# SEARCH AND RECOVERY DIVER

## INSTRUCTOR GUIDE

Product No. 70228 (Rev. 08/22) Version 3.0



PADI

# PADI Search and Recovery Diver Specialty Course Instructor Guide



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# TABLE OF CONTENTS

## INTRODUCTION



## SECTION ONE Course Standards



## SECTION TWO Knowledge Development

## SECTION THREE Open Water Dives



## APPENDIX

# INTRODUCTION

This section includes suggestions on how to use this guide, an overview of course philosophy and goals, a flow chart to show you how course components and materials work together for success, and ways you can organize and integrate student diver learning.

## How to Use this Guide

This guide speaks to *you*, the PADI Search and Recovery Diver Specialty Instructor. The guide contains three sections – the first contains standards specific to this course, the second contains knowledge development presentations, the third considers optional confined water and/or surface training and details the open water dives. All required standards, learning objectives, activities, and performance requirements specific to the PADI Search and Recovery Diver course appear in **boldface** print. **The boldface assists you in easily identifying those requirements that you *must* adhere to when you conduct the course.** Items not in boldface print are recommendations for your information and consideration. General course standards applicable to *all* PADI courses are located in the General Standards and Procedures section of your PADI *Instructor Manual.*

## Course Philosophy and Goals

Many factors can affect the success or failure of any search and recovery conducted underwater. Those of particular importance are surface conditions, underwater visibility, depth, bottom topography, bottom composition, vegetation, accessibility, surge, tides, currents, accuracy of bearings, water temperature, pollution, and obstacles or hazards. The size, weight, and dimensions of the object to recover also play a huge role.

The search and recovery dive team can't control these factors. However, there is one aspect of an underwater search and recovery that can be controlled – *organization.* The other factors must be considered when the team plans a search and recovery dive. Conditions determine what search patterns are used and what recovery methods work best. Thus, the *goal* of this course is to teach student divers a systematic, methodical approach to the search and recovery of submerged objects. Student divers will develop the techniques involved in locating and retrieving lost articles, large and small, within recreational limits and while avoiding disturbing delicate aquatic life. The mechanics of the search are truly an art; while the principles applied to the operation are firmly grounded in science.

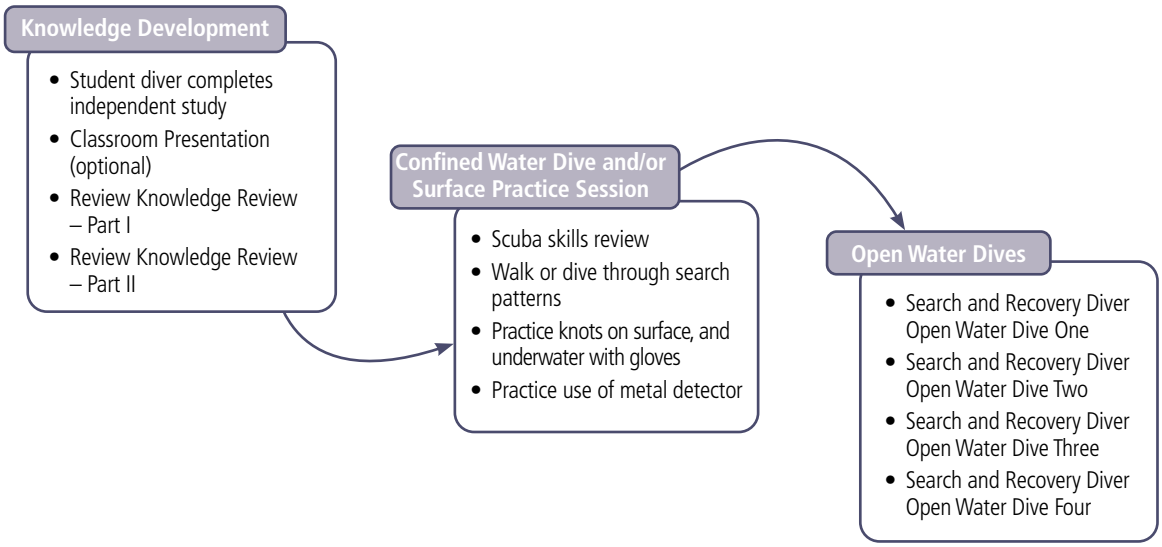
The best way to learn how to conduct search patterns and to use lifting devices is by doing it. This *course philosophy* therefore, emphasizes diving. Student divers will apply the knowledge they gain by interacting with PADI *Search and Recovery Diver eLearning* or by reading the PADI *Search and Recovery Diver Manual* and watching the companion video on at least four open water dives, searching for and recovering objects of different sizes in varying search areas.

## Course Flow Options

Course Flow Options provides a visual representation of how knowledge development and confined water and/or surface practice sessions support open water dives.

When possible, it's preferable to have student divers interact with PADI *Search and Recovery Diver eLearning* or complete and review Knowledge Reviews from the PADI *Search and Recovery Diver Manual* before participating in the open water dives. Knowledge Review – Part I is the same Knowledge Review that appears in the Search and Recovery section of *the* PADI *Advanced Open Water Diver Manual.* If you have the first part of the Knowledge Review on file, you may at your discretion, have student divers complete only Knowledge Review – Part II.

Confined water and/or surface practice sessions are not required for the PADI Search and Recovery Diver course, however, you may choose to have practical sessions that allow student divers to practice skills such as knot tying, rigging a lift bag, and navigating search patterns.




There are four dives to complete over two days. **You may rearrange skill sequences within each dive; however, the sequence of dives must stay intact.** You may add more dives as necessary to meet student divers' needs. Organize your course to incorporate environment friendly techniques throughout each dive, student diver learning styles, logistical needs, and your sequencing preferences.

# SECTION ONE

# Course Standards

This section includes the course standards, recommendations, and suggestions for conducting the PADI Search and Recovery Diver course.

## Standards at a Glance

| Topic | Course Standard | |
|---|---|---|
| **Minimum Instructor Rating** | **PADI Search and Recovery Diver Specialty Instructor** | |
| **Prerequisites**<br>**Minimum Age** | **PADI (Junior) Advanced Open Water Diver**<br>**12 years** | |
| **Ratios** | **Open Water – 8:1** | |
| **Site, Depths and Hours** | **Maximum Depth:** 6-9 metres/20-30 feet recommended<br>**Hours Recommended:** 24<br>**Minimum Open Water Dives: 4 dives over 2 days** | |
| **Materials and Equipment** | **Instructor:**<br>• **PADI Search and Recovery Diver Course Specialty Instructor Guide**<br>• **PADI *Search and Recovery Diver eLearning* or PADI *Search and Recovery Diver Manual***<br>• **Line and reel**<br>• **Lift bag**<br>• **Small and large objects to recover** | **Student Diver:**<br>• **PADI *Search and Recovery Diver eLearning* or PADI *Search and Recovery Diver Manual***<br>• **Compass**<br>• PADI *Search and Recovery* video |

## Instructor Prerequisites

To qualify to teach the PADI Search and Recovery Diver course, an individual must be a Teaching status PADI Open Water Scuba Instructor or higher. **PADI Instructors may apply for the Search and Recovery Diver Specialty Instructor rating after completing a Specialty Instructor Training course with a PADI Course Director, or by providing proof of experience and applying directly.** For further detail, reference the Professional Membership section of your PADI *Instructor Manual.*

## Student Diver Prerequisites

**To qualify for the PADI Search and Recovery Diver course, an individual must::**

1. **Be a certified as a PADI (Junior) Advanced Open Water Diver or have a qualifying certification from another training organization;**

   ***OR***

   **Certified as a PADI (Junior) Open Water Diver and a PADI Underwater Navigator Specialty Diver or have qualifying certifications from another training organization.** In this case, a qualifying certification is defined as proof of specialty course certification in underwater navigation with a minimum of three scuba dives that include training in natural and compass navigation.

2. **Be at least 12 years old.**

## Supervision and Ratios

### Open Water Dives

**A Teaching status PADI Search and Recovery Diver Specialty Instructor must be present and in control of all activities.** The Specialty Instructor may *indirectly supervise* all dives. During the Search and Recovery dives, it is recommended, but not required, that a certified assistant accompany each buddy team. **The Specialty Instructor must ensure that all performance requirements are met.**

**The ratio for open water dives is 8 student divers per instructor (8:1), with 4 additional student divers allowed per certified assistant (4:1).**

## Sequencing

1. Ideally, student divers should complete Knowledge Review Part I before Search and Recovery Dive One.
2. Student divers should complete Knowledge Review Part II before Search and Recovery Dive Two.
3. **Training dives must be conducted in order.** You may rearrange skill sequences within a dive.

## Site, Depths, and Hours

### Site

Choose sites with conditions and environments suitable for completing requirements. Shallow dives will provide divers with more time to complete tasks. Use different open

water dive sites, if possible, to give student divers experience in dealing with a variety of environmental conditions (incorporate environment friendly techniques throughout each dive) and logistical challenges. Practice skills in confined water sessions first to better prepare divers to apply skills in open water later.

### Depths

6-9 metres/20-30 feet recommended

**30 metres/100 feet limit for Dive 1 (Search and Recovery Adventure Dive)**

### Hours

**The PADI Search and Recovery Diver course includes four open water dives conducted over at least two days.** The minimum number of recommended hours is 24.

## Materials and Equipment

### Instructor

- **PADI Search and Recovery Diver Specialty Course Instructor Guide**
- **PADI *Search and Recovery Diver eLearning* or *Manual***
- **PADI *Search and Recovery* video** (include in eLearning)
- **Specialty equipment needed for student divers to perform rigging and lifting**
  - **Small objects for student divers to find and recover by hand** (e.g., brightly colored weights, one litre plastic bottles filled with sand).
  - **Large objects for student divers to find and recover by a lift bag. Weight range should be approximately 11 kilograms/25 pounds (maximum for objects used during Search and Recovery Diver Open Water Dive One) to 45 kilograms/100 pounds (maximum for objects used during Search and Recovery Diver Open Water Dives Two, Three, and Four).**
  - **Lines and reels**
  - **Lift bags**
- As needed: assorted lines, surface floats and markers, anchors and bottom markers, dive light, and slate.

### Student Diver

- **PADI *Search and Recovery Diver eLearning* or *Manual***
- PADI *Search and Recovery* video (eLearning contains video)

- Compass
- Access to support equipment as necessary, including but not limited to: dive light, slate, lift bag and rope, and underwater reel with search line.

## Assessment Standards

**For eLearners, check the diver's eRecord to verify successful of completion of *Search and Recovery Diver eLearning*, including Knowledge Review.**

**To assess knowledge of divers using the manual, have divers complete the Search and Recovery Diver Knowledge Reviews (located in the Appendix of this guide and in the *Search and Recovery Diver Manual*) and review missed questions until they demonstrate adequate knowledge.**

**During open water dives, divers must perform all skills – procedures and motorskills – in a reasonably comfortable, fluid, repeatable manner as would be expected of a diver at this certification level.**

## Certification Requirements and Procedures

**To qualify for certification, student divers must complete all performance requirements for Search and Recovery Dives One, Two, Three, and Four.**

**The instructor certifying the student diver must ensure that all certification requirements have been met.**

## Links to Other Courses

The Search and Recovery Adventure Dive conducted during the PADI Advanced Open Water Diver course may count as the *first dive t*oward this specialty at your discretion.

