

# Canadian Coast Guard Auxiliary



# SAR TRAINING Workbook

Canadian Coast Guard  
Central and Arctic  
Search and Rescue  
2003

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## **Canadian Coast Guard Auxiliary (C&A) SAR Training Workbook**

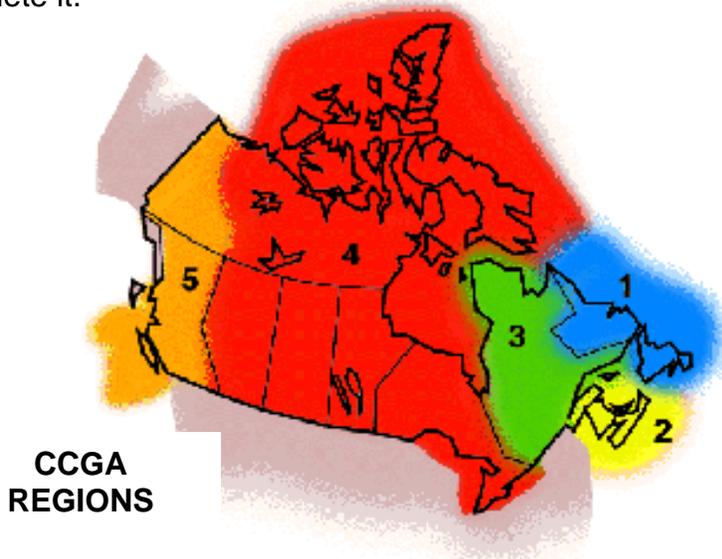
### **Using this workbook**

***This Workbook is a companion to the SAR Training MANUAL. Its purpose is to provide a review of the material in the Student Manual.***

You can use the Workbook as a personal study guide or as a review of SAR Training knowledge. However, in most cases, you will be using the Workbook while taking the SAR course with an Instructor. In that case, the Instructor will assign questions to complete, as well as questions to omit.

The questions in the Workbook point directly to material in the SAR Student Manual. Whether you complete assigned questions, or you yourself select questions to review, the effort will certainly pay off in a better mastery of SAR knowledge.

The SAR Training Manual is an important foundation for Search and Rescue on the water. We hope you profit from taking this Course, and enjoy the effort you put in to complete it.



(1) Newfoundland & Labrador

(2) Maritimes

(3) Quebec

(4) Central & Arctic

5) Pacific

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## MODULE 2: SAR Responsibilities and Resources

### A. How is Search and Rescue organized in Canada?

1. What **department** of government has primary SAR responsibility? \_\_\_\_\_

2. Where are the **JRCC's** located?

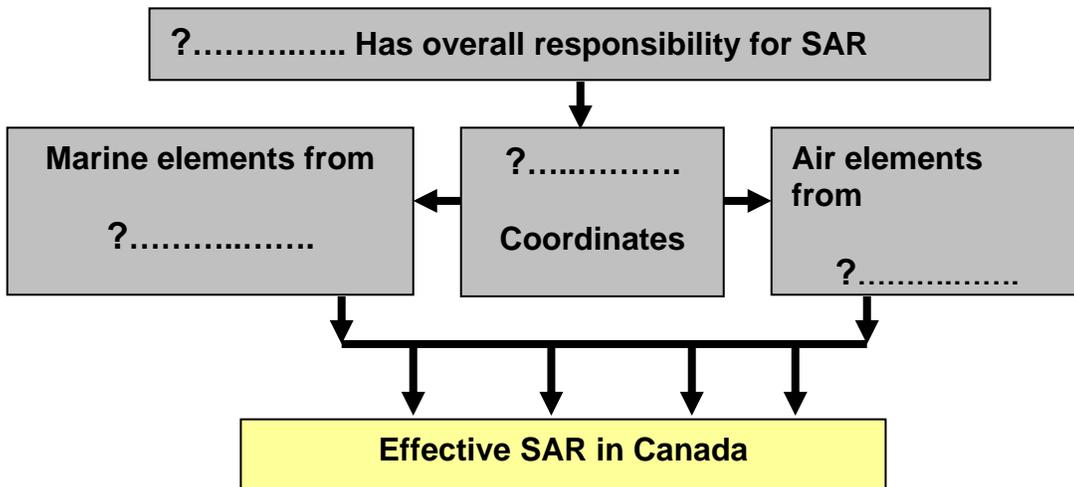
(1) \_\_\_\_\_

(2) \_\_\_\_\_ (3) \_\_\_\_\_

3. Where are the sub-centres (**MRSC**) located?

(i) \_\_\_\_\_ and (ii) \_\_\_\_\_

4. A summary of SAR in Canada.



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**B. Resources for SAR are organized** into three levels. What are the levels?

(1) \_\_\_\_\_ (2) \_\_\_\_\_

(3) \_\_\_\_\_

**C. Primary Resources** refer to all vessels or aircraft whose **main** function is

\_\_\_\_\_

1. For the CCG, examples of **primary** vessels would be:

(i) \_\_\_\_\_ and (ii) \_\_\_\_\_

2. **Primary** air support is located at these bases

(i) \_\_\_\_\_ and (ii) \_\_\_\_\_

3. The types of aircraft used **primarily** for SAR are

(i) \_\_\_\_\_ and (ii) \_\_\_\_\_

**D. Secondary Resources** are vessel or aircraft that belong to

\_\_\_\_\_ but whose main function is not SAR.

Which of these would be a **Secondary Resource**?

Parks Canada boat? \_\_\_\_ Department of Transport Vehicle? \_\_\_\_

The 22<sup>nd</sup>. Regiment? \_\_\_\_ Department of the Environment Airplane? \_\_\_\_

**E. Other Resources** are all the vessels and aircraft that are not included in the groups above.

The major players in **Other Resources** are:

(1) \_\_\_\_\_ (2) \_\_\_\_\_

(3) \_\_\_\_\_ (4) \_\_\_\_\_

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**F. Search and Rescue Tasks** (duties, responsibilities) are, at present, set out in a document called the \_\_\_\_\_

This document will be replaced by the \_\_\_\_\_ Manuals.

Both documents require two general areas of **activity**:

	AND	
--	-----	--

The two areas of activity (above) require the CCG to carry out these four **Primary SAR Tasks**. (The SAR Mandate)

(1) \_\_\_\_\_ (2) \_\_\_\_\_

(3) \_\_\_\_\_ (4) \_\_\_\_\_

A **Secondary SAR Task** of the CCG is to assist municipal or provincial governments in case of \_\_\_\_\_ incidents.

**G.** The **Canadian Coast Guard Auxiliary** has a role in assisting the CCG to meet its mandate. The role is set out in a document called the \_\_\_\_\_  
\_\_\_\_\_ between the Auxiliary and the  
Department of \_\_\_\_\_

**H.** Search and Rescue in Canada is consistent with Search and Rescue worldwide because Canada follows certain **enabling agreements**. Translate the abbreviations of these international organizations:

(i) **ICAO** \_\_\_\_\_

(ii) **IMO** \_\_\_\_\_

(iii) **SOLAS** \_\_\_\_\_

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I. The **coordination** of rescue resources is the responsibility of the JRCC. The

**persons** who coordinate rescue efforts are called:

\_\_\_\_\_.

The Minister of \_\_\_\_\_ designates rescue coordinators under the authority of the

\_\_\_\_\_ Act.

In a distress situation, a Rescue Coordinator has the **power** to:

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

(iii) \_\_\_\_\_

J. According to the \_\_\_\_\_ Act, the overall

**responsibility** of a **Master** of a vessel upon hearing of a (maritime) distress is to \_\_\_\_\_.

**However**, if unable, **for good reasons**, to do so, the Master is required

to \_\_\_\_\_.

K. If a vessel master and JRCC **disagree** on whether, or how, a vessel master should act in a distress situation, who has the final say? \_\_\_\_\_.



