RFPNW Helmsman, Lookout & Assisting the Watch Review Topics

The Helm and Helmsman Duties

Never relieve the helm nor should the helmsman surrender the helm when the vessel is in a turn, and until the vessel has been steadied on the new ordered course to steer. To relieve the helm and the helmsman on watch, the following information should be part of the pass down from the helmsman you are relieving:

- The ordered ship's course in true or magnetic, and the compass or repeater that is being steered by.
- If steering by gyro compass, what is the ordered true course, what is the gyro error, the gyro course to steer true, and what is the magnetic compass checking course. (The checking course is the equivalent course to steer by magnetic compass if the gyro compass fails.)
- Any steering peculiarity such as "Carrying a little right rudder," or "Carrying mostly left."
- Any received orders that are still standing, such as "Steer Nothing to the Left," or "Steady on Course 090º ."
- In restricted waters, is the ship being steered on a range, landmark or light, make sure it is pointed out to you and you are clear and sure that you recognize it.
- What steering unit is engaged (Port or Starboard), and if the standby steering unit is "off or in stand-by."
- What is the condition of all helm equipment.
- What has the weather and sea state been.
- Any special circumstances or instructions that you should know about.

Once you are ready to relieve the helm, first report to the officer of the watch that you are ready to relieve the watch, and request permission to relieve the helm. Wait for the officer of the watch to acknowledge your report and gives you permission to relieve the helm.

On some ships the routine is a bit more formal, where a full report is required to be stated verbally to the officer on watch by the person relieving the helm, for example;

"Sir/Ma'am, request permission to relieve the helm, steering course 100º true, 101º per gyro compass, checking course is 106º , steering on the port steering, starboard steering unit is in standby."

The officer on watch normally will acknowledge and give you permission to relieve the helm by stating "very well" or "very well, relieve the helm."

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Standard commands to the helm

The courses the helmsman steers must be ordered by the conning or watch officer. The helmsman should have the ship on course before he or she surrenders the wheel to his or her relief. The words *port* and *starboard* are never used when giving orders to the helmsman. When an order necessitates a change of rudder angle to right or left, the direction of change is always stated, such as *right full rudder*.

The helmsman always repeats all orders back to the master or watch officer, as they were given (word for word). Standard orders to the helmsman and their corresponding meanings are as follows:

Helm Order	Action
RIGHT (LEFT) STANDARD RUDDER	Varies on different ships (usually 15° rudder). It is the designated number of degrees of rudder angle that causes the ship to turn within a prescribed distance called standard tactical diameter. You must find out what standard rudder is on your ship.
RIGHT (LEFT) FULL RUDDER	Usually means 30° on the rudder angle indicator.
RIGHT (LEFT) HARD RUDDER	Normally equal to 35° of rudder.
COME RIGHT (LEFT) TO 148°	Means to swing the ship's head in the direction stated and steady it on the course given; in this example, 148°. The order is frequently stated "COME RIGHT (LEFT) TO 148°."
STEER 190°	Usually given for only a minor change of heading to the number of degrees specified.
STEADY ON 225°	States the course on which the ship's head is to be steadied. It is normally given while ship's head is swinging. You may generally use up to 30° of opposite rudder to steady the ship.
INCREASE YOUR RUDDER	Means to increase the rudder angle and is usually ordered when the conning officer wants the ship to move more rapidly. May be given as a specific amount such as increasing to right full rudder.
EASE YOUR RUDDER TO (SPECIFIED) DEGREES	Signified to reduce the rudder angle. It may be given as "EASE TO 15° (10° 20° RUDDER" or "EASE YOUR RUDDER TO RIGHT 15°)."
RUDDER AMIDSHIPS	Means to put the rudder on the centerline; no rudder angle. As a rule, this order is merely "RUDDER AMIDSHIPS!"
MEET HER	Means to check the swing by putting on opposite rudder.
STEADY AS YOU GO	Means to steady the ship on the course it is heading at the time the order is given. If the ship is swinging at the time, heading must be noted and the lubber's line brought back to and steadied on it as soon as possible. The order is also stated as "STEADY," or "STEADY AS SHE GOES."