Similarly, divers who successfully complete Search and Recovery Dive One and Knowledge Review Part 1 may receive credit as an Adventure Dive toward the PADI Adventure Diver and Advanced Open Water Diver certifications. They may also credit the specialty certification toward the PADI Master Scuba Diver rating.

# SECTION TWO

# Knowledge Development

## Conduct

Student divers complete independent study of the course by interacting with PADI *Search and Recovery Diver eLearning* or by reading the PADI *Search and Recovery Diver Manual* and by watching the PADI *Search and Recovery* video. Use these knowledge development presentations to prescriptively address student diver misconceptions, or to provide clarification on certain points of interest.

If there is a need for instructor-led presentations, such as when the S*earch and Recovery Diver eLearning* or *Manual* does not exist in a language student divers understand, use the following teaching outline to cover the knowledge development learning objectives and course content. The Search and Recovery Diver Knowledge Reviews (located in this guide's Appendix) must be completed and reviewed before the diver is certified.

## I. Introduction

**Note to Instructor**

Have staff introduce themselves and provide a bit of background. Have student divers introduce themselves and explain why they are interested in search and recovery diving.

### A. Course Goals

The goals of this program are to enable you to:

1. Develop your practical knowledge of search and recovery diving.
2. Increase your diving skills.
3. Plan, organize, and make search and recovery dives.
4. Improve your diving ability and provide you with additional supervised experience.
5. Encourage you to participate in other specialty training.

### B. Course Overview and Schedule

**Note to Instructor**

Discuss the course sequence, assignments, meeting times, places and other information about all class, practical application sessions and training dives. Build excitement about the course, particularly the training dives.

## C. Costs, Equipment Requirements and Paperwork

**Note to Instructor**

Explain all costs, equipment requirements and logistical details as necessary. Reconfirm prerequisites if appropriate and ensure all paperwork is completed – see Section One, and Paperwork and Administrative Procedures, General Standards, PADI *Instructor Manual*. Collect outstanding fees.

## D. Performance Requirements and Certification

1. To qualify for any PADI certification, you must meet specific performance requirements.
    a. You pay for the course, but must earn the certification.
    b. Performance-based learning is objective – a student either meets a requirement or not; your instructor is not arbitrary in assessing performance.
2. Although you must meet all performance requirements, having difficulty does not mean you will be unsuccessful.
    a. You take a course to learn – making mistakes and needing time to master knowledge and skill is part of learning.
    b. You may pick up some things quickly and others slowly; what matters is that you demonstrate mastery – not how long it takes.
    c. You move on at the pace you learn – you may need extra dives or other practice.
3. Upon successfully completing the course, you will receive the PADI Search and Recovery Diver Specialty certification.
4. Certification means that you will be qualified to:
    a. Plan, organize, make, and log open water search and recovery dives in conditions generally comparable to or better than, those in which you trained.
    b. Apply for the Master Scuba Diver rating if you are a PADI Advanced Open Water Diver and a PADI Rescue Diver (or qualifying certification from another training organization) with certification in four other PADI Specialty ratings in addition to Search and Recovery Diver, and you have 50-logged dives.

# II. The Recreational Search and Recovery Diver

## Learning Objectives

**By the end of this section, you should be able to answer the following questions:**

1. **What are four benefits for learning recreational-level search and recovery skills?**
2. **What are the differences between professional and recreational search and recovery divers?**

### 1. What are four benefits for learning recreational-level search and recovery skills?

A. Learning search and recovery skills can:
   1. Save you money – find an anchor, dive watch, or eyeglasses.
   2. Make you a better-rounded diver – application at the Rescue Diver and Divemaster levels.
   3. Be rewarding and challenging – even if searching for a lost fishing pole, the thrill can be just as rewarding as any other underwater challenge.
   4. Serve as a foundation for the professional side of underwater search and recovery jobs – get a glimpse of what professionals do.

### 2. What are differences between professional and recreational search and recovery divers?

B. Recreational search and recovery diver characteristics include:
   1. Basic search and recovery techniques.
   2. Not engaging in search and recovery diving for profit or employment.
   3. Making search and recovery dives with only a buddy.

C. There are divers who engage in search and recovery as a profession or as part of their job description. The following are common characteristics of professional search and recovery divers:
   1. Complete professional-level search and recovery training.
   2. Engage in and seek underwater search and recovery jobs for profit or gainful employment.
   3. Members of a community service-based search and recovery team, work for a commercial diving company, or are independent contractors.
   4. Involved in searching for and recovering missing persons, weapons and large objects like automobiles, planes, and boats.
   5. Use sophisticated search and recovery equipment.
   6. Search in hazardous environments.
   7. Often subject to work/labor regulations (such as AWCBC in Canada, OSHA in the US, HSE in the U.K., OSH in New Zealand and the workplace regulatory bodies in Australia).

**Note to Instructor**

Explain that recreational search and recovery divers do not to dive in polluted or otherwise contaminated water, in water with strong current, zero visibility or near large water intakes. These environments can be very hazardous and require special training and equipment well beyond the scope of recreational diving. If in doubt about water quality or safety do not dive until you have confirmed that the conditions are safe.

Inform student divers that many recovery jobs require the services of a professional commercial diver. Lost objects in adverse environments, of large size, great value or related to a crime should be recovered by a professional diver.

Encourage divers to be familiar with local and federal laws regarding legal ownership of abandoned property (salvage laws) and objects of historical significance (antiquity protection laws). Also, always seek permission to enter private or restricted bodies of water before diving. In some areas, the act of diving to earn money automatically subjects you to regulations that apply to commercial diving. Be sure you are aware of and heed such regulations.

Describe and explain local laws and regulations that may affect earning money by search and recovery, or the recovery of abandoned objects and those of historical interest.

D. Hobby money from search and recovery diving
    1. You may be justified to charge a reasonable fee for time and effort, and profit from recovering lost or abandoned objects underwater.
        a. You may recover for money or resale abandoned objects such as golf balls, fishing equipment and modern boat anchors or small outboard motors.

E. Objects of historical interest
    1. Artifact removal is just not done except in very specific circumstances (such as artifact documentation and historical archiving, etc.) where authorities incorporate time consuming and very expensive controlled conditions that use extensive conservation techniques.
    2. Important information about the past is lost when an artifact and its resting place is disturbed improperly. The physical relationship between artifacts in a site reveals patterns of human use and behavior that no single artifact can. Removing artifacts and disturbing wrecks from their original context loses valuable information that is lost forever.
    3. If you search for an artifact or wreck, and find it, leaving it undisturbed and reporting your find to authorities is probably the best way to preserve it. Improvements in technology and interpretive techniques may validate your find in the future.
    4. Research and understand local laws regarding search and recovery diving.

**Note to instructor**

Differentiate between searching for and recovering the location of, but not recovering anything from, a shipwreck. Local laws and regulations may affect search and recovery of abandoned objects, wrecks, historical artifacts and fossils. Reiterate to student divers to dive responsibly and not to recover anything from shipwrecks, or to take historical artifacts.

# III. Two Types of Search and Recovery Diving

## Learning Objectives

**By the end of this section, you should be able to answer the following question:**

1. **What are differences between searching for specific and nonspecific objects?**

### 1. What are the differences between searching for specific and nonspecific objects?

A. Searching for specific objects
   1. You search for a specific object when you know it has been lost underwater in a certain area and are generally sure the object is somewhere in the search area.
   2. Finding and recovering the object, or when other limiting factors occur – cold, time, air, etc., terminates the dive.
   3. This type of search and recovery diving requires careful planning before the dive.

B. Searching for nonspecific objects (also known as bottom combing)
   1. In this type of search, diver swim around a dive site looking for whatever may turn up, such as boat anchors, fishing equipment, harmful debris, etc.
   2. This type of *discovery* diving is exciting because of what may be found.
   3. Finding the object does not necessarily terminate the dive.
   4. Dive planning is nonspecific – only general.
   5. Choose dive sites where finds are likely – under bridges, docks or piers.
   6. There are many opportunities for responsible recovery and removal of harmful debris beneath the surface. The recovery of cigarettes, beverage containers, food wrappers and discarded fishing line are common items found during underwater cleanups.

**Note to Instructor**

Advise student divers that they can use their search and recovery knowledge and skills during the AWARE - Dive Against Debris Diver specialty course. Reference the PADI AWARE Foundation's website padiaware.org for more information and guidelines for debris recovery and removal techniques.

# IV. Search and Recovery Environments

## Learning Objectives

**By the end of this section, you should be able to answer the following questions:**

1. **What is bottom topography, and how does it affect search and recovery?**
2. **How does water movement affect search and recovery diving?**

### 1. What is bottom topography, and how does it affect search and recovery?

A. You may conduct search and recovery dives in a variety of environments – fresh water, salt water, quarries, lakes, tropical seas, ponds, sand pits, etc. Sometimes the need to make a search and recovery dive is the only reason to make a dive in a specific aquatic environment.

B. You choose search techniques based primarily on two environmental factors: *bottom topography* and *water movement*.

C. Bottom topography refers to the contours and characteristics of the bottom.
   1. Flat, open bottoms are easiest to search, but water movement may sweep away objects.
   2. Irregular bottoms limit the searching techniques used. Crevices often hide objects, but also keep them from shifting away by water movement.

### 2. How does water movement affect search and recovery diving?

D. Water movement – currents, tides and surge
   1. Water movement may sweep an object away from its original submerging point, which is especially true when searching a river.
   2. Water movement may eventually bury lost objects or uncover objects buried previously.
   3. Water movement often makes it difficult for a diver to control position or heading during a search. Although there are search techniques for diving in currents.
   4. Water movement may aid searches by carrying away accidentally kicked up sand or silt intentionally fanned off the bottom to look for an object.

**Note to Instructor**

Advise student divers to avoid making search and recovery dives in aquatic environments unfamiliar to them. Suggest an area orientation from a local instructor or experienced diver.