A Canadian Coast Guard Cutter

**MODULE 3 Coxswain's Responsibilities**

1. The most important legal requirements for mariners are set out in the \_\_\_\_\_ . This Act also includes important Regulations usually referred to as the \_\_\_\_\_
  
2. Above all responsibilities, the Coxswain of a SRU is responsible for \_\_\_\_\_
  
3. It is the duty of every Master, on hearing a distress signal to:
  - (a) \_\_\_\_\_
  - (b) \_\_\_\_\_
  
4. However, should assistance to the distress be impossible, then,
  - (a) \_\_\_\_\_
  
5. What is the duty of a Master whose ship has been "requisitioned" ?  
\_\_\_\_\_
  
6. What are the considerations a SRU Coxswain should assess when requested by the JRCC to assist in saving the property of a mariner ?
  - (a) \_\_\_\_\_
  - (b) \_\_\_\_\_
  
7. How would you explain the meaning of "safe haven" ?  
\_\_\_\_\_

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8. According to CSA (S.384), the obligation of one mariner to assist another ceases when:

(a) \_\_\_\_\_

(b) \_\_\_\_\_

9. There are two important reasons why a rescue vessel would leave a distress scene. What are they ?

(a) \_\_\_\_\_

(b) \_\_\_\_\_

10. In either case, what procedure should the SRU Coxswain follow ?

\_\_\_\_\_  
\_\_\_\_\_

11. The CCGA Log Book, called the Incident Log, is available on most CGA vessels. Another name for this log is the \_\_\_\_\_. As a log book is considered \_\_\_\_\_ evidence before the courts, completeness and accuracy are important. Deliberate falsification of a log could lead to \_\_\_\_\_. If a correction must be made in a log, then \_\_\_\_\_

12 Place a check mark next to the items that should appear in a well-maintained log book.

\_\_\_\_\_ wave or sea conditions

\_\_\_\_\_ non-members of CGA on board

\_\_\_\_\_ you topped up the fuel tanks

\_\_\_\_\_ a crew member was late arriving at the vessel

\_\_\_\_\_ you checked the motor oil level

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\_\_\_\_\_ a marker buoy was missing from the harbour entrance

\_\_\_\_\_ you called off training because of crew illness

13. CGA vessels are required to maintain a listening watch on VHF

Channel \_\_\_\_\_. If you call CGRS, the call should be recorded in

the \_\_\_\_\_.

14. The word “seaworthy” has a broad meaning in maritime affairs. List some of the elements which are part of this important concept.

\_\_\_\_\_  
\_\_\_\_\_

15. Rescuers are often concerned about whether they would be found liable if charged for negligence before the courts. No one can predict what a court would do. However, using what you have learned, and good reason, how would you respond to the following scenarios ?

(a) On a nice summer day you have taken some friends fishing on your 23 ft. cruiser. Larry has some “weed” and you all have a smoke. It affects Bill badly and he falls off the coach roof to the cockpit sole where he breaks his arm. As a dentist, he decides to sue you for big money.

How would you guess the courts might decide ? \_\_\_\_\_.

Why do you think so ? \_\_\_\_\_

(b) You and your 24 ft. SRU were tasked to assist a 30 foot sailboat solidly grounded on Rocky Reef. With considerable effort, using your inflatable, you got everybody off the distress vessel safely. You decided that there was no way you could get the sailboat off the reef as it was too big and the weather was against you. The master of the distress vessel complained bitterly and said he would sue because you had failed to complete the rescue.

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How might a court decide this case ? \_\_\_\_\_

Why might they decide that way ? \_\_\_\_\_

(c) It was a nasty night on the water. You were tasked to assist a power vessel just slightly larger than your SRU. Getting the POB off was tricky but you managed, except for the master. He insisted you tow him and his vessel in. You decided “no” as your regular crew were all absent and you had other boaters as crew who had never experienced towing in these conditions. After standing by for 2 hours, the weather settled, you hooked on, and towed him in. He sued for an incompetent rescue, his undue suffering, and a host of other complaints.

In whose favour might the case be decided ? \_\_\_\_\_

Why do you think so ? \_\_\_\_\_

(d) You are a SRU Coxswain as well as a small boat sailor. The capsized 17 ft. sailboat was a pretty easy task. The POB seemed young and fit so you gave orders in how to right the sailboat. Two of them stood on the centre board, the vessel began to right itself, and one slipped and banged his head on the hull. Only quick action saved the unconscious person from drowning. Later, the injured person sued for the negligence of the rescuers.

Who would probably win this case ? \_\_\_\_\_

Why so ? \_\_\_\_\_

16. What is the purpose of a “waiver of claim” ?

\_\_\_\_\_

17. What document allows SAR units to tow distress vessels?

\_\_\_\_\_. In general, towing is allowed

providing: (a) \_\_\_\_\_

(b) \_\_\_\_\_

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18. Answer T (true) or F (false) to the following:

- (a) If you “lay an information” as an Auxiliarist, it is more effective than when laid as an ordinary citizen. \_\_\_\_\_
- (b) A SRU vessel may be tasked to transport a peace officer. \_\_\_\_\_
- (c) There is no right to salvage on the Great Lakes. \_\_\_\_\_
- (d) If encountering a wreck, the Auxiliarist should notify JRCC \_\_\_\_\_
- (e) Wrecks refer only to vessels, not cargo or fittings. \_\_\_\_\_
- (f) To preserve the wreck and the lives of shipwrecked persons, the Receiver of Wrecks may take charge of the wreck. \_\_\_\_\_
- (g) If a wreck is not claimed within 48 hours, it can be sold. \_\_\_\_\_
- (h) A person’s truck and other equipment could be commandeered to assist in recovering a wreck. \_\_\_\_\_
- (i) If you get a souvenir off a wreck and get it safely home, there is nothing anyone can do about it. \_\_\_\_\_
- (j) Nobody, not even the Receiver of Wrecks, can take charge of a vessel cargo if the Master prohibits it. \_\_\_\_\_

19. In case of an unusual death, all provinces and territories require an investigation usually called a \_\_\_\_\_. The idea is to inquire into the death and its causes, not to \_\_\_\_\_ somebody.

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If you are involved, and could be called to give evidence, you should never \_\_\_\_\_ the case with anyone without legal advice.

Notes and records are important. You should ensure they are \_\_\_\_\_ .

---

***If you have no destination in mind, it doesn't matter what course you steer.***

***The earliest marine life-saving groups were called " Humane Societies ".***

## MODULE 4: SAR Communications

Answer T (True) or F (False)

1. CGRS is also known as MCTS. \_\_\_\_\_
2. On the water, the **primary** communications link is VHF radio. \_\_\_\_\_
3. It is no longer necessary for rescuers to have a VHF Operator's Certificate. \_\_\_\_\_
4. Under no circumstances may civil communications procedures be used on a Rescue mission. \_\_\_\_\_
5. Communications with JRCC and MCTS are recorded, but erased at the end of the Mission. \_\_\_\_\_
6. Because SAR Missions are special situations, the usual VHF radio procedures may be ignored. \_\_\_\_\_
7. For urgent matters, MCTS will simply "patch" you through to JRCC on your normal working channel. \_\_\_\_\_
8. Is this the **preferred** routing for VHF communications on a Mission? \_\_\_



9. Since cell phones are sometimes unreliable, they should never be used in rescue work \_\_\_\_\_.

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10. A duplex channel is appropriate to use in medical emergencies because it allows a degree of privacy \_\_\_\_\_

11. Simplex radio channels can be easily overheard by others \_\_\_\_\_

12. A Rescue Unit which **fails** to get a tasking authorization from JRCC, but which participates in a rescue anyway, could lose what two important things?

(i) \_\_\_\_\_ (ii) \_\_\_\_\_

13. Under what circumstances may a vessel **self-task**?

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

14. What are the missing **sections** of this SITREP?

To: JRCC Trenton  
From: SRU Helpful  
Case Description  
SITREP: 3

? \_\_\_\_\_

? \_\_\_\_\_

? \_\_\_\_\_

Smith, Coxswain. SRU "**HELPFUL**" 051945

15. If your SRU vessel were broken down with engine trouble, you would notify CGRS by means of a \_\_\_\_\_ Report.

16. When receiving a phone call about a possible distress situation, what information should you get from the caller? \_\_\_\_\_ and \_\_\_\_\_.