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Helm Order	Action
SHIFT YOUR RUDDER	Commands you to change to the same number of degrees of opposite rudder angle.
MIND YOUR RUDDER!	A warning that the ship is going off the course because of bad steering.
NOTHING TO THE RIGHT (LEFT) OF (SPECIFIED HEADING)	Given when the presence of some danger on one side or the other makes it necessary to avoid a set in that direction.
KEEP HER SO	Continue to steer the course you are heading. Usually given after you state the course you are steering.
MARK YOUR HEAD	A statement to the helmsman. He or she should give the ship's head at the time of the command, for example, "two seven five, sir."
VERY WELL	Reply of conning officer or watch officer to the helmsman, meaning that the response is understood.
STEER ON THE RANGE	Steer the vessel "by seaman's eye" and use the necessary rudder to keep the range markers lined up (rear marker directly above the forward marker) dead ahead of the vessel.

Lookout Duties

Relieve the watch - Your duty starts before you relieve the watch, because you should report to your station at least 15 minutes early so that you will be alert and well prepared to relieve the person who was on watch before you. Arriving early also gives your eyes time to adapt to darkness when standing watches at night, and allows you time to receive the "pass down" of information from the person you are relieving. On larger ships the lookout watch may be rotated as frequently as once every hour or two.

To relieve the lookout watch, you should want the following information from the lookout you are relieving:

- What contacts are visible and have been reported to the officer on watch in the wheelhouse.
- What contacts has the officer on watch ordered to be watched and amplifying reports are required if there is any change in relative position.
- What have the weather conditions been.
- Is all lookout equipment is good working order.
- Any special circumstances or instructions that you should know about.

When you are ready, relieve the lookout and assume the duties of the lookout watch.

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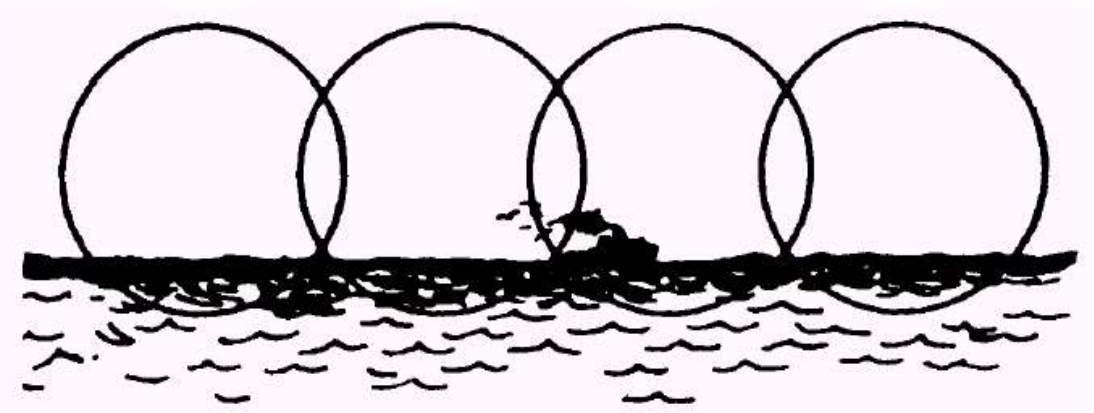
Lookout techniques

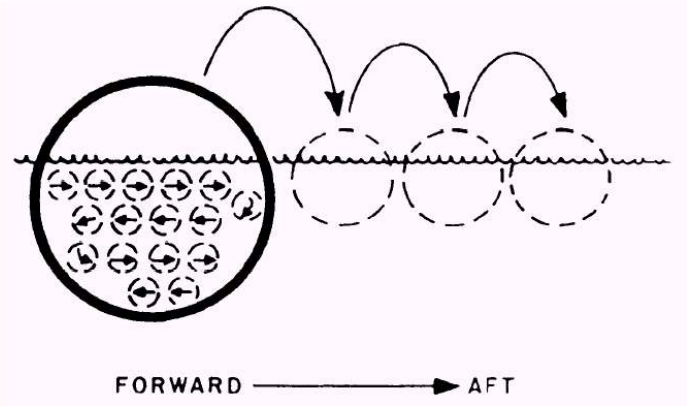
Visual search procedures - Effective visual searching does not come naturally; a lookout must learn through practice. In the daytime a person's eyes must stop on an object in order to see it. Try moving your eyes across the water rapidly from object to object and note that as long as your eyes are in motion, you see almost nothing. Now allow your eyes to move in short steps from object to object and you can really see what is there. This is known as the step-by-step method.



Surface searching - Surface lookouts scan the water from the ship to the horizon and are responsible for all contacts in their sector. In searching the assigned sector, always start at the forward part of the sector and search aft. (See figure) To search and scan, hold the binoculars steady so the horizon is in the top third of the field of vision.