# V. Potential Hazards of Search and Recovery Diving

## Learning Objectives

**By the end of this section, you should be able to answer the following question:**

1. **What six potential hazards may you encounter in search and recovery diving, and how do you avoid each?**

### 1. What six potential hazards may you encounter in search and recovery diving, and how do you avoid each?

A. Knowing and avoiding potential hazards can make your search and recovery dives more efficient and effective.
   1. Sharp objects and debris
      a. Watch for broken glass, wire or rusted metal.
      b. Mud or sand may conceal sharp objects.
      c. Be careful when moving close to the bottom and wear protective gloves, especially if feeling your way along the bottom in low-visibility water.
   2. Entanglement
      a. Search lines and rope, plus line and netting found on the bottom may cause entanglement problems. Be especially careful of transparent monofilament fishing line.
      b. Move slowly over bottoms or around objects covered with line and netting (pier piles, wrecks).
      c. Carry a sharp knife/tool for cutting line. Many search and recovery divers will carry a second cutting tool if likely to encounter line during a search.
   3. Low visibility
      a. Searches may take place in areas with poor water clarity.
      b. Avoid kicking up the silt while swimming. Move with your hands to avoid disturbing the bottom and carefully control your buoyancy – try to remain neutral at all times.
      c. Be aware that diving in low-visibility water may lead to buddy separation and disorientation.
      d. You should have enough visibility to be able to read your gauges so you can check your air, depth, time and direction. You also need to be able to communicate with your buddy. If visibility is so poor that you can't do these, consider the environment unsuitable for recreational search and recovery diving.

**Note to Instructor**

Reinforce to student divers that if they feel uncomfortable diving in low-visibility water, make use of a buddy line or don't make the dive. Remind divers not to pull themselves along in environments where doing so may injure sensitive aquatic organisms.

4. Currents
    a. Currents exist to some degree in every large body of water and are not limited to seas and oceans. Rivers, streams, lakes and even spring-fed environments have currents.
    b. Currents may sweep you away from a dive boat, search area or exit location.
    c. Diving in currents
        i. If unfamiliar with local conditions, consult local divers about specific current conditions.
        ii. Be prepared to abort the dive if you encounter an unexpected strong current during a search.
        iii. Be mindful of tidal currents. Try to dive at slack tide (either high or low).
        iv. Pay attention to your direction of travel while diving in a current.
        v. Avoid having to swim against a current. Begin your dive up-current and use a search pattern that lets you progress down current.
    d. Very strong current, such as rivers at flood stage, tidal currents through channeled areas and similar conditions are beyond the range of recreational diving.
5. Falling objects
    a. When you recover an object with a lift bag, there is some risk that it will fall back to the bottom, such as if knots slip or the lift bag spills its air.
    b. Take precautions to stay out from under a lifting device and recovered object as it ascends, and after it is floating on the surface.
6. Boat traffic
    a. Search and recovery may take place in areas with heavy boat traffic.
    b. Clearly mark your established search area and your location. Always use the dive flag required or recognized in your local area.
    c. If possible, position personnel at the surface to watch for boats entering the search area.
    d. Don't assume that boats always see or recognize your dive flag. Look up and around and surface cautiously.

# VI. Planning Search and Recovery Dives

## Learning Objectives

**By the end of this section, you should be able to answer the following questions:**

1. **What are two reasons you plan the search and recovery portion of a dive?**
2. **What are the five general steps in planning a search and recovery dive?**

**1. What are two reasons you plan the search and recovery portion of a dive?**

A. The importance of carefully planning search and recovery dives include:
   1. Success. Successful search and recovery almost always follows careful and thorough predive planning. Unsuccessful searches usually follow a failure to plan.
   2. Safety. Careful planning allows you to consider, prepare for, and avoid potential hazards. Avoid conducting a search and recovery dive without first planning the dive completely.

**2. What are the five general steps in planning a search and recovery dive?**

**Note to Instructor**

Explain to student divers that the following search and recovery dive plan only outlines the essential aspects to consider – they need the experience they gain in this course, and with the local diving environment, to recognize the contingencies and specifics they will apply to an actual dive plan.

B. The search and recovery dive plan – overview.
   1. Define the dive objective.
      a. Establish a singular, clear objective.
      b. Make sure the objective is realistic – based on your ability, equipment, depth, time, etc.
   2. Collect and analyze all available information. This improves dive efficiency and safety. Use personal observations and/or interview nondivers who know the approximate location of the lost object. Try to determine:
      a. Believed location
      b. Material, shape, size, and weight of object
      c. Specialized equipment needed
      d. Lifting points
      e. Topography, water movement, visibility, and temperature on bottom
      f. Bottom composition – sand, silt, coral, rock, gravel, shell, mud
      g. Surface conditions
      h. Possible hazards – polluted water, scattered debris on the bottom, etc.
      i. Emergency facilities – location, telephone numbers

**Note to Instructor**

Explain to student divers that the most significant variable that affects the success of a search and recovery dive is planning for the bottom environment. Elaborate on local irregular bottoms and obstructions, silt and mud, suction, and sensitive aquatic life.

3. Select diving mode – snorkeling or scuba? There may be times when snorkeling may be better than using scuba.
4. Select a dive buddy or team.
   a. Select individuals who are experienced in search and recovery diving.
   b. Divers engaged in search and recovery efforts must work well together. They must agree on a search strategy and work as a team.
5. Briefing
   a. If more than two divers are involved in a search and recovery effort, a predive briefing is important. All divers must clearly understand their specific tasks.
   b. Before the briefing, it's best to select a single search leader. This individual conducts the briefing, coordinates the dive, and controls the search so that there are no search gaps between different buddy teams.

## VII. Pinpointing Lost Objects at the Surface

### Learning Objectives

**By the end of this section, you should be able to answer the following questions:**

1. **What is the procedure for determining the position of a sinking object when you are standing on shore?**
2. **What is the procedure for relocating the position of an object when you are at the surface in or out the water?**
3. **How do you establish a search area?**

### 1. What is the procedure for determining the position of a sinking object when you are standing on shore?

A. Different situations may arise when you see an object dropped or sink, or discover a sunken object while underwater that you want to relocate later. You can relocate the object more easily by using one the following techniques, depending upon your location relative to the lost object.

B. Determining the position of a sinking object when standing on shore:
   1. Watch the sinking object and face it from a point you can easily identify. Turn your back to the object and find a permanent landmark directly ahead that aligns with you and it. Call this point *A.*
   2. Next, move down the shore 50 to 100 metres/yards and repeat the process. Call this point *B.*
   3. Move to the other side of your first position 50 to 100 metres/yards and find a third set of landmarks on which to line up the sinking object. Call this point *C.*
   4. If possible, line up more than one landmark at each of the three locations. This increases landmark fixing accuracy. If you have a compass, take a bearing on the sinking object from all three points on shore.

5. To relocate the object, swim out to the general area. When you believe you are over the general area, face the shore.
   a. Align your location by swimming to where the lines established by points *A, B* and *C* intersect.
   b. With your compass, use the reciprocal bearings taken on shore. This should put you very near where the object went down (but water movement may affect its actual resting spot).

**2. What is the procedure for relocating the position of an object when you are at the surface in or out of the water?**

C. Relocating the position of an object while in the water.
   1. Position yourself on the surface directly over the object. Select two permanent landmarks on shore that line up exactly. Pick one marker close to the water and another directly in line with it but as far behind the first as possible.

**Note to Instructor**
Remind student divers to use tall, thin landmarks. If tall, thin landmarks are not available, use vertical edges of objects (houses, windows or signs).

   2. Note these landmarks, then rotate in the water between 60 and 120 degrees, and choose another two permanent landmarks that line up exactly. You may repeat this to obtain a third or fourth set of landmarks for more accuracy.
   3. Sketch your landmarks on a slate and note important information.
   4. To relocate the object, refer to your landmark sketch on your slate and then swim on the surface to the approximate area. While swimming, move until you align each set of landmarks. Line up the landmarks as precisely as possible and then begin your descent.
   5. This is also a good technique for finding your way back to great dive sites.

**3. How do you establish a search area?**

D. Establishing a search area.
   1. If you can't accurately pinpoint the location of a lost object from the surface, you need to establish a general search area.
   2. Define an area that you are reasonably sure the object must be within, but no larger than necessary.
   3. When possible, establish a general search area by using natural boundaries found on the surface – piers, jetties, riverbanks and shorelines.
   4. When possible, the search area should have a regular shape: a square or rectangle.
   5. After establishing the boundaries, you may want to measure the boundaries using kick cycles or another method. This may help you decide on an appropriate search pattern.

# VIII. Underwater Searches

**Note to Instructor**

Search patterns require accurate compass navigation and underwater distance measurements. Depending on your student divers, it may be appropriate to review basic navigation. It may be sufficient to review by having students practice on land, but if you find student navigation skills very rusty, you may want to schedule a confined water session or open water dive to refresh compass and navigation skills prior to Search and Recovery Dive One.

## Learning Objectives

**By the end of this section, you should be able to answer the following questions:**

1. **How do you execute a U and an expanding square compass search pattern, and when should you use them?**
2. **How do you execute a circular, semicircular and jackstay rope search patterns, and when should you use them?**
3. **What is a surface-controlled search pattern?**
4. **How do you execute a shore-walk search pattern, and when should you use it?**
5. **How do you execute a snorkeler led search pattern, and when should you use it?**
6. **What general considerations should you take into account when using search patterns?**

### 1. How do you execute a U and an expanding square compass search pattern, and when should you use them?

**Note to Instructor**

Draw patterns on a board for reference as you describe each, and/or refer student divers to the pattern illustrations in the PADI *Search and Recovery Diver Manual.*

A. The U search pattern

1. Simple and effective. Can be used in almost any situation, but is especially useful for a larger search area. Requires no special equipment, is easy to set up and makes dive planning easy. Use the U search pattern to find small or larger objects over flat bottoms in calm water. This search pattern also has application with uneven bottoms and currents.
2. When appropriate, begin the pattern at one corner of the established search area. This starting point should be marked with a surface buoy with anchor, natural reference or bottom marker.
3. To complete the U pattern: search teams swim along the bottom in a straight line, turn 90 degrees for a short length, and then 90 degrees for another long length. Two right turns alternate with two left turns resulting in a series of *U* shapes with close overlap.

4. Underwater visibility and size of the object dictates the distance between the longer sides of the U pattern. The lower the visibility and the smaller the search object, the closer the sides should be.
5. A compass increases the accuracy of 90-degree turns (especially the use of a digital compass). Use one with this pattern when possible. Measure sides of the pattern with kick cycles or timed swims in moderate to good visibility. In low visibility and/or for small objects, you can complete the pattern using arm spans measurements.
6. If you don't find the object, complete a U pattern by returning to the starting point.
7. Conduct as many U patterns in as many different directions as necessary to cover an entire established search area, or until you find the object.
8. Try to orient the pattern so that when you swim the longer sides of the pattern, you swim directly into any existing current. This minimizes the effects of current and allows you to stay relatively on course.
9. In situations that call for a fast search for a moderate to large object in medium or better visibility, you may be able to use the U-pattern with Diver Propulsion Vehicles (DPVs) if available.

**Note to Instructor**

The use of a Diver Propulsion Vehicle (DPV) requires experience. Suggest to student divers to complete the PADI DPV Diver Specialty.

