. For other situations, a Scharnow turn or a Williamson turn might be more appropriate. Both will require more time before returning to the point in question.

If the turn is in response to a man overboard, stop the engines.

Put the rudder over full. If in response to a man overboard, put the rudder toward the person.

When clear of the person, go all ahead full, still using full rudder.

After deviating from the original course by about 240 degrees (about 2/3 of a complete circle)

Stop the engines when the target point is 15 degrees off the bow. Ease the rudder and back

If dealing with a man overboard, always bring the vessel upwind of the person. Stop the vessel in the water with the person well forward of the propellers. Williamson turn: The Williamson turn is a maneuver used to bring a ship or boat under power back to a point it previously passed through, often for the purpose of recovering a man overboard. It was named for John Williamson, USNR, who used it in 1943 to pick up Tim Williamson (USMMA 2002) who had fallen overboard.

However, according to Uncommon Carriers by John McPhee, the maneuver was originally called the Butakov pipe and was used in the Russo-Japanese War as a way of keeping guns at the same distance from an enemy. The Williamson turn is most appropriate at night or in reduced visibility, or if the point can be allowed to go (or already has gone) out of sight, but is still relatively near. For other situations, an Anderson turn (quickest method) or a Scharnow turn might be more appropriate. The choice will in large part depend on prevailing wind and weather conditions. It was also used by U.S. Navy nuclear submarines to clear their sonar dead zones.

Put the rudder over full.

If in response to a man overboard, put the rudder toward the person (e.g., if the person is

After deviating from the original course by about 60 degrees, shift the rudder full to the

When heading about 20 degrees short of the reciprocal, put the rudder amidships so that v

Bring the vessel upwind of the person, stop the vessel in the water with the person along

If dealing with a man overboard, always bring the vessel upwind of the person. Stop the vessel in the water with the person well forward of the propellers. Scharnow turn: The Scharnow turn is a maneuver used to bring a ship or boat back to a point it previously passed through, often for the purpose of recovering a man overboard. It was developed by and named for Ulrich Scharnow. The Scharnow turn is most appropriate when the point to be reached is significantly further astern than the vessel's turning radius. For other situations, an Anderson turn or a Williamson turn might be more appropriate.

Put the rudder over hard. If in response to a man overboard, put the rudder toward the person

After deviating from the original course by about 240 degrees, shift the rudder hard to the

When heading about 20 degrees short of the reciprocal course, put the rudder amidships so
If dealing with a man overboard, always bring the vessel upwind of the person. Stop the vessel in the water with the person well forward of the propellers.

REF097

U.S. submarines are equipped with signal ejectors which may be used to launch identification signals, including emergency signals. Two general types of signals may be used: smoke floats and flares or stars. A combination signal which contains both smoke and flare of the same color may also be used. The smoke floats, which burn on the surface, produce a dense, colored smoke for a period of fifteen to forty-five seconds. The flares or stars are propelled to a height of three hundred to four hundred feet from which they descend by small parachute. The flares or stars burn for about twenty-five seconds. The color of the smoke or flare/star has the following meaning: a) GREEN – Used under training exercise conditions only to indicate that a torpedo has been fired or that the firing of a torpedo has been simulated. [Note that an alternate color had been black which still is an acceptable answer for some questions.] b) YELLOW – Indicates that submarine is about to come to periscope depth from below periscope depth. Surface craft terminate antisubmarine counter-attack and clear vicinity of the submarine. Do not stop propellers. c) RED – Indicates an emergency condition within the submarine and that it will surface immediately, if possible. Surface ships clear the area and stand by to give assistance after the submarine has surfaced. In case of repeated red signals, or if the submarine fails to surface within a reasonable time, she may be assumed to be disabled. Buoy the location, look for a submarine buoy and attempt to establish sonar communications. Advise U.S. Naval authorities immediately. d) WHITE – Two white flares/smoke in succession indicates that the submarine is about to surface, usually from periscope depth (non-emergency surfacing procedure). Surface craft should clear the vicinity of the submarine." These emergency identification signals should not be mistaken for the light assigned by the International and Inland Rules of the Road under the authority of Rule 1(c) to submarines (intermittent yellow (amber) flashing beacon)

REF098

Asphyxia or asphyxiation is a condition of deficient supply of oxygen to the body that arises from abnormal breathing. An example of asphyxia is choking. Asphyxia causes generalized hypoxia, which affects primarily the tissues and organs.

REF099

Class A fire: A fire involving common combustible materials which can be extinguished by the use of water or water solutions. Materials in this category include wood and wood-based materials, cloth, paper, rubber and certain plastics. Class B fire: A fire involving flammable or combustible liquids, flammable gases, greases and similar products. Extinguishment is accomplished by cutting off the supply of oxygen to the fire or by preventing flammable vapors from being given off. Class C fire: A fire involving energized electrical equipment, conductors or appliances. Nonconducting extinguishing agents must be used for the protection of firefighters. Class D fire: A fire involving combustible metals, for example, sodium, potassium, magnesium, titanium and aluminum. Extinguishment is accomplished through the use of heat absorbing extinguishing agents such as certain dry powders that do not react with the burning metals.

REF1000

KGW: Rectangular green dayboard bearing a central white stripe.

REF1001

Entering and exit signals. Signal lights are located outside each lock gate. When the green (go) light is on, all vessels will enter in the sequence prescribed by the Lock Master. When the red (stop) light is on, the lock is not ready for entrance and vessels shall stand clear. In addition to the above visual signals, the Lock Master will signal that the lock is ready for entrance by sounding one long blast on the lock air horn. The Lock Master will signal that the lock is ready for exit by lighting the green exit light and sounding one short blast on the air horn.

REF1002

Generally, lateral aids to navigation indicate on which side of a vessel an aid to navigation should be passed when the vessel is proceeding in the conventional direction of buoyage. Normally, the conventional direction of buoyage is the direction in which a vessel enters navigable channels from seaward and proceeds towards the head of navigation. In the absence of a route leading from seaward, the conventional direction of buoyage generally follows a clockwise direction around land masses. For example, proceeding southerly along the Atlantic Coast, from Florida to Texas along the Gulf Coast, and northerly along the Pacific Coast are considered as proceeding in the conventional direction of buoyage. In some instances, this direction must be arbitrarily assigned. Where doubt exists, the mariner should consult charts and

other nautical publications. Virtually all U.S. lateral marks are located in IALA Region B and follow the traditional 3R rule of red, right, returning. A summary of the port and starboard hand lateral mark characteristics is contained in the following table.

Characteristic	Port Hand	Starboard
Color	Green	
Shape (buoys)	Cylindrical (can) or pillar	Conical (nun) or pillar
Dayboard	Green square	Red triangle
Topmark (if fitted)	Cylinder	Cone, point up
Light Color (if fitted)	Green	Red
Reflector Color	Green	Red
Number	Odd	Even

U.S. lateral aids to navigation at certain Pacific Islands are located within IALA Region A and thus exhibit opposite color significance. Port hand marks are red with square or cylindrical shapes while starboard hand marks are green with triangular or conical shapes.

REF1003

Alternating Lights: A rhythmic light showing light of alternating colors.

REF1004

Occulting light: A light in which the total duration of light in each period is clearly longer than the total duration of darkness and in which the intervals of darkness (occultations) are all of equal duration. (Commonly used for single occulting light which exhibits only single occultations which are repeated at regular intervals.)

REF1006

Information and regulatory marks are used to alert the mariner to various warnings or regulatory matters. These marks have orange geometric shapes against a white background. The meanings associated with the orange shapes are as follows: 1. An open-faced diamond signifies danger. 2. A vertical diamond shape having a cross centered within indicates that vessels are excluded from the marked area. 3. A circular shape indicates that certain operating restrictions are in effect within the marked area.

REF1007

Isolated danger marks are erected on, moored over, or placed immediately adjacent to an isolated danger that may be passed on all sides. These marks should not be approached closely without special caution. Isolated danger marks are colored with black and red bands, and if lighted, display a group flashing (2) white light. A topmark consisting of two black spheres, one above the other is fitted for both lighted and unlighted marks.

REF1009

Preferred channel marks are aids to navigation which mark channel junctions or bifurcations and often mark wrecks or obstructions. Preferred channel marks may normally be passed on either side by a vessel, but indicate to the mariner the preferred channel. Preferred channel marks are colored with red and green bands. At a point where a channel divides, when proceeding in the conventional direction of buoyage, a preferred channel in IALA Region B may be indicated by a modified port or starboard lateral mark as follows:

Characteristic	Preferred to starboard	Preferred to Port
Color	Green with one broad red band	Red with one broad green band
Shape (buoys)	Cylindrical (can) or pillar	Conical (nun) or pillar
Dayboard	Green square, lower half red	Red triangle, lower half green
Topmark (when fitted)	Green square or cylinder	Red triangular cone, point up
Light Color (if lighted)	Green	Red
Rhythm	Composite group flashing (2+1)	Composite group flashing (2+1)
Reflector color	Green	Red

CAUTION: It may not always be possible to pass on either side of preferred channel aids to navigation. The appropriate nautical chart should always be consulted.

REF101

Refractory Description A refractory material or refractory is a heat-resistant material: that is, a mineral that is resistant to decomposition by heat, pressure, or chemical attack, most commonly applied to a mineral that retains strength and form at high temperatures.

REF1020

Intracoastal Waterway aids to navigation: The Intracoastal Waterway runs parallel to the Atlantic and Gulf coasts from Manasquan Inlet, New Jersey to the Mexican border. Aids to navigation marking these waters have some portion of them marked with yellow. Otherwise, the coloring and numbering of the aids to navigation follow the same system as that in other U.S. waterways. In order that vessels may readily follow the Intracoastal Waterway route, special markings are employed. These marks consist of a yellow square and yellow triangle and indicate which side the aid to navigation should be passed when following the conventional direction of buoyage. The yellow square indicates that the aid to navigation should be kept on the left side and the yellow triangle indicates that the aid to navigation should be kept on the right side. A yellow horizontal band provides no lateral information, but simply identifies aids as marking the Intracoastal Waterway.

REF1022

Geographic Range: The greatest distance the curvature of the earth permits an object of a given height to be seen from a particular height of eye without regard to luminous intensity or visibility conditions.

REF1027

Luminous Range: The greatest distance a light can be expected to be seen given its nominal range and the prevailing meteorological visibility.

REF1029

Luminous Range: The greatest distance a light can be expected to be seen given its nominal range and the prevailing meteorological visibility. **Meteorological visibility:** The greatest distance at which a black object of suitable dimension could be seen and recognized against the horizon sky by day, or, in the case of night observations, could be seen and recognized if the general illumination were raised to the normal daylight level. **Nominal range:** The maximum distance a light can be seen in clear weather (meteorological visibility of 10 nautical miles) . Listed for all lighted aids to navigation except range lights, directional lights, and private aids to navigation.

REF1032

Coast Pilots The National Ocean Service publishes nine United States Coast Pilots to supplement nautical charts of U.S. waters. Information comes from field inspections, survey vessels, and various harbor authorities. Maritime officials and pilotage associations provide additional information. Coast Pilots provide more detailed information than Sailing Directions because Sailing Directions are intended exclusively for the oceangoing mariner. The Notice to Mariners updates Coast Pilots. Each volume contains comprehensive sections on local operational considerations and navigation regulations. Following chapters contain detailed discussions of coastal navigation. An appendix provides information on obtaining additional weather information, communications services, and other data. An index and additional tables complete the volume.

REF1037

From Pub 117, Radio Navigation Aids: "In periods of crisis, conflict, national emergency, or war, naval authorities may direct the movement of merchant ships (including routing and diversion) so that they may be better protected from hostilities and not interfere with possible naval and/or joint military operations."

REF1045

NAVAREAs are the maritime geographic areas in which various governments are responsible for navigation and weather warnings.

REF1048

In support of the Global Maritime Distress and Safety System (GMDSS), Broadcast Warnings are promulgated by the Worldwide Navigational Warnings Service (WWNWS) to provide rapid dissemination of information critical to navigation and the safety of life at sea. Navigational Warnings are issued regularly and contain information about persons in distress, or objects and events that pose an immediate hazard to navigation. The five types of Navigation Warnings: NAVAREA IV, HYDROLANT, HYDROARC, NAVAREA XII, and HYRDOPAC are categorized by their location. As of 26 January 2017, maritime security alerts and advisories are issued by the US Maritime Advisory System, replacing Special Warnings and MARAD Advisories.

REF105

Hull members that run athwartship (from one side to the other) are called "transverse." Those that run from the bow to the stern are called "longitudinal." A ship's inner bottom forms the tank top in the engine room. The double bottom is the space or tank between the inner bottom and the skin or the hull. Vertical transverse members in the double bottom are called floors. Stringer: A term applied to a fore-and-aft girder running along the side of a ship and also to the outboard strake of plating on any deck. The side pieces of a ladder or staircase into which the treads and risers are fastened. Stringer Plates: A term applied to the outboard plates on any deck, or to the plates attached to the top flanges of a tier of beams at the side of a vessel. Stiffener: An angle bar, T-bar, channel, etc., used to stiffen plating of a bulkhead, etc. A cofferdam is a void space between two tanks that prevents one tank from leaking directly into the other. TUMBLE HOME: The decreasing of a vessel's beam above the waterline as it approaches the rail. Opposite of flare. RUN: The underwater portion of a vessel aft of the midship section or flat of the bottom. That portion of the after hull that tapers to the stern post. MIDDLE BODY: That portion of the ship adjacent to the midship section. When it has a uniform cross section throughout, its length its waterlines being parallel to the centerline, it is called the parallel middle body. ENTRANCE: The forward underwater portion of a vessel at or near the bow. The angle formed between the center line of the ship and the tangent to the designed waterline is called the angle of entrance. CAMBER, ROUND OF BEAM : The weather decks of ships are rounded up or arched in an athwartship direction for the purpose of draining any water that may fall on them to the sides of the ship where it can be led overboard through scuppers. The arching or rounding up is called the camber or round of the beam and is expressed in inches in connection with the greatest molded breadth of the ship in feet, thus, "the main deck has a camber of 10 inches in 40 feet." It is measured at the center line of the ship at the greatest molded breadth and is the distance from the chord to the top of the arch. DEADRISE : The angle which the straight portion of the bottom of the floor of the midship section makes with the base line. It is expressed by the number of inches rise above the base line in the half-beam of the vessel. SHEER : The longitudinal curve of a vessel's rails, decks, etc. the usual reference being to the ship's side; however, in the case of a deck having a camber, its center line may also have a sheer. The amount by which the height of the weather deck at the after or forward perpendicular exceeds that at its lowest point. FLARE : The spreading out from a central vertical plane of the body of a ship with increasing rapidity as the section rises from the water line to the rail. COUNTER : That part of a ship's stern which overhangs the stern post, usually that part above the water line. FREEING PORTS : Holes in the lower portion of a bulwark, which allow deck wash to drain off into the sea. Some freeing ports have swinging gates which allow water to drain off but which are automatically closed by sea-water pressure. BUTT : That end or edge of a plate or timber where it comes squarely against another piece, or, the joint thus formed. The long edge of a plate is called the edge and the short edge is called the end. A ship's inner bottom forms the tank top in the engine room. The double bottom is the space or tank between the inner bottom and the skin or the hull. Vertical transverse members in the double bottom are called floors.

REF1050

NIMA World Port Index (Pub. 150) The World Port Index contains a tabular listing of thousands of ports throughout the world, describing their locations, characteristics, facilities, and services available. Information is arranged geographically; the index is arranged alphabetically. Coded information is presented in columns and rows. This information supplements information in the Sailing Directions. The applicable volume of Sailing Directions and the number of the harbor chart are given in the World Port Index. The Notice to Mariners corrects this book. Pub. 150. World Port Index. A publication of the Defense Mapping Agency Hydrographic/Topographic Center listing the location, characteristics, known facilities, and available services of ports, shipping facilities and oil terminals throughout the world. The applicable chart and Sailing Direction volume is given for each place listed. A code indicates certain types of information.

REF1055

azimuth circle. A ring designed to fit snugly over a compass or compass repeater, and provided with means for observing compass bearings and azimuths. A similar ring without the means for observing azimuths of the sun is called a BEARING CIRCLE.

REF1059

An electronic chart display and information system (ECDIS) is an electronic chart system which satisfies the IMO SOLAS convention carriage requirements for corrected paper charts when used with an ENC or its functional equivalent (e.g. NIMA Digital Nautical Chart.)

REF1062

True Motion Display: A type of radarscope display in which own ship and other moving contacts move on the PPI in accordance with their true courses and speed. This display is similar to a navigational (geographical) plot. See RELATIVE MOTION DISPLAY. Relative Motion Display: A type of radarscope display in which the position of own ship is normally fixed at the center of the PPI (some sets have off-center capability in relative mode of operation) and all detected objects

or contacts move relative to own ship.

REF1064

Speed of Sound In air = 1120 ft/sec or .18667 NM/sec In water - 4800 ft/sec or .8 NM/sec

REF1067

Warm, moist air that is rising eventually cools to the dew point of the air, at which time it condenses onto dust and other particulates to form clouds.

REF108

Reference: IAMSAR Volume III "If the helicopter is to approach in the usual manner, from the stern, the ship should maintain a constant speed through the water and keep the wind 30 degrees on the port bow or on either beam if the area is amidships, or 30 degrees on the starboard quarter if the area is forward."

REF111

Metacenter: The highest point to which G may rise and still permit the vessel to have positive stability. Found at the intersection of the line of action of B when the ship is erect with the line of action of B when the ship is given a small inclination. Center of Gravity: That point at which all the vertically downward forces of weight are considered to be concentrated; the center of the mass of the vessel.

REF1114

Celestial Training Videos. All 24 lessons can be viewed for free by visiting [\[\[Celestial Training Videos|http://seasources.net/celestial_navigation.htm\]\]](http://seasources.net/celestial_navigation.htm) Lesson 1: Corrections to Sextant Reading Lesson 2: Dip Correction Lesson 3: Apparent Altitude Lesson 4: Watch Time Lesson 5: Chronometer Time Lesson 6: Finding GHA and Declination Lesson 7: Increments and Corrections Sun Lesson 8: Increments and Corrections Star Lesson 9: Assumed position and Local Hour Angle Lesson 10: Finding Computed Altitude and Azimuth Lesson 11: Interpolation Lesson 12: Altitude Intercept Lesson 13: Position Plotting Sheet Lesson 14: Plotting Lines of Position Lesson 15: Combining All of the Above Lessons Lesson 16: Finding Deviation and Gyro Error Lesson 17: Finding Azimuth by HO 229 for Compass Correction Lesson 18: Amplitudes Lesson 19: Predicting Zone Time of Local Apparent Noon Lesson 20: Latitude by Meridian Altitude Lesson 21: Latitude and Azimuth by Polaris Lesson 22: Running Fixes Lesson 23: Predicting Times of Sunrise / Sunset Lesson 24: Star Identification Downloads of Support Material are FREE. [\[\[Download Tables for Lesson 3, Altitude Correction|http://betabox.seasources.net/videos/Celestialvideos/AltitudeCorrections.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/AltitudeCorrections.pdf) [\[\[Download Tables for Lesson 7, Increments and Corrections Sun|http://betabox.seasources.net/videos/Celestialvideos/incrementsandcorrectionslesson.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/incrementsandcorrectionslesson.pdf) [\[\[Download Tables for Lesson 8, Increments and Corrections Star|http://betabox.seasources.net/videos/Celestialvideos/incrementsandcorrectionslesson2.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/incrementsandcorrectionslesson2.pdf) [\[\[Download Tables for Lesson 10, Finding Computed Altitude and Azimuth|http://betabox.seasources.net/videos/Celestialvideos/Lesson10.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/Lesson10.pdf) [\[\[Download Tables for Lesson 11, Interpolation|http://betabox.seasources.net/videos/Celestialvideos/interpolationtables.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/interpolationtables.pdf) [\[\[Download Table 27 for Lesson 18, Amplitudes|http://betabox.seasources.net/videos/Celestialvideos/T-27.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/T-27.pdf) [\[\[Download Table 28 for Lesson 18, Amplitudes|http://betabox.seasources.net/videos/Celestialvideos/T-28.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/T-28.pdf) [\[\[Download Universal Plotting Sheet for Lesson 14, Plotting Lines of Position|http://betabox.seasources.net/videos/Celestialvideos/plotsheet.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/plotsheet.pdf) [\[\[Download Complete Increments and Corrections Tables|http://betabox.seasources.net/videos/Celestialvideos/IncrementsandCorrections.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/IncrementsandCorrections.pdf) [\[\[Download Complete Nautical Almanac|http://betabox.seasources.net/videos/Celestialvideos/nautalmanaccgexams.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/nautalmanaccgexams.pdf) [\[\[Download Complete HO 229, Sight Reduction Tables|http://betabox.seasources.net/videos/Celestialvideos/Pub229Vol2.pdf\]\]](http://betabox.seasources.net/videos/Celestialvideos/Pub229Vol2.pdf)

REF1120

True Bearing = Relative Bearing + True Heading. Relative Bearing = True Bearing - True Heading.