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17. "Distress" situations are sorted into **Degrees of Urgency**. What are the three degrees of urgency?

(1)\_\_\_\_\_ (2)\_\_\_\_\_ (3)\_\_\_\_\_

18. The SRU can contact **aircraft** involved in missions on these VHF Channels

\_\_\_\_\_ and \_\_\_\_\_

19. If an **aircraft** circles your rescue vessel one to three times and then crosses

your **bow**, changing the pitch or throttle of its engines, it is signaling

you to \_\_\_\_\_

20. If the **aircraft** did a similar thing, but focused on crossing your **stern**, it would

be signaling you to \_\_\_\_\_

### **Optional Challenge**

1. The nautical term "fairway" means
  - a) A moderate distance.
  - b) A good speed through the water.
  - c) The middle of a channel.
2. If you were going to "choke" a line, you would
  - a) Tie several knots so it would never come loose.
  - b) Pass the standing end through a small loop to make a larger loop.
  - c) Tie a slipknot in the line so it can be tightened around a piling.
3. When naming spring lines, what do fore (foreward) and aft refer to?
  - a) Their origin on the vessel.
  - b) The direction they go from the vessel.
  - c) Depends whether you stand to port or starboard.
4. The term used for securing a line to a cleat is
  - a) knot
  - b) belay
  - c) batten
  - d) mooring

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1. Use your Manual to translate the following NOCL messages:

(a) " Prescott Coast Guard this is Auxiliary Rescue Vessel CLARION with a NOCL message"

Bravo  
may have  
8 or 9  
digits.

ALPHA Affirmative \_\_\_\_\_

BRAVO 425007917 \_\_\_\_\_

CHARLIE Negative \_\_\_\_\_

FOXTROT Underwater unit required. \_\_\_\_\_

(b) " Sarnia Coast Guard this is Auxiliary Rescue vessel HOPE with a NOCL message"

ALPHA Affirmative \_\_\_\_\_

BRAVO 433207919 \_\_\_\_\_

CHARLIE Two white \_\_\_\_\_

One grey \_\_\_\_\_

ECHO Four \_\_\_\_\_

FOXTROT Alpha too large for my crew complement. \_\_\_\_\_

2. There is sometimes confusion between a SITREP and a STATUS report. For each of the situations below, indicate if a SITREP or a STATUS REPORT should be given.

(a) On a distress tasking, the SRU arrives on scene. \_\_\_\_\_

(b) You are taking your private unit vessel on a two-week cruise of the Trent Canal. \_\_\_\_\_

(c) You have to change the oil in your diesel engine and will only be out of service for 2 ½ to 3 hours. \_\_\_\_\_

(d) You are ready to leave the dock on a task. \_\_\_\_\_

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(e) You and your crew are going out to practice recovering a dummy from the water. \_\_\_\_\_

(f) On your way out to a distress, another vessel hails you down with a medical emergency on board. \_\_\_\_\_

3. Answer T (true) or F (false) to these questions about MARBS

(a) MARBS are designed to keep a distress vessel waiting until they are certain they really have an emergency. \_\_\_\_\_

(b) If a SRU hears a MARB, they should immediately launch. \_\_\_\_\_

(c) The best thing to do if a vessel requiring assistance has no radio, is to use your own radio or phone to call MCTS or JRCC. \_\_\_\_\_

(d) If you are aware a vessel requiring assistance does have a VHF radio, tell them they'll get help faster if you call in for them. \_\_\_\_\_

(e) A civilian boater who responded to a MARB would be called a "vessel of opportunity". \_\_\_\_\_

(f) Normally, JRCC will wait 15 minutes for someone to respond to a MARB. \_\_\_\_\_

(g) If no one responds to a MARB, a SRU is automatically permitted to go to their assistance. \_\_\_\_\_

***We are responsible for actions performed in response to circumstances for which we are not responsible***

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4. The Self-Locating Datum Marker Buoy (SLDMB™) is part of a whole search and rescue system. Answer the following about the system:

(a) The Buoy can be made to drift in the same way as

(i) \_\_\_\_\_

or a (ii) \_\_\_\_\_

(b) The marker buoy will automatically activate itself when it touches

\_\_\_\_\_

(c) A SLDMB may only be launched on the authority of \_\_\_\_\_.

5. Basically, the EPIRB sends a signal to a \_\_\_\_\_ orbiting about \_\_\_\_\_ miles above the earth.

The calculation of position is made from the signal received and sent to JRCC for processing. One major problem is that the data is sent and processed faster at the \_\_\_\_\_ than at the \_\_\_\_\_. Even adding more satellites has not solved the problem. Therefore, a new device called a \_\_\_\_\_ has now been developed.

6. These new devices send their locations to \_\_\_\_\_ by using the \_\_\_\_\_ system. The information is relayed to JRCC facilities who dispatch rescue units.

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7. (a) GMDSS is an abbreviation for \_\_\_\_\_
- (b) GMDSS was developed through the “IMO” meaning \_\_\_\_\_  
\_\_\_\_\_ and applies to all ships subject to the International  
Convention for the Safety of Life at Sea, abbreviated \_\_\_\_\_
- (c) A key component of the system for other boaters is that VHF radios will  
now include a feature called \_\_\_\_\_,  
abbreviated \_\_\_\_\_. It operates on Channel \_\_\_\_\_.
- (d) In an emergency, the feature allows a vessel to broadcast its distress by  
pressing one button. The call is received by a land-based or \_\_\_\_\_  
receiver. The receiver may recognize the caller by its MMSI, meaning  
\_\_\_\_\_. Or, the call may be  
received as a general distress broadcast.

If the radio is connected to a GPS unit, the DISTRESS message will include  
the vessel identification and its location.

***The term “halyard” came from sailing days when you “haul yards” to  
raise the square sails which used yards(booms) top and bottom.***

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(e) Global communications are provided by a satellite system called \_\_\_\_\_, meaning \_\_\_\_\_  
\_\_\_\_\_. In areas without shore-based VHF or DSC facilities, (polar regions) SAR traffic is routed through the \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_ terminals of the INMARSAT satellite.

8. Another recent device is used to detect survivors by radar. This portable radar transponder, called a \_\_\_\_\_, meaning \_\_\_\_\_ is taken on board a survival craft, and switched on. A rescue vessel with radar will see a series of \_\_\_\_\_ on the screen which indicate the position of the survivors.

9. In the GMDSS system, distress, SAR, weather, and navigation information ( Maritime Safety Information) can be received automatically by vessels equipped with a \_\_\_\_\_ receiver up to 300 miles off shore. The satellite system \_\_\_\_\_ can cover the rest of the areas. As an alternative to the satellite system, information can be printed out on vessels equipped with a \_\_\_\_\_

10. It is normal and accepted practice to employ VHF Channel \_\_\_\_\_ as both a calling and distress channel. However, the CCG uses Channel \_\_\_\_\_ as a working channel. In addition, Channel \_\_\_\_\_ is designated as a SAR working channel.

***A small anchor on a long rode is more effective  
Than a large anchor on a short rode.***

**MODULE 5: Air Rescue Support**

1. Answer T (true) or F (false) for each of the following.
  - (a) Switch off your radio when a helicopter is overhead. You can't hear anyway. \_\_\_\_\_.
  - (b) Leave flag staffs and antennas up as they help to disperse static electricity. \_\_\_\_\_
  - (c) As a helicopter approaches at sea, the only concern you have is whether papers and loose gear are well secured. \_\_\_\_\_
  - (d) When a helicopter approaches, turn your bow towards it to reduce turbulence and wind effect. \_\_\_\_\_
  - (e) Always remember to give a SAR Tech a hand as he nears your vessel. \_\_\_\_\_
  
2. On a night search, try to make sure an aircraft drops the flare (ahead, behind) \_\_\_\_\_ the SRU vessel.
  
3. One or more SKAD, meaning, \_\_\_\_\_ may be dropped by a fixed wing aircraft. The aircraft may first drop \_\_\_\_\_ to determine wind direction, as well as make several passes at an altitude of \_\_\_\_\_ feet to establish \_\_\_\_\_. Each SKAD has a floating line attached. The purpose of the line is \_\_\_\_\_

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4. A “de-watering” pump may be hoisted down from a helicopter or dropped by \_\_\_\_\_ from a fixed wing aircraft. If dropped, the idea is to drop the pump to (leeward, windward) \_\_\_\_\_ of the target, have a \_\_\_\_\_ foot recovery line fall over the track of the SRU, and on the other end of the line, have a \_\_\_\_\_ to stop the whole thing from floating away.