B. The expanding square search pattern
   1. Like the U pattern, it is simple and effective. Can be used in most situations, requires no special equipment and makes dive planning easy. This pattern is especially suitable for a medium-sized objects missing in rough terrain in calm water.
   2. Begin the pattern in the center of the established search area or at the location of the last sighting of the lost object.
   3. Underwater visibility and size of the object dictates the distance between the sides of the expanding square pattern. If the water is murky, the distance between the sides should be small.
   4. To execute the pattern, swim a short straight length – for example, three kick cycles. Turn 90 degrees (either right or left) and swim a slightly longer length – for example, six kick cycles. Turn 90 degrees again (same direction as last time), and the next length increased same amount – for our example, nine kick cycles. Continue this process so that the pattern forms a straight-lined spiral moving away from the starting point. Overlap the spiral sides slightly to avoid search gaps.

5. When possible, use a compass to make the 90 degree turns as accurate as possible. Kick cycles are effective in measuring sides.

**2. How do you execute a circular, semicircular and jackstay rope search patterns, and when should you use them?**

**Note to Instructor**

Draw patterns on a board for reference as you describe each, and/or refer student divers to the pattern illustrations in the PADI *Search and Recovery Diver Manual*.

C. Circular search pattern

1. Particularly useful when looking for a small item in a relatively small area. It is also a good choice for searches in current or surge since the center is securely anchored. It's an easy search to set up rapidly if you have a line and reel handy. As with most rope search patterns, it is best used when the bottom is relatively flat and free of obstructions.
2. One buddy anchors the line by holding it tightly in the center of the circle, while the other diver swims a circle holding the line taut. If you can't find the object after swimming one complete revolution, the diver with the reel releases more line (amount depends on the visibility and size of the object). The search diver then swims another revolution. The search continues with ever expanding circles until finding the object, running out of line, or reaching some other dive limit.
3. The anchor diver usually controls the reel. However, the search diver may control the reel, particularly if the topography is such that it's necessary to vary the line length added on each revolution.
4. You can also anchor the line to a fixed point such as stake or pier pylon, and the buddy teams swim the revolutions. In this case, the outer diver handles the reel with line. The advantage is that with two divers, the line may be lengthened more on each revolution.

D. Semicircular search pattern

1. This search pattern is particularly useful when looking for a medium sized or larger object. This pattern is useful for a long horizontal search area. It is also accurate in the presence of a current or surge, since the center is anchored to the bottom. Use this pattern when the bottom is relatively flat and free of obstructions.
2. To begin the pattern, select a compass heading that will direct the search in a straight line. Try to use the cardinal points as headings or if a current exists, organize the search so that you head directly into the current.
3. During the first half of the search pattern, divers alternate as pivot diver and search diver in semicircular sweeps – continually moving in the established direction.

4. During the second half of the search pattern, divers again alternate as pivot diver and search diver in semicircular sweeps on the other side of the pattern – continually moving in the reciprocal direction of that previously chosen.

E. The jackstay search pattern – Technique One

**Note to Instructor**

There are actually many ways to perform a jackstay search pattern. The two methods here are typical. Be sure to emphasize which one you'll have student divers practice during Search and Recovery Dive Three.

1. This pattern is useful to search a large, relatively flat-bottomed area. Also, use the pattern successfully in moderate current.
2. First establish a base line (a reference line from which the search is started) within the search area and decide which direction (right or left) along the base line you will travel during the search.
3. Put a rope, weighted or anchored (an extra dive knife stuck in the substrate may act as an anchor) at each end, 90 degrees to the base line. The rope length depends on the search area size.
4. Divers start on each end of the rope on opposite sides from each other. On a line signal, each diver swims toward the other end while looking for the object. They pass in the middle and continue to the other end.
5. Divers signal when they reach the opposite end, then move the weighted/anchored ends along the base line in the search direction. The distance they move the line depends on the visibility and the size of the lost object – some overlap is preferable.
6. Repeat the procedure until you find the object, the area is covered or you terminate the dive.
7. This search requires close teamwork and establishing line signals clearly before the dive.

F. The jackstay search pattern – Technique Two

1. This version of the pattern is also useful to search a large area with a relatively flat bottom. Used successfully when a moderate current exists in the search area.
2. Again, establish a base line within the search area and decide which direction along the base line to move the line during the search.
3. Two divers take a rope to a starting point at the edge of one end of the base line.
4. Diver One swims the line straight out, 90 degrees to the base line, while Diver Two stays at the starting point holding on to the other end of the line. Diver One searches for the object while swimming the line.

5. Diver One reaches the end of the line and pulls it tight, then moves the end in the search direction the distance dictated by visibility so the line is now at an angle to the base line. After moving the line, Diver One anchors the line (with dive knife or a lead weight). Diver One then swims back along the line to Diver Two at the starting point, searching while swimming.
6. Once together again, the two divers move the line end in the search direction the specified distance so that line is again perpendicular to the base line. They anchor the line and now begin searching together to the other end, searching for the object as they swim.
7. Upon reaching the other end of the rope, they again move the rope as before. They repeat the procedure until they find the object, the area is covered or the divers terminate the dive.

**Note to Instructor**

Review with and show student divers the types of lines and reels used in search and recovery. The types of reels and lines used ought to depend on the search, however, too often it's dictated by what you happen to have available. Suggest to student divers to be proactive by having appropriate tools in their kit before they need them.

### 3. What is a surface-controlled search pattern?

G. Surface-controlled search pattern

1. Surface controlled search patterns are a good choice when searching in very low visibility – when it's almost impossible for two divers to stay together and when attempting to reduce the amount of silt being stirred up. Useful in areas with currents, especially in rivers. Useful for rapid searches with several divers at once on the same pattern.
2. Surface searches require at least three individuals: tender (surface person who directs search), search diver and a standby diver or buddy search diver. The tender stands on shore with the standby diver (if not a buddy search diver). The standby diver remains above water, ready to assist the search diver if needed. (Tender/standby diver combination effectively maintains the buddy system in this type of search.)
3. The search diver(s) run patterns underwater to look for the object while the tender controls the search by letting out line as needed. The search diver communicates with the tender via rope signals. The search diver surfaces after locating the object, or when asked to do so by the tender.
4. Teamwork is required. Establish clear line signals before the dive.
5. Rope signals – the search patterns explained in this section may require the use of tender-to-diver and diver-to-tender rope signals. Rope signals vary greatly, so agree on their meaning during dive planning. You may find it helpful to write the signals down on a slate.

**Note to Instructor**

Review and agree on rope signals with student divers. Inform divers that rope pull signals are not standardized and to review them with their buddy before starting the search. You may wish to add to these suggested signals or replace them all together.

Diver-to-Diver Rope Signals – suggested rope pulls:

1. One pull = *Attention* or *Begin pattern.*
2. Two pulls = *OK?,* or *OK!*
3. Three pulls = *I've finished the circle, semicircle or length of the jackstay line.*
4. Four pulls = *Come back toward me,* or *Let's meet.*
5. Continuous pulls = *Emergency – I need your assistance immediately!*

Review and agree on tender-to-diver and diver-to-tender rope signals with student divers. You may wish to add to these suggested signals or replace them all together.

Tender-to-Diver Rope Signals – suggested rope pulls:

1. One pull = *Attention* and *Stop.*
2. Two pulls = *OK?,* or *OK!* and *Continue.*
3. Three pulls = *Go right.*
4. Four pulls = *Go left.*
5. Five pulls = *Search where you are.*
6. Six pulls = *Come up immediately.*
7. Let line out = *Go out/down.*
8. Take line in = *Come in/up.*

Diver-to-Tender Rope Signals – suggested rope pulls:

1. One pull = *Attention,* or *On bottom, beginning pattern.*
2. Two pulls = *OK?*, or *OK!* and *Continuing*
3. Three pulls = *Take up slack in line.*
4. Four pulls = *Give me slack*.
5. Five pulls = *Send down standby diver.*
6. Six pulls = *Pull me up immediately.*
7. Continuous pulls = *Emergency – I need immediate assistance!*

## 4. How do you execute a shore-walk search pattern, and when should you use it?

**Note to Instructor**

Draw patterns on a board for reference as you describe each, and/or refer student divers to the pattern illustrations in the PADI *Search and Recovery Diver Manual*. Student divers don't practice shore-walk patterns and snorkeler led search patterns during the open water dives in this course. You may have student divers practice these patterns on optional dives after completing the four dives outlined.

H. Shore-walk pattern
   1. Useful for searching a large area along shore. May be used with many divers or only one or two.
   2. Tender holds line and walks along shore. Search divers take line all the way out, hold line taut, and swim keeping line perpendicular to shore.
   3. At end of search area, tender signals and takes up line. Divers swim out line until it is taut, reverse direction and search continues in opposite direction.
   4. Search ends when team finds object, reaches shallow water or reaches a dive limit.

**5. How do you execute a snorkeler led search pattern, and when should you use it?**

I. Snorkeler led search pattern
   1. Especially effective when looking for a relatively large object in a large area. To conduct the search, you need a snorkeler, line, and two or more search divers.
   2. Establish the search area, ideally by anchoring buoys at four corners of large search area. This provides the snorkeler with references during the search.
   3. The snorkeler swims the pattern and the divers swim in a V pattern, with the leader holding onto the line from the snorkeler.
   4. If visibility is good, only the lead search diver holds the line, with other divers following on either side in a staggered V formation. The snorkeler led search pattern (or V Search) is a good choice for setting up a quick search of a large area.

**6. What general considerations should you take into account when using search patterns?**

J. General considerations and reminders – all search patterns
   1. Begin a search pattern at a specific location within the established search area. Identify this location with a buoy and anchor or a marker on the bottom.
   2. Use the simplest search pattern that will work.
   3. When using compass-based search patterns use the cardinal compass points – N, S, E and W – on the long sides of the pattern to simplify search pattern headings. Underwater navigation is the backbone of search and recovery.
   4. In a two person dive team, it's often most effective if one diver navigates the pattern while the other looks for the object.
   5. When following a pattern underwater, keep track of your relative position and a sketch of the pattern on a slate.
   6. To assist navigation, note natural and artificial references while swimming a pattern underwater.

7. On a large area search, it may help to place bottom markers (heavy wire with small flags attached, small floating buoys with line and weights, piled stones, etc.) as underwater references that mark areas you've searched. Be sure to clean the bottom of these markers when the dive is complete.
8. Avoid stirring up silt while swimming a pattern because this hampers the search.
9. Avoid contact with the bottom.
    a. Keep fins pointed upward – diving slightly buoyant (with your BCD – not under weighted) can help with this.
    b. When you stop, remain level or head down in the water and avoid fin movement.
    c. Use buoyancy to begin ascents initially rather than swimming.
10. Review communications and establish any special signals specific to swimming a particular pattern.
11. When boat traffic in the search area is heavy or other individuals are involved in the search, consider towing a surface float with a locally recognized dive flag to let others know where you are.
12. Small metal objects may sink into soft silt or sand, or water movement may bury them. You may want to use an underwater metal detector as you follow the search pattern. Plan the pattern so you don't leave any gaps in the area you cover with the detector. Be aware that metal detectors are restricted in many areas – follow local laws and regulations.