REF1123

Course Over Ground is the actual direction of progress of a vessel, between two points, with respect to the surface of the earth. The vessel's Heading may differ from the Course over ground due to the effects of wind, Tide and currents.

REF1150

set, n. The direction towards which a current flows. direction of current. . The direction toward which a current is flowing, called the SET of the current.

REF116

Hull members that run athwartship (from one side to the other) are called "transverse." Those that run from the bow to the stern are called "longitudinal." A ship's inner bottom forms the tank top in the engine room. The double bottom is the space or tank between the inner bottom and the skin or the hull. Vertical transverse members in the double bottom are called floors. Stringer: A term applied to a fore-and-aft girder running along the side of a ship and also to the outboard strake of plating on any deck. The side pieces of a ladder or staircase into which the treads and risers are fastened. Stringer Plates: A term applied to the outboard plates on any deck, or to the plates attached to the top flanges of a tier of beams at the side of a vessel. Stiffener: An angle bar, T-bar, channel, etc., used to stiffen plating of a bulkhead, etc. A cofferdam is a void space between two tanks that prevents one tank from leaking directly into the other. TUMBLE HOME: The decreasing of a vessel's beam above the waterline as it approaches the rail. Opposite of flare. RUN: The underwater portion of a vessel aft of the midship section or flat of the bottom. That portion of the after hull that tapers to the stern post. MIDDLE BODY: That portion of the ship adjacent to the midship section. When it has a uniform cross section throughout, its length its waterlines being parallel to the centerline, it is called the parallel middle body. ENTRANCE: The forward underwater portion of a vessel at or near the bow. The angle formed between the center line of the ship and the tangent to the designed waterline is called the angle of entrance. CAMBER, ROUND OF BEAM : The weather decks of ships are rounded up or arched in an athwartship direction for the purpose of draining any water that may fall on them to the sides of the ship where it can be led overboard through scuppers. The arching or rounding up is called the camber or round of the beam and is expressed in inches in connection with the greatest molded breadth of the ship in feet, thus, "the main deck has a camber of 10 inches in 40 feet." It is measured at the center line of the ship at the greatest molded breadth and is the distance from the chord to the top of the arch. DEADRISE : The angle which the straight portion of the bottom of the floor of the midship section makes with the base line. It is expressed by the number of inches rise above the base line in the half-beam of the vessel. SHEER : The longitudinal curve of a vessel's rails, decks, etc. the usual reference being to the ship's side; however, in the case of a deck having a camber, its center line may also have a sheer. The amount by which the height of the weather deck at the after or forward perpendicular exceeds that at its lowest point. FLARE : The spreading out from a central vertical plane of the body of a ship with increasing rapidity as the section rises from the water line to the rail. COUNTER : That part of a ship's stern which overhangs the stern post, usually that part above the water line. FREEING PORTS : Holes in the lower portion of a bulwark, which allow deck wash to drain off into the sea. Some freeing ports have swinging gates which allow water to drain off but which are automatically closed by sea-water pressure. PLATING A ship is structurally a box girder. Shell plating forms the sides and bottom of the box girder, and the weather deck forms the top. The point where the weather deck (main and forecastle decks) and the side plating meet is called the deck edge or gunwale (pronounced gunnels). The location where the bottom plating and the side plating meet is called the bilge. Usually the bottom is rounded into the side of the ship to some degree; this rounding is called the turn of the bilge. Most merchant ships, aircraft carriers, and auxiliary ships have a boxlike midship section with vertical sides and a flat bottom, as shown in figure 17-1. High-speed ships such as destroyers and cruisers, however, have rising bottoms and broad, rounded bilges. This shape is partially, although not entirely, responsible for the high speed of these ships. Individual shell plates are usually rectangular in shape; the short sides are referred to as the ends, and the long sides are called edges. End joints are known as butts and edge joints as seams. Plates are joined together at the butts to form long strips of plating running lengthwise; these fore-and-aft rows of plating are called strakes. The uppermost side strake, at the gunwale, is known as the sheer strake. It is thicker than most strakes since it must withstand high stresses at these corners as the ship bends over wave crests. The outer weather-deck strake, known as the stringer strake, also contributes to the strength of the hull. The shell plating, together with the weather deck, forms the watertight envelope of the ship. The internal structural members of the hull reinforce the watertight capacity of the hull.

REF1165

Bowditch_table_18 Table 18. Distance of an Object by Two Bearings To determine the distance of an object as a vessel on a steady course passes it, observe the difference between the course and two bearings of the object, and note the time interval between bearings. Enter this table with the two differences. Multiply the distance run between bearings by the number in the first column to find the distance of the object at the time of the second bearing, and by the number in the second column to find the distance when abeam. The table was computed by solving plane oblique and right triangles.

REF1167

You are underway and intend to make good a course of 040°T. You experience a current with a set and drift of 190°T at 1.4 knots, and a northwest wind produces a leeway of 3°. You adjust your course to compensate for the current and leeway, while maintaining an engine speed of 10 knots. What will be your speed made good over your intended course of 040°T? Step 1: Draw a line from point A in the direction of the true course 040°T. Step 2: Draw a line from point A in the direction of the set of the current 190°T. Step 3: Use dividers on the scale to mark a point at 1.4 nm from point A along the direction of the set (distance drift traveled in 1 hour). Step 4: Use dividers on the scale to measure off 10 nm (distance vessel traveled in 1 hour) and transfer this distance from point B to where it intersects with course line (C) and mark it. Step

5: Speed Made Good is the distance measured from point A to point C with dividers and taken from the scale.

REF1168

You wish to make good a course of 035°T while turning for an engine speed of 12 knots. The set is 340°T, and the drift is 2 knots. What course should you steer? Step 1: Draw a line from point "A" in the direction of the true course 035°T. Step 2: Draw a line from point "A" in the direction of the set of the current 340°T. Step 3: Use dividers on the scale to mark a point at 2 nm from point "A" along the direction of the set (distance drift traveled in 1 hour). Step 4: Use dividers on the scale to measure off 12 nm (distance vessel traveled in 1 hour) and transfer this distance from point "A" along the course line (C) and mark it. Step 5: Using parallel rulers, walk the line from point "B" TO "C" down to the center of the compass rose. Course should you steer is taken from the point marked "D", 044°T

REF1203

New distance = new consumption x old speed² x old distance / old consumption x new speed²

REF1207

New distance = new consumption x old speed² x old distance / old consumption x new speed² 479 X 289 X 607 = 84027617 121 X 210.25 = 25440.25 84027617 / 25440.25 = 3302.9

REF124

Heat is transferred in three (3) ways: 1. Conduction through solids structural members such as decks and bulkheads that should be cooled to control the fire. 2. Convection through fluids such as liquids and gases. Since hot air rises, this hot air moves through a vessel's ventilation system and stair towers. Stop the ventilation and close doors and dampers to prevent spreading the fire. Fusible links automatically melt and close some fire dampers. 3. Radiation, similar to the sun's ability to heat the earth through 93,000,000 miles of empty space.

REF125

An oxygen Indicator is a device that tests for oxygen content. Prolonged exposure to gases such as CO₂ may affect its accuracy .

REF1258

If the pitch of the propeller is 26.7 feet, and the revolutions per day are 131,717, calculate the day's run allowing 4% negative slip. To determine the efficiency of a propeller: If the slip is "Positive" subtract the slip from 100 and move the decimal two places to the left. If the slip is "Negative" add to 100 and move the decimal two places to the left. (4 + 100 = 104. two to the left becomes 1.04) DISTANCE RUN = RPM x Pitch x Efficiency x 60 x Hours Run / 6080 CONVERT RPD TO RPM 131,717 / 24 / 60 = 91.47 (RPM) 91.47 X (PITCH) 26.7 X (SLIP) 1.04 X 60 X 24 / 6080 = 601.56 60 = minutes in an hour 6080 = Constant (feet in 1 Nautical Mile) P x RPM = 1 minute P x RPM x 60 = 1 hour P x RPM x 60 x 24 = 1 day Definitions: Pitch = The distance a propeller will advance during one revolution when revolving in a solid. Slip = Slip is the difference between the distance as determined by revolutions of the propeller and the actual distance as determined by observation. Slip is usually expressed as a percentage and is named "Positive" if the distance by propeller is greater than the observed distance and "Negative" if it is less than the observed distance

REF126

What are flammable and combustible liquids? Flammable and combustible liquids are liquids that can burn. They are classified, or grouped, as either flammable or combustible by their flashpoints. Generally speaking, flammable liquids will ignite (catch on fire) and burn easily at normal working temperatures. Combustible liquids have the ability to burn at temperatures that are usually above working temperatures. There are several specific technical criteria and test methods for identifying flammable and combustible liquids. Under the Workplace Hazardous Materials Information System (WHMIS) 1988, flammable liquids have a flashpoint below 37.8°C (100°F). Combustible liquids have a flashpoint at or above 37.8°C (100°F) and below 93.3°C (200°F). Flammable and combustible liquids are present in almost every workplace. Fuels and many common products like solvents, thinners, cleaners, adhesives, paints, waxes and polishes may be flammable or combustible liquids. Everyone who works with these liquids must be aware of their hazards and how to work safely with them. These categories are further subdivided, depending on the liquid's flash point and boiling point. •Class IA flammable liquids have a flash point below 73 °F (the upper end of the common range of room temperature) and a boiling point below 100 °F •Class IB flammable liquids have a flash point below 73 °F and a boiling point greater than or equal to 100 °F •Class IC flammable liquids have a flash point greater than or equal to 73 °F and below 100 °F •Class II combustible liquids have a flash point greater than or equal to 100 °F and below 140 °F •Class IIIA combustible liquids have a flash point greater than or equal to 140 °F and below 200 °F •Class IIIB combustible liquids have a flash point greater than or equal to 200 °F 46 cfr 30.10–22 Flammable liquid—TB/ALL. The term flammable liquid means any liquid

which gives off flammable vapors (as determined by flashpoint from an open-cup tester, as used for test of burning oils) at or below a temperature of 80 °F. Flammable liquids are referred to by grades as follows: (a) Grade A. Any flammable liquid having a Reid 1 vapor pressure of 14 pounds or more. (b) Grade B. Any flammable liquid having a Reid 1 vapor pressure under 14 pounds and over 8 1/2 pounds. (c) Grade C. Any flammable liquid having a Reid 1 vapor pressure of 8 1/2 pounds or less and a flashpoint of 80 °F. or below. Flammable range: The limits between the minimum and maximum concentrations of vapor in air that can form an explosive or burnable mixture. Usually these limits are abbreviated LEL (Lower Explosive Limit) and UEL (Upper Explosive Limit). A "combustible liquid" has a flashpoint above 80°F. (Example: Lube Oil) Most petroleum vapors are heavier than air and are toxic. These vapors constitute varying fire and explosion hazards. Splashing or spraying oil into a tank, the movement of water droplets through oil, or moving oil through pipes can electrically charge liquid petroleum products and produce static electricity. This static electricity can trigger an explosion.

Lower flammability limit (LFL): The lowest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in the presence of an ignition source (arc, flame, heat). The term is considered by many safety professionals to be the same as the lower explosive level (LEL). At a concentration in air lower than the LFL, gas mixtures are "too lean" to burn. Methane gas has an LFL of 5.0%. If the atmosphere has less than 5.0% methane, an explosion cannot occur even if a source of ignition is present. From the health and safety perspective, the LEL concentration is considered to be Immediately Dangerous to Life or Health (IDLH), where a more stringent exposure limit does not exist for the flammable gas. Percentage reading on combustible air monitors should not be confused with the LFL concentrations. Explosimeters designed and calibrated to a specific gas may show the relative concentration of the atmosphere to the LFL—the LFL being 100%. A 5% displayed LFL reading for methane, for example, would be equivalent to 5% multiplied by 5.0%, or approximately 0.25% methane by volume at 20 degrees C. Control of the explosion hazard is usually achieved by sufficient natural or mechanical ventilation, to limit the concentration of flammable gases or vapors to a maximum level of 25% of their lower explosive or flammable limit. Upper flammability limit (UFL): Highest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in the presence of an ignition source (arc, flame, heat). Concentrations higher than UFL or UEL are "too rich" to burn. Operating above the UFL is usually avoided for safety because air leaking in can bring the mixture into combustibility range. The explosive range of any volatile vapor in air is between its lower explosive limit (LEL) and its upper explosive limit (UEL). Below the LEL the volatile vapor's percentage in air is too lean to burn. And above the UEL the volatile vapor's percentage in air is too rich to burn. Combustible gas indicators read as a percent of the LEL. This is known as the sampled level. Formula : Actual Vapor/air mixture = LEL (decimal) * sampled level (decimal) Use a combustible gas indicator to test for the presence of explosive gases. These meters show the percentage (%) of the lower explosive limit (LEL) of a combustible gas in any given space. However, a combustible gas indicator only detects vapor at the point where the sample is taken. It will not work properly in oxygen-deficient atmospheres. Any movement of the needle indicates an unsafe condition. Petroleum vapors are normally heavier than air and settle at the lowest point in a tank or compartment. Be sure to test the atmosphere in those locations. An oxygen Indicator is a device that tests for oxygen content. Prolonged exposure to gases such as CO₂ may affect its accuracy. An explosimeter is a gas detector which is used to measure the amount of combustible gases present in a sample. When a percentage of the lower explosive limit (LEL) of an atmosphere is exceeded, an alarm signal on the instrument is activated. " The explosimeter is primarily a combustible gas detector but will also give guidance with regard to safety of a space for entry by personnel. If a space has been ventilated to remove vapors, the remaining concentration can be measured with explosimeter, provided that it is below the lower flammable range. Generally any needle deflection above zero is taken as indicating a toxic condition. Crude oils contain all of the hydrocarbon products extracted in the refinery and many of the products are highly toxic. Benzene (C₂H₆) is an example and its low threshold limit value (TLV) of 10 ppm indicates this. Sour Crude oils carry highly toxic hydrogen sulphide (H₂S) with a TLV also of 10 ppm. Petrol (Gasoline) has a TLV of 300 ppm. Entry to the cargo tanks and pump-rooms of a crude oil carrier exposes personnel to these risks. These are additional risks involved in the tank entry, where inert gas has been used. The inert gas adds the risk of Carbon monoxide (CO) which has a TLV of 50 ppm; Nitrogen dioxide (NO₂) with 3 ppm; nitric oxide (NO) with 25 ppm; and sulphur dioxide (SO₂) with 2 ppm. Trace amounts of the hydrocarbon products which are very dangerous, and other toxic gases which may be present, require special means of detection. Threshold limit values are updated annually and given in references available from health and safety authorities. Ambient air typically consists of 78% nitrogen and 21% oxygen. The extra 1% is a combination of carbon, helium, methane, argon and hydrogen. The closer the air is to sea level, the higher the percentage of oxygen. Human activities, particularly the manufacturing processes and the burning of fossil fuels, has directly impacted the ambient air quality due to the high level of industrial and chemical pollutants that have been released into the atmosphere. calibration gas: A calibration gas is a reference gas or gas mixture used as comparative standard in the calibration of analytical instruments, like gas analyzers or gas detectors. Therefore, a calibration gas has to be of a precisely defined nature or composition, like zero gas or span gas. Reid vapor pressure (RVP) is a common measure of the volatility of gasoline and other petroleum products. It is defined as the absolute vapor pressure exerted by the vapor of the liquid and any dissolved gases/moisture at 37.8 °C (100 °F) as determined by the test method ASTM-D-323, which was first developed in 1930 and has been revised several times (the latest version is ASTM D323-15a). The test method measures the vapor pressure of gasoline, volatile crude oil, jet fuels, naphtha, and other

volatile petroleum products but is not applicable for liquefied petroleum gases. ASTM D323-15a requires that the sample be chilled to 0-1 degrees Celsius and then poured into the apparatus; for any material that solidifies at this temperature, this step cannot be performed. RVP is commonly reported in kilopascals or pounds per square inch and represents volatilization at atmospheric pressure because ASTM-D-323 measures the gauge pressure of the sample in a non-evacuated chamber. What is an Autoignition Temperature? A material's autoignition or ignition temperature is the temperature at which a material self-ignites without any obvious sources of ignition, such as a spark or flame. Most common flammable and combustible liquids have autoignition temperatures in the range of 300°C (572°F) to 550°C (1022°F). Some have very low autoignition temperatures. For example, ethyl ether has an autoignition temperature of 160°C (356°F) and its vapours have been ignited by hot steam pipes. Serious accidents have resulted when solvent-evaporating ovens were heated to temperatures above the autoignition temperature of the solvents used. Autoignition temperatures, however, are intended as guides, not as fine lines between safe and unsafe. Use all precautions necessary. Inert gas is principally used to control cargo tank atmospheres and so prevent the formation of flammable mixtures. The primary requirement for an inert gas is low oxygen contents. Most using equipment on fleet ship's is nitrogen generator. Main hazard from nitrogen inerting that this gas has not any odor or color can't easily recognize. The oxygen content of the atmosphere in enclosed spaces may be low for several reasons. The inerting is common and planned action on vessel operations. As the amount of available oxygen decreases below the normal 21% by volume breathing tends to become faster and deeper. Symptoms indicating that an atmosphere is deficient in oxygen may give inadequate notice of danger. Most persons would fail to recognize the danger until they were too weak to be able to escape without help. This is especially so when escape involves the exertion of climbing. While individuals vary in susceptibility, all will suffer impairment if the oxygen level falls to 16% by volume. Exposure to an atmosphere containing less than 10% oxygen content by volume inevitably causes unconsciousness. The rapidity of onset of unconsciousness increases as the availability of oxygen diminishes, and death will result unless the victim is removed to the open air and resuscitated. An atmosphere containing less than 5% oxygen by volume causes immediate unconsciousness with no warning other than a grasp for air. If resuscitation is delayed for more than a few minutes, irreversible damage is done to the brain even if life is subsequently restored. Entry into oxygen deficient spaces must never be permitted without breathing apparatus until such spaces have been thoroughly ventilated and test readings indicate an oxygen level of 21% by volume throughout. Nonflammable compressed gas: Any material having a vapor pressure exceeding 25 pounds per square inch at a temperature of 70°F. Green label. Examples are oxygen, nitrogen, and helium.

REF1272

If the speed necessary for reaching port at a designated time is 20.7 knots and the pitch of the propeller is 23.8 feet, how many revolutions per minute will the shaft have to turn, assuming a 3% negative slip? To determine the efficiency of a propeller: If the slip is "Positive" subtract the slip from 100 and move the decimal two places to the left. If the slip is "Negative" add to 100 and move the decimal two places to the left. $RPM = 6080 \times \text{Speed} / 60 \times \text{Pitch} \times \text{Efficiency}$ $RPM = 6080 \times 20.7 / 60 \times 23.8 \times 1.03 = 125856/1470.89 = 85.56$ 60 = minutes in an hour 6080 = Constant (feet in 1 Nautical Mile) $P \times RPM = 1 \text{ minute}$ $P \times RPM \times 60 = 1 \text{ hour}$ $P \times RPM \times 60 \times 24 = 1 \text{ day}$ Definitions: Pitch = The distance a propeller will advance during one revolution when revolving in a solid. Slip = Slip is the difference between the distance as determined by revolutions of the propeller and the actual distance as determined by observation. Slip is usually expressed as a percentage and is named "Positive" if the distance by propeller is greater than the observed distance and "Negative" if it is less than the observed distance

REF128

Hull members that run athwartship (from one side to the other) are called "transverse." Those that run from the bow to the stern are called "longitudinal." A ship's inner bottom forms the tank top in the engine room. The double bottom is the space or tank between the inner bottom and the skin or the hull. Vertical transverse members in the double bottom are called floors. Stringer: A term applied to a fore-and-aft girder running along the side of a ship and also to the outboard strake of plating on any deck. The side pieces of a ladder or staircase into which the treads and risers are fastened. Stringer Plates: A term applied to the outboard plates on any deck, or to the plates attached to the top flanges of a tier of beams at the side of a vessel. Stiffener: An angle bar, T-bar, channel, etc., used to stiffen plating of a bulkhead, etc. A cofferdam is a void space between two tanks that prevents one tank from leaking directly into the other. TUMBLE HOME: The decreasing of a vessel's beam above the waterline as it approaches the rail. Opposite of flare. RUN: The underwater portion of a vessel aft of the midship section or flat of the bottom. That portion of the after hull that tapers to the stern post. MIDDLE BODY: That portion of the ship adjacent to the midship section. When it has a uniform cross section throughout, its length its waterlines being parallel to the centerline, it is called the parallel middle body. ENTRANCE: The forward underwater portion of a vessel at or near the bow. The angle formed between the center line of the ship and the tangent to the designed waterline is called the angle of entrance. CAMBER, ROUND OF BEAM : The weather decks of ships are rounded up or arched in an athwartship direction for the purpose of draining any water that may fall on them to the sides of the ship where it can be led overboard through scuppers. The arching or rounding up is called the camber or round of the beam and is expressed in

inches in connection with the greatest molded breadth of the ship in feet, thus, "the main deck has a camber of 10 inches in 40 feet." It is measured at the center line of the ship at the greatest molded breadth and is the distance from the chord to the top of the arch. DEADRISE : The angle which the straight portion of the bottom of the floor of the midship section makes with the base line. It is expressed by the number of inches rise above the base line in the half-beam of the vessel. SHEER : The longitudinal curve of a vessel's rails, decks, etc. the usual reference being to the ship's side; however, in the case of a deck having a camber, its center line may also have a sheer. The amount by which the height of the weather deck at the after or forward perpendicular exceeds that at its lowest point. FLARE : The spreading out from a central vertical plane of the body of a ship with increasing rapidity as the section rises from the water line to the rail. COUNTER : That part of a ship's stern which overhangs the stern post, usually that part above the water line. FREEING PORTS : Holes in the lower portion of a bulwark, which allow deck wash to drain off into the sea. Some freeing ports have swinging gates which allow water to drain off but which are automatically closed by sea-water pressure.