5. The pump is enclosed in a watertight \_\_\_\_\_ which weighs \_\_\_\_\_ pounds. Included is oil, fuel, hoses, and even \_\_\_\_\_ for those unfamiliar with pump operation.

***When clear and sunny, objects appear closer than they really are.  
When hazy and the light is dim, the opposite is true.***

***On a clear day, with height of eye about 5 ft., you can see about 2.5 miles, the hull of a moderate-sized sailboat, and the bow wash of a ship.***

**MODULE 6: Search Areas**

1. What is the meaning of each of these abbreviations?

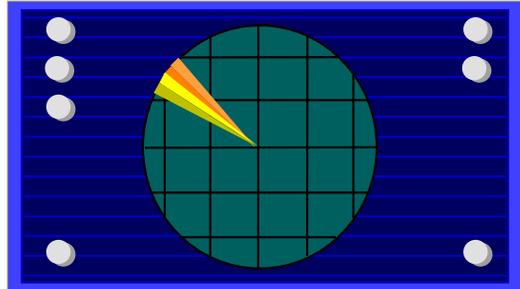
**LKP** \_\_\_\_\_

**PIW** \_\_\_\_\_

**S** \_\_\_\_\_

**CSP** \_\_\_\_\_

**POB** \_\_\_\_\_



2. Correct these statements:

(a) Good search conditions exist when the wind is (**less than / more than**)

15 KTS **and** visibility is (**greater than / less than**) 3 NM.

(b) Poor search conditions exist when the wind is (**greater than / less than**)

15 KTS **or** visibility is (**greater than / less than**) 3 NM.

3. If JRCC were to call you and say, " We have had an unreliable, and garbled, report that there is a vessel in trouble 3 miles due south of Eagle Point. Check it out."

What would you understand you are being asked to do?

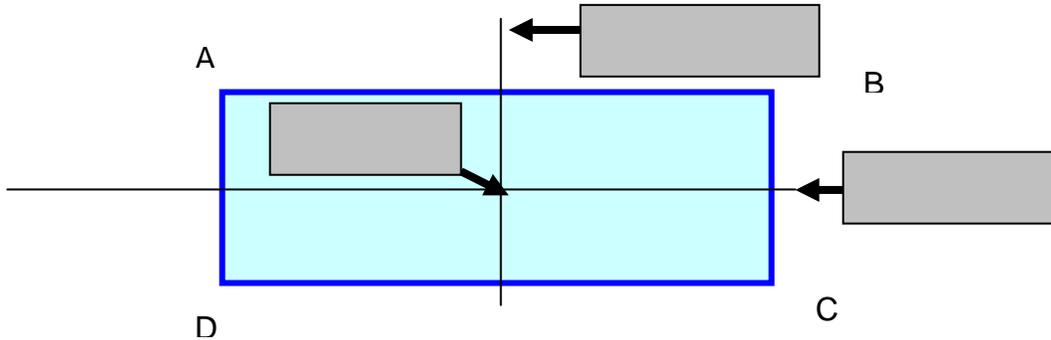
\_\_\_\_\_

4. If you arrived at the reported area and found nothing, what would be a reasonable procedure for you to "check it out"?

\_\_\_\_\_

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5. Label this diagram for the **Center Point Method** of defining a search area.



6. Rectangular search areas are labeled using the letters A B C and D.

What is the rule for assigning these letters? \_\_\_\_\_

\_\_\_\_\_

7. In the **Corner Point Method** of defining a search area, you require not only the letters ABC and D, but **also** \_\_\_\_\_

8. In the **Boundary Method**, if the boundary B C were  $046^{\circ} 40' W$ , which of the following is the **only** possible correct label for boundary AD?

$046^{\circ} 35'' W$  \_\_\_\_\_  $040^{\circ} 40' W$  \_\_\_\_\_  $047^{\circ} 05' W$  \_\_\_\_\_  $045^{\circ} 40' W$  \_\_\_\_\_

9. The **Landmark Boundary Method** requires \_\_\_\_\_(number) or more landmarks on shore plus a \_\_\_\_\_ offshore.

**Optional Challenge**

1. Your position is  $45^{\circ} 15'$  north and  $080^{\circ} 20'$  west. How many NM are you from the Equator? \_\_\_\_\_

2. A "scupper" is  
 (a) A type of fish      (b) A bailing can      (c) A cockpit drain

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## Datum

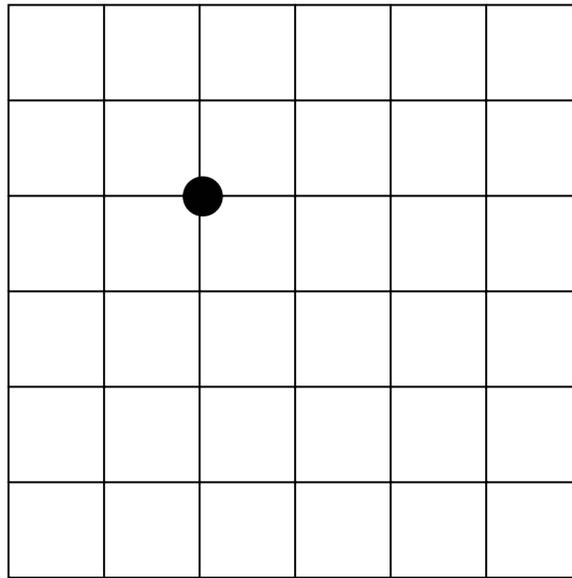
Before a formal search is assigned by JRCC, a Coxswain is often asked to do an initial “look around”. This often results in locating the problem because local knowledge of the area is used. Local knowledge is often applied in a “rough and ready” manner, perhaps mentally, or on a sketch, rather than exact chart plotting.

The following exercises will help you **visualize** and review this process. You will need the Leeway Speed Graph in each scenario.

### Scenario 1

(a) A large cabin cruiser drifted in 20 KT. West winds for 2 hours. Mark (“X”) on the grid where Datum is likely to be.

(b) Suppose the wind shifted to the North and blew for another 2 hours. Start with the Datum you calculated, where is the new Datum (“Y”) likely to be?



**You name a wind from where it blows.**

**You name a current for where it goes.**

Each square is 1 NM per side. **N**  
The symbol ● = LKP

### To review:

1. Vessels drift erratically because of keels, superstructures, hull designs and so on. The term for the **range** of drift direction is \_\_\_\_\_
2. Have you checked how islands, points, shoals, and other obstructions affect water currents in your own area? These can have a large effect on where, and how, vessels might drift.

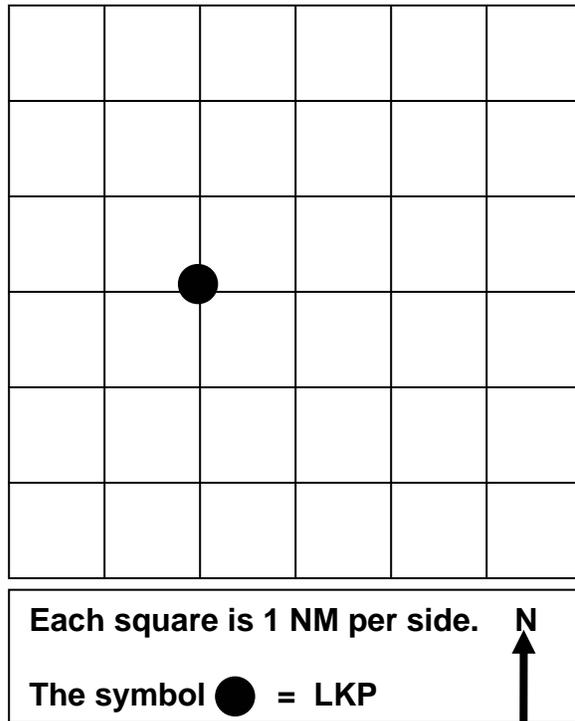
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**Scenario 2**

(a) A surfboard has drifted for 2 ½ hours in a 10 KT. South wind. Mark an “X” where you expect to find the surfboard.