**Note to Instructor**

Use of a metal detector is not required for this program, but you may include it. If you intend to, plan time to explain how the specific detector works and give student divers time to practice with the instrument on the surface. Advise them of any local restrictions involving metal detectors.

13. Pay attention to basic diver safety procedures. Check your air regularly and often, and maintain contact with your buddy. Include what to do if separated in your dive planning.
14. When using your compass, remember that metal objects may cause reading variations that affect your search pattern.

# IX. Object Recovery Procedures

## Learning Objectives

**By the end of this section, you should be able to answer the following questions:**

1. **Based on the weight of an object, when should you use a lift bag for recovery?**
2. **What is wrong with using your BCD as a lifting device to recover an object?**
3. **For what three reasons is it preferable to use a commercially made lift bag when recovering an object over using a homemade lift bag?**
4. **How do you improvise a homemade lift bag if you need one when a commercial model isn't on hand?**
5. **How do you tie a bowline, sheet bend, and two half-hitch knots?**
6. **Why do you choose a lift bag based on an object's weight?**
7. **What is the procedure for lifting an object to the surface with a lift bag?**
8. **What air source should you use to add air to a lift bag?**
9. **Where should you be when lifting an object with a lift bag?**

### 1. Based on the weight of an object, when should you use a lift bag for recovery?

A. Recovery methods
   1. Hand-carry to the surface (recommended: place in a mesh bag to free hands) only light objects (no more than approximately 4 kilograms/10 pounds to 7 kilograms/15 pounds) – examples: eyeglasses, wallets, fishing rod, etc.
   2. Lift bag – commonly used for recreational recovery of objects weighing more than 4 kilograms/10 pounds and less than approximately 45 kilograms/100 pounds.
   3. Lines from the surface – hand-pulled. Requires surface personnel to handle lines. Often used from boats. If using a surface line to recover an object from a small boat, be cautious that the boat can carry the added weight of the recovered item. It is best for divers to exit the water before lifting in case the load falls or slips from the rigging.
   4. Lifting from a boat works, but you can't always get a boat over the object because of where it is, because you don't have a boat available, or because between you and your buddy, there's no one left to run the boat and haul the object up. For these reasons, you'll most commonly use a lift bag to recover objects in the 4 kilogram/10 pound to 45 kilogram/100 pound range.

### 2. What is wrong with using your BCD as a lifting device to recover an object?

B. Do not use your BCD as a lifting device.
   1. If you accidentally release the object you run the risk of an uncontrolled, rapid ascent with a resulting risk of DCI.

2. Dropping an item creates an immediate hazard because your BCD has a lot of air in it and you will end up ascending too fast.

**3. For what three reasons is it preferable to use a commercially made lift bag when recovering an object over using a homemade lift bag?**

C. Types of lift bags
   1. Commercially made lift bags are recommended because:
      a. They typically have a built-in dump valve/system to release expanding air during ascent.
      b. They have quick-connect/disconnect rigging strong enough to withstand the lift of the bag.
      c. They are made from rugged materials that won't easily tear during lifting or in the dive environment.

**Note to Instructor**
Show student divers different types of commercial lift bags they'll use during the course along with any appropriate homemade lift bags.

**4. How do you improvise a homemade lift bag if you need one when a commercial model isn't on hand?**

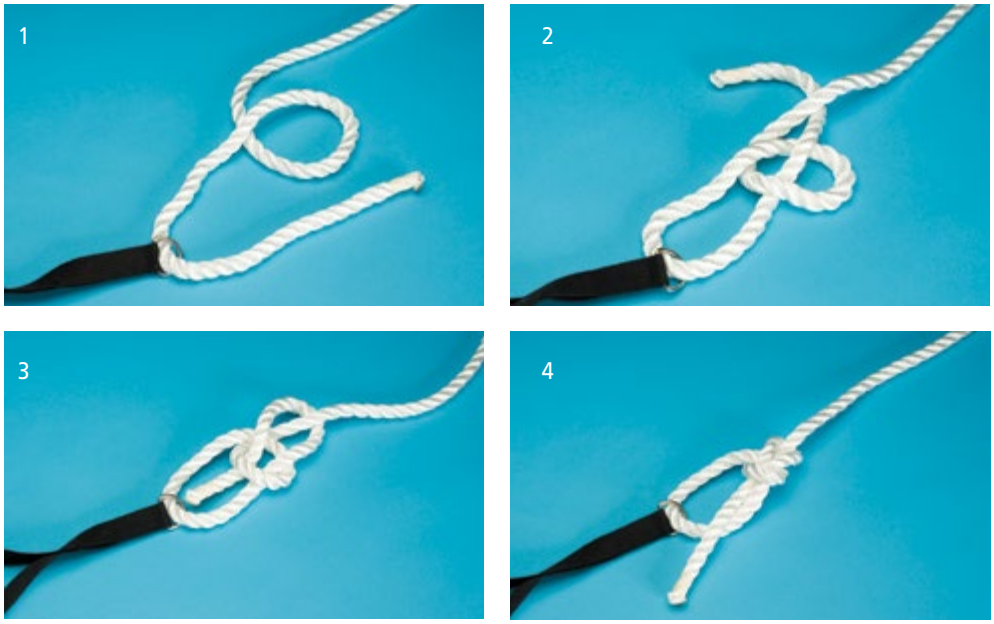
D. Homemade lift bags
   1. Avoid using unless a commercially made bag is not available because a homemade lift bag may be less reliable.
   2. Different types of homemade lift bags include – mesh bag with plastic bag insert, duffle or dry bag etc.
   3. A homemade lift bag can also be constructed from cutting a hole in the rim of a car tire inner tube and passing a line through inside around the center.
   4. You can lift up to 11 kilograms/25 pounds with a lift bag made by placing a heavy-duty plastic garbage bag inside another.
   5. Be cautious when using homemade bags because sometimes the air volume creates more lifting force than the material can withstand, tearing the bag and dropping the load.

**5. How do you tie a bowline, sheet bend, and two half-hitch knots?**

**Note to Instructor**
Have student divers practice tying knots above water with gloves on and eyes closed.

E. Bowline – typically used to attach line to an object. This knot, even though pulled tight, is easy to untie.

Bowline

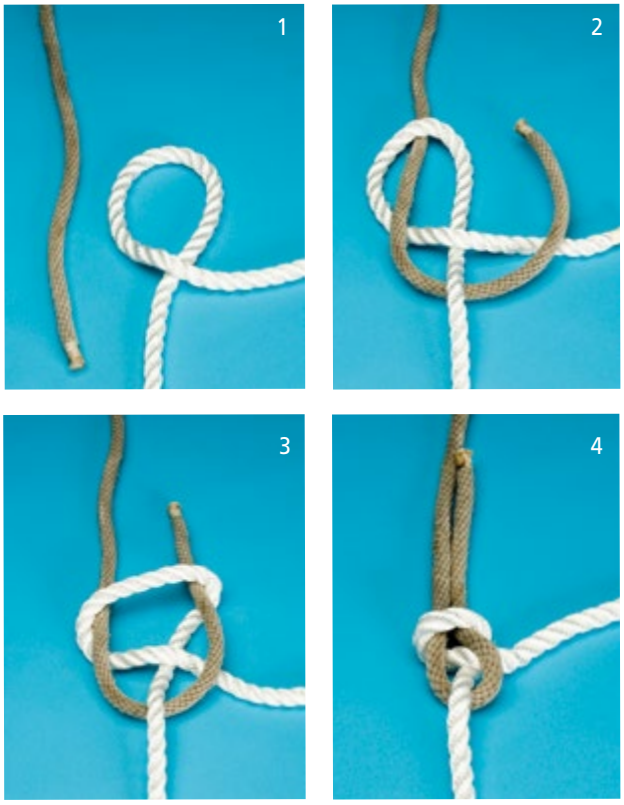



1. Make an overhand loop in the line the size of eye desired (1).
2. Pass the bitter end up through the overhand loop (2).
3. Bring the bitter end around the standing part and back down through the overhand loop (3).
4. Pull the knot tight by holding the bitter end and the loop with one hand, and pulling the standing part with the other (4).

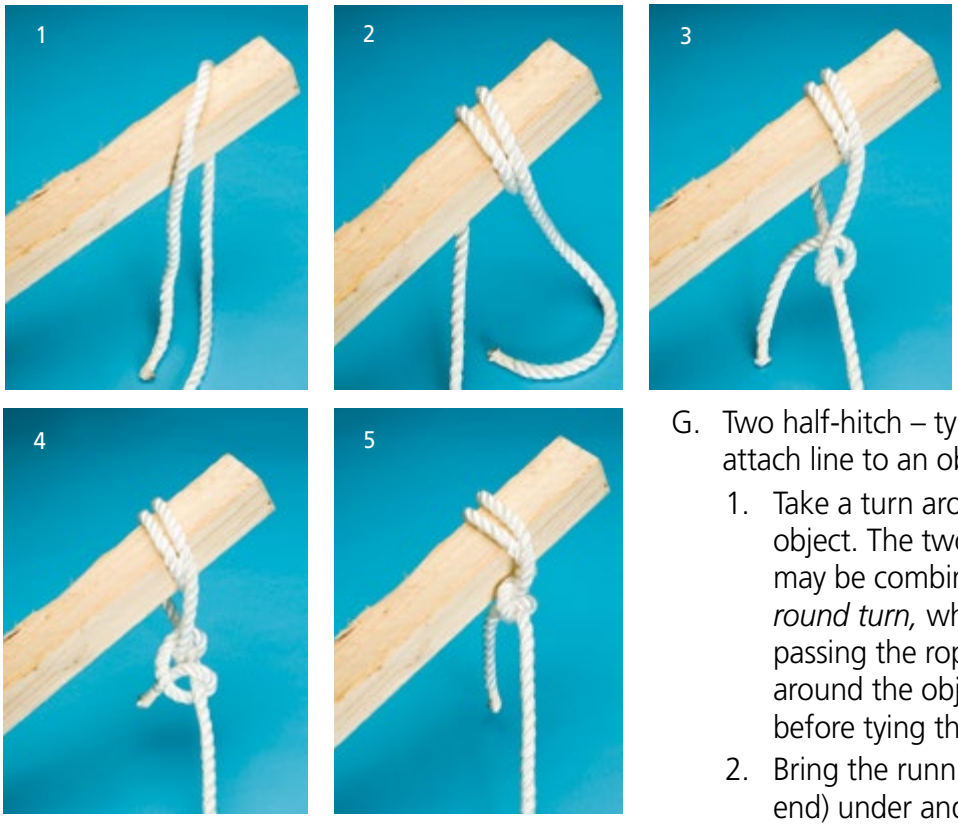
F. Sheet bend – typically used to attach one line to another and/or attaching lines of different diameters to each other.

1. Form a bight in one of the lines to be joined together (1).
2. Pass the bitter end of the second line up through the bight formed by the first line (2).
3. Wrap the end of line around the bight.
4. Pass the end over the bight, putting it under its own standing part (3).
5. Pull taut on both standing parts to set the knot (4).