REF130

Limit switch = a switch designed to cut off power automatically at or near the limit of travel of a moving object controlled by electricity.

REF1310

Find the height of the tide at Port Wentworth, GA, on 5 October 1983, at 1840 DST (ZD +4). Tide Problem Question # (457, index #2715, dif. page# 224, ref.page # 107). If time in problem is given as EDT (Daylight Savings Time) you must subtract one hour from the given time to work the problem. Atlantic Coast (ZD+5= EASTERN STANDARD TIME)(ZD+4= EASTERN DAYLIGHT TIME) Gulf Coast west of Pensacola (ZD+6= CENTRAL STANDARD TIME) (ZD+5= CENTRAL DAYLIGHT TIME)

.	Time	Time	Height	Height
.	High Water	Low Water	High Water	Low Water

Reference:

Difference:

Duration of Tide =
 Time to Nearest (H or L) =
 Range of Tide =
 Correction From Table 3 =
 Height of Tide =
 Depth of Water =

Diagram 1 = Solution to this problem

REF1315

On 5 March 1983, at 0630 EST (ZD +5), what will be the predicted height of tide at Ocracoke, Ocracoke Inlet, NC? Tide Problem Question # (517, index #2458, dif. page#222, ref.page #88). If time in problem is given as EDT (Daylight Savings Time) you must subtract one hour from the given time to work the problem. Atlantic Coast (ZD+5= EASTERN STANDARD TIME)(ZD+4= EASTERN DAYLIGHT TIME) Gulf Coast west of Pensacola (ZD+6= CENTRAL STANDARD TIME) (ZD+5= CENTRAL DAYLIGHT TIME)

.	Time	Time	Height	Height
.	High Water	Low Water	High Water	Low Water

Reference:

Difference:

Duration of Tide =
 Time to Nearest (H or L) =
 Range of Tide =
 Correction From Table 3 =
 Height of Tide =
 Depth of Water =

Diagram 1 = Solution to this problem

REF1317

On 6 July 1983, at 1830 DST (ZD +4), what will be the predicted height of tide at Newburgh, NY? Tide Problem Question # (417, index #1545, dif. page 214, ref.page58). If time in problem is given as EDT (Daylight Savings Time) you must subtract one hour from the given time to work the problem. Atlantic Coast (ZD+5= EASTERN STANDARD TIME)(ZD+4= EASTERN DAYLIGHT TIME) Gulf Coast west of Pensacola (ZD+6= CENTRAL STANDARD TIME) (ZD+5= CENTRAL DAYLIGHT TIME)

.	Time	Time	Height	Height
.	High Water	Low Water	High Water	Low Water
Reference:				
Difference:				

Duration of Tide =
 Time to Nearest (H or L) =
 Range of Tide =
 Correction From Table 3 =
 Height of Tide =
 Depth of Water =
 Diagram 1 = Solution to this problem

REF133

Notice to Mariners. A weekly publication of the Defense Mapping Agency Hydrographic/Topographic Center prepared jointly with the National Ocean Survey and the U.S. Coast Guard giving information on changes in aids to navigation, dangers to navigation, selected items from the Local Notice to Mariners, important new soundings, changes in channels, harbor construction, radio navigation information, new and revised charts and publications, special warnings and notices, pertinent HYDROLANT, HYDROPAC, NAVAREA IV and II messages and corrections to charts, manuals, catalogs, sailing directions (pilots), etc. The Notice to Mariners should be used routinely for updating the latest editions of nautical charts and related publications.

REF1331

The charted depth alongside the south face of Mystic Pier, Charlestown, MA, is 35 feet. Your maximum draft is 38 feet. You wish to have 2 feet under the bottom, on a rising tide, when you go alongside to discharge a heavy lift. What is the earliest time after 0900 EST (ZD +5), on 2 February 1983, that you can dock? Tide Problem Question # (607, index #2577, dif. page#223 , ref.page #96). If time in problem is given as EDT (Daylight Savings Time) you must subtract one hour from the given time to work the problem. Atlantic Coast (ZD+5= EASTERN STANDARD TIME)(ZD+4= EASTERN DAYLIGHT TIME) Gulf Coast west of Pensacola (ZD+6= CENTRAL STANDARD TIME) (ZD+5= CENTRAL DAYLIGHT TIME) [Stations marked with an asterisk (*) are reference stations for which daily predictions are given in table 1. Page numbers of reference stations are given in parentheses.]

.	Time	Time	Height	Height
.	High Water	Low Water	High Water	Low Water
Reference:				
Difference:				

Duration of Tide =
 Time to Nearest (H or L) =
 Range of Tide =
 Correction From Table 3 =
 Height of Tide =
 Depth of Water =
 Diagram 1 = Solution to this problem

REF1332

You are to sail from Elizabethport, N.J., on 17 November 1983 with a maximum draft of 27 feet. You will pass over an obstruction in the channel near Sandy Hook that has a charted depth of 25.5 feet. The steaming time from Elizabethport to the obstruction is 1h 50m. What is the earliest time (ZD +5) you can sail on 17 November and pass over the obstruction with 2 feet of clearance? Tide Problem Question # (1318, index #1591, dif. page#214, ref.page #67). If time in problem is given as EDT (Daylight Savings Time) you must subtract one hour from the given time to work the problem. Atlantic Coast (ZD+5= EASTERN STANDARD TIME)(ZD+4= EASTERN DAYLIGHT TIME) Gulf Coast west of Pensacola (ZD+6=

CENTRAL STANDARD TIME) (ZD+5= CENTRAL DAYLIGHT TIME)

.	Time	Time	Height	Height
.	High Water	Low Water	High Water	Low Water

Reference:
Difference:

Duration of Tide =
Time to Nearest (H or L) =
Range of Tide =
Correction From Table 3 =
Height of Tide =
Depth of Water =
Diagram 1 = Solution to this problem

REF1337

Your vessel has a draft of 23 feet. On 23 June 1983 you wish to pass over a temporary obstruction near Beaufort, SC, that has a charted depth of 22 feet. Allowing for a safety margin of 3 feet, what is the earliest time after 1600 DST (ZD +4) that this passage can be made? Tide Problem Question # (557, index #2683, dif. page#224, ref.page #101). If time in problem is given as EDT (Daylight Savings Time) you must subtract one hour from the given time to work the problem. Atlantic Coast (ZD+5= EASTERN STANDARD TIME)(ZD+4= EASTERN DAYLIGHT TIME) Gulf Coast west of Pensacola (ZD+6= CENTRAL STANDARD TIME) (ZD+5= CENTRAL DAYLIGHT TIME)

.	Time	Time	Height	Height
.	High Water	Low Water	High Water	Low Water

Reference:
Difference:

Duration of Tide =
Time to Nearest (H or L) =
Range of Tide =
Correction From Table 3 =
Height of Tide =
Depth of Water =
Diagram 1 = Solution to this problem

REF134

DIURNAL---Having a period or cycle of approximately 1 tidal day. Thus, the tide is said to be diurnal when only one high water and one low water occur during a tidal day, and the tidal current is said to be diurnal when there is a single flood and single ebb period in the tidal day. A rotary current is diurnal if it changes its direction through all points of the compass once each tidal day.

REF139

Isobars are lines on a weather map joining together places of equal atmospheric pressure . On the map the isobar marked 1004 represents an area of high pressure, while the isobar marked 976 represents an area of low pressure. The numbers measure the atmospheric pressure in millibars. Simply put, barometric pressure is the measurement of air pressure in the atmosphere, specifically the measurement of the weight exerted by air molecules at a given point on Earth. ... Barometric pressure also changes with the weather—or rather, the weather changes with changes in barometric pressure.

REF141

Meaning of Air Mass An air mass may be defined as a large body of air whose physical properties, especially temperature, moisture content, and lapse rate, are more or less uniform horizontally for hundreds of kilometres. According to A.N. Strahler and A.H. Strahler (1978) "a body of air in which the upward gradients of temperature and moisture are fairly uniform over a large area is known as an air mass." An air mass may be so extensive that it may cover a large portion of a continent and it may be so thick in vertical dimension that it may vertically extend through the troposphere. It may be pointed out that since a single air mass is so large that it may cover hundreds of thousands to millions of square kilometres of the earth's surface, and hence horizontal homogeneity of an air mass in terms of its physical properties may not be practically possible because the nature and degree of uniformity of air mass properties are determined by, (i) the

properties of the source area and the direction of its movement, (ii) changes introduced in the air mass during its journey away from the source area, and (iii) the age of the air mass. The vertical distribution of temperature in an air mass, and moisture content of the air are two basic properties of an air mass which control the weather conditions of the area affected by that air mass. An air mass is designated as cold air mass when its temperature is lower than the underlying surface while an air mass is termed warm air mass when its temperature is higher than the underlying surface. The boundary between two different air masses is called front. The physical properties of an air mass are determined on the basis of the characteristic features of the surface through which it travels. An air mass also affects and modifies temperature and moisture conditions of the areas visited by it and in turn it is also modified by the local conditions of the visited areas.

Source Regions of Air Mass The extensive areas over which air masses originate or form are called source regions whose nature and properties largely determine the temperature and moisture characteristics of air masses. An air mass originates when atmospheric conditions remain stable and uniform over an extensive area for fairly long period so that the air lying over that area attains the temperature and moisture characteristics of the ground surface. Once formed, an air mass is seldom stationary over the source region, rather it moves to other areas. An ideal source region of air mass must possess the following essential conditions: (i) There must be extensive and homogeneous earth's surface so that it may possess uniform temperature and moisture conditions. The source region should be either land surface or ocean surface because irregular topography and surface comprised of both land and water cannot have uniform temperature and moisture conditions. (ii) There should not be convergence of air, rather there should be divergence of air flow so that the air may stay over the region for longer period of time and thus the air may attain the physical properties of the region. It is thus, apparent that anticyclonic areas characterised by high barometric pressure and low pressure gradients are most ideal regions for the development of air masses. (iii) Atmospheric conditions should be stable for considerable long period of time so that the air may attain the characteristics of the surface. There are 6 major source regions of air masses on the earth's surface. (1) Polar oceanic areas (North Atlantic Ocean between Canada and Northern Europe, and North Pacific Ocean between Siberia and Canada-during winter season), (2) Polar and arctic continental areas (snow-covered areas of Eurasia and North America, and Arctic region during winter season), (3) Tropical oceanic areas (anticyclonic areas – throughout the year), (4) Tropical continental areas (North Africa-Sahara, Asia, Mississippi Valley zone of the USA – most developed in summers), (5) Equatorial regions (zone located between trade winds – active throughout the year), and (6) Monsoon lands of S.E. Asia.

Classification of Air Masses Any classification of air masses must consider the fact that all of their weather characteristics (mainly temperature, humidity and lapse rate) are properly represented and incorporated. Thus, the weather conditions of air masses at their source regions and thermodynamic and mechanical modification introduced in them during their journey away from their respective source regions must be taken into consideration while classifying them into definite categories. There are two approaches to the classification of air masses: (1) Geographical classification, and (2) Thermodynamic classification.

(1) Geographical Classification: The geographical classification of air masses is based on the characteristic features of the source regions. Trewartha has classified air masses on the basis of their geographical locations into two broad categories: (i) Polar air mass (P), which originates in polar areas. Arctic air masses are also included in this category. (ii) Tropical air mass (T), which originates in tropical areas. Equatorial air masses are also included in this category. These two air masses have been further divided into two types on the basis of the nature of the surface of the source regions (whether continental or oceanic areas) e.g.: * (a) Continental air masses (indicated by a small letter c), and (b) Maritime air masses (indicated by a small letter m). It may be pointed out that a continental air mass gets modified and is transformed into maritime type while passing through ocean surface but maritime air mass is seldom transformed into continental type while passing through land surface. Based on above facts air masses are classified into the following four principal types according to their geographical locations: * (i) Continental polar air mass (cP). (ii) Maritime polar air mass (mP). (iii) Continental tropical air mass (cT). (iv) Maritime tropical air mass (mT). * (2)

Thermodynamic Modifications and Classification of Air Masses Thermodynamic modification of an air mass involves its heating or cooling from below while passing through different surfaces away from the source region. Heating of an air mass causes decrease in the vertical stability of the atmosphere. After being originated the air masses move out of their source regions to other regions and in the process they modify the weather conditions of the areas travelled by them and in turn they also get modified by the surface conditions over which they move. The thermodynamic modifications of air masses, besides heating from below, also include evaporation of water into the air from below or into intermediate layer by precipitation from moist air aloft. *The modification of air masses depends on 4 factors: (i) Initial characteristics of air mass in terms of temperature and moisture content, (ii) Nature of land or water surface over which a particular air mass moves, (iii) Path followed by the air mass from the source region to the affected area, and (iv) Time taken by the air mass to reach a particular destination. An air mass while moving over the surface whose temperature is greater than the lower layer of the moving air mass, is heated from below and becomes unstable due to resultant steepened lapse rate and upward movement of air. This mechanism causes condensation, cloud formation and precipitation if the moving air mass contains sufficient amount of moisture content. On the other hand, if the moving air mass is warmer than the surface over which it travels, it is cooled from below resulting into atmospheric stability which restricts upward movement of the air and thus there is no chance for condensation, cloud formation and precipitation. It is, thus, obvious that cold polar air masses while moving from their source regions to relatively warmer surfaces become unstable because they are warmed from below.

On the other hand, warm tropical air masses, when move out of their source areas and reach colder surfaces, are cooled from below, causing atmospheric stability and dry weather. A warm air mass (w) is that whose temperature is greater than the surface temperature of the region visited while if the air mass is colder than the surface temperature it is called cold air mass (k). It is apparent that the warmth or coldness of an air mass is determined by the temperature of the underlying surface. Air mass also undergoes thermodynamic modification when evaporation is added to it from outside. An air mass is termed stable air mass when air descends while an air mass becomes unstable when upward movement of air is operative. Such mechanical modifications in an air mass are introduced due to cyclonic and anticyclonic conditions. Besides, mechanical modifications are also introduced due to: (i) Turbulent mixing caused by eddies or convection, (ii) Divergence and convergence of air masses and their effects on lapse rate of temperature, (iii) Subsidence of air and lateral expansion on the ground surface (anticyclonic condition), (iv) Lifting of air and convergence of air at the ground surface (cyclonic condition), and (v) Advection. Based on thermodynamic and mechanical (dynamic) modifications air masses are divided into: (i) cold air mass and (ii) warm air mass, each of which is further divided into: (a) stable air mass, and (b) unstable air mass. Cold air masses originate in the polar and arctic regions. They are characterized by the following properties in their source regions: (i) Temperature is very low because of loss of heat through outgoing long-wave terrestrial radiation. (ii) Specific humidity is extremely low. (iii) Stability increases and normal lapse rate of temperature is low. Cold air masses after moving out from their source regions and reaching other areas have the following properties: (1) The temperature of the areas where cold air masses reach starts decreasing. (ii) The air mass is warmed from below and thus normal lapse rate increases and the air becomes unstable. This mechanism causes convective currents. (iii) If the cold air mass lies over warm ocean surface, then its specific humidity increases and cumulonimbus clouds are formed. (iv) The usual visibility in the air mass is maintained. (v) Precipitation occurs only when the air mass lies over warm ocean surface but if it lies over warm continent, there is clear weather. (vi) If the cold air mass lies partly over warm ocean surface and partly over adjoining cold land surface, then cyclonic conditions are induced. Cold air masses are further divided into (a) continental cold air mass, and (b) maritime cold air mass. (2) Warm air mass is that whose temperature is greater than the surface temperature of the areas over which it moves. Such air mass is cooled from below and thus its lower layer becomes stable due to which its vertical movement stops. Warm air masses generally originate in the subtropical regions characterized by anticyclonic conditions. They are further divided into (a) continental warm air mass, and (b) maritime warm air mass. Based on thermodynamic and mechanical (dynamic) modifications and some other considerations air masses are divided into 16 types as follows:*

(A) Continental Polar Air Masses: (1) Continental Polar Cold Stable Air mass (cPKs) (2) Continental Polar Cold Unstable Air Mass (cPKu) (3) Continental Polar Warm Stable Air Mass (cPWs) (4) Continental Polar Warm Unstable Air Mass (cpWu) (B) Maritime Polar Air Masses (mp): (1) Maritime Polar Cold Stable Air Mass (mPKs) (2) Maritime Polar Cold Unstable Air Mass (mPKu) (3) Maritime Polar Warm Stable Air Mass (mPWs) (4) Maritime Polar Warm Unstable Air Mass (mPWu)) (C) Continental Tropical Air Masses (cT): (1) Continental Tropical Cold Stable Air Mass (cTKs) (2) Continental Tropical Cold Unstable Air Mass (cTKu) (3) Continental Tropical Warm Stable Air Mass (cTWs) (4) Continental Tropical Warm Unstable Air Mass (cTWu) (D) Maritime Tropical Air Masses (mT): (1) Maritime Tropical Cold Stable Air Mass (mTKs) (2) Maritime Tropical Cold Unstable Air Mass (mTKu) (3) Maritime Tropical Warm Stable Air Mass (cTWs) (4) Maritime Tropical Warm Unstable Air Mass (cTWu) c = continental, T = tropical, m = maritime, K = cold, W = warm, u = unstable, s = stable

REF143

When a force is applied to change alignment of the spin axis of a gyroscope, the resultant motion is perpendicular to the direction of the force. This tendency is known as precession. A force applied to the center of gravity* of the gyroscope will move the entire system in the direction of the force. Only a force that tends to change the axis of rotation produces precession.

REF156

“Note that the most important factor contributing to free communication loss of stability is the distance from the centerline of the ship to the centerline of the flooded compartment.”

REF157

Delicate cargo: Cargo that is highly susceptible to damage by tainting from odorous cargo.

REF160

Speed of Sound In air = 1120 ft/sec or .18667 NM/sec In water - 4800 ft/sec or .8 NM/sec Using the Fathometer Use the fathometer to determine whether the depth of water under the keel is sufficient to prevent the ship from grounding and to check the actual water depth with the charted water depth at the fix position. The navigator must compare the charted sounding at every fix position with the fathometer reading and report to the captain any discrepancies. Taking continuous soundings in restricted waters is mandatory. If the warning sounding is received, then slow the ship, fix the ship's position more frequently, and proceed with extreme caution. Ascertain immediately where the ship is in the channel; if the minimum

expected sounding was noted correctly, the warning sounding indicates the vessel may be leaving the channel and standing into shoal water. Notify the vessel's captain and conning officer immediately. If the danger sounding is received, take immediate action to get the vessel back to deep water. Reverse the engines and stop the vessel's forward movement. Turn in the direction of the deepest water before the vessel loses steerageway. Consider dropping the anchor to prevent the ship from drifting aground. The danger sounding indicates that the ship has left the channel and is standing into immediate danger. It requires immediate corrective action by the ship's conning officer, navigator, and captain to avoid disaster. Many underwater features are poorly surveyed. If a fathometer trace of a distinct underwater feature can be obtained along with accurate position information, send the fathometer trace and related navigational data to NIMA for entry into the Digital Bathymetric Data Base.

REF163

isomagnetic chart: A map of equal magnetic elements, usually geomagnetic intensity or direction.