(b) At the same time, there is also an East water current running at .4 KT. Mark a “Y” where Datum should be considering both wind and current.

(NOTE: The key to doing this is to calculate where the wind pushed the surfboard. Then, **from that point**, calculate and mark the current drift. **That** final mark is Datum.)



*Sound is traveling far and wide,  
A stormy day will then betide.*

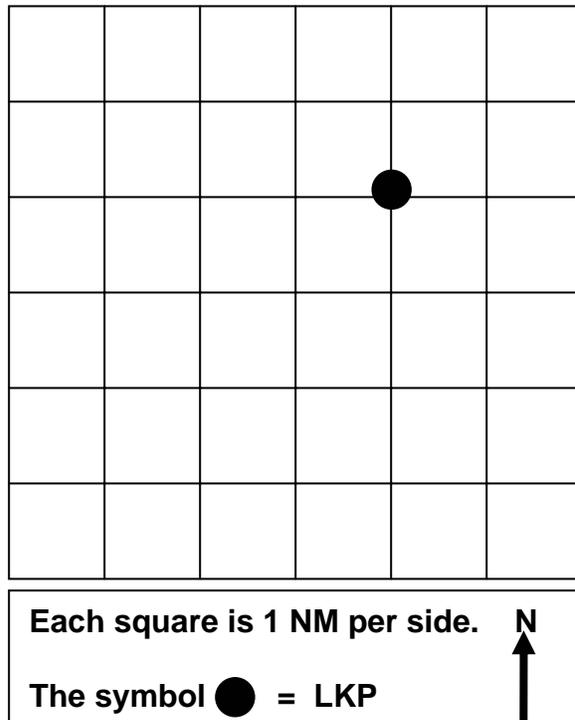
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**Scenario 3**

The LOBO, a 42 Ft. sailing cruiser, reported they were adrift, unable to sail or motor, at 0300. Winds were 20 KT from the North East. You know the water current in that area is South East at .5 KT. In these conditions, you estimate it will be 0600 before you arrive on scene. ( Calculate either water current or leeway first, it makes no difference. Remember to calculate one or the other and then calculate the next from that point.)

(a) Find and mark Datum (a rough plot is OK)

(b) Draw a line from LKP to Datum. This is the likely TRACK that the LOBO drifted. Would this help you “look around” for the LOBO ?



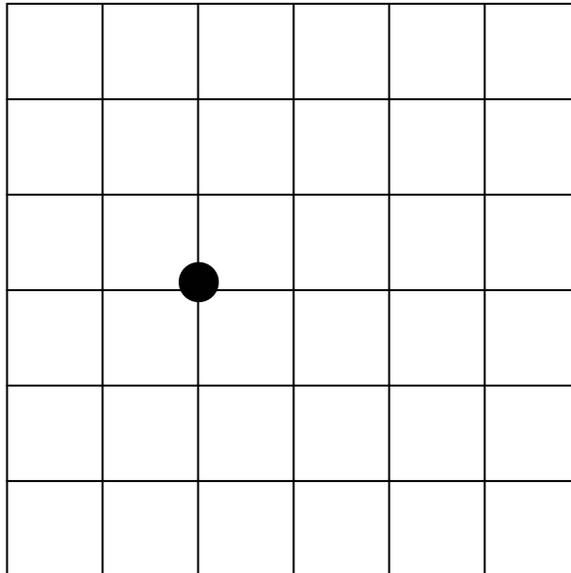
***Rowing is like life. We can't see where we're going,  
But, we have a clear view of where we've been.***

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**Scenario 4**

An 18 Ft. open fishing boat with outboard motor is overdue. They were reported at the LKP at 1200. Winds have been from the North at 14KT. Water current in that area is West at .5KT. It is now 1400. You can easily be in the area in one hour. Assume they have no anchor so must be adrift. The question is, did they get in trouble and start to drift at 1200, or sometime later ?

- (a) Calculate and mark, from 1 to 3, the three possible Datums for 1300, 1400, and 1500.
- (b) In this scenario, where should you check first ? \_\_\_\_\_
- (c) After this, what should you do? \_\_\_\_\_



Each square is 1 NM per side. N  
The symbol ● = LKP

**Code of the old US Lifesaving Service:**  
*You have to go out,  
And that's a fac'  
But nothing' says  
You have to come back.*

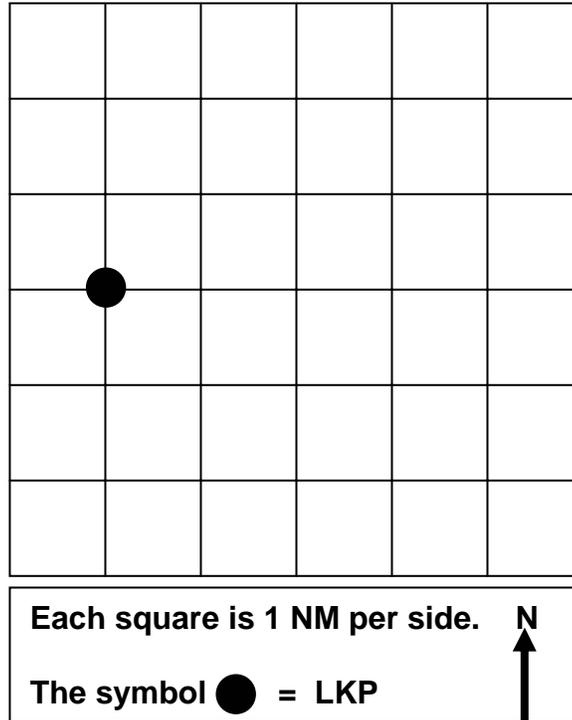
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***If in trouble, or in doubt,  
always call the captain out.***

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### Scenario 5

A large cabin cruiser has been adrift in 24 KT West winds for 3 hours. There is a .2 KT East water current in that area. Mark where you would expect to locate the vessel.



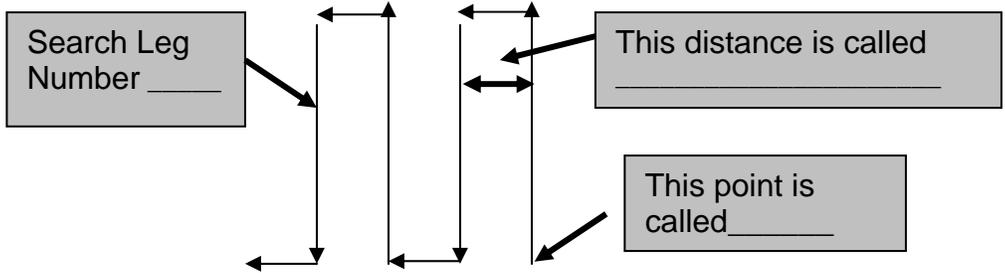
***Docking lines. Make the stern line six feet longer than the length of the boat.  
Then one person jumping onto a dock can Handle the bow and stern lines at the same time.***

***Statute mile, 5,280 feet  
Nautical mile, 6080 feet  
Kilometre, 3,280 feet.***

***Red sky at night, sailor's delight  
Red sky in the morning, sailors take warning***

**MODULE 7: Search Patterns**

1. This diagram represents **part** of a **Creeping Line** Search Pattern.
  - (a) **Draw the line of drift** for the target and show, with an arrow, the drift **direction**.
  - (b) Fill in the other labels in the boxes provided.