Sheet bend



Two half-hitch




G. Two half-hitch – typically used to attach line to an object.
   1. Take a turn around the object. The two half-hitch may be combined with a *round turn,* which is simply passing the rope all the way around the object twice before tying the knot (1, 2).
   2. Bring the running end (bitter end) under and over the standing part and back under itself (3).
   3. Continue by passing the bitter end under and over the standing part and back under itself (4, 5).

**6. Why do you choose a lift bag based on an object's weight?**

H. Choosing a lift bag
   1. Choose a bag with a lifting capacity as close to the object's negative buoyancy as possible. The idea is for the bag to be nearly full when it offsets the object's negative buoyancy, so that expanding air bubbles out of the bottom during ascent and there's not much buoyancy increase.
   2. If the bag capacity is significantly greater than the object's weight, it retains expanding air, increasing the buoyancy, making it harder to control and risking a runaway ascent.

**Note to Instructor**

You may want to provide information on how to calculate the air required to lift an object, however, teaching student divers to match a rated commercial lift bag (i.e., a 22 kilogram/50 pound lift bag) with the weight of the object to lift meets the objective.

**7. What is the procedure for lifting an object to the surface with a lift bag?**

I. Rigging lift bags

1. When you locate an object that you're going to recover by a lift bag, your first step is to mark it with a buoy and line, which you leave attached until you have the object safely ashore or on the boat. Do this so that if the object slips loose or sinks during recovery, you don't have to search for it again.
2. The next step is to attach the bag to the object securely. You normally do this by either tying the lift bag to the object, clipping the lift bag to the object or through a combination of both tying and clipping. It all depends upon what you're raising and the specific lift bag.
    a. When the object (such as a small anchor) has an obvious attachment point suitable for raising it, simply secure the lift bag using the bag's clip or a carabineer.
    b. If not, rig the object with line, and then attach the lift bag either by tying or by clipping the bag to the line.
3. Use nylon pre-stretched line for rigging when possible. Knots placed in this type of line stay secure once tied. Use polypropylene line with caution, since it tends to come untied easily.
4. Before filling a lift bag with air, be sure the rigging (knots or clips) is secure. Always test your rigging by tugging on it prior to attempting a lift.

**8. What air source should you use to add air to a lift bag?**

J. Inflating the lift bag

1. Inflate the lift bag with an air source other than your primary second stage, such as an alternate second stage or an accessory inflator.
    a. Be careful not to entangle it in the rigging.
    b. In cold water, use an accessory inflator, not your alternate second stage, to inflate the bag. This is because high airflow through a second stage can cause it to freeze and to free flow.
2. Inflate the lift bag a little at a time, pulling on the rigging to test it and loosen the object from the bottom. Be ready to dump air if needed.
3. Initially, fill the lift bag with enough air so that it is neutral or just slightly negative just barely hovering over the bottom before beginning the ascent to the surface. This will result in a more controlled ascent and allow you to test the rigging again.
4. If an object appears stuck in mud or silt, avoid overfilling the lift bag to break the suction. Pull on it to release the suction.
    a. When possible, dig around the object to reduce suction before filling the lift bag.

b. Overfilled lift bags can be dangerous if the suction suddenly breaks, sending the lift bag up in an uncontrolled manner.

**9. Where should you be when lifting an object with a lift bag?**

K. Positioning

1. Never straddle or lean over the object you're lifting.
2. Where appropriate, swim the object and lift bag horizontally just above the bottom to the exit area instead of the surface. Moving an object in this manner is easier than swimming with it at the surface.
3. Stay out from under the lift bag as it heads for the surface. You should be well off to the side. If the object comes loose during ascent, it won't hit you as it falls to the bottom.
4. Depending on conditions and the situation, you may accompany the lift bag to the surface or allow it to rise independently. If accompanying it to the surface, maintain control of the lift bag's buoyancy during ascent by periodically dumping air from the bag.
5. As always, when ascending with an object, be extremely cautious about your rate of ascent – maximum 18 metres/60 feet per minute. If you have trouble controlling the lift bag, let it go and swim away from it in case it resinks. Nothing you recover is worth risking your safety in an uncontrolled ascent.
6. After you reach the surface, if necessary, add air to the lift bag to give it plenty of positive buoyancy. You may want to tie the bag to your boat or float while you exit the water.

**Note to Instructor**

Reinforce to student divers to keep their hands and gear clear of the rigging at all times to avoid being snagged and dragged by a runaway bag. When raising something, stay well out from under the rising lift bag with a recovered object in case the object resinks due to bag spillage, rig failure, or from coming loose.

Remind student divers to keep in mind that a lift bag can easily raise weight beyond their ability to carry or haul into a boat, so have other people lend a hand if necessary when hauling the recovered item aboard or ashore.

# SECTION THREE

# Open Water Dives

## Conduct

**The PADI Search and Recovery Diver Specialty course has four required open water training dives.** You also have the option of adding a confined water dive to practice skills, such as object recovery procedures, knot tying, rigging a lift bag, and navigating search patterns along with a general scuba skills review.

You may add training dives for additional experience as needed for student divers to demonstrate mastery. However, **student divers must demonstrate mastery of all performance objectives for each dive prior to progressing to the next training dive.**

The purpose of Dive One is to have divers practice basic search patterns, tie knots and rig and lift an object. On Dive Two, student divers perform the expanding square search pattern to find and lift an object. On Dive Three, student divers perform the jackstay search pattern to find and lift an object. On Dive Four, student divers plan their own search patterns and lifting methods for the dive.

**Prior to certification, student divers must demonstrate mastery of all performance objectives.**

## Dives, Times, Depths and Gases

1. **The minimum number of dives for certification as a PADI Search and Recovery Diver is four open water dives.**
2. **All dives must be planned as no stop (no decompression) dives.** Divers may use enriched air to extend no stop time or add conservatism if they are certified as PADI Enriched Air Divers (or have a qualifying certification).
3. **Conduct Dive One no deeper than 30 metres/100 feet.** The recommended depth is 6-9 metres/20-30 feet.

## General Considerations

1. Choose a dive site, preferably a sandy bottom, where fragile marine life will not be damaged during searches and recovery attempts.
2. Conduct a thorough knowledge orientation and dive briefing. Emphasize that students should interact responsibly with the aquatic life by maintaining neutral buoyancy and avoiding unnecessary contact.

3. Involve student divers in dive planning activities. Have student divers prepare lines, reels and lift bags as appropriate.
4. Have a variety of recoverable objects on hand – buckets filled with bottom sand/sediment, bricks, concrete blocks, small boat anchors, weight belts, parts of engines, etc.
   a. The approximate weight range of the objects should be between 11 kilograms/25 pounds and 45 kilograms/100 pounds (11 kilograms/25 pounds maximum for Search and Recovery Diver Open Water Dive One).
   b. For Dive One, also have on hand small objects (e.g., coins, bottle tops, sunglasses, eating utensils – size dependent on visibility and bottom composition) that can be searched for, found and hand-carried back to the surface.
5. When possible, place search objects underwater before student divers arrive at the site. If this can't be done, have assistants place the objects while student divers are participating in predive activities.
6. Staff support saves valuable time:
   a. Assist with the placement of recoverable objects within the established search areas.
   b. Supervise buddy teams during search pattern execution.
   c. Supervise students while they practice rigging and lifting objects from the bottom.
   d. Help recover objects not located and returned by student divers.
7. You can determine student diver performance on dives from the surface by assigning buddy teams a colored buoy and line. By observing the buoys on the surface, you can determine the progress of each team and its errors. Because buddy teams bring recovered objects to the surface, you will know they mastered the objectives. Be prepared to assist with surface recovery of the lifted objects.
8. On Dive Four, have student divers organize, plan and conduct a search and recovery dive from start to finish. For realism, have the divers interview you or your assistants for information regarding the lost object (size of object, what the object looks like, and approximate area in which the object was lost). The lost object may be something that can be recovered by hand (coins, sunglasses, etc.) or something that requires a lift bag.
9. Divers who finish exercises with sufficient gas remaining may continue to dive for pleasure and experience, at your discretion.

## Sequence Options and Dives

1. Ideally, student divers should complete Knowledge Review – Part I before Dive One.
2. Students should complete Knowledge Review – Part II before Dives Two,Three and Four.
3. **Training dives must be conducted in order.** You may rearrange skill sequences within a dive.

# Search and Recovery Dive One

### Performance Objectives

**By the end of Search and Recovery Dive One, student divers should be able to, with a buddy and with instructor guidance as appropriate:**

1. **Demonstrate a methodical search of an area approximately 15 metres by 15 metres/50 feet by 50 feet, or other dimensions for the same area of search to find a small submerged object. Search until object is found or until reaching a planned dive limit.**
2. **Demonstrate a methodical search of an area approximately 30 metres by 30 metres/100 feet by 100 feet, or other dimensions for the same area of search to find a submerged object not more than 11 kilograms/25 pounds negatively buoyant. Search until object is found or until reaching a planned dive limit.**
3. **Tie the following knots correctly while underwater: the bowline, two half-hitches and a sheet bend.**
4. **Demonstrate how to safely rig and bring to the surface an object not more than 11 kilograms/25 pounds negatively buoyant using an appropriate lifting device.**

## I. Dive One Standards

**A. Environment: Open Water**

**B. Maximum Depth: 30 metres/100 feet;** 6-9 metres/20-30 feet recommended

## II. Suggested Sequence

**A. Briefing**

1. Evaluate dive site conditions.
2. Identify facilities at the dive site.
3. Explain interesting and helpful facts about the dive site, including bottom topography, bottom composition, depth range and points of interest (use a dive site map if appropriate).
4. Describe entry and exit techniques for the dive site.
5. Have buddy teams plan their turn pressure, ascent pressure and reserve pressure for the dive based on gas supply limits.
6. Review the dive sequence and performance requirements.
7. Review communication and other emergency protocols as required by local regulations.

**B. Predive Procedures**

1. Have divers prepare all standard and specialized equipment.
2. Confirm that divers have all dive data: turn-around gas pressure, maximum depth and bottom time on a slate.

3. Practice circular/rope search pattern on land. Assign one individual to be the anchor diver and one to be the search diver.
4. Practice a U search pattern on land. Assign one person to be the navigator and one person to be the searcher. Determine the approximate time/kick cycles required to complete the different sides of the U pattern.
5. On land, practice rigging an object similar to that being recovered using the knots learned during the presentation.