REF1662

RULE 18 Responsibilities Between Vessels —INTERNATIONAL— Steering and Sailing Rules. Subpart II—Conduct of Vessels in Sight of One Another RULE 18 Responsibilities Between Vessels Except where Rules 9, 10 and 13 otherwise require: (a) A power-driven vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; (iii) a vessel engaged in fishing; (iv) a sailing vessel. (b) A sailing vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; (iii) a vessel engaged in fishing. (c) A vessel engaged in fishing when underway shall, so far as possible, keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver. (d) (i) Any vessel other than a vessel not under command or a vessel restricted in her ability to maneuver shall, if the circumstances of the case admit, avoid impeding the safe passage of a vessel constrained by her draft, exhibiting the signals in Rule 28. (ii) A vessel constrained by her draft shall navigate with particular caution having full regard to her special condition. (e) A seaplane on the water shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, she shall comply with the Rules of this Part. (f) (i) A WIG craft shall, when taking off, landing and in flight near the surface, keep well clear of all other vessels and avoid impeding their navigation; (ii) A WIG craft operating on the water surface shall comply with the Rules of this Part as a power-driven vessel. —INLAND— Steering and Sailing Rules RULE 18 Responsibilities Between Vessels Except where Rules 9, 10, and 13 otherwise require: (a) A power-driven vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; (iii) a vessel engaged in fishing; and (iv) a sailing vessel. (b) A sailing vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; and (iii) a vessel engaged in fishing. (c) A vessel engaged in fishing when underway shall, so far as possible, keep out of the way of: (i) a vessel not under command; and (ii) a vessel restricted in her ability to maneuver. (d) A seaplane on the water shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, she shall comply with the Rules of this Part.

REF1664

RULE 4 Application RULE 5 Look-out —INTERNATIONAL— Steering and Sailing Rules PART B—STEERING AND SAILING RULES Section I—Conduct of Vessels in Any Condition of Visibility RULE 4 Application Rules in this Section apply to any condition of visibility. RULE 5 Look-out Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision. —INLAND— Steering and Sailing Rules PART B—STEERING AND SAILING RULES Subpart I—Conduct of Vessels in Any Condition of Visibility RULE 4 Application Rules in this subpart apply in any condition of visibility. RULE 5 Look-out Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.

REF1666

RULE 19 Conduct of Vessels in Restricted Visibility —INTERNATIONAL— Steering and Sailing Rules Section III—Conduct of Vessels in Restricted Visibility (a) This Rule applies to vessels not in sight of one another when navigating in or near an area of restricted visibility. (b) Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility. A power-driven vessel shall have her engines ready for immediate maneuver. (c) Every vessel shall have due regard to the prevailing circumstances and conditions of restricted visibility when complying with the Rules of Section I of this Part. (d) A vessel which detects by radar alone the presence of another vessel shall determine if a close-quarters situation is developing and/or risk of collision exists. If so, she shall take avoiding action in ample time, provided that when such action consists of an alteration of course, so far as possible the following shall be avoided: (i) an alteration of course to port for a vessel forward of the beam, other than for a vessel being

overtaken; (ii) an alteration of course towards a vessel abeam or abaft the beam. (e) Except where it has been determined that a risk of collision does not exist, 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 and in any event navigate with extreme caution until danger of collision is over. —INLAND— Steering and Sailing Rules Subpart III—Conduct of Vessels in Restricted Visibility RULE 19 Conduct of Vessels in Restricted Visibility (a) This Rule applies to vessels not in sight of one another when navigating in or near an area of restricted visibility. (b) Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility. A power-driven vessel shall have her engines ready for immediate maneuver. (c) Every vessel shall have due regard to the prevailing circumstances and conditions of restricted visibility when complying with Rules 4 through 10. (d) A vessel which detects by radar alone the presence of another vessel shall determine if a close-quarters situation is developing or risk of collision exists. If so, she shall take avoiding action in ample time, provided that when such action consists of an alteration of course, so far as possible the following shall be avoided: (i) an alteration of course to port for a vessel forward of the beam, other than for a vessel being overtaken; and (ii) an alteration of course toward a vessel abeam or abaft the beam. (e) Except where it has been determined that a risk of collision does not exist, 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 course. She shall if necessary take all her way off and, in any event, navigate with extreme caution until danger of collision is over.

REF1668

RULE 9 Narrow Channels —INTERNATIONAL— Steering and Sailing Rules RULE 9 Narrow Channels (a) A vessel proceeding along the course of a narrow channel or fairway shall keep as near to the outer limit of the channel or fairway which lies on her starboard side as is safe and practicable. (b) A vessel of less than 20 meters in length or a sailing vessel shall not impede the passage of a vessel which can safely navigate only within a narrow channel or fairway. (c) A vessel engaged in fishing shall not impede the passage of any other vessel navigating within a narrow channel or fairway. (d) A vessel shall not cross a narrow channel or fairway if such crossing impedes the passage of a vessel which can safely navigate only within such channel or fairway. The latter vessel may use the sound signal prescribed in Rule 34(d) if in doubt as to the intention of the crossing vessel. (e) (i) In a narrow channel or fairway when overtaking can take place only if the vessel to be overtaken has to take action to permit safe passing, the vessel intending to overtake shall indicate her intention by sounding the appropriate signal prescribed in Rule 34(c)(i). The vessel to be overtaken shall, if in agreement, sound the appropriate signal prescribed in Rule 34(c)(ii) and take steps to permit safe passing. If in doubt she may sound the signals prescribed in Rule 34(d). (ii) This Rule does not relieve the overtaking vessel of her obligation under Rule 13. (f) A vessel nearing a bend or an area of a narrow channel or fairway where other vessels may be obscured by an intervening obstruction shall navigate with particular alertness and caution and shall sound the appropriate signal prescribed in Rule 34(e). (g) Any vessel shall, if the circumstances of the case admit, avoid anchoring in a narrow channel. 20 —INLAND— Steering and Sailing Rules RULE 9 Narrow Channels (a) (i) A vessel proceeding along the course of a narrow channel or fairway shall keep as near to the outer limit of the channel or fairway which lies on her starboard side as is safe and practicable. (ii) Notwithstanding paragraph (a)(i) and Rule 14(a), a power-driven vessel operating in narrow channels or fairways on the Great Lakes, Western Rivers, or waters specified by the Secretary, and proceeding down bound with a following current shall have the right-of-way over an upbound vessel, shall propose the manner and place of passage, and shall initiate the maneuvering signals prescribed by Rule 34(a)(i), as appropriate. The vessel proceeding upbound against the current shall hold as necessary to permit safe passing. (b) A vessel of less than 20 meters in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway. (c) A vessel engaged in fishing shall not impede the passage of any other vessel navigating within a narrow channel or fairway. (d) A vessel shall not cross a narrow channel or fairway if such crossing impedes the passage of a vessel which can safely navigate only within that channel or fairway. The latter vessel shall use the danger signal prescribed in Rule 34(d) if in doubt as to the intention of the crossing vessel. (e) (i) In a narrow channel or fairway when overtaking, the power-driven vessel intending to overtake another power-driven vessel shall indicate her intention by sounding the appropriate signal prescribed in Rule 34(c) and take steps to permit safe passing. The power-driven vessel being overtaken, if in agreement, shall sound the same signal and may, if specifically agreed to take steps to permit safe passing. If in doubt she shall sound the danger signal prescribed in Rule 34(d). (ii) This Rule does not relieve the overtaking vessel of her obligation under Rule 13. (f) A vessel nearing a bend or an area of a narrow channel or fairway where other vessels may be obscured by an intervening obstruction shall navigate with particular alertness and caution and shall sound the appropriate signal prescribed in Rule 34(e). (g) Every vessel shall, if the circumstances of the case admit, avoid anchoring in a narrow channel.

REF1669

RULE 13 Overtaking —INTERNATIONAL— Steering and Sailing Rules **RULE 13 Overtaking** (a) Notwithstanding anything contained in the Rules of Part B, Sections I and II, any vessel overtaking any other shall keep out of the way of the vessel being overtaken. (b) A vessel shall be deemed to be overtaking when coming up with another vessel from a direction more than 22.5 degrees abaft her beam, that is, in such a position with reference to the vessel she is overtaking, that at night she would be able to see only the sternlight of that vessel but neither of her sidelights. (c) When a vessel is in any doubt as to whether she is overtaking another, she shall assume that this is the case and act accordingly. (d) Any subsequent alteration of the bearing between the two vessels shall not make the overtaking vessel a crossing vessel within the meaning of these Rules or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear.

—INLAND— Steering and Sailing Rules **RULE 13 Overtaking** (a) Notwithstanding anything contained in Rules 4 through 18, any vessel overtaking any other shall keep out of the way of the vessel being overtaken. (b) A vessel shall be deemed to be overtaking when coming up with another vessel from a direction more than 22.5 degrees abaft her beam; that is, in such a position with reference to the vessel she is overtaking, that at night she would be able to see only the sternlight of that vessel but neither of her sidelights. (c) When a vessel is in any doubt as to whether she is overtaking another, she shall assume that this is the case and act accordingly. (d) Any subsequent alteration of the bearing between the two vessels shall not make the overtaking vessel a crossing vessel within the meaning of these Rules or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear.

REF1672

RULE 15 Crossing Situation. Steering and Sailing Rules Subpart II—Conduct of Vessels in Sight of One Another

—INTERNATIONAL— When two power-driven vessels are crossing so as to involve risk of collision, 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.

—INLAND— Steering and Sailing Rules. **Steering and Sailing Rules Subpart II—Conduct of Vessels in Sight of One Another**

RULE 15 Crossing Situation (a) When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel. (b) Notwithstanding paragraph (a), on the Great Lakes, Western Rivers, or water specified by the Secretary, a power-driven vessel crossing a river shall keep out of the way of a power-driven vessel ascending or descending the river.

REF1678

RULE 3 General Definitions —INTERNATIONAL— General For the purpose of these Rules, except where the context otherwise requires: (a) The word “vessel” includes every description of water craft, including nondisplacement craft, WIG craft and seaplanes, used or capable of being used as a means of transportation on water. (b) The term “power-driven vessel” means any vessel propelled by machinery. (c) The term “sailing vessel” means any vessel under sail provided that propelling machinery, if fitted, is not being used. (d) The term “vessel engaged in fishing” means any vessel fishing with nets, lines, trawls or other fishing apparatus which restrict maneuverability, but does not include a vessel fishing with trolling lines or other fishing apparatus which do not restrict maneuverability. (e) The word “seaplane” includes any aircraft designed to maneuver on the water. (f) The term “vessel not under command” means a vessel which through some exceptional circumstance is unable to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel. (g) The term “vessel restricted in her ability to maneuver” means a vessel which from the nature of her work is restricted in her ability to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel. (g) (continued) The term “vessels restricted in their ability to maneuver” shall include but not be limited to: (i) a vessel engaged in laying, servicing or picking up a navigation mark, submarine cable or pipeline; (ii) a vessel engaged in dredging, surveying or underwater operations; (iii) a vessel engaged in replenishment or transferring persons, provisions or cargo while underway; (iv) a vessel engaged in the launching or recovery of aircraft; (v) a vessel engaged in mineclearance operations; (vi) a vessel engaged in a towing operation such as severely restricts the towing vessel and her tow in their ability to deviate from their course. (h) The term “vessel constrained by her draft” means a power-driven vessel which, because of her draft in relation to the available depth and width of navigable water is severely restricted in her ability to deviate from the course she is following. (i) The word “underway” means that a vessel is not at anchor, or made fast to the shore, or aground. (j) The words “length” and “breadth” of a vessel means her length overall and greatest breadth. (k) Vessels shall be deemed to be in sight of one another only when one can be observed visually from the other. (l) The term “restricted visibility” means any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms or any other similar causes. (m) The term “Wing-In-Ground (WIG) craft” means a multimodal craft which, in its main operational mode, flies in close proximity to the surface by utilizing surface-effect action.

—INLAND—

General

RULE 3 General Definitions For the purpose of these Rules and this Chapter, except where the context otherwise requires: (a) The word “vessel” includes every description of water craft, including nondisplacement craft and seaplanes, used or capable of being used as a means of transportation on water; (b) The term “power-driven vessel” means any vessel propelled by machinery; (c) The term “sailing vessel” means any vessel under sail provided that propelling machinery, if fitted, is not being used; (d) The term “vessel engaged in fishing” means any vessel fishing with nets, lines,

trawls, or other fishing apparatus which restricts maneuverability, but does not include a vessel fishing with trolling lines or other fishing apparatus which do not restrict maneuverability; (e) The word “seaplane” includes any aircraft designed to maneuver on the water; (f) The term “vessel not under command” means a vessel which through some exceptional circumstance is unable to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel; (g) The term “vessel restricted in her ability to maneuver” means a vessel which from the nature of her work is restricted in her ability to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel; vessels restricted in their ability to maneuver include, but are not limited to: (i) a vessel engaged in laying, servicing, or picking up a navigation mark, submarine cable, or pipeline; (ii) a vessel engaged in dredging, surveying, or underwater operations; (iii) a vessel engaged in replenishment or transferring persons, provisions, or cargo while underway; (iv) a vessel engaged in the launching or recovery of aircraft; (v) a vessel engaged in mineclearance operations; and (vi) a vessel engaged in a towing operation such as severely restricts the towing vessel and her tow in their ability to deviate from their course. (h) The word “underway” means that a vessel is not at anchor, or made fast to the shore, or aground; (i) The words “length” and “breadth” of a vessel means her length overall and greatest breadth; (j) Vessels shall be deemed to be in sight of one another only when one can be observed visually from the other; (k) The term “restricted visibility” means any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, or any other similar causes; (l) “Western Rivers” means the Mississippi River, its tributaries, South Pass, and Southwest Pass, to the navigational demarcation lines dividing the high seas from harbors, rivers, and other inland waters of the United States, and the Port Allen-Morgan City Alternate Route, and that part of the Atchafalaya River above its junction with the Port Allen-Morgan City Alternate Route including the Old River and the Red River; (m) “Great Lakes” means the Great Lakes and their connecting and tributary waters including the Calumet River as far as the Thomas J. O’Brien Lock and Controlling Works (between mile 326 and 327), the Chicago River as far as the east side of the Ashland Avenue Bridge (between mile 321 and 322), and the Saint Lawrence River as far east as the lower exit of Saint Lambert Lock; (n) “Secretary” means the Secretary of the department in which the Coast Guard is operating; (o) “Inland Waters” means the navigable waters of the United States shoreward of the navigational demarcation lines dividing the high seas from harbors, rivers, and other inland waters of the United States and the waters of the Great Lakes on the United States side of the International Boundary; (p) “Inland Rules” or “Rules” mean the Inland Navigational Rules and the annexes thereto, which govern the conduct of vessels and specify the lights, shapes, and sound signals that apply on inland waters; and (q) “International Regulations” means the International Regulations for Preventing Collisions at Sea, 1972, including annexes currently in force for the United States.

REF168

Mean High Water is the average of all the high water heights observed over a period of several years. For example, in the United States this period spans 19 years and is referred to as the National Tidal Datum Epoch.

REF1683

RULE 26 Fishing Vessels Lights and Shapes —INTERNATIONAL— RULE 26 Fishing Vessels (a) A vessel engaged in fishing, whether underway or at anchor, shall exhibit only the lights and shapes prescribed in this Rule. (b) A vessel when engaged in trawling, by which is meant the dragging through the water of a dredge net or other apparatus used as a fishing appliance, shall exhibit: (i) two all-round lights in a vertical line, the upper being green and the lower white, or a shape consisting of two cones with their apexes together in a vertical line one above the other; (ii) a masthead light abaft of and higher than the all-round green light; a vessel of less than 50 meters in length shall not be obliged to exhibit such a light but may do so; (iii) when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight. (c) A vessel engaged in fishing, other than trawling, shall exhibit: (i) two all-round lights in a vertical line, the upper being red and the lower white, or a shape consisting of two cones with apexes together in a vertical line one above the other; (ii) when there is outlying gear extending more than 150 meters horizontally from the vessel, an all-round white light or a cone apex upwards in the direction of the gear; (iii) when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight. (d) The additional signals described in Annex II to these Rules apply to a vessel engaged in fishing in close proximity to other vessels engaged in fishing. (e) A vessel when not engaged in fishing shall not exhibit the lights or shapes prescribed in this Rule, but only those prescribed for a vessel of her length. —INLAND— **Lights and Shapes** RULE 26 Fishing Vessels (a) A vessel engaged in fishing, whether underway or at anchor, shall exhibit only the lights and shapes prescribed in this Rule. (b) A vessel when engaged in trawling, by which is meant the dragging through the water of a dredge net or other apparatus used as a fishing appliance, shall exhibit: (i) two all-round lights in a vertical line, the upper being green and the lower white, or a shape consisting of two cones with their apexes together in a vertical line one above the other; (ii) a masthead light abaft of and higher than the all-round green light; a vessel of less than 50 meters in length shall not be obliged to exhibit such a light but may do so; and (iii) when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight. (c) A vessel engaged in fishing, other than trawling, shall exhibit: (i) two all-round lights in a vertical line, the upper being red and the lower white, or a shape consisting of two cones with apexes together in a vertical line one above

the other; (ii) when there is outlying gear extending more than 150 meters horizontally from the vessel, an all-round white light or a cone apex upwards in the direction of the gear; (iii) when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight. (d) The additional signals described in Annex II to these Rules apply to a vessel engaged in fishing in close proximity to other vessels engaged in fishing. (e) A vessel when not engaged in fishing shall not exhibit the lights or shapes prescribed in this Rule, but only those prescribed for a vessel of her length.

REF1685

—INTERNATIONAL— Lights and Shapes RULE 24 Towing and Pushing (a) A power-driven vessel when towing shall exhibit: (i) instead of the light prescribed in Rule 23(a)(i) or (a)(ii), two masthead lights in a vertical line. When the length of the tow, measuring from the stern of the towing vessel to the after end of the tow exceeds 200 meters, three such lights in a vertical line; (ii) sidelights; (iii) a sternlight; (iv) a towing light in a vertical line above the sternlight; and (v) when the length of the tow exceeds 200 meters, a diamond shape where it can best be seen. —INLAND— Lights and Shapes RULE 24 Towing and Pushing (a) A power-driven vessel when towing astern shall exhibit: (i) instead of the light prescribed either in Rule 23(a)(i) or 23(a)(ii), two masthead lights in a vertical line. When the length of the tow, measuring from the stern of the towing vessel to the after end of the tow exceeds 200 meters, three such lights in a vertical line; (ii) sidelights; (iii) a sternlight; (iv) a towing light in a vertical line above the sternlight; and (v) when the length of the tow exceeds 200 meters, a diamond shape where it can best be seen.