2. The drawing represents the area for a **Parallel Search** Pattern.
  - (a) **Label** the corner points of the search area
  - (b) Draw, and label, the **probable line of drift** of the target
  - (c) Draw, and label, one **search leg** the SRU vessel would run.

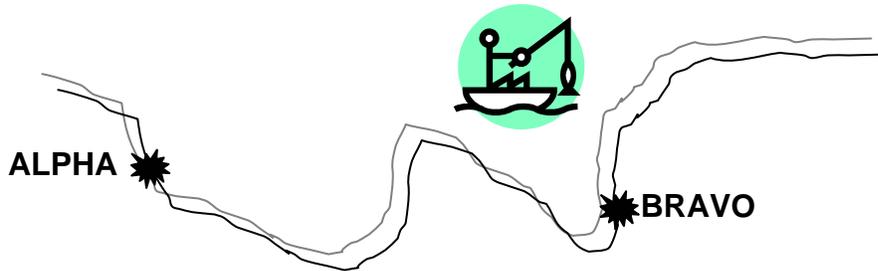


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3. The target was traveling from Bravo to Alpha. Your base is in Alpha. The **Track Crawl** is a **non-return**.

(a) Where should your CSP be? \_\_\_\_\_

(b) Where should your search pattern end? \_\_\_\_\_



4. The target was traveling from Alpha to Bravo. The SRU base is in Alpha. You are assigned a **Track Crawl Return** pattern.

(a) Where should you commence search?

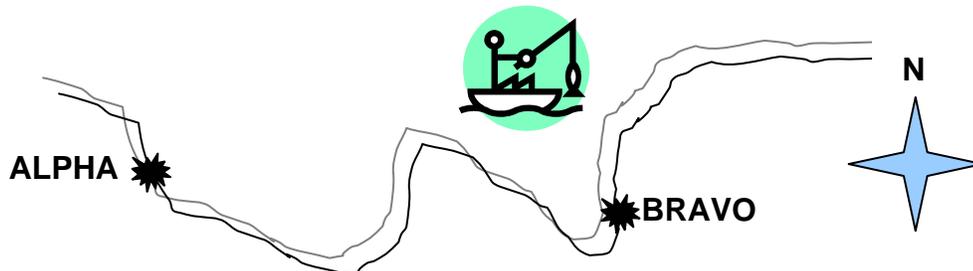
(i) To the south of the target's probable track? \_\_\_\_\_

(ii) To the north of the target's probable track? \_\_\_\_\_

(iii) Right on the target's probable track? \_\_\_\_\_

(iv) Where will you end your search pattern?

\_\_\_\_\_



5. The drawing represents the first two legs of an **Expanding Square** Search Pattern.

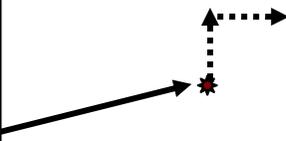
- (a) Sketch in the **next two legs** of the pattern
- (b) Answer the question in Box (b)
- (c) What three (3) factors determine the **total number** of legs in an Expanding Square? (1) \_\_\_\_\_  
(2) \_\_\_\_\_ (3) \_\_\_\_\_

**Box (b)**

**What two names do we give to this starting point?**

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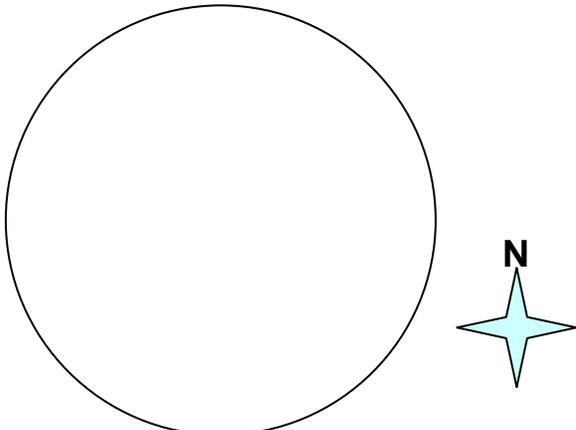
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6. Suppose you have been assigned a **Sector Search** with a Track Spacing of **0.5 NM**. Use the diagram to:

- (a) Label **Datum**
- (b) Draw the **first leg** (000°) of the search pattern.
- (c) Label the **length** of the first search leg.
- (d) Draw the **second leg and third** of the pattern.
- (e) Label how many degrees (°) your **turn** would be to the second leg.



(f) At a speed of 6 knots, how long would it take to complete the search pattern?

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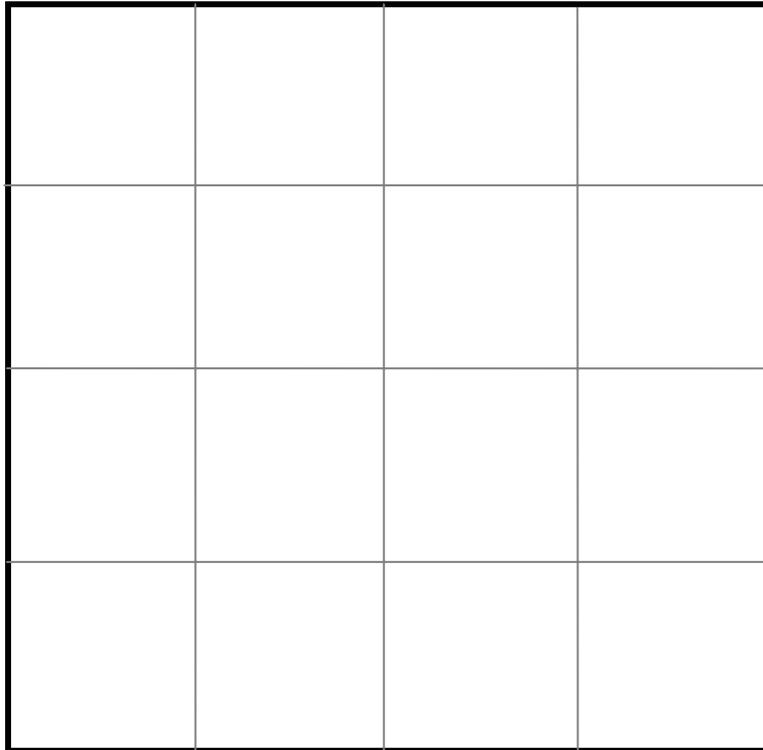
7. The box below represents a search area **four (4) miles square**. That is, each small square represents a distance of 1 NM X 1 NM. From the centre point of the large square, plot an Expanding Square search pattern using a track spacing of 0.5 miles. **(Remember that Track Spacing equals Sweep width and the entire area must be covered.)**

(b) What would be the total distance traveled?

\_\_\_\_\_ **NM**

(c) At a speed of 6 knots, determine the length of time to complete the search.

---



**An Expanding Square search pattern is a suitable pattern to use when searching for a person in the water.**

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8. This sketch represents the area assigned for a **Coordinated Search Pattern**. Suppose the target's drift track is **to the east**.



- (a) Sketch in a line, with an arrow, to show the track line for the **SRU vessel**.
- (b) Sketch in the first two search legs that the **aircraft** would take.
9. What search pattern crosses back and forth across a distress vessel's line of drift? \_\_\_\_\_
10. An aircraft Contour Search is the same as a marine \_\_\_\_\_
11. In what search pattern is the destination of the distress vessel of prime importance ? \_\_\_\_\_
12. The Student Manual contains computation tables for some search patterns. Why is it important for a Coxswain to calculate how long a pattern will take to complete?

---

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**Optional Challenge**

1. If you were asked to “pay out” a line (rope), you would  
a) Coil it      b) Flake it      c) Ease it out      d) Let it go
2. What scale on your chart uses Greenwich, England as its origin?  
a) Latitude      b) Longitude      c) Mileage      d) Mercator
3. Your single screw boat has a right hand screw. Normally, the effect on handling is  
a) Going forward, the vessel will tend to wander to port  
b) Going back, the vessel will tend to wander to port  
c) No effect. The rudder cancels everything out.
4. What is the reciprocal course of 342°? \_\_\_\_\_
5. How long is a “prolonged blast” on a whistle or horn? \_\_\_\_\_
6. Any part of a line (rope) between the ends is called the  
(a) Bitter      (b) Bight      (c) Middle      (d) The noose.