Direct the eyes just below the horizon and scan for 5 seconds in as many small steps as possible across the field seen through the binoculars. Search the entire sector in 5° steps, pausing between steps for approximately 5 seconds to scan the field of view. At the end of your sector, lower the glasses and rest the eyes for a few seconds, then search back across the sector with the naked eye.

When you sight a contact, keep it in the binoculars' field of vision, moving your eyes from it only long enough to determine the relative bearing.



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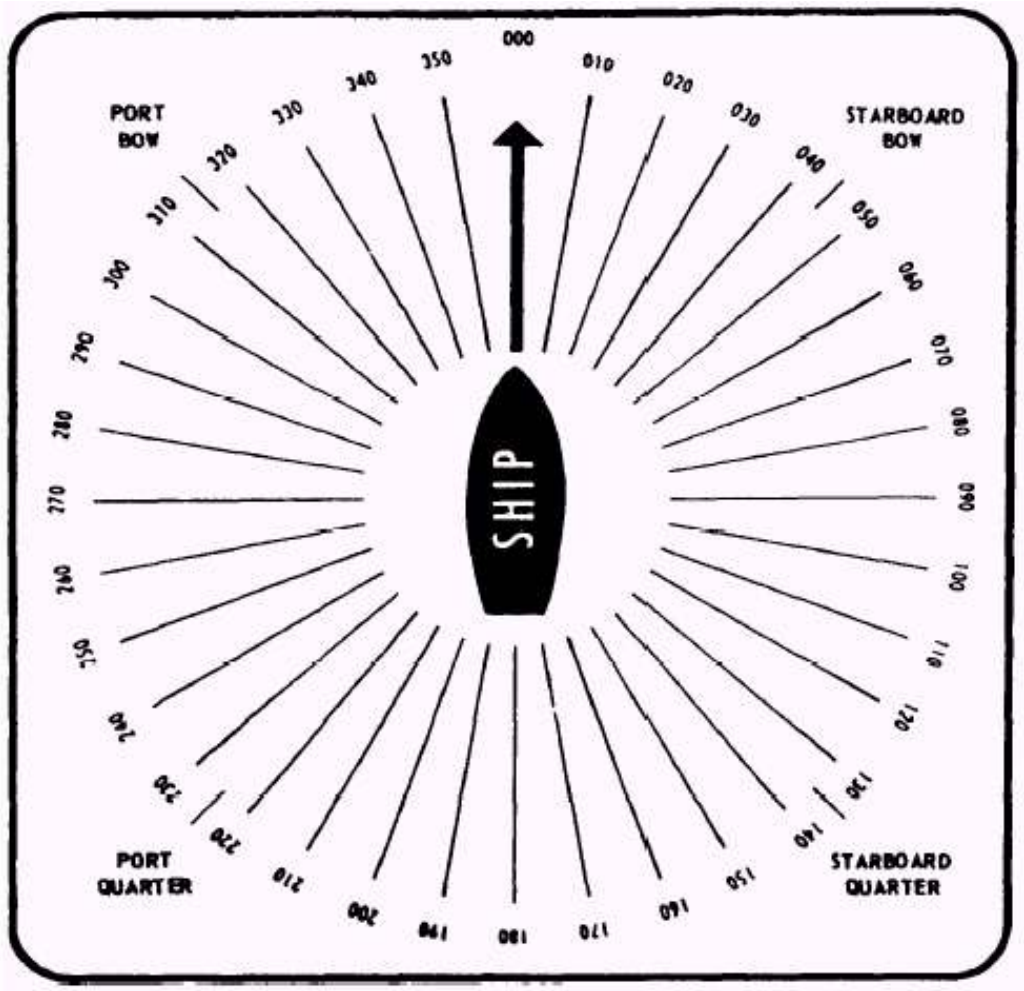
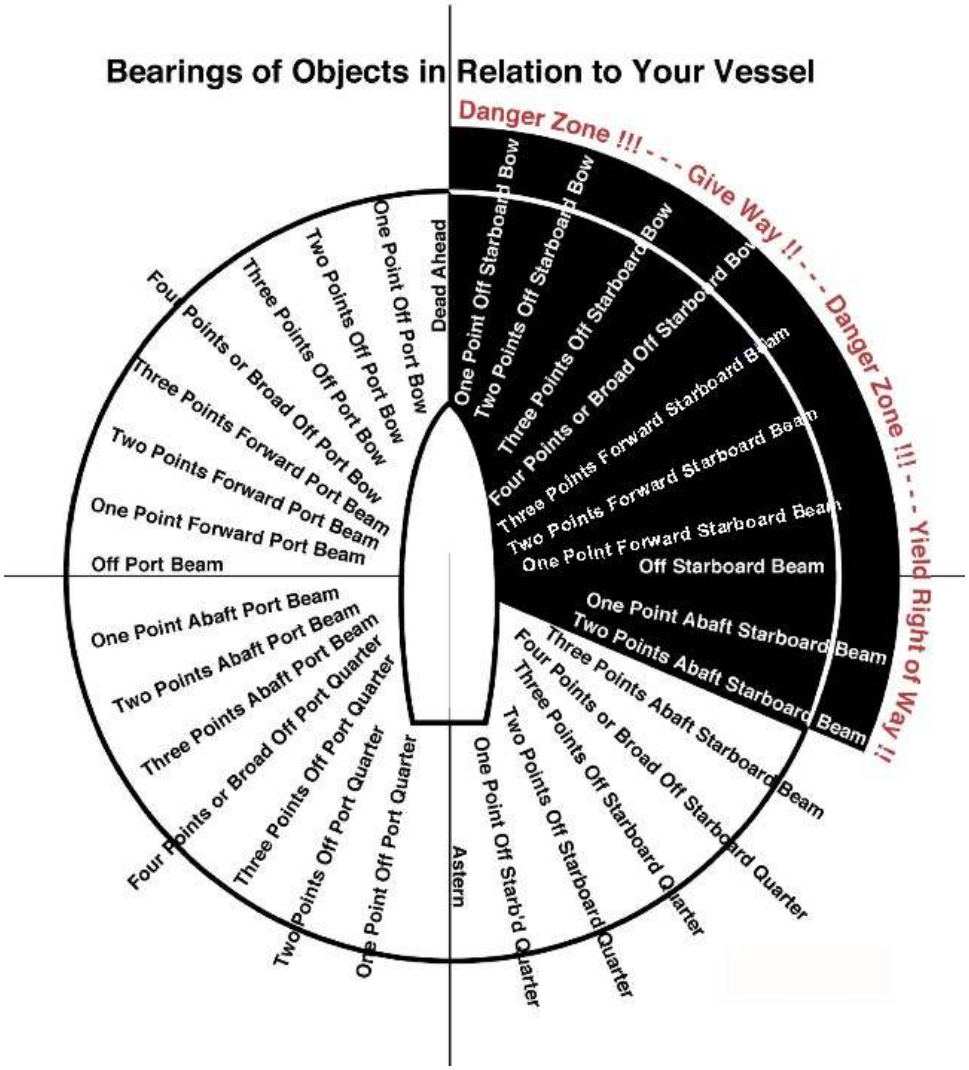
Relative bearing - The direction of an object from a ship is called the bearing. Bearing is measured in degrees clockwise around a circle, from 000° to 360°. Relative bearings have the ship's bow as a reference point; Lookouts often are required to report objects in degrees of relative bearing. The figure shows the relative bearings around a ship. An object dead ahead is bearing 000°; one on the starboard beam is at 090°, and so on. Study the illustration. Practice pointing to various objects and compare your estimates of their bearing to what they really are. With practice you will be able to report a contact within 10° of its actual bearing.