REF1686

RULE 35 Sound Signals in Restricted Visibility —INTERNATIONAL— Sound and Light Signals In or near an area of restricted visibility, whether by day or night, the signals prescribed in this Rule shall be used as follows: (a) A power-driven vessel making way through the water shall sound at intervals of not more than 2 minutes one prolonged blast. (b) A power-driven vessel underway but stopped and making no way through the water shall sound at intervals of not more than 2 minutes two prolonged blasts in succession with an interval of about 2 seconds between them. (c) A vessel not under command, a vessel restricted in her ability to maneuver, a vessel constrained by her draft, a sailing vessel, a vessel engaged in fishing and a vessel engaged in towing or pushing another vessel shall, instead of the signals prescribed in paragraphs (a) or (b) of this Rule, sound at intervals of not more than 2 minutes three blasts in succession, namely one prolonged followed by two short blasts. (d) A vessel engaged in fishing, when at anchor, and a vessel restricted in her ability to maneuver when carrying out her work at anchor, shall instead of the signals prescribed in paragraph (g) of this Rule sound the signal prescribed in paragraph (c) of this Rule. (e) A vessel towed or if more than one vessel is towed the last vessel of the tow, if manned, shall at intervals of not more than 2 minutes sound four blasts in succession, namely one prolonged followed by three short blasts. When practicable, this signal shall be made immediately after the signal made by the towing vessel. (f) When a pushing vessel and a vessel being pushed ahead are rigidly connected in a composite unit they shall be regarded as a power-driven vessel and shall give the signals prescribed in paragraphs (a) or (b) of this Rule. (g) A vessel at anchor shall at intervals of not more than one minute ring the bell rapidly for about 5 seconds. In a vessel of 100 meters or more in length the bell shall be sounded in the forepart of the vessel and immediately after the ringing of the bell the gong shall be sounded rapidly for about 5 seconds in the after part of the vessel. A vessel at anchor may in addition sound three blasts in succession, namely one short, one prolonged and one short blast, to give warning of her position and of the possibility of collision to an approaching vessel. (h) A vessel aground shall give the bell signal and if required the gong signal prescribed in paragraph (g) of this Rule and shall, in addition, give three separate and distinct strokes on the bell immediately before and after the rapid ringing of the bell. A vessel aground may in addition sound an appropriate whistle signal. (i) A vessel of 12 meters or more but less than 20 meters in length shall not be obliged to give the bell signals prescribed in paragraphs (g) and (h) of this Rule. However, if she does not, she shall make some other efficient sound signal at intervals of not more than 2 minutes. (j) A vessel of less than 12 meters in length shall not be obliged to give the above-mentioned signals but, if she does not, shall make some other efficient sound signal at intervals of not more than 2 minutes. (k) A pilot vessel when engaged on pilotage duty may in addition to the signals prescribed in paragraphs (a), (b) or (g) of this Rule sound an identity signal consisting of four short blasts. —INLAND— Sound and Light Signals RULE 35 Sound Signals in Restricted Visibility In or near an area of restricted visibility, whether by day or night, the signals prescribed in this Rule shall be used as follows: (a) A power-driven vessel making way through the water shall sound at intervals of not more than 2 minutes one prolonged blast. (b) A power-driven vessel underway but stopped and making no way through the water shall sound at intervals of not more than 2 minutes two prolonged blasts in succession with an interval of about 2 seconds between them. (c) A vessel not under command; a vessel restricted in her ability to maneuver, whether underway or at anchor; a sailing vessel; a vessel engaged in fishing, whether underway or at anchor; and a vessel engaged in towing or pushing another vessel shall, instead of the signals prescribed in paragraphs (a) or (b) of this Rule, sound at intervals of not more than 2 minutes, three blasts in succession; namely, one prolonged followed by two short blasts. (d) A vessel towed or if more than one vessel is towed the last vessel of the tow, if manned, shall at intervals of not more than 2 minutes sound four blasts in succession; namely, one prolonged followed by three short blasts. When practicable, this signal shall be made immediately after the signal made by the towing vessel. (e) When a

pushing vessel and a vessel being pushed ahead are rigidly connected in a composite unit they shall be regarded as a power-driven vessel and shall give the signals prescribed in paragraphs (a) or (b) of this Rule. (f) A vessel at anchor shall at intervals of not more than 1 minute ring the bell rapidly for about 5 seconds. In a vessel of 100 meters or more in length the bell shall be sounded in the forepart of the vessel and immediately after the ringing of the bell the gong shall be sounded rapidly for about 5 seconds in the after part of the vessel. A vessel at anchor may in addition sound three blasts in succession; namely, one short, one prolonged and one short blast, to give warning of her position and of the possibility of collision to an approaching vessel. (g) A vessel aground shall give the bell signal and if required the gong signal prescribed in paragraph (f) of this Rule and shall, in addition, give three separate and distinct strokes on the bell immediately before and after the rapid ringing of the bell. A vessel aground may in addition sound an appropriate whistle signal. (h) A vessel of less than 12 meters in length shall not be obliged to give the above-mentioned signals but, if she does not, shall make some other efficient sound signal at intervals of not more than 2 minutes. (i) A pilot vessel when engaged on pilotage duty may in addition to the signals prescribed in paragraphs (a), (b) or (f) of this Rule sound an identity signal consisting of four short blasts. (j) The following vessels shall not be required to sound signals as prescribed in paragraph (f) of this Rule when anchored in a special anchorage area designated by the Secretary: (i) a vessel of less than 20 meters in length; and (ii) a barge, canal boat, scow, or other nondescript craft.

REF169

Doppler log is an instrument, used in ships, to measure ship's relative speed with water (in which it is travelling) by the use of Doppler effects on transmitted/reflected sound waves. Display of a dual axis Doppler speed log which shows the vessels movement in the Fore and Aft as well as the Athwartship direction.

REF1699

RULE 30 Anchored Vessels and Vessels Aground —INTERNATIONAL— Lights and Shapes RULE 30 Anchored Vessels and Vessels Aground (a) A vessel at anchor shall exhibit where it can best be seen: (i) in the fore part, an all-round white light or one ball; (ii) at or near the stern and at a lower level than the light prescribed in subparagraph (i), an all-round white light. (b) A vessel of less than 50 meters in length may exhibit an all-round white light where it can best be seen instead of the lights prescribed in paragraph (a) of this Rule. (c) A vessel at anchor may, and a vessel of 100 meters and more in length shall, also use the available working or equivalent lights to illuminate her decks. (d) A vessel aground shall exhibit the lights prescribed in paragraph (a) or (b) of this Rule and in addition, where they can best be seen: (i) two all-round red lights in a vertical line; (ii) three balls in a vertical line. (e) A vessel of less than 7 meters in length, when at anchor, not in or near a narrow channel, fairway or anchorage, or where other vessels normally navigate, shall not be required to exhibit the lights or shape prescribed in paragraphs (a) and (b) of this Rule. (f) A vessel of less than 12 meters in length, when aground, shall not be required to exhibit the lights or shapes prescribed in subparagraphs (d)(i) and (ii) of this Rule. —INLAND— Lights and Shapes RULE 30 Anchored Vessels and Vessels Aground (a) A vessel at anchor shall exhibit where it can best be seen: (i) in the fore part, an all-round white light or one ball; and (ii) at or near the stern and at a lower level than the light prescribed in subparagraph (i), an all-round white light. (b) A vessel of less than 50 meters in length may exhibit an all-round white light where it can best be seen instead of the lights prescribed in paragraph (a) of this Rule. (c) A vessel at anchor may, and a vessel of 100 meters or more in length shall, also use the available working or equivalent lights to illuminate her decks. (d) A vessel aground shall exhibit the lights prescribed in paragraph (a) or (b) of this Rule and in addition, if practicable, where they can best be seen: (i) two all-round red lights in a vertical line; and (ii) three balls in a vertical line. (e) A vessel of less than 7 meters in length, when at anchor, not in or near a narrow channel, fairway, anchorage, or where other vessels normally navigate, shall not be required to exhibit the lights or shape prescribed in paragraphs (a) and (b) of this Rule. (f) A vessel of less than 12 meters in length when aground shall not be required to exhibit the lights or shapes prescribed in subparagraphs (d)(i) and (ii) of this Rule. (g) A vessel of less than 20 meters in length, when at anchor in a special anchorage area designated by the Secretary, shall not be required to exhibit the anchor lights and shapes required by this Rule.

REF170

Using the Fathometer Use the fathometer to determine whether the depth of water under the keel is sufficient to prevent the ship from grounding and to check the actual water depth with the charted water depth at the fix position. The navigator must compare the charted sounding at every fix position with the fathometer reading and report to the captain any discrepancies. Taking continuous soundings in restricted waters is mandatory. If the warning sounding is received, then slow the ship, fix the ship's position more frequently, and proceed with extreme caution. Ascertain immediately where the ship is in the channel; if the minimum expected sounding was noted correctly, the warning sounding indicates the vessel may be leaving the channel and standing into shoal water. Notify the vessel's captain and conning officer immediately. If the danger sounding is received, take immediate action to get the vessel back to deep water. Reverse the engines and stop the vessel's forward movement. Turn in the direction of the deepest water before the vessel loses steerageway. Consider dropping the anchor to prevent the ship from drifting aground. The danger sounding indicates that the ship has

left the channel and is standing into immediate danger. It requires immediate corrective action by the ship's conning officer, navigator, and captain to avoid disaster. Many underwater features are poorly surveyed. If a fathometer trace of a distinct underwater feature can be obtained along with accurate position information, send the fathometer trace and related navigational data to NIMA for entry into the Digital Bathymetric Data Base.

REF1701

—INTERNATIONAL— Lights and Shapes RULE 23 Power-driven Vessels Underway (a) A power-driven vessel underway shall exhibit: (i) a masthead light forward; (ii) a second masthead light abaft of and higher than the forward one; except that a vessel of less than 50 meters in length shall not be obliged to exhibit such light but may do so; (iii) sidelights; and (iv) a sternlight. —INLAND— Lights and Shapes RULE 23 Power-driven Vessels Underway (a) A power-driven vessel underway shall exhibit: (i) a masthead light forward; (ii) a second masthead light abaft of and higher than the forward one; except that a vessel of less than 50 meters in length shall not be obliged to exhibit such light but may do so; (iii) sidelights; and (iv) a sternlight.

REF1705

RULE 33 Equipment for Sound Signals —INTERNATIONAL— Sound and Light Signals PART D—SOUND AND LIGHT SIGNALS RULE 33 Equipment for Sound Signals (a) A vessel of 12 meters or more in length shall be provided with a whistle, a vessel of 20 meters or more in length shall be provided with a bell in addition to a whistle, and a vessel of 100 meters or more in length shall, in addition, be provided with a gong, the tone and sound of which cannot be confused with that of the bell. The whistle, bell and gong shall comply with the specifications in Annex III to these Regulations. The bell or gong or both may be replaced by other equipment having the same respective sound characteristics, provided that manual sounding of the prescribed signals shall always be possible. (b) A vessel of less than 12 meters in length shall not be obliged to carry the sound signaling appliances prescribed in paragraph (a) of this Rule but if she does not, she shall be provided with some other means of making an efficient sound signal. —INLAND— Sound and Light Signals PART D—SOUND AND LIGHT SIGNALS RULE 33 Equipment for Sound Signals (a) A vessel of 12 meters or more in length shall be provided with a whistle and a bell and a vessel of 100 meters or more in length shall, in addition, be provided with a gong, the tone and sound of which cannot be confused with that of the bell. The whistle, bell and gong shall comply with the specifications in Annex III to these Rules. The bell or gong or both may be replaced by other equipment having the same respective sound characteristics, provided that manual sounding of the prescribed signals shall always be possible. (b) A vessel of less than 12 meters in length shall not be obliged to carry the sound signaling appliances prescribed in paragraph (a) of this Rule but if she does not, she shall be provided with some other means of making an efficient sound signal.

REF171

CLOUD FORMS 1. Cirrus: detached clouds, delicate and fibrous in appearance, generally white in color. Cirrus appear in the most varied combination of forms, such as tufts, lines drawn across the blue sky, branching featherlike plumes, and are often arranged in bands across the sky. These clouds are very thin, and the sun and the moon can be seen through them. They range in height from 20,000 to 40,000 feet. Cirrus clouds rarely result in rain. 2. Cirro-cumulus: patches of white flakes or rounded masses without shadows, arranged in groups or in lines resembling the sand on the seashore. Cirro-cumulus is often called the mackerel sky. These clouds range in height from 10,000 to 35,000 feet. 3. Cirro-stratus: a thin whitish veil, sometimes covering the sky completely and giving it a milky appearance; at other times presenting a fibrous structure like a tangled web. This cloud is responsible for halos around the sun and moon. This cloud is denser than the cirrus, though its height range is about the same. 4. Alto-cumulus: large rounded masses, partially shaded, arranged in groups or lines or waves sometimes so close together that their edges join. They range in height from 2,500 to 28,000 feet. They rarely result in precipitation. 5. Alto-stratus: a dense sheet of a gray or bluish color. At times it is very dark and thick, completely hiding the sun or moon. It ranges in height from 8,000 to 32,000 feet. 6. Strato-cumulus: large lumpy masses or rolls of dull gray, frequently covering the whole sky. This cloud form is seen more often in the winter, and its usual height is about 2,000 feet, though it may descend to 500 feet and rise to 12,000. 7. Stratus: a uniform layer of cloud, not very thick, hovering about 1,000 feet above the ground. Stratus often results in rain or snow. 8. Nimbo-stratus: a dense layer of dark, shapeless cloud with ragged edges ranges in thickness from 500 feet to five miles, and hovers usually at a height of 1,000 feet. This is the cloud that brings the steady downpour. 9. Cumulus: a thick cloud, dome-shaped with a horizontal base, commonly known as a cauliflower cloud. It is usually very thick, and usually floats at an altitude of 5,000 feet. The cumulus cloud is known as the cloud of fair weather. 10. Cumulo-nimbus: the typical thundershower cloud, appears in great masses in the form of mountains or towers. This is the thickest of all clouds, often reaching a depth of eight miles. This cloud is responsible for what is impolitely called "dirty weather." Indications by Appearance of Sky. The indications of weather afforded by the colors of the sky, and given herewith, are very useful in predicting approaching weather conditions at sea. A red sky at sunset presages fine weather; a red sky in the morning, bad weather or much wind, if not rain; a gray sky in the morning, fine weather. Soft-looking or delicate clouds foretell fine weather, with moderate

or light breezes; hard-edged, oily-looking clouds, wind. A dark, gloomy blue sky is windy, but a light, bright blue sky indicates fine weather. Generally, the softer the clouds look the less wind, although rain may be expected; and the harder, more "greasy," rolled, tufted, or ragged, the stronger the wind will prove. Also, a bright-yellow sky at sunset presages wind; a pale-yellow, wet; and by the preponderance of red, yellow, or gray tints the coming weather may be foretold very nearly-indeed, if aided by instruments, almost accurately.

REF172

Course recorder is navigational equipment for automatically recording the course of vessel over period of time. The record is done on continuous paper belt. The recorder is operated from a gyro compass or a remote magnetic compass.

REF1724

BOTH INTERNATIONAL & INLAND The tug shown is greater than 50 meters and severely restricted in her ability to deviate from her course. Which lights would be displayed from the towing vessel? Note: Rule 24 (a) states a power driven vessel when towing shall exhibit two masthead lights in a vertical line, instead of the light prescribed for a power driven vessel in Rule 23(a)(i) or a(ii). When the length of the tow exceeds 200 meters, then three lights in a vertical line are to be shown. In addition to the identification lights: sidelights, stern light and a towing light above the stern light. Rule 24 (d) in a very convoluted way is stating that if the vessel carries her identification lights forward (either two or three in a vertical line) and the towing vessel is greater than 50 meters then according to Rule 23 (i) and (ii), another masthead light must be in place abaft and higher. Conversely, if identification lights are carried aft and the towing vessel is greater than 50 meters then a forward masthead light must be carried. Rule 27 (c) states that a power driven vessel engaged in towing and the tow is severely restricted, the towing vessel and her tow shall, in addition to the lights in Rule 24 (a), exhibit three all round lights in a vertical line with the highest and lowest lights being red and the middle light white. A. Two white masthead lights, red-white-red all round lights, sidelights, stern light and a towing light Incorrect: Since the vessel is greater than 50 meters it would need to display three white masthead lights, two identification lights and an extra masthead light, in addition to sidelights, stern light and towing light. (Rule 24 (d)) B. Three white masthead lights, red-white-red all round lights, sidelights and two towing lights Incorrect: The vessel is also required to display a towing light over a stern light. (Rule 24(a)) C. Three white masthead lights, two all round red lights, sidelights, stern light and a towing light Incorrect: Since the towing vessel is restricted in her ability to maneuver she would have to display red-white-red in a vertical line. (Rule 27(c)) D. None of the above Correct: The proper lights would be two white masthead lights forward, one masthead light aft, red-white-red all round lights vertically aligned, sidelights, stern light and a towing light.

REF173

Dew Point: The temperature to which air must be cooled, at a given pressure and water-vapor content, for it to reach saturation; the temperature at which dew begins to form.

REF1738

RULE 37 Distress Signals —INTERNATIONAL— Sound and Light Signals When a vessel is in distress and requires assistance she shall use or exhibit the signals described in Anne IV to these Regulations. ANNE IV - Distress Signals 1. The following signals, used or exhibited either together or separately, indicate distress and need of assistance: (a) a gun or other explosive signal fired at intervals of about a minute; (b) a continuous sounding with any fog-signaling apparatus; (c) rockets or shells, throwing red stars fired one at a time at short intervals; (d) a signal made by radiotelegraphy or by any other signaling method consisting of the group . . . -- . . . (SOS) in the Morse Code; (e) a signal sent by radiotelephony consisting of the spoken word "Mayday"; (f) the International Code Signal of distress indicated by N.C.; (g) a signal consisting of a square flag having above or below it a ball or anything resembling a ball; (h) flames on the vessel (as from a burning tar barrel, oil barrel, etc.); (i) a rocket parachute flare or a hand flare showing a red light; (j) a smoke signal giving off orange-colored smoke; (k) slowly and repeatedly raising and lowering arms outstretched to each side; (l) the radiotelegraph alarm signal; (m) the radiotelephone alarm signal; (n) signals transmitted by emergency position-indicating radio beacons; (o) approved signals transmitted by radio communication systems, including survival craft radar transponders. —INLAND— Sound and Light Signals **RULE 37 Distress Signals** When a vessel is in distress and requires assistance she shall use or exhibit the signals described in Anne IV to these Rules. —INLAND— ANNE IV 33 CFR 87 Distress Signals § 87.1 Need of assistance The following signals, used or exhibited either together or separately, indicate distress and need of assistance: (a) A gun or other explosive signal fired at intervals of about a minute; (b) A continuous sounding with any fog-signaling apparatus; (c) Rockets or shells, throwing red stars fired one at a time at short intervals; (d) A signal made by radiotelegraphy or by any other signaling method consisting of the group . . . -- . . . (SOS) in the Morse Code; (e) A signal sent by radiotelephony consisting of the spoken word "Mayday"; (f) The International Code Signal of distress indicated by N.C.; (g) A signal consisting of a square flag having above or below it a ball or anything resembling a ball; (h) Flames on the vessel (as from a burning tar barrel, oil barrel, etc.); (i) A rocket parachute flare or a hand flare showing a red light; (j) A smoke signal giving off orange-colored smoke; (k) Slowly and repeatedly raising and

lowering arms outstretched to each side; (l) The radiotelegraph alarm signal; (m) The radiotelephone alarm signal; (n) Signals transmitted by emergency position-indicating radio beacons; (o) Signals transmitted by radio communication systems, including survival craft radar transponders meeting the requirements of 47 CFR 80.1095. (p) A high intensity white light flashing at regular intervals from 50 to 70 times per minute

REF1740

RULE 34 —INTERNATIONAL ONLY—Maneuvering and Warning Signals Sound and Light Signals (a) When vessels are in sight of one another, a power-driven vessel underway, when maneuvering as authorized or required by these Rules, shall indicate that maneuver by the following signals on her whistle: – one short blast to mean “I am altering my course to starboard”; – two short blasts to mean “I am altering my course to port”; – three short blasts to mean “I am operating astern propulsion”. (b) Any vessel may supplement the whistle signals prescribed in paragraph (a) of this Rule by light signals, repeated as appropriate, while the maneuver is being carried out: (i) these light signals shall have the following significance: – one flash to mean “I am altering my course to starboard”; – two flashes to mean “I am altering my course to port”; – three flashes to mean “I am operating astern propulsion”; (ii) the duration of each flash shall be about one second, the interval between flashes shall be about one second, and the interval between successive signals shall be not less than ten seconds; (iii) the light used for this signal shall, if fitted, be an all-round white light, visible at a minimum range of 5 miles, and shall comply with the provisions of Annex I to these Regulations. (c) When in sight of one another in a narrow channel or fairway: (i) a vessel intending to overtake another shall in compliance with Rule 9(e)(i) indicate her intention by the following signals on her whistle: – two prolonged blasts followed by one short blast to mean “I intend to overtake you on your starboard side”; – two prolonged blasts followed by two short blasts to mean “I intend to overtake you on your port side”. (ii) the vessel about to be overtaken when acting in accordance with Rule 9(e)(i) shall indicate her agreement by the following signal on her whistle: – one prolonged, one short, one prolonged and one short blast, in that order. (d) When vessels in sight of one another are approaching each other and from any cause either vessel fails to understand the intentions or actions of the other, or is in doubt whether sufficient action is being taken by the other to avoid collision, the vessel in doubt shall immediately indicate such doubt by giving at least five short and rapid blasts on the whistle. Such signal may be supplemented by a light signal of at least five short and rapid flashes. (e) A vessel nearing a bend or an area of a channel or fairway where other vessels may be obscured by an intervening obstruction shall sound one prolonged blast. Such signal shall be answered with a prolonged blast by any approaching vessel that may be within hearing around the bend or behind the intervening obstruction. (f) If whistles are fitted on a vessel at a distance apart of more than 100 meters, one whistle only shall be used for giving maneuvering and warning signals.

REF1741

INTERNATIONAL— Lights and Shapes RULE 24—CONTINUED (c) A power-driven vessel when pushing ahead or towing alongside, except in the case of a composite unit, shall exhibit: (i) instead of the light prescribed in Rule 23(a)(i) or 23(a)(ii), two masthead lights in a vertical line; (ii) sidelights; and (iii) a sternlight.

REF1745

RULE 9 —INLAND—Narrow Channels Steering and Sailing Rules (a) (i) A vessel proceeding along the course of a narrow channel or fairway shall keep as near to the outer limit of the channel or fairway which lies on her starboard side as is safe and practicable. (ii) Notwithstanding paragraph (a)(i) and Rule 14(a), a power-driven vessel operating in narrow channels or fairways on the Great Lakes, Western Rivers, or waters specified by the Secretary, and proceeding down bound with a following current shall have the right-of-way over an upbound vessel, shall propose the manner and place of passage, and shall initiate the maneuvering signals prescribed by Rule 34(a)(i), as appropriate. The vessel proceeding upbound against the current shall hold as necessary to permit safe passing. (b) A vessel of less than 20 meters in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway. (c) A vessel engaged in fishing shall not impede the passage of any other vessel navigating within a narrow channel or fairway. (d) A vessel shall not cross a narrow channel or fairway if such crossing impedes the passage of a vessel which can safely navigate only within that channel or fairway. The latter vessel shall use the danger signal prescribed in Rule 34(d) if in doubt as to the intention of the crossing vessel. (e) (i) In a narrow channel or fairway when overtaking, the power-driven vessel intending to overtake another power-driven vessel shall indicate her intention by sounding the appropriate signal prescribed in Rule 34(c) and take steps to permit safe passing. The power-driven vessel being overtaken, if in agreement, shall sound the same signal and may, if specifically agreed to take steps to permit safe passing. If in doubt she shall sound the danger signal prescribed in Rule 34(d). (ii) This Rule does not relieve the overtaking vessel of her obligation under Rule 13. (f) A vessel nearing a bend or an area of a narrow channel or fairway where other vessels may be obscured by an intervening obstruction shall navigate with particular alertness and caution and shall sound the appropriate signal prescribed in Rule 34(e). (g) Every vessel shall, if the circumstances of the case admit, avoid anchoring in a narrow channel.