**Although a Commence Search Point (CSP) is always indicated for reasons such as “to determine the length of time to search an area,” the real point at which an SRU begins the search is when the unit arrives in or near the search area.**

**Track Spacing and Sweep Width**

1. You begin at a point to start searching for a vessel. You run a course 000°. In SAR language, this course is called a search \_\_\_\_\_, or a track \_\_\_\_\_

2. You move 1 NM to the West and run another course 180°. The 1 NM distance **between** the two courses is called \_\_\_\_\_

What is the abbreviation for this? \_\_\_\_\_

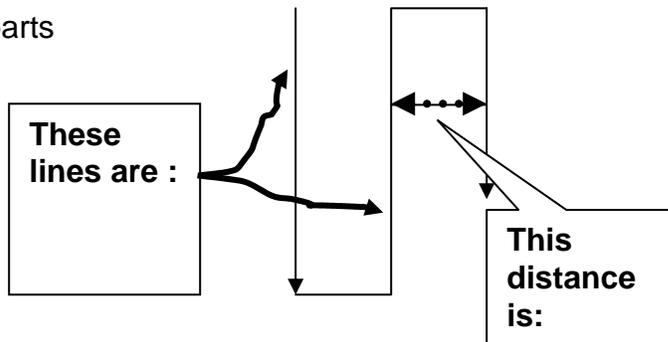
3. When searching, what advantage is there to running very close to your last track? \_\_\_\_\_

4. What disadvantage is there to running tracks so close together ?

\_\_\_\_\_

5. Label the missing parts

of this diagram.



Search track, or track leg, is the line(course) the search vessel takes to cover the water.  
Track spacing (S)is the distance between one search leg and another.

6. We know that track legs and track spacing refer to what the **vessel** is doing. But we need to FIND a target : large, small, in night or day, clear or hazy, etc. In other words, we need to increase our “detection capability”, or, our “probability of detection”. To do so, we need to answer these questions:

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- a) what am I searching for ? (what target?)
- b) what are the "visibility" conditions?

If we know the answers to these questions, we will know how wide a path or sweep we should use to find my target. We call this distance the SWEEP WIDTH.

7. The illustration called the Sweep Width "uncorrected" and uses the symbol  $W_u$ . Why do we say that the Sweep Width is "uncorrected" ?

8. What do we have to consider to make the Sweep Width "corrected" ?

\_\_\_\_\_ and \_\_\_\_\_

9. What is the symbol for a corrected sweep width ? \_\_\_\_\_

10. Suppose your target was a 25 person raft in 10 NM visibility. The  $W_u$  would be (from the illustration) \_\_\_\_\_. If winds were greater than 15 KT, what  $W$  would you calculate ? \_\_\_\_\_ ( $W_u \times .5$ ). When you made this calculation, you (narrowed, widened) \_\_\_\_\_ the width or scope of your search, and gave yourself a (better, worse) \_\_\_\_\_ chance of locating the target.

16. Using the example in question 10, the  $W$  (corrected sweep width) SHOULD become the  $S$  (track spacing). When you do so, you increase search effectiveness or search quality (we call this the Coverage Factor)

**MODULE 8: Search Procedures**



Answer T (True) or F (False) to each if the following:

1. Spotters should search as though they were the one in distress. \_\_\_\_\_
2. To be fair to the crew, Coxswains should take their turn as spotter. \_\_\_\_\_
3. The reason for briefing spotters is so they will be able to ignore things not connected with the distress. \_\_\_\_\_
4. Night vision glasses should be used in the same way as binoculars are used in the daytime. \_\_\_\_\_
5. Objects sighted should be announced using the “clock” method. \_\_\_\_\_
6. A spotter should focus on a spot on the water every 30°. \_\_\_\_\_
7. Spotters will keep up their concentration and be more efficient if the SRU vessel moves along at full cruising speed. \_\_\_\_\_
8. It is best to rotate spotters every 30 minutes if possible. \_\_\_\_\_
9. At night, you can actually see more out of the “corner of your eye” than what you can see “straight ahead”. \_\_\_\_\_
10. You don't need to rest a spotter away from their post, just change them to a new position on the vessel. \_\_\_\_\_
11. If your “night vision” gets destroyed with a bright light, it would take about 30 minutes to recover your night vision. \_\_\_\_\_

**MODULE 9: Personal Safety and Self Rescue**

1. What is the **first** responsibility of the Master of a SRU on a task?

\_\_\_\_\_

2. CGA policy (**requires / recommends**)

that crew wear a PFD or Life Jacket on all SAR Missions.



3. To sustain your blood sugar level, it is a good idea to consume

**(high energy food / coffee)** while on a task.

4. Alcohol increases the risk of **(hypoglycemia / hypothermia)**.

5. At night, it is a good idea to attach a strobe to your PFD with **(pins / a lanyard)**.

6. Water conducts body heat at a rate of **(10 / 25)** times the rate of air.

7. Compared to air, Carbon Monoxide weighs **(less / the same)**.

8. Gasoline engines produce **(more / less)** CO than diesel engines.

9. Enclosed cabins open at the stern run an increased risk of CO poisoning on

**(downwind / upwind)** search legs.

10. A crewmember should re-consider his / her role as SAR crew if they have

consumed alcohol within the past **(4 hours / 8 hours)**.

**MODULE 10 MARITIME DISASTER SCENE**

This Module has been moved to the  
SAR Operations Course

***Granny knot : a Square knot that failed.***

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**Collision Regulations**

*NOTE: Stand On = having the right of way. Give way = must yield*

Fill in the blanks for each of the following:

1. Normally, the (upstream, downstream) vessel has the right of way. \_\_\_\_\_
2. What is your action if you hear a vessel fog signal forward of your beam .  
\_\_\_\_\_

3. Five or more short blasts indicates danger ahead. It also indicates

---

4. The term for a vessel "unable to maneuver is. \_\_\_\_\_

5. State two reasons why a vessel might be "restricted in her ability to maneuver" ?

(a) \_\_\_\_\_ (b) \_\_\_\_\_

6. When sailing vessels each have the wind on the same side, the vessel to \_\_\_\_\_ must give way.

7. The fog signal for power driven vessels underway is \_\_\_\_\_.

The fog signal for sailing vessels underway is \_\_\_\_\_. A

SAR vessel towing another vessel in fog would signal \_\_\_\_\_.

The vessel being towed should respond with \_\_\_\_\_.

8. If you saw, directly ahead, from the left: a low green light, a little higher white light, then a low red light, what's happening?

9. In a shallow narrow harbour entrance, a small sailing dinghy is sailing into harbour. A large cabin cruiser meets her in the entrance. The dinghy skipper shouts for right of way. What do the Regulations say about this?

10. A Lake Erie fishing tug is setting her nets. A large sailing cruiser approaches the area. Who is supposed to take what action ?