**C. Search and Recovery Dive One**

1. Predive check
   a. Buddies conduct a predive safety check.
   b. Watch for and correct errors as appropriate.
2. Entry
3. Buoyancy check and proper weighting
4. Gas management
   a. Before beginning the descent, remind divers to check their starting pressure and make a note of their turn pressure.
   b. During the dive, check cylinder pressures at irregular intervals to confirm appropriate gas management.
5. Teams enter the water, mark off the search area with buoys.
6. Descent
7. Dive One Tasks
   a. Small-area search – Buddy teams search for and recover a small object (no bigger than a baseball – smaller if visibility is good) that has been placed in a predetermined area (approximately 15 metres by 15 metres/50 feet by 50 feet, or other dimensions for the same area of search). The use of a circular search pattern is recommended.
   b. Large-area search – Buddy teams search for and recover an object (not more than 11 kilograms/25 pounds negatively buoyant) that has been placed in a predetermined area (approximately 30 metres by 30 metres/100 feet by 100 feet, or other dimensions for the same area of search). The use of a U search pattern is recommended
   c. Once teams locate the object, they attach a buoy and recover the object using a lift bag.
8. Ascent
   a. Teams bring the object to the surface.
   b. Divers ascend at a maximum rate not exceeding 18 metres/60 feet per minute or according to dive computer.
9. Exit
   a. Divers establish positive buoyancy at the surface.

b. Divers exit the water appropriately for the environment, with assistance as necessary.

**D. Post-dive procedures**

1. Check in with surface support staff (as required).
2. Divers stow dive equipment as appropriate.

**E. Debriefing**

1. Provide positive reinforcement and assess performance.
2. Have student divers critique themselves on their performance. Ask divers to discuss the use of circular rope and U search patterns along with the lifting exercise. Add your observations as appropriate.
3. Log the dive (instructor signs logbook/approves digital log).

# Search and Recovery Dive Two

### Performance Objectives

**By the end of Search and Recovery Dive Two, student divers should be able to, with a buddy and with instructor guidance as appropriate:**

1. **Demonstrate the expanding square search for a submerged object in an area approximately 18 metres by 18 metres/60 feet by 60 feet, or other dimensions for the same area of search.**
2. **Demonstrate how to use an appropriate lifting device to safely rig and bring to the surface an object found using the expanding square search pattern.**

## I. Dive Two Standards

**A. Environment: Open Water**

**B. Depth:** 6-9 metres/20-30 feet recommended

## II. Suggested Sequence

**A. Briefing**

1. Evaluate dive site conditions.
2. Identify facilities at the dive site.
3. Explain interesting and helpful facts about the dive site, including bottom topography, bottom composition, depth range and points of interest (use a dive site map if appropriate).
4. Describe entry and exit techniques for the dive site.
5. Have buddy teams plan their turn pressure, ascent pressure and reserve pressure for the dive based on gas supply limits.
6. Review the dive sequence and performance requirements.

7. Review communication and other emergency protocols as required by local regulations.

**B. Predive Procedures**

1. Have divers prepare all standard and specialized equipment.
2. Confirm that divers have all dive data: turn-around gas pressure, maximum depth and bottom time on a slate.
3. Practice expanding square pattern on land. Assign one person to be the navigator and one person to be the searcher. Determine the approximate time/kick cycles required to complete the different sides.

**C. Search and Recovery Dive Two**

1. Predive check
    a. Buddies conduct a predive safety check.
2. Entry
3. Buoyancy check and proper weighting
4. Gas management
    a. Before beginning the descent, remind divers to check their starting pressure and make a note of their turn pressure.
    b. During the dive, check cylinder pressures at irregular intervals to confirm appropriate gas management.
5. Teams enter the water, mark off the search area with buoys.
6. Descent
7. Dive Two Tasks
    a. Teams initiate an expanding square search pattern.
    b. Once teams locate the object, they attach a buoy and recover the object using a lift bag.
8. Ascent
    a. Teams bring the object to the surface.
    b. Divers ascend at a maximum rate not exceeding 18 metres/60 feet per minute or according to dive computer.
9. Exit
    a. Divers establish positive buoyancy at the surface.
    b. Divers exit the water appropriately for the environment, with assistance as necessary.

**D. Post-dive procedures**

1. Check in with surface support staff (as required).
2. Divers stow dive equipment as appropriate.

**E. Debriefing**

1. Provide positive reinforcement and assess performance.
2. Have student divers critique themselves on their performance. Ask student divers to discuss the use of an expanding square search pattern and the lifting exercise. Add your observations as appropriate.
3. Log the dive (instructor signs logbook/approves digital log).

# Search and Recovery Dive Three

### Performance Objectives

**By the end of Search and Recovery Dive Three, student divers should be able to, with a buddy and with instructor guidance as appropriate:**

1. **Demonstrate the jackstay search for a submerged object in an area approximately 60 metres by 60 metres/200 feet by 200 feet, or other dimensions for the same area of search.**
2. **Demonstrate how to use an appropriate lifting device to safely rig and bring to the surface an object found using the jackstay search method.**

## I. Dive Three Standards

**A. Environment: Open Water**

**B. Depth:** 6-9 metres/20-30 feet recommended

## II. Suggested Sequence

**A. Briefing**

1. Evaluate dive site conditions.
2. Identify facilities at the dive site.
3. Explain interesting and helpful facts about the dive site, including bottom topography, bottom composition, depth range and points of interest (use a dive site map if appropriate).
4. Describe entry and exit techniques for the dive site.
5. Have buddy teams plan their turn pressure, ascent pressure and reserve pressure for the dive based on gas supply limits.
6. Review the dive sequence and performance requirements.
7. Review communication and other emergency protocols as required by local regulations.

**B. Predive Procedures**

1. Have divers prepare all standard equipment along with ropes and weights/anchors needed for the jackstay search.

2. Confirm that divers have all dive data: turn-around gas pressure, maximum depth and bottom time on a slate.
3. Practice the jackstay pattern on land.

**C. Search and Recovery Dive Three**

1. Predive check
   a. Buddies conduct a predive safety check.
2. Entry
3. Buoyancy check and proper weighting
4. Gas management
   a. Before beginning the descent, remind divers to check their starting pressure and make a note of their turn pressure.
   b. During the dive, check cylinder pressures at irregular intervals to confirm appropriate gas management.
5. Teams enter the water, mark off the search area with buoys.
6. Descent
7. Dive Three Tasks
   a. Teams initiate jackstay search pattern.
   b. Once teams locate the object, they attach a buoy and recover the object using a lift bag.
8. Ascent
   a. Teams bring the object to the surface.
   b. Divers ascend at a maximum rate not exceeding 18 metres/60 feet per minute or according to dive computer.
9. Exit
   a. Divers establish positive buoyancy at the surface.
   b. Divers exit the water appropriately for the environment, with assistance as necessary.

**D. Post-dive procedures**

1. Check in with surface support staff (as required).
2. Divers stow dive equipment as appropriate.

**E. Debriefing**

1. Provide positive reinforcement and assess performance.
2. Have student divers critique themselves on their performance. Ask student divers to discuss the use of the jackstay search pattern and the lifting exercise. Add your observations as appropriate.
3. Log the dive (instructor signs logbook/approves digital log).

# Search and Recovery Dive Four

## Performance Objectives

**By the end of Search and Recovery Dive Four, student divers should be able to:**

1. **Organize, plan and conduct a search and recovery dive with a dive buddy.**
2. **Choose an appropriate search pattern and lifting method based on facts gathered about a lost object prior to a dive.**

## I. Dive Four Standards

**A. Environment: Open Water**

**B. Depth:** 6-9 metres/20-30 feet recommended

## II. Suggested Sequence

**A. Briefing**

1. Evaluate dive site conditions.
2. Identify facilities at the dive site.
3. Explain interesting and helpful facts about the dive site, including bottom topography, bottom composition, depth range and points of interest (use a dive site map if appropriate).
4. Describe entry and exit techniques for the dive site.
5. Have buddy teams plan their turn pressure, ascent pressure and reserve pressure for the dive based on gas supply limits.
6. Review the dive sequence and performance requirements.
7. Review communication and other emergency protocols as required by local regulations.

**B. Predive Procedures**

1. Have divers interview you (or assistant) about the lost object and the approximate location.
2. Have divers organize and plan the dive based on the information provided.
3. Have divers prepare all standard equipment along with search equipment needed.
4. Confirm that divers have all dive data: turn-around gas pressure, maximum depth and bottom time on a slate.

**C. Search and Recovery Dive Four**

1. Predive check
   a. Buddies conduct a predive safety check.

2. Entry
3. Buoyancy check and proper weighting
4. Gas management
    a. Before beginning the descent, remind divers to check their starting pressure and make a note of their turn pressure.
    b. During the dive, check cylinder pressures at irregular intervals to confirm appropriate gas management.
5. Teams enter the water, mark off the search area with buoys.
6. Descent
7. Dive Four Tasks
    a. Teams initiate search.
    b. Teams locate and recover the object.
8. Ascent
    a. Teams bring the object to the surface.
    b. Divers ascend at a maximum rate not exceeding 18 metres/60 feet per minute or according to dive computer.
9. Exit
    a. Divers establish positive buoyancy at the surface.
    b. Divers exit the water appropriately for the environment, with assistance as necessary.

**D. Post-dive procedures**

1. Check in with surface support staff (as required).
2. Divers stow dive equipment as appropriate.

**E. Debriefing**

1. Provide positive reinforcement and assess performance.
2. Have student divers critique themselves on their performance. Add your observations as appropriate.
3. Log the dive (instructor signs logbook/approves digital log).

# APPENDIX

# Search and Recovery Diver

## Knowledge Review – Part I

Complete this knowledge review to hand in to your instructor for review. If there's something you don't understand, review the related material. If you still don't understand, have your instructor explain it to you.

1. Describe a recreational search and recovery diver.

2. List the six potential hazards of search and recovery diving.
    1.
    2.
    3.
    4.
    5.
    6.

3. List the five general steps in planning a search and recovery dive.
    1.
    2.
    3.
    4.

4. Briefly describe when to use an expanded square and a U search pattern.

5. Briefly describe when to use and how to execute a circular rope search.

6. Explain why you should never use your BCD for lifting objects.

7. Identify the weight at which use of a lift bag becomes mandatory.

8. List three reasons why commercially-made lift bags should be used for recovering underwater objects.
   1.
   2.
   3.

9. Explain the procedures for controlling, rigging, and lifting an object using a lift bag.

10. Identify which air sources you should use for filling a lift bag.

**Student Diver Statement:**

I've reviewed the questions and answers, and any I answered incorrectly or incompletely I have had explained to me and/or reviewed the material, so that I now understand what I missed.

Student Name _____

Signature _____ Date _____

# Search and Recovery Diver

## Knowledge Review – Part II

Complete this knowledge review to hand in to your instructor for review. If there's something you don't understand, review the related material. If you still don't understand, have your instructor explain it to you.

11. Describe the procedure for a jackstay search (either technique).

12. Describe the procedure for the snorkeler led search pattern, and explain when you would use it.

13. Describe the procedure for the semicircular search pattern, and explain when you would use it.

14. Describe the procedure for the shore-walk search pattern, and explain when you would use it.

15. Explain how bottom topography and water movement can affect a search.

16. Explain how being a professional search and recovery diver differs from being a recreational search and recovery diver.