REF1746

RULE 24 Towing and Pushing —INLAND— Lights and Shapes **RULE 24 Towing and Pushing** (a) A power-driven vessel when towing astern shall exhibit: (i) instead of the light prescribed either in Rule 23(a)(i) or 23(a)(ii), two masthead lights in a vertical line. When the length of the tow, measuring from the stern of the towing vessel to the after end of the tow exceeds 200 meters, three such lights in a vertical line; (ii) sidelights; (iii) a sternlight; (iv) a towing light in a vertical line above the sternlight; and (v) when the length of the tow exceeds 200 meters, a diamond shape where it can best be seen. (b) When a pushing vessel and a vessel being pushed ahead are rigidly connected in a composite unit they shall be regarded as a power-driven vessel and exhibit the lights prescribed in Rule 23. (c) A power-driven vessel when pushing ahead or towing alongside, except as required by paragraphs (b) and (i) of this Rule, shall exhibit: (i) instead of the light prescribed either in Rule 23(a)(i) or 23(a)(ii), two masthead lights in a vertical line; (ii) sidelights; and (iii) two towing lights in a vertical line. A power-driven vessel to which paragraphs (a) or (c) of this Rule apply shall also comply with Rule 23(a)(i) and 23(a)(ii). (d) A vessel or object other than those referred to in paragraph (g) of this Rule being towed shall exhibit: (i) sidelights; (ii) a sternlight; and (iii) when the length of the tow exceeds 200 meters, a diamond shape where it can best be seen. (e) Provided that any number of vessels being towed alongside or pushed in a group shall be lighted as one vessel, except as provided in paragraph (iii): (i) a vessel being pushed ahead, not being part of a composite unit, shall exhibit at the forward end sidelights, and a special flashing light; (ii) a vessel being towed alongside shall exhibit a sternlight and at the forward end, sidelights and a special flashing light; and (iii) when vessels are towed alongside on both sides of the towing vessels a sternlight shall be exhibited on the stern of the outboard vessel on each side of the towing vessel, and a single set of sidelights as far forward and as far outboard as is practicable, and a single special flashing light. (f) An inconspicuous, partly submerged vessel or object being towed shall exhibit: (g) if it is less than 25 meters in breadth, one all-round white light at or near each end; (i) if it is 25 meters or more in breadth, four all-round white lights to mark its length and breadth; (ii) if it exceeds 100 meters in length, additional all-round white lights between the lights prescribed in subparagraphs (i) and (ii) so that the distance between the lights shall not exceed 100 meters: Provided, That any vessels or objects being towed alongside each other shall be lighted as one vessel or object; (iii) a diamond shape at or near the aftermost extremity of the last vessel or object being towed; and (v) the towing vessel may direct a searchlight in the direction of the tow to indicate its presence to an approaching vessel. (h) Where from any sufficient cause it is impracticable for a vessel or object being towed to exhibit the lights prescribed in paragraph (e) or (g) of this Rule, all possible measures shall be taken to light the vessel or object towed or at least to indicate the presence of the unlighted vessel or object. (i) Notwithstanding paragraph (c), on the Western Rivers (except below the Huey P. Long Bridge on the Mississippi River) and on waters specified by the Secretary, a power-driven vessel when pushing ahead or towing alongside, except as paragraph (b) applies, shall exhibit: (i) sidelights; and (ii) two towing lights in a vertical line. (j) Where from any sufficient cause it is impracticable for a vessel not normally engaged in towing operations to display the lights prescribed by paragraph (a), (c) or (i) of this Rule, such vessel shall not be required to exhibit those lights when engaged in towing another vessel in distress or otherwise in need of assistance. All possible measures shall be taken to indicate the nature of the relationship between the towing vessel and the vessel being assisted. The searchlight authorized by Rule 36 may be used to illuminate the tow.

REF1747

RULE 34 —INLAND—Maneuvering and Warning Signals. Sound and Light Signals (a) When power-driven vessels are in sight of one another and meeting or crossing at a distance within half a mile of each other, each vessel underway, when maneuvering as authorized or required by these Rules: (i) shall indicate that maneuver by the following signals on her whistle: one short blast to mean "I intend to leave you on my port side"; two short blasts to mean "I intend to leave you on my starboard side"; and three short blasts to mean "I am operating astern propulsion". (ii) upon hearing the one or two blast signal of the other shall, if in agreement, sound the same whistle signal and take the steps necessary to effect a safe passing. If, however, from any cause, the vessel doubts the safety of the proposed maneuver, she shall sound the danger signal specified in paragraph (d) of this Rule and each vessel shall take appropriate precautionary action until a safe passing agreement is made. (b) A vessel may supplement the whistle signals prescribed in paragraph (a) of this Rule by light signals: (i) These signals shall have the following significance: one flash to mean "I intend to leave you on my port side"; two flashes to mean "I intend to leave you on my starboard side"; three flashes to mean "I am operating astern propulsion"; (ii) The duration of each flash shall be about 1 second; and (iii) The light used for this signal shall, if fitted, be one all-round white or yellow light, visible at a minimum range of 2 miles, synchronized with the whistle, and shall comply with the provisions of Annex I to these Rules. (c) When in sight of one another: (i) a power-driven vessel intending to overtake another power-driven vessel shall indicate her intention by the following signals on her whistle: one short blast to mean "I intend to overtake you on your starboard side"; two short blasts to mean "I intend to overtake you on your port side"; and (ii) the power-driven vessel about to be overtaken shall, if in agreement, sound a similar sound signal. If in doubt she shall sound the danger signal prescribed in paragraph (d). (d) When vessels in sight of one another are approaching each other and from any cause either vessel fails to understand the intentions or actions of the other, or is in doubt whether sufficient action is being taken by the other to avoid collision, the vessel in doubt shall immediately indicate such

doubt by giving at least five short and rapid blasts on the whistle. This signal may be supplemented by a light signal of at least five short and rapid flashes. (e) A vessel nearing a bend or an area of a channel or fairway where other vessels may be obscured by an intervening obstruction shall sound one prolonged blast. This signal shall be answered with a prolonged blast by any approaching vessel that may be within hearing around the bend or behind the intervening obstruction. (f) If whistles are fitted on a vessel at a distance apart of more than 100 meters, one whistle only shall be used for giving maneuvering and warning signals. (g) When a power-driven vessel is leaving a dock or berth, she shall sound one prolonged blast. (h) A vessel that reaches agreement with another vessel in a head-on, crossing, or overtaking situation, as for example, by using the radiotelephone as prescribed by the Vessel Bridge-to-Bridge Radiotelephone Act (85 Stat. 164; 33 U.S.C. 1201 et seq.), is not obliged to sound the whistle signals prescribed by this Rule, but may do so. If agreement is not reached, then whistle signals shall be exchanged in a timely manner and shall prevail.

REF1748

ANNEX V—INLAND—(33 CFR 88) - Pilot Rules § 88.01 Purpose and applicability This Part applies to all vessels operating on United States inland waters and to United States vessels operating on the Canadian waters of the Great Lakes to the extent there is no conflict with Canadian law. § 88.03 Definitions The terms used in this part have the same meaning as defined in the Inland Navigational Rules Act of 1980. § 88.05 Copy of Rules After January 1, 1983, the operator of each self-propelled vessel 12 meters or more in length shall carry on board and maintain for ready reference a copy of the Inland Navigation Rules. § 88.09 Temporary exemption from light and shape requirements when operating under bridges A vessel's navigation lights and shapes may be lowered if necessary to pass under a bridge. § 88.11 Law enforcement vessels (a) Law enforcement vessels may display a flashing blue light when engaged in direct law enforcement or public safety activities. This light must be located so that it does not interfere with the visibility of the vessel's navigation lights. (b) The blue light described in this section may be displayed by law enforcement vessels of the United States and the States and their political subdivisions. § 88.12 Public Safety Activities (a) Vessels engaged in government sanctioned public safety activities, and commercial vessels performing similar functions, may display an alternately flashing red and yellow light signal. This identification light signal must be located so that it does not interfere with the visibility of the vessel's navigation lights. The identification light signal may be used only as an identification signal and conveys no special privilege. Vessels using the identification light signal during public safety activities must abide by the Inland Navigation Rules, and must not presume that the light or the exigency gives them precedence or right of way. (b) Public safety activities include but are not limited to patrolling marine parades, regattas, or special water celebrations; traffic control; salvage; firefighting; medical assistance; assisting disabled vessels; and search and rescue. § 88.13 Lights on moored barges (a) The following barges shall display at night and if practicable in periods of restricted visibility the lights described in paragraph (b) of this section: (1) Every barge projecting into a buoyed or restricted channel. (2) Every barge so moored that it reduces the available navigable width of any channel to less than 80 meters. (2) Barges moored in groups more than two barges wide or to a maximum width of over 25 meters. (3) Every barge not moored parallel to the bank or dock. (b) Barges described in paragraph (a) of this section shall carry two unobstructed all-round white lights of an intensity to be visible for at least one nautical mile and meeting the technical requirements as prescribed in § 84.15 of this chapter. (c) A barge or a group of barges at anchor or made fast to one or more mooring buoys or other similar device, in lieu of the provisions of Inland Navigation Rule 30, may carry unobstructed all-round white lights of an intensity to be visible for at least one nautical mile that meet the requirements of § 84.15 of this chapter and shall be arranged as follows: (1) Any barge that projects from a group formation, shall be lighted on its outboard corners. (2) On a single barge moored in water where other vessels normally navigate on both sides of the barge, lights shall be placed to mark the corner extremities of the barge. (3) On barges moored in group formation, moored in water where other vessels normally navigate on both sides of the group, lights shall be placed to mark the corner extremities of the group. (d) The following are exempt from the requirements of this section: (1) A barge or group of barges moored in a slip or slough used primarily for mooring purposes. (2) A barge or group of barges moored behind a pierhead. (3) A barge less than 20 meters in length when moored in a special anchorage area designated in accordance with § 109.10 of this chapter. § 88.15 Lights on dredge pipelines Dredge pipelines that are floating or supported on trestles shall display the following lights at night and in periods of restricted visibility. (a) One row of yellow lights. The lights must be: (1) Flashing 50 to 70 times per minute, (2) Visible all around the horizon, (3) Visible for at least 2 miles on a clear dark night, (4) Not less than 1 and not more than 3.5 meters above the water, (5) Approximately equally spaced, and (6) Not more than 10 meters apart where the pipeline crosses a navigable channel. Where the pipeline does not cross a navigable channel the lights must be sufficient in number to clearly show the pipeline's length and course. (b) Two red lights at each end of the pipeline, including the ends in a channel where the pipeline is separated to allow vessels to pass (whether open or closed). The lights must be: (1) Visible all around the horizon, and (2) Visible for at least 2 miles on a clear dark night, and (3) One meter apart in a vertical line with the lower light at the same height above the water as the flashing yellow light. § 88.15 Lights on dredge pipelines Dredge pipelines that are floating or supported on trestles shall display the following lights at night and in periods of restricted visibility. (a) One row of yellow lights. The lights must be: (1) Flashing 50 to 70 times per minute, (2) Visible all around the horizon, (3) Visible for at least 2 miles on a clear dark night, (4) Not less than 1 and not more than 3.5 meters above the water, (5)

Approximately equally spaced, and (6) Not more than 10 meters apart where the pipeline crosses a navigable channel. Where the pipeline does not cross a navigable channel the lights must be sufficient in number to clearly show the pipeline's length and course. (b) Two red lights at each end of the pipeline, including the ends in a channel where the pipeline is separated to allow vessels to pass (whether open or closed). The lights must be: (1) Visible all around the horizon, and (2) Visible for at least 2 miles on a clear dark night, and (3) One meter apart in a vertical line with the lower light at the same height above the water as the flashing yellow light.

REF1753

RULE 21 —INLAND—Definitions Lights and Shapes (a) "Masthead light" means a white light placed over the fore and aft centerline of the vessel showing an unbroken light over an arc of the horizon of 225 degrees and so fixed as to show the light from right ahead to 22.5 degrees abaft the beam on either side of the vessel, except that on a vessel of less than 12 meters in length the masthead light shall be placed as nearly as practicable to the fore and aft centerline of the vessel. (b) "Sidelights" mean a green light on the starboard side and a red light on the port side each showing an unbroken light over an arc of the horizon of 112.5 degrees and so fixed as to show the light from right ahead to 22.5 degrees abaft the beam on its respective side. On a vessel of less than 20 meters in length the sidelights may be combined in one lantern carried on the fore and aft centerline of the vessel, except that on a vessel of less than 12 meters in length the sidelights when combined in one lantern shall be placed as nearly as practicable to the fore and aft centerline of the vessel. (c) "Sternlight" means a white light placed as nearly as practicable at the stern showing an unbroken light over an arc of the horizon of 135 degrees and so fixed as to show the light 67.5 degrees from right aft on each side of the vessel. (d) "Towing light" means a yellow light having the same characteristics as the "sternlight" defined in paragraph (c) of this Rule. (e) "All-round light" means a light showing an unbroken light over an arc of the horizon of 360 degrees. (f) "Flashing light" means a light flashing at regular intervals at a frequency of 120 flashes or more per minute. (g) "Special flashing light" means a yellow light flashing at regular intervals at a frequency of 50 to 70 flashes per minute, placed as far forward and as nearly as practicable on the fore and aft centerline of the tow and showing an unbroken light over an arc of the horizon of not less than 180 degrees nor more than 225 degrees and so fixed as to show the light from right ahead to abeam and no more than 22.5 degrees abaft the beam on either side of the vessel.

REF1756

RULE 10 Traffic Separation Schemes (a) This Rule applies to traffic separation schemes and does not relieve any vessel of her obligation under any other Rule. (b) A vessel using a traffic separation scheme shall: (i) proceed in the appropriate traffic lane in the general direction of traffic flow for that lane; (ii) so far as practicable keep clear of a traffic separation line or separation zone; (iii) normally join or leave a traffic lane at the termination of the lane, but when joining or leaving from either side shall do so at as small an angle to the general direction of traffic flow as practicable. (c) A vessel shall, so far as practicable, avoid crossing traffic lanes but if obliged to do so shall cross on a heading as nearly as practicable at right angles to the general direction of traffic flow. (d) (i) A vessel shall not use an inshore traffic zone when she can safely use the appropriate traffic lane within the adjacent traffic separation scheme. However, vessels of less than 20 meters in length, sailing vessels, and vessels engaged in fishing may use the inshore traffic zone. (ii) Notwithstanding subparagraph (d) (i), a vessel may use an inshore traffic zone when en route to or from a port, offshore installation or structure, pilot station, or any other place situated within the inshore traffic zone, or to avoid immediate danger. (e) A vessel other than a crossing vessel or a vessel joining or leaving a lane shall not normally enter a separation zone or cross a separation line except: (i) in cases of emergency to avoid immediate danger; or (ii) to engage in fishing within a separation zone. (f) A vessel navigating in areas near the terminations of traffic separation schemes shall do so with particular caution. (g) (g)A vessel shall so far as practicable avoid anchoring in a traffic separation scheme or in areas near its terminations. (h) A vessel not using a traffic separation scheme shall avoid it by as wide a margin as is practicable. (i) A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane. (j) A vessel of less than 20 meters in length or a sailing vessel shall not impede the safe passage of a power-driven vessel following a traffic lane

REF1758

RULE 13 —INLAND—Overtaking, Steering and Sailing Rules (a) Notwithstanding anything contained in Rules 4 through 18, any vessel overtaking any other shall keep out of the way of the vessel being overtaken. (b) A vessel shall be deemed to be overtaking when coming up with another vessel from a direction more than 22.5 degrees abaft her beam; that is, in such a position with reference to the vessel she is overtaking, that at night she would be able to see only the sternlight of that vessel but neither of her sidelights. (c) When a vessel is in any doubt as to whether she is overtaking another, she shall assume that this is the case and act accordingly. (d) Any subsequent alteration of the bearing between the two vessels shall not make the overtaking vessel a crossing vessel within the meaning of these Rules or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear.

REF1759

RULE 30 —INLAND—Anchored Vessels and Vessels Aground Lights and Shapes **RULE 30 Anchored Vessels and Vessels Aground** (a) A vessel at anchor shall exhibit where it can best be seen: (i) in the fore part, an all-round white light or one ball; and (ii) at or near the stern and at a lower level than the light prescribed in subparagraph (i), an all-round white light. (b) A vessel of less than 50 meters in length may exhibit an all-round white light where it can best be seen instead of the lights prescribed in paragraph (a) of this Rule. (c) A vessel at anchor may, and a vessel of 100 meters or more in length shall, also use the available working or equivalent lights to illuminate her decks. (d) A vessel aground shall exhibit the lights prescribed in paragraph (a) or (b) of this Rule and in addition, if practicable, where they can best be seen: (i) two all-round red lights in a vertical line; and (ii) three balls in a vertical line. (e) A vessel of less than 7 meters in length, when at anchor, not in or near a narrow channel, fairway, anchorage, or where other vessels normally navigate, shall not be required to exhibit the lights or shape prescribed in paragraphs (a) and (b) of this Rule. (f) A vessel of less than 12 meters in length when aground shall not be required to exhibit the lights or shapes prescribed in subparagraphs (d)(i) and (ii) of this Rule. (g) A vessel of less than 20 meters in length, when at anchor in a special anchorage area designated by the Secretary, shall not be required to exhibit the anchor lights and shapes required by this Rule.

REF1760

RULE 23—CONTINUED (d) A power-driven vessel when operating on the Great Lakes may carry an all-round white light in lieu of the second masthead light and sternlight prescribed in paragraph (a) of this Rule. The light shall be carried in the position of the second masthead light and be visible at the same minimum range.

REF1763

RULE 18 —INTERNATIONAL ONLY— Responsibilities Between Vessels Steering and Sailing Rules. Subpart II—Conduct of Vessels in Sight of One Another Except where Rules 9, 10 and 13 otherwise require: (a) A power-driven vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; (iii) a vessel engaged in fishing; (iv) a sailing vessel. (b) A sailing vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; (iii) a vessel engaged in fishing. (c) A vessel engaged in fishing when underway shall, so far as possible, keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver. (d) (i) Any vessel other than a vessel not under command or a vessel restricted in her ability to maneuver shall, if the circumstances of the case admit, avoid impeding the safe passage of a vessel constrained by her draft, exhibiting the signals in Rule 28. (ii) A vessel constrained by her draft shall navigate with particular caution having full regard to her special condition. (e) A seaplane on the water shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, she shall comply with the Rules of this Part. (f) (i) A WIG craft shall, when taking off, landing and in flight near the surface, keep well clear of all other vessels and avoid impeding their navigation; (ii) A WIG craft operating on the water surface shall comply with the Rules of this Part as a power-driven vessel.

REF177

Stabilized Display (North-Upward): A PPI display in which the orientation of the relative motion presentation is fixed to an unchanging reference (North). This display is North-Upward, normally. In an UNSTABILIZED DISPLAY, the orientation of the relative motion presentation changes with changes in ship's heading. **Double Stabilization:** The stabilization of a Heading Upward PPI display to North. The cathode-ray tube with the PPI display stabilized to North is rotated to keep ship's heading upward.