---

**Answer True (T) or False (F) to each of the following.**

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11. In general, a power driven vessel should give way to a sailing vessel.\_\_\_\_
12. For sailing vessels, the stand on vessel has the wind on her port side.\_\_\_\_\_
13. When two power driven vessels are crossing, the vessel to starboard is the stand on vessel.\_\_\_\_\_
14. The port side-light is green \_\_\_\_\_
15. If a power driven vessel is overtaking you from astern at night, and you see only a red side light, you are being passed on the port side. \_\_\_\_\_
16. It is a courtesy, but not really necessary, to acknowledge sound signals from another vessel. \_\_\_\_\_
17. A small sailing vessel, under power, would be legal with side lights and a stern light. \_\_\_\_\_
18. A stern light, as in motor vehicles, should be red in colour.\_\_\_\_\_
19. When power driven vessels are meeting in sight of one another, 2 short blasts indicate an alteration of course to port. \_\_\_\_\_
20. Dead ahead you see a low white light ; to the right of it you see a low green light. You have good reason to believe that a power-driven vessel is crossing your course from left to right. \_\_\_\_\_

## **ANSWERS**

### **Module 2: SAR Responsibilities and Resources**

- A. 1. Department of National Defense  
1. Victoria Trenton Halifax  
2. St. John's Quebec  
4. DND  
CCG JRCC DND
- B. Primary Secondary Others
- C. SAR  
1. Cutters IRB  
2. Trenton Winnipeg  
3. CH111 Labradors C130 Hercules
- D. Federal Agencies  
1. All of these could be.
- E. 1. CASARA 2. CCGA 3. Regional Police 4. Vessels of Opportunity
- F. National Search and Rescue Manual IAMSAR  
Search and Rescue Prevention  
1. Detect marine incidents 2. Coordinate, conduct and control SAR  
3. Provide Marine Resources 4. Coordinate, control and conduct prevention  
Humanitarian and Civil incidents
- G. Contribution Agreement Fisheries and Oceans
- H. (i) International Civil Aviation Organization  
(i) International Maritime Organization  
(iii) International Convention For Safety of Life at Sea
- I. Rescue Coordinators Fisheries and Oceans Canada Shipping Act  
(i) Order all vessels to report their position  
(ii) Order other vessels to take part in assisting with the distress  
(iii) Give any other orders as necessary concerning the distress
- J. Canada Shipping Act "proceed with all speed" to assist  
Enters in the ship's log the reasons for not responding
- K. Master of the vessel.
-

**MODULE 3 – COXSWAIN'S RESPONSIBILITIES**

1. Canada Shipping Act  
Collision Regulations
2. Own Vessel & Crew
3. (a) Proceed with all speed  
(b) inform if possible
4. Enter reason in log
5. To comply with the requisition
6. (a) safety if his/her own vessel  
(b) within capabilities
7. A sheltered location where assistance is available
8. (a) when other ships have been requisitioned  
(b) when assistance is no longer required
9. (a) safety of rescue vessel  
(b) to respond to a higher priority
10. Notify JRCC; broadcast appropriate radio call.
11. Deck Log; important; imprisonment; run line through text.
12. Items 1, 2, 4.
13. Channel 16; Radio Log
14. Partial list: Safety Equipment; construction; Design; State of Repair
15. Judgment calls for all cases.
16. Provide some protection for crew.
17. National SAR Manual; JRCC authorizes; No commercial assistance available.
18. F; T; T; T; F; T; F; T; F; T.
19. Inquest; accuse; discuss; complete.



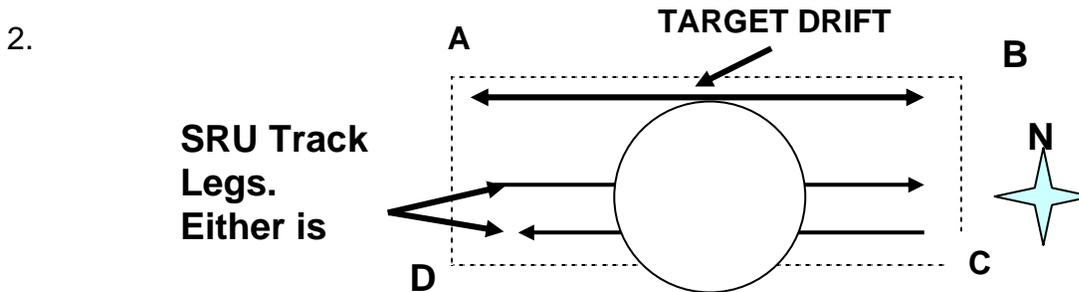
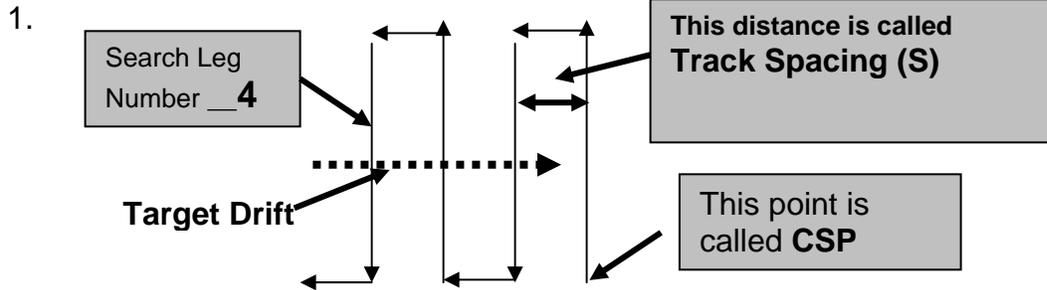
**Module 6: Search Areas**

1. Last Known Position  
Person(s) in the Water  
Track Spacing  
Commence Search Position  
Person(s) on Board
2. (a) Less than                      Greater than  
(b) Greater than      Less than
3. Go to the LKP, check, then search
4. Follow the Track Line
5.                                      Minor Axis  
                                    Center Point                      Major Axis
6. The "A" is the Northwest, or most northerly corner.
7. Latitude and Longitude of the corners.
8. 047° 05' (longitude increases to the west)
9. 2                      distance

***Optional Challenge***

1. 60 NM per degree is  $60 \times 45 = 2700$  NM.  
One minute = 1 NM.       $2700 + 15 = 2715$  NM.
2. c)

**Module 7: Search Patterns**



3. (a) Alpha (b) Bravo

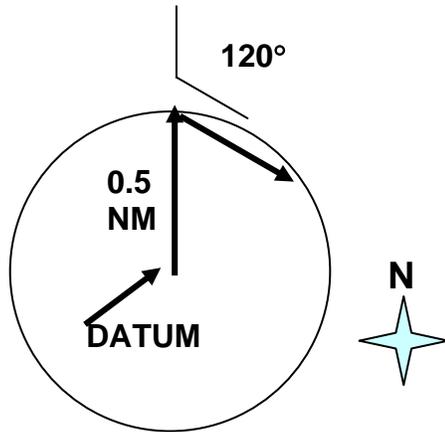
4. (a) (i) OK (b) Alpha  
 (ii) OK  
 (iii) NO

5.

Box (b)

What two names do we give to this starting point?  
 -DATUM  
 -CSP

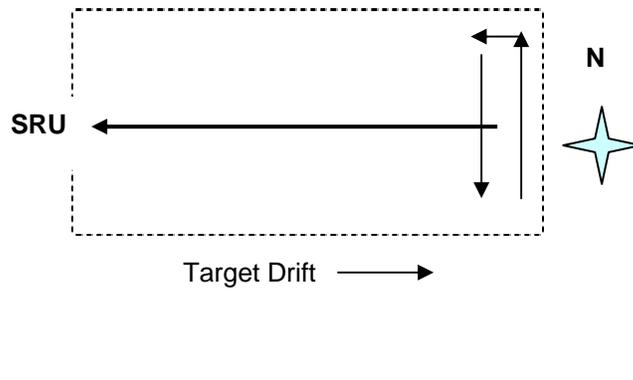
6.



7. (b) 40.5 NM

(c) 405 minutes (or 6.75 hours)

8.



**Module 8: Search Procedures**

- 1. T
- 2. F
- 3. F
- 4. T
- 5. T
- 6. F
- 7. F
- 8. T
- 9. T
- 10. F
- 11. T

**Optional Challenge**

- 1. c)
- 2. b)
- 3. a) The tendency is for the stern to move to starboard, therefore the bow (boat direction) to port.
- 4. 162°
- 5. 4-6 seconds
- 6. b)

## **Module 9: Personal Safety and Self-Rescue**

1. The safety of the vessel and the crew.
  2. Requires
  3. High energy food
  4. Hypothermia
  5. Lanyard (may not modify a life-saving device with, eg. pins)
  6. 25
  7. The same
  - 8. MORE**
  9. Downwind
  10. 4 hours
- 

## **Module 10 Incident Command Structure**

1. JRCC; MCTS (CGRS); SRU Coxswain & Crew
2. vessels of opportunity; On Scene Commander or Coordinator  
Surface search; OSC.



**A Great Lakes Auxiliary Rescue Vessel**