Bearings are always reported in three digits, and spoken digit by digit, except that objects dead ahead or astern (000°, 180°); on either beam (090°, 270°); or on either bow (045°, 315°) or quarter (135°, 225°) may be indicated as such. For example, a ship bearing 315° could be reported as being broad on the port bow, although the bearing itself can be used.

Points from the bow, stern - Another method of indicating direction to a sighted object is by expressing the direction in reference to own ship's bow or stern in points or compass points. Remember each point is 11.25º. For example, a lookout report of a sighted vessel at 045º relative, would be; "A ship 4 points (broad) on the starboard bow." Refer to the below diagram, and see that 045º is 4 compass points.



Estimated distance

A range in yards for each contact reported would be invaluable, but estimating ranges over water is very difficult for the inexperienced lookout because distances are deceptive. Only with a lot of on-the-job experience will you become proficient in estimating ranges to contacts. Question the watch officer concerning the radar ranges to visual contacts and compare them with your estimated range.

The only readily available reference point you can use when estimating ranges is the horizon. Knowing your height above the waterline will help you estimate ranges because the distance to the horizon varies with the height of the eye.

(See figure) At a height of 40 feet, for example, the distance to the horizon is about 14,400 yards (7.2 miles); at a height of 100 feet, the distance is about 23,000 yards (11-1/2 miles). Practice estimating ranges to other vessels in company whose distances are known or can be easily determined. Remember a nautical mile is 2,000 yards. To convert yard to nautical miles, simply divided by 2 (2,000). For example, 17,800 yards ÷ 2 = 8.9 nautical miles.

HEIGHT OF EYE FEET	RANGE TO HORIZON YARDS	MILES
10	7,200	3.6
20	10,200	5.1
30	12,600	6.3
40	14,400	7.2
60	17,800	8.9
80	20,600	10.3
100	23,000	11.5

Verbal Lookout Report - Always report everything you see, hear, or believe you see or hear. By reporting doubtful targets, more eyes are brought to bear on them, resulting in improved chances of identification. At night and in poor visibility, report even the faintest hunches. At such times, a hunch that you have seen something often means you really have. Do not delay the report while you try to get a better look—the main thing is speed.

The report - Give the initial report when you first sight a contact. Usually the contact is too far away for a positive identification, but do not delay the report. Include in the initial report:

1. WHAT YOU SEE: Describe the contact quickly and briefly. Name the type or class of ship or aircraft if you recognize it; otherwise, simply report "ship," "plane," and so forth.

2. BEARING: Always report contacts in relative bearings. These are given as three digits, spoken digit by digit. The bearing can also be reported using compass points (each point = 11.25) off the bow or stern.

3. RANGE: Estimate of ranges are reported in yards/miles and spoken digit by digit, except that multiples of hundreds and thousands are spoken as such.

4. MOVEMENT: Report whether the contact is moving from right to left, left to right (this is bearing drift), opening, closing, paralleling, high speed, slow speed, dead in the water, and so forth.

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Environmental Protection - The Officer in Charge of the Watch (OOW) and all bridge/wheelhouse watchstanders should be aware of the serious effects of operational and accidental pollution of the marine environment and should be familiar with the International Convention for the Prevention of Pollution from Ships (MARPOL) and the ship's Shipboard Oil Pollution Emergency Plan (SOPEP).

Reporting obligations - All ships should make a report to the relevant authorities when an incident involving another ship is observed or an incident on their own ship involves:

- a discharge or probable discharge of oil or of noxious liquid substances above the permitted level for whatever reason, including securing the safety of the ship or saving life; or
- a discharge or probable discharge of harmful substances in packaged form, including those in containers, portable tanks, vehicles and barges; or
- a discharge during the operation of the ship of oil or noxious liquid substances in excess of that which is allowed.

A report is also required if the ship suffers damage, failure or a breakdown that affects the safety of the ship or impairs safe navigation, and results in a discharge or probable discharge into the sea of a harmful substance. However, reports are not required simply because there has been a breakdown or failure of machinery or equipment.

Reporting points - The SOPEP should include as an appendix the list of agencies or officials of administrations designated to receive and process reports from ships.

In the absence of a local agency or if there is any delay in contacting a listed reporting point the nearest coastal radio station, designated ship movement reporting station or Rescue Coordination Center (RCC) should be contacted by the fastest available means.

Shipboard oil pollution emergency plans.
Plan format. The plan must contain the following six sections. A seventh nonmandatory section may be included at the shipowner’s discretion:

(1) Introduction. This section must contain the following:
  (i) Introductory text.
  (ii) General information.
    (a) The ship’s name, call sign, official number, International Maritime Organization (IMO) international number, and principal characteristics.

(2) Preamble. This section must contain an explanation of the purpose and use of the plan and indicate how the shipboard plan relates to other shore based plans.

(3) Reporting Requirements. This section of the plan must include information relating to the following:
  (i) When to report. A report shall be made whenever an incident involves—
    (a) A discharge of oil or oily mixture resulting from damage to the ship or its equipment, or for the purpose of securing the safety of a ship or saving life at sea;
    (b) A discharge of oil or oily mixture during the operation of the ship in excess of the quantities or instantaneous rate allowed by the regulations.
    (c) A probable discharge. Factors to be considered in determining whether a discharge is probable include, but are not limited to: ship location and proximity to land or other navigational hazards, weather,

tide, current, sea state, and traffic density.