17. Describe the procedure for pinpointing a fix on a submerged object while at the surface over it, and describe how to relocate the object later using the fix.

18. Identify the three commonly used knots for search and recovery and explain what you use each for. Describe the recommended above-water practice technique for preparing to tie these knots while underwater.

**Student Diver Statement:**

I've reviewed the questions and answers, and any I answered incorrectly or incompletely I have had explained to me and/or reviewed the material, so that I now understand what I missed.

Student Name _____

Signature _____ Date _____

# Search and Recovery Diver

## Knowledge Review – Part I Answer Key

**Note to Instructor**

To assess knowledge you may review the Knowledge Review from the student diver's manual with the diver, ideally prior to participating in skill practice. Prescriptively teach answers to questions student divers may have missed or have answered incorrectly or incompletely. Ensure student divers understand what they have missed.

1. Describe a recreational search and recovery diver.

   **Recreational search and recovery divers use simple equipment to find small to medium objects within recreational depths and environments.**

2. List the six potential hazards of search and recovery diving.

   1. **Sharp objects and debris**
   2. **Entanglement**
   3. **Low visibility**
   4. **Currents**
   5. **Sinking recovered objects**
   6. **Boat traffic**

3. List the five general steps in planning a search and recovery dive.

   1. **Define objective**
   2. **Collect and analyze information**
   3. **Choose scuba or snorkel**
   4. **Select a buddy or team**
   5. **Briefing**

4. Briefly describe when to use an expanded square and a U search pattern.

   **The expanded square search pattern is well suited for finding medium-sized objects missing in rough terrain in calm water.**

   **The U search pattern is well suited for finding small or larger objects primarily in calm water over flat, unobstructed bottoms.**

5. Briefly describe when to use and how to execute a circular rope search.

   **The circular rope search is useful for finding a small object in a small area, over a flat bottom (even currents). One buddy stays in center, acts as pivot. Searcher has other end of rope and swims circle around pivot looking for object.**

6. Explain why you should never use your BCD for lifting objects.

   **Excess buoyancy could cause a runaway ascent if object is dropped or breaks free.**

7. Identify the weight at which use of a lift bag becomes mandatory.

   **4 kilograms/10 pounds**

8. List three reasons why commercially-made lift bags should be used for recovering underwater objects.

   1. **Constructed from heavy-duty materials**
   2. **Have exhaust valves**
   3. **Have loops, slings for rigging**

9. Explain the procedures for controlling, rigging, and lifting an object using a lift bag.

   **Rig the bag to the object using a bowline, sheet bend or two half-hitch knots. Attach marker buoy. Use alternate air source to fill lift bag – use just enough air to lift off bottom for neutral buoyancy. Position self away from bag – not under it during ascent.**

10. Identify which air sources you should use for filling a lift bag.

    **Alternate air source**

# Search and Recovery Diver

## Knowledge Review – Part II Answer Key

**Note to Instructor**

To assess knowledge you may review the Knowledge Reviews from the student diver's manual with the diver, ideally prior to participating in skill practice. Prescriptively teach answers to questions student divers may have missed or have answered incorrectly or incompletely. Ensure student divers understand what they have missed.

11. Describe the procedure for a jackstay search (either technique).

**Establish a compass heading or use a natural formation as a base line. Stretch out the search rope until it is taut and perpendicular to the base line, then anchor it. Two divers begin the search from opposite ends of the rope, moving toward each other. At the end of the rope, they both move and re-anchor the rope further along the base line – keeping it perpendicular and taut. They repeat these steps until the object is found or the search ends.**

**OR**

**Two divers start at the same end of the anchored search rope. Diver 1 searches while swimming along the rope while Diver 2 remains stationary. At the end, Diver 1 moves the rope a short distance parallel to the base line, re-anchors it and follows it back to Diver 2. Reunited, both divers move the rope until it is perpendicular to the base line again. They repeat these steps until the object is found or the search ends.**

12. Describe the procedure for the snorkeler led search pattern, and explain when you would use it.

**Establish search area with anchored buoys or landmarks. The snorkeler swims a pattern and the divers follow in a "V" formation with the lead diver holding onto the line from the snorkeler. This procedure is used to guide one or more divers over a relatively large search area looking for a large object.**

13. Describe the procedure for the semicircular search pattern, and explain when you would use it.

**Divers 1 and 2 hold opposite ends of the search rope taut along the established baseline/ heading. Diver 2 remains stationary, acting as a pivot point, while Diver 1 swims a semicircular pattern stopping on the base line. Then Diver 1 remains stationary while Diver 2 swims a semicircular pattern back to base line. This continues until the divers set a reciprocal course and repeat the search on the other side of the base line. The semicircular search pattern is used to search a long narrow area while looking for a medium or large sized object.**

14. Describe the procedure for the shore-walk search pattern, and explain when you would use it.

**A tender holds the search line and walks along the shore while divers who are spaced evenly hold the line taut and swim perpendicular to shore. At the end of search area, the tender takes in some line (moving divers closer to shore) then walks back to the starting point. This**

**procedure is repeated until the entire search area is covered. This pattern is used to search a large area along a shoreline.**

15. Explain how bottom topography and water movement can affect a search.

    **Bottom topography often determines which search technique can be used. Irregular bottoms limit search technique choices. Water movement can bury objects in silt, sand or mud, making them more difficult to find. However, it can also assist divers in carrying away the sediment they fan up while searching the bottom. Water movement may also make it more difficult for divers to maintain their position in the water while following a pattern.**

16. Explain how being a professional search and recovery diver differs from being a recreational search and recovery diver.

    **Recreational search and recovery divers are trained to use basic techniques to recover small to medium sized articles. As a general rule, they do not engage in search and recovery for profit or employment. Professionals, such as law enforcement or fire-rescue divers, complete professional training programs and maintain their expertise through seminars and practical application. They work for profit or employment and search locations for items, such as automobiles, boats, weapons or missing persons, which are beyond a recreational divers training. In addition, they may use much more sophisticated equipment such as sonar, acoustic beacon and dredges.**

17. Describe the procedure for pinpointing a fix on a submerged object while at the surface over it, and describe how to relocate the object later using the fix.

    **Stay over the object and select two permanent landmarks on shore that line up exactly. One object should be as close to the water as possible while the other is directly in line and as far behind as possible. Take a compass reading on these objects, if possible. Rotate in the water between 60 to 120 degrees and pick another set of permanent landmarks in the same way. To relocate the object, swim in the general area until you have aligned one set of landmarks visually, or with the compass heading. Stay on that line until your other fix aligns.**

18. Identify the three commonly used knots for search and recovery and explain what you use each for. Describe the recommended above-water practice technique for preparing to tie these knots while underwater.

    1. **Bowline – used to attach the rigging to the lift bag and object.**
    2. **Sheet bend – used to join line of different sizes or the same size.**
    3. **Two half-hitches – used to tie a line tightly around an object. This is also used for securing a lift bag to an object you are raising. Practice tying these knots until you can do them from memory. Put on dive gloves, tie them a few more times, and then practice tying them with your eyes closed.**

# PADI Specialty Training Record

## Search and Recovery Diver Course

### Instructor Statement

I verify that this student diver has satisfactorily completed all academic and/or any confined water training sessions as outlined in the PADI Search and Recovery Diver Specialty Course Instructor Guide. I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI # _____

Instructor Signature _____ Completion Date _____

## Open Water Dives

### Dive 1

I verify that this student diver has satisfactorily completed Dive One as outlined in the PADI Search and Recovery Diver Specialty Course Instructor Guide including:

- Search of an area 15 metres by 15 metres/50 feet by 50 feet, or other dimensions for the same area of search to find a small submerged object.
- Search of an area 30 metres by 30 metres/100 feet by 100 feet, or other dimensions for the same area of search to find an object not more than 11 kilograms/25 pounds.
- Tie underwater the bowline, two half-hitches, and a sheet bend knot.
- Rig and bring to the surface an object not more than 11 kilograms/25 pounds using an appropriate lifting device.

I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI # _____

Instructor Signature _____ Completion Date _____

### Dive Two

I verify that this student diver has satisfactorily completed Dive Two as outlined in the PADI Search and Recovery Diver Specialty Course Instructor Guide including:

- Use of the expanding square search for a submerged object in an area 18 metres by 18 metres/60 feet by 60 feet or other dimensions for the same area of search.
- Use of an appropriate lifting device to safely rig and bring to the surface an object found using the expanding square search pattern.

I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI # _____

Instructor Signature _____ Completion Date _____

## Dive Three

I verify that this student diver has satisfactorily completed Dive Three as outlined in the PADI Search and Recovery Diver Specialty Course Instructor Guide including:

- Use of the jackstay search for a submerged object in an area 60 metres by 60 metres/200 feet by 200 feet, or other dimensions for the same area of search.
- Use of an appropriate lifting device to safely rig and bring to the surface an object found with the jackstay search method.

I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI # _____

Instructor Signature _____ Completion Date _____

## Dive Four

I verify that this student diver has satisfactorily completed Dive Four as outlined in the PADI Search and Recovery Diver Specialty Course Instructor Outline including:

- Organize, plan and conduct a search and recovery dive with a dive buddy.
- Choose an appropriate search pattern and lifting method based on facts gathered about a lost object prior to a dive.

I am a renewed, Teaching status PADI Instructor in this specialty.

Instructor Name _____ PADI # _____

Instructor Signature _____ Completion Date _____

## Student Diver Statement

I verify that I have completed all performance requirements for this Search and Recovery Diver specialty course. I am adequately prepared to dive in areas and under conditions similar to those in which I was trained. I agree to abide by PADI Standard Safe Diving Practices.

Student Name _____

Student Signature _____ Date _____

# PADI Adventure Dive Training Record

## Adventure Dive: Search and Recovery Diver

### Skills Overview

- Knowledge Review
- Briefing
- Practice Search Patterns on Land
- Practice Object Rigging on Land
- Gearing Up
- Predive Safety Check (BWRAF)
- Entry
- Small Area Search
- Large Area Search
- Tie Knots
- Rigging and Lifting an Object
- Exit
- Debrief
- Log Dive – Complete Training Record

### Instructor Statement

I verify that this student has satisfactorily completed the Knowledge Review and Performance Requirements (as described in PADI's Advanced Open Water Diver Instructor Guide) for this PADI Advanced Open Water Training Dive. I am a renewed, Teaching status PADI Instructor for the current year.

Instructor Name _____ PADI # _____

Instructor Signature _____ Completion Date _____

### Instructor Contact Information (Please Print)

Instructor Mailing Address _____

City _____ State/Province _____

Country _____ Zip/Postal Code _____

Phone _____ Email _____

### Student Diver Statement

I verify that I have completed all of the Performance Requirements for this Adventure Dive. I realize that there is more to learn about search and recovery diving and that completion of a PADI Search and Recovery Diver course is highly recommended. I also agree to abide by PADI Standard Safe Diving Practices.

Student Name _____

Student Signature _____ Completion Date _____