REF1772

ALTERNATIVE COMPLIANCE The alternative compliance procedures for the International Rules and the Inland Rules are the same, although they appear both in the International Rules section of the Code of Federal Regulations (33 CFR Part 81) and in the Inland Rules section (33 CFR Part 89). **SEC 1. Definitions. 4. Certificate of Alternative Compliance: Contents. 2. General. 5. Certificate of Alternative Compliance: Termination. 3. Application for a Certificate of Alternative Compliance 6. Record of certification of vessels of special of. construction or purpose. 1. Definitions. As used in this part: "72 COLREGS" refers to the International Regulations for Preventing Collisions at Sea, 1972, done at London, October 20, 1972, as rectified by the Proces-Verbal of December 1, 1973, as amended. "Inland Rules" refers to the Inland Navigation Rules contained in the Inland Navigational Rules Act of 1980 (Pub. L. 96-591) and the technical annexes established under that Act. "A vessel of special construction or purpose" means a vessel designed or modified to perform a special function and whose arrangement is thereby made relatively inflexible. "Interference with the special function of the vessel" occurs when installation or use of lights, shapes, or sound-signaling appliances under the 72 COLREGS/Inland Rules prevents or significantly hinders the operation in which the vessel is usually engaged. 2. General. Vessels of special construction or purpose which cannot fully comply with the light, shape, and sound signal provisions of the 72 COLREGS / Inland Rules without interfering with their special function may instead meet alternative requirements. The Chief of the Marine Safety Division in each Coast Guard District Office makes this determination and requires that alternative**

compliance be as close as possible with the 72 COLREGS / Inland Rules. These regulations set out the procedure by which a vessel may be certified for alternative compliance. 3. Application for a Certificate of Alternative Compliance. (a) The owner, builder, operator, or agent of a vessel of special construction or purpose who believes the vessel cannot fully comply

REF1773

RULE 28 —INTERNATIONAL ONLY— Vessels Constrained by Their Draft Lights and Shapes A vessel constrained by her draft may, in addition to the lights prescribed for power-driven vessels in Rule 23, exhibit where they can best be seen three all-round red lights in a vertical line, or a cylinder. Vessel constrained by her draft.

REF191

Standard sea-level pressure, by definition, equals 760 mm (29.92 inches) of mercury, 14.70 pounds per square inch, 1,013.25 × 10³ dynes per square centimetre, 1,013.25 millibars, one standard atmosphere, or 101.325 kilopascals.

REF192

Wind direction is generally reported by the direction from which it originates. For example, a north or northerly wind blows from the north to the south.[1] The exceptions are onshore winds (blowing onto the shore from the water) and offshore winds (blowing off the shore to the water). Wind direction is usually reported in cardinal (or compass) direction, or in degrees. Consequently, a wind blowing from the north has a wind direction referred to as 0° (360°); a wind blowing from the east has a wind direction referred to as 90°, etc.

REF203

Safe water marks are used to mark fairways, midchannels, and offshore approach points, and indicate that there is unobstructed water on all sides. They can also be used by the mariner transiting offshore waters to identify the proximity of intended landfall. Safe water marks are red and white striped and have a red spherical topmark to further aid in identification. If lighted, they display a white light with the characteristic Morse code "A".

REF207

Generally, lateral aids to navigation indicate on which side of a vessel an aid to navigation should be passed when the vessel is proceeding in the conventional direction of buoyage. Normally, the conventional direction of buoyage is the direction in which a vessel enters navigable channels from seaward and proceeds towards the head of navigation. In the absence of a route leading from seaward, the conventional direction of buoyage generally follows a clockwise direction around land masses. For example, proceeding southerly along the Atlantic Coast, from Florida to Texas along the Gulf Coast, and northerly along the Pacific Coast are considered as proceeding in the conventional direction of buoyage. In some instances, this direction must be arbitrarily assigned. Where doubt exists, the mariner should consult charts and other nautical publications. Virtually all U.S. lateral marks are located in IALA Region B and follow the traditional 3R rule of red, right, returning. A summary of the port and starboard hand lateral mark characteristics is contained in the following table.

Characteristic	Port Hand	Starboard Hand
Color	Green	Red
Shape (buoys)	Cylindrical (can) or pillar	Conical (nun) or pillar
Dayboard	Green square	Red triangle
Topmark (if fitted)	Cylinder	Cone, point upward
Light Color (if fitted)	Green	Red
Reflector Color	Green	Red
Number	Odd	Even

U.S. lateral aids to navigation at certain Pacific Islands are located within IALA Region A and thus exhibit opposite color significance. Port hand marks are red with square or cylindrical shapes while starboard hand marks are green with triangular or conical shapes.

REF229

Tide: The rise and fall of the surface of a body of water caused primarily by the differences in gravitational attraction of the moon, and to a lesser extent the sun, upon different parts of the earth when the positions of the moon and sun change with respect to the earth. Spring tide: The tidal effect of the sun and the moon acting in concert twice a month, when the sun, earth and moon are all in a straight line (full moon or new moon). The range of tide is larger than average. Neap tide: This opposite effect occurs when the moon is at right angles to the earth-sun line (first or last quarter). The range of tide is smaller than average. Range: The vertical difference between the high and low tide water levels during one tidal cycle.

Tidal day or Lunar day: 24 hours and 50 minutes. The moon orbits the earth every month, and the earth rotates (in the same direction as the moon's orbit) on its axis once every 24 hours. Tidal cycle: One high tide plus a successive low tide. Semidiurnal tide: The most common tidal pattern, featuring two highs and two lows each day, with minimal variation in the height of successive high or low waters. Diurnal tide: Only a single high and a single low during each tidal day; successive high and low waters do not vary by a great deal. Such tides occur, for example, in the Gulf of Mexico, Java Sea and in the Tonkin Gulf. Mixed Tide or Mixed semidiurnal tide: Characterized by wide variation in heights of successive high and low waters, and by longer tide cycles than those of the semidiurnal cycle. Such tides occur, for example, in the U.S. Pacific coast and many Pacific islands.

REF236

An anemometer is a device for measuring wind speed, and is a common weather station instrument. The term is derived from the Greek word anemos, meaning wind, and is used to describe any airspeed measurement instrument used in meteorology or aerodynamics. The first known description of an anemometer was given by Leon Battista Alberti around 1450. Anemometers can be divided into two classes: those that measure the wind's speed, and those that measure the wind's pressure; but as there is a close connection between the pressure and the speed, an anemometer designed for one will give information about both.

REF246

Dead Reckoning (DR) - the process of estimating one's current position based upon a previously determined position, or fix, and advancing that position based upon known speed, elapsed time, and course; without sightings to land, etc. The speed reading was originally based on a Dutchman's Log, which uses a buoyant object tossed overboard near the bow of the vessel and assumed to be "Dead" in the water, or stationary, and the time it takes for the boat to move by it a certain, measured, distance on the deck is timed, then the speed of the vessel can be calculated. This does not take into account effects of wind and currents on the calculated position of the vessel. Estimated Position (EP) - a navigation point, less accurate than a fix, determined by course run, estimated speed, and estimated factors like drift caused by the wind and currents

REF2574

RULE 3 General Definitions —INTERNATIONAL— General For the purpose of these Rules, except where the contet otherwise requires: (a) The word "vessel" includes every description of water craft, including nondisplacement craft, WIG craft and seaplanes, used or capable of being used as a means of transportation on water. (b) The term "power-driven vessel" means any vessel propelled by machinery. (c) The term "sailing vessel" means any vessel under sail provided that propelling machinery, if fitted, is not being used. (d) The term "vessel engaged in fishing" means any vessel fishing with nets, lines, trawls or other fishing apparatus which restrict maneuverability, but does not include a vessel fishing with trolling lines or other fishing apparatus which do not restrict maneuverability. (e) The word "seaplane" includes any aircraft designed to maneuver on the water. (f) The term "vessel not under command" means a vessel which through some eceptional circumstance is unable to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel. (g) The term "vessel restricted in her ability to maneuver" means a vessel which from the nature of her work is restricted in her ability to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel. (g) (continued) The term "vessels restricted in their ability to maneuver" shall include but not be limited to: (i) a vessel engaged in laying, servicing or picking up a navigation mark, submarine cable or pipeline; (ii) a vessel engaged in dredging, surveying or underwater operations; (iii) a vessel engaged in replenishment or transferring persons, provisions or cargo while underway; (iv) a vessel engaged in the launching or recovery of aircraft; (v) a vessel engaged in mineclearance operations; (vi) a vessel engaged in a towing operation such as severely restricts the towing vessel and her tow in their ability to deviate from their course. (h) The term "vessel constrained by her draft" means a power-driven vessel which, because of her draft in relation to the available depth and width of navigable water is severely restricted in her ability to deviate from the course she is following. (i) The word "underway" means that a vessel is not at anchor, or made fast to the shore, or aground. (j) The words "length" and "breadth" of a vessel means her length overall and greatest breadth. (k) Vessels shall be deemed to be in sight of one another only when one can be observed visually from the other. (l) The term "restricted visibility" means any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms or any other similar causes. (m) The term "Wing-In-Ground (WIG) craft" means a multimodal craft which, in its main operational mode, flies in close proimity to the surface by utilizing surface-effect action. —INLAND— General RULE 3 General Definitions For the purpose of these Rules and this Chapter, except where the contet otherwise requires: (a) The word "vessel" includes every description of water craft, including nondisplacement craft and seaplanes, used or capable of being used as a means of transportation on water; (b) The term "power-driven vessel" means any vessel propelled by machinery; (c) The term "sailing vessel" means any vessel under sail provided that propelling machinery, if fitted, is not being used; (d) The term "vessel engaged in fishing" means any vessel fishing with nets, lines, trawls, or other fishing apparatus which restricts maneuverability, but does not include a vessel fishing with trolling lines or

other fishing apparatus which do not restrict maneuverability; (e) The word “seaplane” includes any aircraft designed to maneuver on the water; (f) The term “vessel not under command” means a vessel which through some exceptional circumstance is unable to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel; (g) The term “vessel restricted in her ability to maneuver” means a vessel which from the nature of her work is restricted in her ability to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel; vessels restricted in their ability to maneuver include, but are not limited to: (i) a vessel engaged in laying, servicing, or picking up a navigation mark, submarine cable, or pipeline; (ii) a vessel engaged in dredging, surveying, or underwater operations; (iii) a vessel engaged in replenishment or transferring persons, provisions, or cargo while underway; (iv) a vessel engaged in the launching or recovery of aircraft; (v) a vessel engaged in mineclearance operations; and (vi) a vessel engaged in a towing operation such as severely restricts the towing vessel and her tow in their ability to deviate from their course. (h) The word “underway” means that a vessel is not at anchor, or made fast to the shore, or aground; (i) The words “length” and “breadth” of a vessel means her length overall and greatest breadth; (j) Vessels shall be deemed to be in sight of one another only when one can be observed visually from the other; (k) The term “restricted visibility” means any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, or any other similar causes; (l) “Western Rivers” means the Mississippi River, its tributaries, South Pass, and Southwest Pass, to the navigational demarcation lines dividing the high seas from harbors, rivers, and other inland waters of the United States, and the Port Allen-Morgan City Alternate Route, and that part of the Atchafalaya River above its junction with the Port Allen-Morgan City Alternate Route including the Old River and the Red River; (m) “Great Lakes” means the Great Lakes and their connecting and tributary waters including the Calumet River as far as the Thomas J. O’Brien Lock and Controlling Works (between mile 326 and 327), the Chicago River as far as the east side of the Ashland Avenue Bridge (between mile 321 and 322), and the Saint Lawrence River as far east as the lower end of Saint Lambert Lock; (n) “Secretary” means the Secretary of the department in which the Coast Guard is operating; (o) “Inland Waters” means the navigable waters of the United States shoreward of the navigational demarcation lines dividing the high seas from harbors, rivers, and other inland waters of the United States and the waters of the Great Lakes on the United States side of the International Boundary; (p) “Inland Rules” or “Rules” mean the Inland Navigational Rules and the annexes thereto, which govern the conduct of vessels and specify the lights, shapes, and sound signals that apply on inland waters; and (q) “International Regulations” means the International Regulations for Preventing Collisions at Sea, 1972, including annexes currently in force for the United States.

REF2576

LOOKOUT DUTY Too much emphasis can never be placed upon the importance of the lookout on shipboard. This is particularly true in time of war. Many accidents at sea could have been avoided if the lookout had been alert and attentive. If you are on lookout you must report anything that comes into sight. This includes other ships, lights, land, shoals, discolored water, buoys, floating objects, periscopes, and wreckage. In short, report anything that might be of interest to the bridge, even garbage or refuse. Lookouts are stationed on the forecandle head in the crow’s nest and in time of war frequently on the stern and other parts of the vessel. The report when on the forecandle head is usually made by the striking of the ship’s bell (on some vessels it is made by speaking tube or telephone). One bell signifies an object is sighted to the starboard. Two bells implies that an object is sighted to the port. Three bells indicates an object dead ahead of your ship. This report will be acknowledged by the officer on the bridge. If no acknowledgement is made, repeat the signal until understood and acknowledged.

REF2646

RULE 18 Responsibilities Between Vessels —INTERNATIONAL— Steering and Sailing Rules. Subpart II—Conduct of Vessels in Sight of One Another **RULE 18 Responsibilities Between Vessels** Except where Rules 9, 10 and 13 otherwise require: (a) A power-driven vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; (iii) a vessel engaged in fishing; (iv) a sailing vessel. (b) A sailing vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; (iii) a vessel engaged in fishing. (c) A vessel engaged in fishing when underway shall, so far as possible, keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver. (d) (i) Any vessel other than a vessel not under command or a vessel restricted in her ability to maneuver shall, if the circumstances of the case admit, avoid impeding the safe passage of a vessel constrained by her draft, exhibiting the signals in Rule 28. (ii) A vessel constrained by her draft shall navigate with particular caution having full regard to her special condition. (e) A seaplane on the water shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, she shall comply with the Rules of this Part. (f) (i) A WIG craft shall, when taking off, landing and in flight near the surface, keep well clear of all other vessels and avoid impeding their navigation; (ii) A WIG craft operating on the water surface shall comply with the Rules of this Part as a power-driven vessel. —INLAND— Steering and Sailing Rules **RULE 18 Responsibilities Between Vessels** Except where Rules 9, 10, and 13 otherwise require: (a) A power-driven vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver;

(iii) a vessel engaged in fishing; and (iv) a sailing vessel. (b) A sailing vessel underway shall keep out of the way of: (i) a vessel not under command; (ii) a vessel restricted in her ability to maneuver; and (iii) a vessel engaged in fishing. (c) A vessel engaged in fishing when underway shall, so far as possible, keep out of the way of: (i) a vessel not under command; and (ii) a vessel restricted in her ability to maneuver. (d) A seaplane on the water shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, she shall comply with the Rules of this Part.

REF2664

A stadimeter is an optical device for estimating the range to an object of known height by measuring the angle between the top and bottom of the object as observed at the device. ... A stadimeter is a type of analog computer.

REF2669

The following questions are to be answered using Chart 12221 TR, Chesapeake Bay Entrance, and supporting publications. You are southbound along the coast on a course of 180°T and the engine speed is 14 knots. Your draft is 16 feet. Gyro error is 2°W. Use 10°W variation where required.

REF2670

The following questions (1-10) are based on the Army Corps of Engineers Mississippi River Maps (Cairo to the Gulf) and the Light List. AHP = Above Head of Passes LMR = Lower Mississippi River UMR = Upper Mississippi River OHR = Ohio River ACOE = Army Corps of Engineers

REF2671

The following questions are to be answered using Chart 13205 TR, Block Island Sound, and supporting publications. Your height of eye is 42 feet and your vessel's draft is 34 feet. The gyro error is 2°E. You are keeping daylight savings time (ZT+4). Use 15°W variation where required.

DEVIATION TABLE

Magnetic

Heading	Deviation
030°	3°W
060°	4°W
090°	3°W
120°	2°W
150°	0°
180°	1°E
210°	2°E
240°	3°E
270°	2°E
300°	1°E
330°	1°W
360°	3°W

REF2672

The following questions should be answered using Chart 12354TR, Long Island Sound - Eastern Part, and the supporting publications. Your vessel has a draft of 12 feet (3.7 meters) Your height of eye is 24 feet (7.3 meters) Variation is 14°W "Per standard magnetic compass" is abbreviated "psc" "Per gyrocompass" is abbreviated "pgc"

DEVIATION TABLE

Magnetic

Heading	Deviation
000°	0°
030°	1°W
060°	2°W
090°	4°W
120°	2°W
150°	1°W
180°	1°E
210°	2°E

240°	3°E
270°	3°E
300°	2°E
330°	1°E

REF274

The National Cargo Bureau (NCB) a not-for-profit marine surveying organization charged with assisting the U.S. Coast Guard with carrying out the provisions of the International Convention for the Safety of Life at Sea. The NCB was formed by a group of marine underwriters and the Coast Guard for the purpose of reducing losses of grain ships. Any ship loading grain in the US sailing for a foreign port must have a certificate issued by the NCB in order to sail(See U.S. Coast Guard Navigation and Vessel Inspection Circular No. 5-94 - NVIC 05-94). The NCB acts with and enforces the regulations of the Coast Guard in this area. Grain ships have unique stability issues and are prone to capsize if loaded improperly. Headquartered in New York City, the NCB has offices throughout United States.

REF282

46 CFR 32.60-10

REF337

Updated on 10_28_2021

REF343

46 CFR 153.953. A vessel must display a red flag by day and a red light at night while made fast to a dock. These signals must be visible from all sides of the vessel. While at anchor and transferring cargo, a tank ship must display a red flag.

REF351

Subpart B—Load Line Marks § 45.31 Deck line.

REF375

155.750 Contents of transfer procedures.

REF376

An oil water separator (OWS) is a piece of shipboard or in general waste water treatment equipment that separates oil from oily waste water such as bilge water before the waste water is discharged. Bilge water is an almost unavoidable product in ship operations. Bilge water that is generated in proximity to shipboard equipment (such as in the engine room) often contains oil and its direct discharge would result in undesirable transfer of waste oil to the marine environment. By international agreement under the MARPOL convention, most commercial vessels need to be fitted with an oily water separator to remove oil contaminants before bilge water is pumped overboard. Oily water separator equipment has been a shipboard requirement since the 1970s but recently it has become evident that oily water separators have not been as effective as had been assumed, and alleged improper operation of this equipment by crewmembers (sometimes called the magic pipe) has resulted in criminal prosecutions in the United States and to a lesser extent in Europe. There are different technologies that can be used to separate oil from waste water. Most economic are those based on the gravity effect, where oil droplets are separated from the water by floating to the surface due to the difference in viscosity between oil and water. This phenomenon is expressed by Stoke's Law. Other technologies employ membrane filtration, centrifugation, adsorption on active carbon granules, heating, ultrasonic energy, electro-coagulation and chemical methods such as Wet Air Oxidation Zimpro Process. Oil in waste water can be present as free oil, emulsified oil, a chemically stabilized dispersion or molecularly dissolved oil. Oily waste water can also contain suspended solids (silt). Oil water separators can be manufactured for above ground or under ground use or in the case of ships for onboard use. The shell can be made from concrete, steel, stainless steel or GRP. They can contain a single treatment step or a combination thereof. Some manufacturers of oil water separator equipment are: Mercer International (USA), San Dizier Environment (France), Conder Environmental Solutions (UK), and Sulzer Chemtec (Switzerland). Oil water separators can be by-pass separators or full retention separators. By pass separators as the name implies by-pass the treatment step above a certain flow. Full retention oil water separators treat 100% of the flow. Class 1 oil water separators guarantee a maximum of 5 ppm oil in the effluent whereas Class 2 oil water separators guarantee a maximum of 100 ppm oil in the effluent. Common legislative requirements for OWS design are alarm devices and an automatic closure device which is activated when the full oil storage capacity of the oil water separator has been reached.

REF385

To ensure integrity and safety, 33 CFR 156.170 requires annual static liquid pressure testing for equipment used in bulk oil and hazardous material transfer operations. Equipment subject to this requirement includes: pipelines, loading arms, manifolds, metallic hoses and non-metallic transfer hoses.

REF388

46 CFR TABLE 95.50-10 (a)

REF392

The life raft on board ship are released or launched in to the water by three different methods: 1) Auto release with Hydrostatic Release Unit (HRU). 2) Manually launching. 3) Launching by Davits. Auto Release with Hydrostatic Release Unit (HRU): The life raft HRU plays an important role when it comes to saving life during abandon ship situation. SOLAS 74 clearly specify the requirements for construction and positioning of the HRU at the life raft. The Working of HRU: ■HRU acts as a connecting media between life raft container and ship deck, where it is stored. ■The HRU comes in action under the pressure of water exerted on HRU when the ship sinks below 4m of water level. ■The HRU consists of a sharp knife or chisel which is used to cut the strap lashed over the container carrying life raft, but it still holds the painter at the weak link. ■The HRU is connected to the container through a lashing arrangement which can be disengaged quickly by means of slip hook when launching the raft manually. ■The HRU is connected to a strong point on deck through a weak link. ■When vessel sinks, the HRU cuts the rope and the container floats to the surface of water. ■As vessel sinks further, the tension in the painter causes the life raft to inflate out of the container. ■The tension acting on the weak link will cause it to break making the life raft free from the ship. ■When vessel sinks, the HRU cuts the rope and the container floats to the surface of water. Manual Launching Procedure of Life raft: ■Check that one end of the painter of the raft is well secured to a strong point on ship's deck or structure. ■Remove the lashing from the container of the raft and open the way to portable rail if available. ■Check the ship side where the raft to be launched is clear. ■Two people should lift the container from both sides horizontally and throw the container. ■Make sure the painter is still tied at a strong point so that the raft should not be waved away by waters. ■Pull the painter with a hard jerk to fire the gas bottle to inflate the raft. ■The life raft will take 20-30 sec to inflate. ■Board the life raft one by one using ladder or rope. ■Avoid sharp objects like knives, shoes and other sharp objects etc which may damage the raft surface. ■When everybody is aboard, after a headcount, cut the painter with a sharp knife. Launching Raft by Davit: ■Open the lashing and remove the raft container from HRU by opening the manual slip hook or bottle screw arrangement. ■Tie up the one end of the painter of raft into a strong point at deck. ■Keep the container in the open and attach the davit hook to the given eye in the canister/ container ■Take up the raft load by davit and keep the container hanging at embarkation deck area. ■Pull the painter and inflate the raft. Have a thorough check on the inflated raft. ■Start boarding the raft without the shoes and other sharp object. ■After the boarding is completed, check the bottom is clear and release the securing lines, if any. ■Someone inside the raft will detach the hook of the davit from the raft when the raft is just above the water. ■The davit operating person will board the raft either by jumping in to the sea, raft or by other boarding means if provided. ■Cut the painter and cast away the raft from ship.