(ii) Information required. This section of the plan must include a notification form, that contains information to be provided in the initial and follow-up notifications.

(iii) Whom to contact. This section of the plan must make reference to the appendices listing coastal state contacts, port contacts, and ship interest contacts.

(4) Steps to control a discharge. This section of the plan must contain a discussion of procedures to address the following scenarios:

(i) Operational spills

In the event of an operational spill:

- Cease operations
- Secure the system in use
- Notify the master
- Commence cleanup
- Dispose of recovered oil and cleanup materials must be in accordance with local laws

Examples of operational spills are:

Pipe leakage: The plan must provide specific guidance for dealing with pipe leakage; Example:

- Sound general alarm and initiate emergency response procedures
- Stop bunkering operations and close manifold valves
- Locate source of leakage and contain all spilled oil
- Begin cleanup procedures
- Drain affected pipeline into tank

Tank overflow: The plan must include procedures for dealing with tank overflows. It must provide alternatives such as transferring cargo or bunkers to empty or slack tanks, or readying pumps to transfer the excess ashore: Example:

- Stop bunkering, close manifolds
- Sound general alarm
- Inform bunkering personnel of incident
- Begin cleanup
- Transfer oil back to shore if necessary

Hull leakage: The plan must outline procedures for responding to spills due to suspected hull leakage, including guidance on measures to be taken to reduce the head of oil in the tank involved either by internal transfer or discharge ashore.

(ii) Spills resulting from casualties.

In the event of a spill:

Grounding; Example:

- Sound the General Alarm
- Initiate visual inspection of vessel
- Take soundings to determine seabed
- Evaluate the probability of a release
- Determine if towing assistance is available

- After assessing the situation, evaluate the possibility of transferring bunkers or trimming ballast.

Fire or explosion; Example:

- Sound fire alarm to alert Master, officers, and crew
- Determine if there are casualties
- Determine the extent of damage
- Request assistance
- Assess the potential for a spill

Collision; Example:

- Determine the extent of damage
- Ready pumping system for salvage pumping
- Determine effects of separation (opening of breached spaces, increase threat of pollution, etc)
- If oil tanks are breached, attempt to transfer to other tanks

Hull failure; Example:

- Ring general alarm and inform crew
- Depending on circumstances, select heading and minimum speed to minimize any hull deflections
- Observe surrounding water for oil movement in way of engine room intakes. May be necessary to maneuver, if possible, to keep suctions free from oil
- Take actions to reduce hull stress (reduce speed or stop)
- Assess potential for capsizing

Excessive list. Example:

- Determine cause (shift of cargo, incorrect loading, flooding, etc)
- Check all tanks and voids
- If oil has spilled, make appropriate notifications
- Take corrective action

(5) National and Local Coordination. This section of the plan must contain information to assist the master in initiating action by the coastal State, local government, or other involved parties. This information must include guidance to assist the master with organizing a response to the incident should a response not be organized by the shore authorities. Detailed information for specific areas may be included as appendices to the plan.

(6) Appendices. Appendices must include the following information:

1. Twenty-four hour contact information and alternates to the designated contacts.
2. These details must be routinely updated to account for personnel changes and changes in telephone, telex, and telefacsimile numbers.
3. Clear guidance must also be provided regarding the preferred means of communication.

(7) Non-mandatory provisions. If this section is included by the shipowner, it should include the following types of information or any other information that may be appropriate.

For U.S. flag vessel operating U.S. domestically must comply with the Coast Guard's General response plan requirements.

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The development of a response plan - prepares the vessel owner or operator and the vessel's crew to respond to an oil spill.

The plan must cover all geographic areas of the United States in which the vessel intends to handle, store, or transport oil, including port areas and offshore transit areas.

The plan must be written in English and, if applicable, in a language that is understood by the crew members with responsibilities under the plan.

A vessel response plan must be divided into the following sections:
(1) General information and introduction.
(2) Notification procedures.
(3) Shipboard spill mitigation procedures.
(4) Shore-based response activities.
(5) List of contacts.
(6) Training procedures.
(7) Exercise procedures.
(8) Plan review and update procedures.
(9) On board notification checklist and emergency procedures (unmanned tank barges only).
(10) Geographic-specific appendix for each USCG Captain of the Port (COTP) zone in which the vessel or vessels operate.
(11) An appendix for vessel-specific information for the vessel or vessels covered by the plan.