REF406

A vessel of more than 19.8 meters (65 feet) in length must carry a minimum of three life buoys of not less than 610 millimeters (24 inches) in diameter.

REF489

Deck General – Knots The knots listed below refer to illustration D030DG. Learn to associate each of the listed knots with its diagram and learn how the knot is used in the maritime industry. E. Timber Hitch or a timber hitch and a half hitch; this knot is used to secure a line to a timber or a spar when applying a pull parallel to the timber or spar. F. Round Turn and Two Half Hitches; this knot is used to secure a line to a spar or pole when the pull is perpendicular to the spar or pole. G. Fisherman's Bend; this knot is used to secure a line to a ring or pole. H. Becket Bend; this knot is used to attach two lines of different sizes together or attach a line to an eye; it is also called a sheet bend. I. Bowline on a Bight; this knot is used to make a temporary eye in the middle of a line. J. Plain Whipping; this is used to prevent the end of a line from unraveling. K. Palm and Needle Whipping; see above description. L. Double Blackwall Hitch; this knot is used to temporarily secure a line to a hook. M. Carrick Bend; this knot is used to secure to heavy lines together. N. Stopper Hitch; this knot is used to hold tension on a line when moving it to or from a capstan. O. Barrel Hitch; this knot is used for lifting or loading barrels or similarly shaped cargo. P. Rolling Hitch; this knot is used for securing a line to a railing or a spar when the pull is parallel to the railing or spar. Q. Bowline; this is a knot used to make a temporary eye in the end of a line. R. Double Becket Bend; see becket bend above. S. Blackwall Hitch; see double blackwall hitch above. T. French Bowline; this is a knot that can be used for lifting a man over the side while allowing his hands to be free. U & V. Half Hitch; this are both examples of half hitches. W. Square Knot; this knot is used to secure to small line together, it is also called a reef knot or sailor's knot. . Clove Hitch; this knot is used to secure a line to a railing or spar when the pull is perpendicular to the railing or spar.

REF499

Diagram 2 shows a hempen rope of three separate strands which have been twisted together so that, as you look at them, they spiral away from left to right. It is, therefore, a right-handed, hawser-laid rope. Since the vast majority of ropes in ordinary, everyday use are of the same construction, it is probable that yours, too, is hawser-laid. However, in your length, the strands, whilst still three in number, may spiral away from right to left. In that event, yours is left-banded, hawser-laid rope. It is possible, though, that your rope has four strands, not three, laid up right-handed round a central heart. If so, it is shroud-laid rope. Or, if it is large, it may be cable-laid, formed of three right-handed ropes laid up together left-handed. Finally, your rope may have more than four strands, either twisted together, which produces a rope smoother than three-stranded but not so strong, or plaited, over and under each other. The latter is braided rope, which is smooth, strong and non-kinking. Opening out a strand of rope (Strand II in Diagram) reveals a number of yarns, laid up in the opposite direction to the strands to give the rope flexibility (except in certain specialized lines such as non-kinkable rope used for boats' falls). Teasing out a yarn reveals the fibers which have almost invariably a right-handed twist. In the U.S.A. the size of a rope is commonly given by its diameter, or thickness, although its circumference may also be used. (In Britain, rope sizes are always given as circumferences.) The size of the yarns which make up the rope are based upon the number of a particular thickness of yarn needed to make up one strand with a diameter of 1/2 in. Thus a standard rope of 3 in. circumference will contain three strands each of 1 in. diameter and each strand will contain 18 yarns. The size of these yarns is therefore said to be "18s". Smaller ropes will be made of smaller yarns, which will be known by higher numbers since more of them would be needed to make up a 1/2-in. diameter strand. The reverse applies to ropes larger than 3 in. circumference. In Britain, rope sizes are generally varied by using different numbers of standard sized yarns, 24 of which are needed to make a strand of 1/2 in. diameter. Ropes for general usage are laid up with a standard or plain lay, but others may be twisted up exceptionally tight and hard, which gives them a firm or short lay, or more loosely than normal, which gives them a soft or long lay. A short laid rope is less liable to lose its shape through absorbing water but will be weaker and less pliable than a standard rope, whilst for a long laid rope the advantages and disadvantages are exactly reversed. Most ropes are 'oil spun', i.e. treated with a special lubricant during manufacture to soften the fibers. The few which are not are termed 'dry spun'. Ropes intended for prolonged use in water are 'tanned' or 'barked' or treated with a special waterproof dressing, but those which will be wetted only occasionally, e.g. by rain through being exposed to the weather, are merely soaked in tar. Tarring makes a rope stiffer and heavier and reduces its strength by one-seventh if firm laid, one-sixth if plain laid and one-third if soft laid.

REF515

162.134 Connecting waters from Lake Huron to Lake Erie; traffic rules.

REF519

Right-hand propellers turn clockwise when going ahead, when viewed from the stern. A solid propeller has its blades cast integral with its hub.

REF521

As a vessel moves through the water, it experiences a change in mean draft known as sinkage. This change could be equally distributed fore and aft or could be more pronounced on either the bow or stern. The simultaneous change in mean draft or sinkage and change in trim is known as squat.

REF534

Scope of chain calculation. $A^2 \times B^2 = C^2$ OR $C = \sqrt{\text{of } A^2 + B^2}$ You are arriving in port and are assigned to anchor in anchorage circle B-4. It has a diameter of 600 yards and your vessel's LOA is 525 feet. If you anchor in 10 fathoms at the center of the circle, what is the maximum number of shots of chain you can use and still remain in the circle? Diameter of anchorage = 600 yards $\times 3' = 1800'$ radius of anchorage = $1800' / 2 = 900'$ A = radius minus length of ship or $900' - 525' = 375'$ B = depth of water 11 fathoms $\times 6 = 66'$ $A^2 = 375 \times 375 = 140625$ $B^2 = 66 \times 66 = 4356$ $A^2 + B^2 = 149337$ $\sqrt{\text{of } 149337} = 386 / 90 = 4.29$ shots

REF590

Bell Book, noun Nautical. A book in which all orders affecting the main engines of a ship are recorded. A logbook was originally a book for recording readings from the chip log, and is used to determine the distance a ship traveled within a certain amount of time. The readings of the log have been recorded in equal times to give the distance traveled with respect to a given start position. Today's ship's log has grown to contain many other types of information, and is a record of operational data relating to a ship or submarine, such as weather conditions, times of routine events and significant incidents, crew complement or what ports were docked at and when. It is essential to traditional navigation, and must be filled in at least daily. Most National shipping authorities and Admiralties specify that logbooks are kept to provide a record of events, and to help crews navigate should radio, radar or the GPS fail. Examination of the detail in a ship's log is often

an important part of the investigative process for official maritime inquiries, in much the same way as a "black box" is used on airplanes (see *Mary Celeste*). Logbook entries are sometimes of great importance in legal cases involving maritime commercial disputes. The term logbook has spread to a wide variety of other endeavors, and logbooks are widely used for e.g. complex machines like nuclear plants or particle accelerators where one is more and more using a computer based electronic logbook. In military terms, a logbook is a series of official and legally binding documents. Each document (usually arranged by date) is marked with the time of an event or action of significance. Commercial ships and Naval vessels often keep a "rough log," - or "scrap log," - a preliminary draft of the ship's course, speed, location, and other data, which is then transcribed as the "smooth log," - or "official log" - the final version of the ship's record. Changes may be made to the rough log but the smooth log is considered permanent and no erasures are permitted. Alterations or corrections in an official logbook must be initialed by the authorized keeper of the logbook and the original data entries which have been cancelled or corrected must remain legible.

REF592

33 CFR 151.25 Oil Record Book. (a) Each oil tanker of 150 gross tons and above, ship of 400 gross tons and above other than an oil tanker, and manned fixed or floating drilling rig or other platform shall maintain an Oil Record Book Part I (Machinery Space Operations). An oil tanker of 150 gross tons and above or a non oil tanker that carries 200 cubic meters or more of oil in bulk, shall also maintain an Oil Record Book Part II (Cargo/Ballast Operations). (b) An Oil Record Book printed by the U.S. Government is available to the masters or operators of all U.S. ships subject to this section, from any Coast Guard Sector Office, Marine Inspection Office, or Captain of the Port Office. (c) The ownership of the Oil Record Book of all U.S. ships remains with the U.S. Government. (d) Entries shall be made in the Oil Record Book on each occasion, on a tank to tank basis if appropriate, whenever any of the following machinery space operations take place on any ship to which this section applies— (1) Ballasting or cleaning of fuel oil tanks; (2) Discharge of ballast containing an oily mixture or cleaning water from fuel oil tanks; (3) Disposal of oil residue; and (4) Discharge overboard or disposal otherwise of bilge water that has accumulated in machinery spaces. (e) Entries shall be made in the Oil Record Book on each occasion, on a tank to tank basis if appropriate, whenever any of the following cargo/ ballast operations take place on any oil tanker to which this section applies— (1) Loading of oil cargo; (2) Internal transfer of oil cargo during voyage; (3) Unloading of oil cargo; (4) Ballasting of cargo tanks and dedicated clean ballast tanks; (5) Cleaning of cargo tanks including crude oil washing; (6) Discharge of ballast except from segregated ballast tanks; (7) Discharge of water from slop tanks; (8) Closing of all applicable valves or similar devices after slop tank discharge operations; (9) Closing of valves necessary for isolation of dedicated clean ballast tanks from cargo and stripping lines after slop tank discharge operations; and (10) Disposal of oil residue. (f) Entries shall be made in the Oil Record Book on each occasion, on a tank-to-tank basis if appropriate, whenever any of the following operations take place on a fixed or floating drilling rig or other platform to which this section applies— (1) Discharge of ballast or cleaning water from fuel oil tanks; and (2) Discharge overboard of platform machinery space bilge water. (g) In the event of an emergency, accidental or other exceptional discharge of oil or oily mixture, a statement shall be made in the Oil Record Book of the circumstances of, and the reasons for, the discharge. (h) Each operation described in paragraphs (d), (e) and (f) of this section shall be fully recorded without delay in the Oil Record Book so that all the entries in the book appropriate to that operation are completed. Each completed operation shall be signed by the person or persons in charge of the operations concerned and each completed page shall be signed by the master or other person having charge of the ship. (i) The Oil Record Book shall be kept in such a place as to be readily available for inspection at all reasonable times and shall be kept on board the ship. (j) The master or other person having charge of a ship required to keep an Oil Record Book shall be responsible for the maintenance of such record. (k) The Oil Record Book for a U.S. ship shall be maintained on board for not less than three years. (l) This section does not apply to a barge or a fixed or floating drilling rig or other platform that is not equipped to discharge overboard any oil or oily mixture. (m) This section does not apply to a fixed or floating drilling rig or other platform that is operating in compliance with a valid National Pollutant Discharge Elimination System (NPDES) permit. (Approved by the Office of Management and Budget under control number 1625-0009) [CGD 75-124a, 48 FR 45709, Oct. 6, 1983; 48 FR 54977, Dec. 8, 1983, as amended by CGD 88- 002A, 55 FR 18582, May 2, 1990; USCG-2000- 7641, 66 FR 55571, Nov. 2, 2001; USCG-2006-25150, 71 FR 39209, July 12, 2006; USCG-2006-25556, 72 FR 36328, July 2, 2007]

REF619

A solenoid valve is an electromechanically-operated valve. Solenoid valves differ in the characteristics of the electric current they use, the strength of the magnetic field they generate, the mechanism they use to regulate the fluid, and the type and characteristics of fluid they control.

REF628

Fires are divided into five different "classes"- A, B, C, D, and LFG. These classes indicate either the type of fuel involved or special dangers. The class also indicates the type of extinguishing agent to use and certain techniques that should or should not be used on that fire. The first step in fighting a Class C fire is to secure (i.e., turn off) electrical power to the

equipment or circuits on fire. Class C fires are those in or around electrical equipment, gear, or wiring. The reason these fires are placed in a separate class is because they add the danger of electrical shock to persons in the area. Water-based agents cannot be used on this type of fire because water conducts electrical current. However, low velocity fog can be used .

REF629

The first step in fighting a Class C fire is to secure (i.e., turn off) electrical power to the equipment or circuits on fire. Class C fires are those in or around electrical equipment, gear, or wiring. The reason these fires are placed in a separate class is because they add the danger of electrical shock to persons in the area. Water-based agents cannot be used on this type of fire because water conducts electrical current. However, low velocity fog can be used .

REF630

Class D fires: Burning metals, such as magnesium, sodium, potassium, and aluminum constitute Class D fires. Since most ships usually are not equipped to fight this type of fire, allow these fires to burn out while you protect the surrounding area .

REF647

Convective heat transfer, often referred to simply as convection, is the transfer of heat from one place to another by the movement of fluids. Convection is usually the dominant form of heat transfer in liquids and gases.

REF652

Class A fire: A fire involving common combustible materials which can be extinguished by the use of water or water solutions. Materials in this category include wood and wood-based materials, cloth, paper, rubber and certain plastics. Class B fire: A fire involving flammable or combustible liquids, flammable gases, greases and similar products. Extinguishment is accomplished by cutting off the supply of oxygen to the fire or by preventing flammable vapors from being given off. Class C fire: A fire involving energized electrical equipment, conductors or appliances. Nonconducting extinguishing agents must be used for the protection of firefighters. Class D fire: A fire involving combustible metals, for example, sodium, potassium, magnesium, titanium and aluminum. Extinguishment is accomplished through the use of heat absorbing extinguishing agents such as certain dry powders that do not react with the burning metals.

REF655

When the system is activated an alarm sounds in a manned space for about 20 seconds before CO₂ gas floods that space. You must leave the space immediately when this alarm sounds to avoid being overcome by the CO₂ gas because CO₂ will not support human life. The CO₂ alarm for a CO₂ flooding system is powered by CO₂ pressure .

REF720

170.055 Definitions concerning a vessel.

REF727

Radiographic and ultrasonic weld inspection are the two most common methods of non-destructive testing (NDT) used to detect discontinuities within the internal structure of welds. The obvious advantage of both these methods of testing is their ability to help establish the weld's internal integrity without destroying the welded component. We shall briefly examine these two methods of non-destructive testing (NDT). We shall consider how they are used and what types of welding discontinuities they can be expected to find. We shall examine their advantages over other inspection methods and their limitations. Radiographic Testing (RT) – This method of weld testing makes use of X-rays, produced by an X-ray tube, or gamma rays, produced by a radioactive isotope. The basic principle of radiographic inspection of welds is the same as that for medical radiography. Penetrating radiation is passed through a solid object, in this case a weld rather than that part of the human body, onto a photographic film, resulting in an image of the object's internal structure being deposited on the film. The amount of energy absorbed by the object depends on its thickness and density. Energy not absorbed by the object will cause exposure of the radiographic film. These areas will be dark when the film is developed. Areas of the film exposed to less energy remain lighter. Therefore, areas of the object where the thickness has been changed by discontinuities, such as porosity or cracks, will appear as dark outlines on the film. Inclusions of low density, such as slag, will appear as dark areas on the film while inclusions of high density, such as tungsten, will appear as light areas. All discontinuities are detected by viewing shape and variation in density of the processed film. Radiographic testing can provide a permanent film record of weld quality that is relatively easy to interpret by trained personnel. This testing method is usually suited to having access to both sides of the welded joint (with the exception of double wall signal image techniques used on some pipe work). Although this is a slow and expensive method of nondestructive testing, it is a positive method for detecting porosity, inclusions, cracks, and voids in the interior of welds. It is essential that qualified personnel conduct radiographic interpretation since false interpretation of radiographs can be expensive and interfere seriously with productivity. There are

obvious safety considerations when conducting radiographic testing. X-ray and gamma radiation is invisible to the naked eye and can have serious health and safety implications. Only suitably trained and qualified personnel should practice this type of testing. Ultrasonic Testing (UT) – This method of testing makes use of mechanical vibrations similar to sound waves but of higher frequency. A beam of ultrasonic energy is directed into the object to be tested. This beam travels through the object with insignificant loss, except when it is intercepted and reflected by a discontinuity. The ultrasonic contact pulse reflection technique is used. This system uses a transducer that changes electrical energy into mechanical energy. The transducer is excited by a high-frequency voltage, which causes a crystal to vibrate mechanically. The crystal probe becomes the source of ultrasonic mechanical vibration. These vibrations are transmitted into the test piece through a coupling fluid, usually a film of oil, called a couplant. When the pulse of ultrasonic waves strikes a discontinuity in the test piece, it is reflected back to its point of origin. Thus the energy returns to the transducer. The transducer now serves as a receiver for the reflected energy. The initial signal or main bang, the returned echoes from the discontinuities, and the echo of the rear surface of the test piece are all displayed by a trace on the screen of a cathode-ray oscilloscope. The detection, location, and evaluation of discontinuities become possible because the velocity of sound through a given material is nearly constant, making distance measurement possible, and the relative amplitude of a reflected pulse is more or less proportional to the size of the reflector. One of the most useful characteristics of ultrasonic testing is its ability to determine the exact position of a discontinuity in a weld. This testing method requires a high level of operator training and competence and is dependant on the establishment and application of suitable testing procedures. This testing method can be used on ferrous and nonferrous materials, is often suited for testing thicker sections accessible from one side only, and can often detect finer lines or plainer defects which may not be as readily detected by radiographic testing. Stringer: A term applied to a fore-and-aft girder running along the side of a ship and also to the outboard strake of plating on any deck. The side pieces of a ladder or staircase into which the treads and risers are fastened. Stringer Plates: A term applied to the outboard plates on any deck, or to the plates attached to the top flanges of a tier of beams at the side of a vessel. Stiffener: An angle bar, T-bar, channel, etc., used to stiffen plating of a bulkhead, etc. A cofferdam is a void space between two tanks that prevents one tank from leaking directly into the other.

REF729

In a direction between abeam and astern; opposite, or nearly opposite, a vessel's quarter.

REF994

Hydrostatic Release Unit (H.R.U.) is designed for E.P.I.R.B's and Liferafts. The H.R.U. is a mechanical device that will operate automatically when immersed to a certain depth in water, to release a liferaft, or any other device requiring liberation under these conditions. The H.R.U is installed as part of the liferaft stowage lashing system, (on the INBOARD SIDE of the liferaft), being fitted between a deck plate, or liferaft cradle, and the lashing. The liferaft painter is secured to a WEAK LINK (breaking strength 2.2 +/- 0.4 kN) and this in turn is fitted at the deck attachment of the H.R.U. Liferafts that have not been launched in the usual manner are taken down with the sinking vessel. At a depth of between 1.5 to 4 meters (or 5 to 12 feet), the water pressure is sufficient to depress an internal diaphragm in the HRU and operate the release mechanism. Once released, the liferaft container will then float free of the sinking vessel and rise towards the surface, with the painter line paying out as the vessel continues to sink. When all the free length of the painter line is paid out, the inflation mechanism of the liferaft is activated, the liferaft inflates, bursting open the container, and continues to rise to the surface. At this point of inflation, the WEAK LINK parts and allows the liferaft to continue to float to the surface ready for boarding by survivors.

REF996

A day beacon (sometimes "daybeacon") is an unlighted nautical sea mark. A signboard attached to a day beacon is called a day mark and is used to identify it.[1] Typically, day beacons mark channels whose key points are marked by lighted buoys. Day beacons may also mark smaller navigable routes in their entirety. They are the most common aid to nautical navigation in shallow water as they are relatively inexpensive to install and maintain. Navigation around day beacons is the same as with all other navigational aids.

REF997

Special marks are not primarily intended to assist safe navigation, but to indicate special areas or features referred to on charts or in other nautical publications. The feature should be described in a nautical document such as a chart, Light List, Coast Pilot or Notice to Mariner. Some areas that may be marked by these aids to navigation are spoil areas, pipelines, traffic separation schemes, jetties, or military exercise areas. Special marks are yellow in color and, if lighted, display a yellow light.